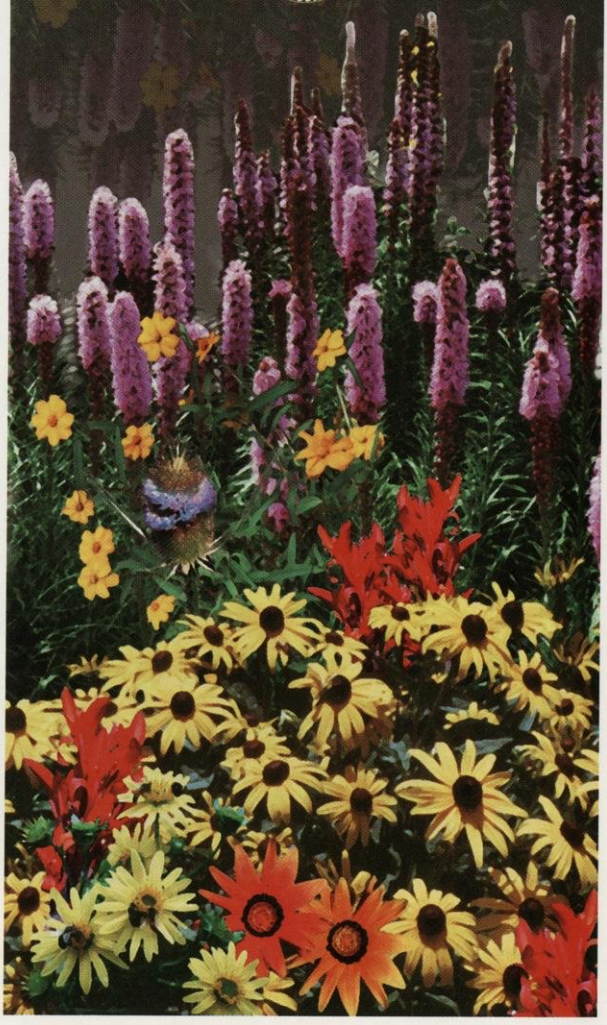
Department of Botany.

A LABORATORY OF LEARNING–AN OASIS OF TRANQUILITY

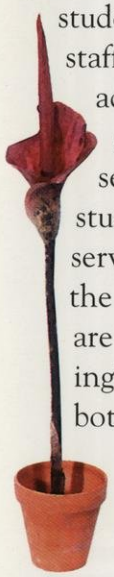
RENOVATION AND EXPANSION OF THE BOTANY GARDENS AND GREENHOUSES

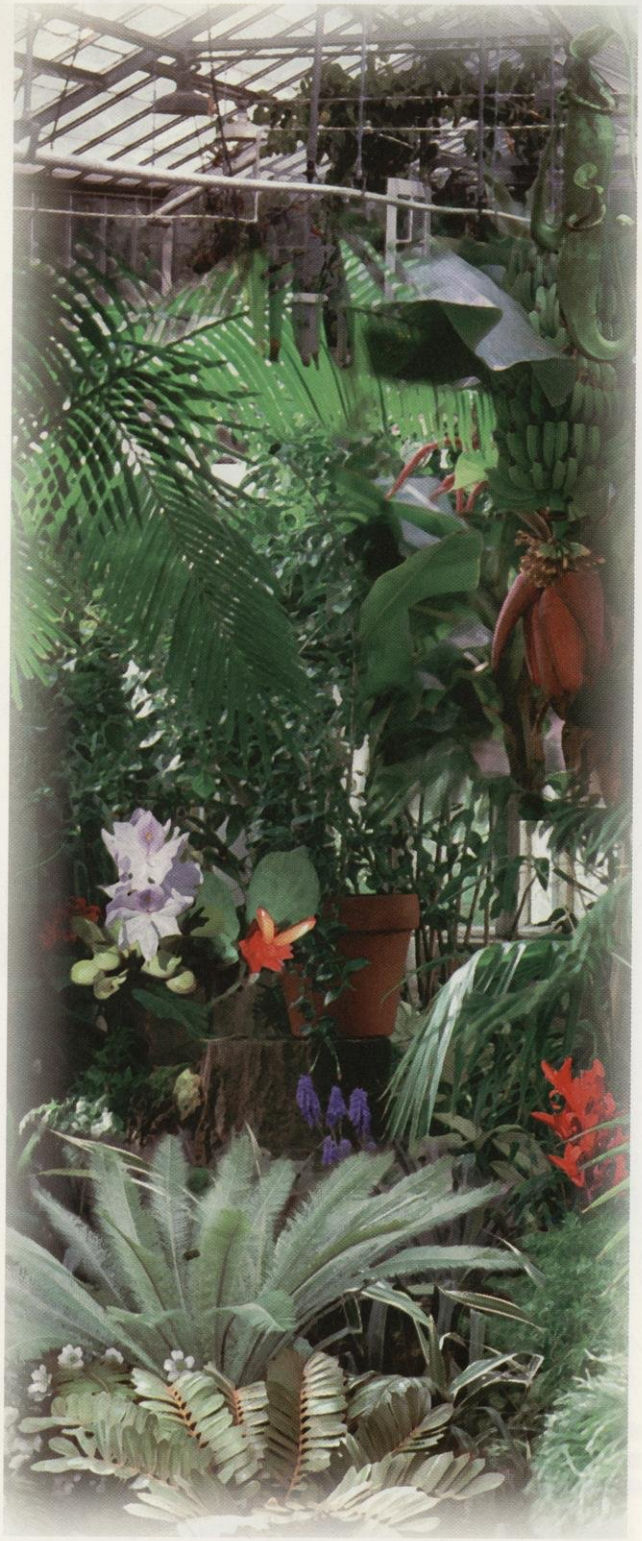


The Botany Gardens and Greenhouses have served as a laboratory of learning and an oasis of tranquility for generations of University of Wisconsin–Madison students. The gardens, located north of University Avenue and bounded by Chamberlain, Lathrop and Birge Halls, feature more than 500 species of ferns, gymnosperms, and flowering plants. The eight greenhouses, encompassing 8,000 square feet, feature plant species comprising distinct aquatic, desert, and tropical communities.

The Department of Botany and other university departments make extensive use of the gardens and greenhouses. These are working facilities, permitting UW faculty and students to undertake a variety of research projects in plant physiology, ecology, taxonomy and other related areas.

In addition to meeting essential teaching and research interests, the gardens and greenhouses are an aesthetic resource for students and the community. Botany staff assist numerous visitors seeking advice on plants for their homes and gardens; the facilities are used as a setting by UW art and dance students; the gardens and greenhouses serve touring school children, in whom the seeds of environmental stewardship are first planted. Within an increasingly urbanized environment, the botany gardens and greenhouses have become an oasis of greenery and serenity for all.





Renewal—Sowing For the Future

The UW–Madison Department of Botany, ranked among the nation's best, has earned worldwide recognition. To maintain this prestigious position, teaching and research facilities must continue to be world-class. Accordingly, an exciting renovation and expansion project has been proposed for essential improvements to the botany gardens and greenhouses.

Greenhouse Expansion

The planned construction of a 30-foot-high conservancy dome will allow room for a community of palms, bananas, cacao and other tall tropical trees. The community includes bromeliads and orchids, a water-lily pond, a wet wall for ferns, and a host of small birds, geckos, fish, and other insect predators. The dome will also feature a headhouse for teaching and research.

Garden Expansion and Renovation

Expansion of the gardens will permit a greater diversity of plant species from around the world, better spacing among species, and the development of specialized habitats such as prairie, marsh, and rock gardens.

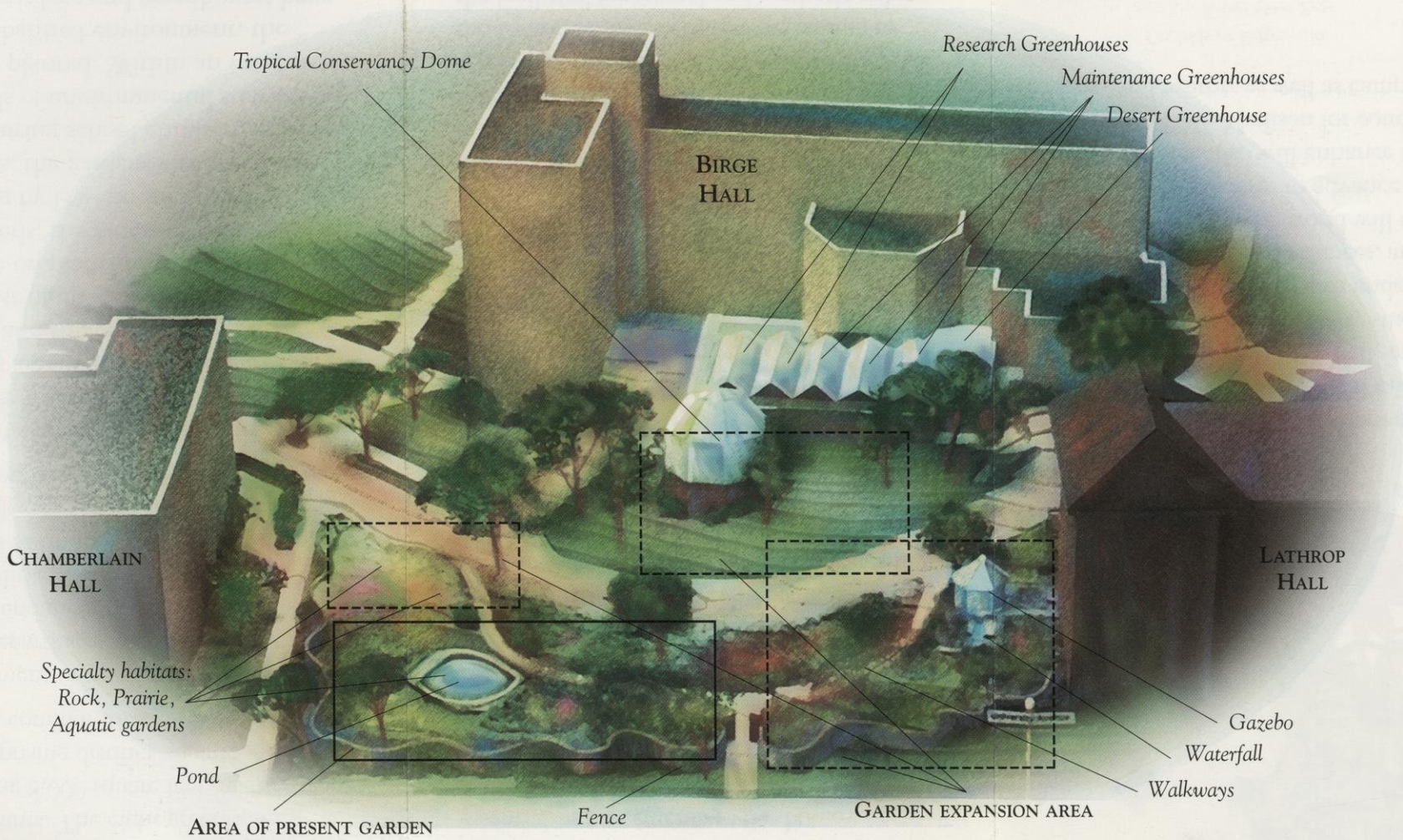
Features to be added include a gazebo, waterfall, small pond, benches, and walkways. A four-foot-high fence will be erected along University Avenue to enhance the feeling of sanctuary. Besides adding to the facilities' functional and aesthetic value, such features will encourage scholars and visitors alike to spend a few moments in a setting of beauty and tranquility.

Who Will Reap the Harvest?

The proposed expansion and renovation of the botany gardens and greenhouses will benefit many. School children will have the opportunity to observe the wonders of a tropical rain forest for the first time. The facility will serve as a dynamic classroom for university students seeking to develop an in-depth understanding of the botanical sciences, and scholars from around the world will use the gardens and greenhouses to advance their research. The site also will enhance the beauty of the UW–Madison for community residents and visitors as well as campus employees.

BOTANY GARDENS AND GREENHOUSES

CURRENT LOCATION AND FEATURES, PROJECTED RENOVATIONS AND EXPANSION PROJECTS



How You Can Help

With University funds committed to ongoing operations and other expenses, funding for the expansion and renovation of the botany gardens and greenhouses must come from private contributions. Renovation and expansion of the gardens will cost approximately $250,000. Construction of the conservancy dome will require about $1.2 million. Your support is vital if we are to develop this rich botanical resource to its full potential.

If you would like to make a gift to the botany gardens and greenhouse project, a number of giving options are available. Your gift may be undesignated, to be used as needed on the project, or you may designate your gift for a specific item. Naming opportunities are offered for gifts that cover the costs of major items such as the conservancy dome, gazebo, pond, arbor, waterfall, and other features.

You also may contribute to the endowment fund for the botany gardens and greenhouses. Income generated by the endowment will be used to cover ongoing operating and maintenance costs. Interested contributors also may support the program through planned or deferred giving options.

However you choose to make your gift, please be assured that your support represents an important investment that will reap long-term benefits and will secure an invaluable botanical heritage for future generations.

All gifts should be made payable to the University of Wisconsin Foundation–Botany Gardens and Greenhouses Fund. If you have any questions or would like additional information, please contact:

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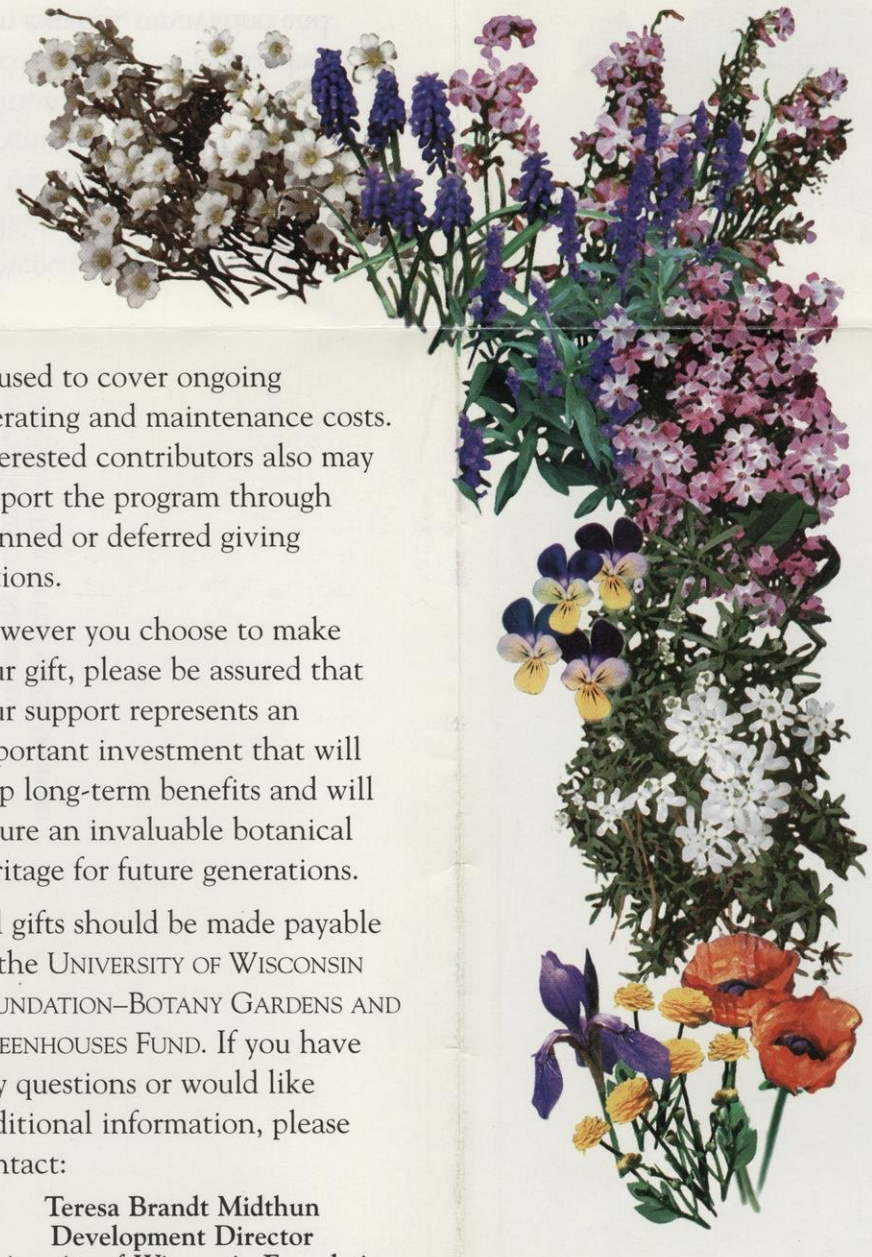

Find out more about this project, and the programs and activities of the Department of Botany. The department's instructional resources can be viewed at **http://www.wisc.edu/botany**

From there you can access the ***Tour of the Botanical Garden, Orchids of Wisconsin,*** and the ***Fungi Web Page.***

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Amorphophallus titanum

The Titan Arum

University of Wisconsin–Madison • College of Letters and Sciences • Department of Botany • June 2001

Live photos and updates at: http://arum.doit.wisc.edu/

The Titan Arum is a member of the family Araceae, the aroids or arum plants. Members of this family include the Calla Lily, Jack-in-the-Pulpit, Anthuriums, *Dieffenbachia,* Philodendrons, and (blooming here as well) the Giant Arum, *Dracontium gigas.* The Titan Arum is native to the equatorial rain forests of central Sumatra in Indonesia, where its name is *Bunga Bangkai,* meaning "corpse flower."

Italian botanist Odoardo Beccari discovered the Titan Arum in Sumatra in 1878. He sent seeds to the Royal Botanical Gardens in Kew, where the first bloom of this species in cultivation occurred in 1889.

The Titan Arum bloomed for the first time in the United States at the New York Botanical Gardens in 1937, where it became a sensation. A more recent bloom occurred at the Huntington Botanical Gardens on August 1, 1999. Billed the "world's largest flower," it was the first-ever flowering of one of these rare plants in California, and only the 11th recorded bloom in the United States. During the 19 days it was on public view, this *Amorphophallus titanum* drew 76,000 fans.

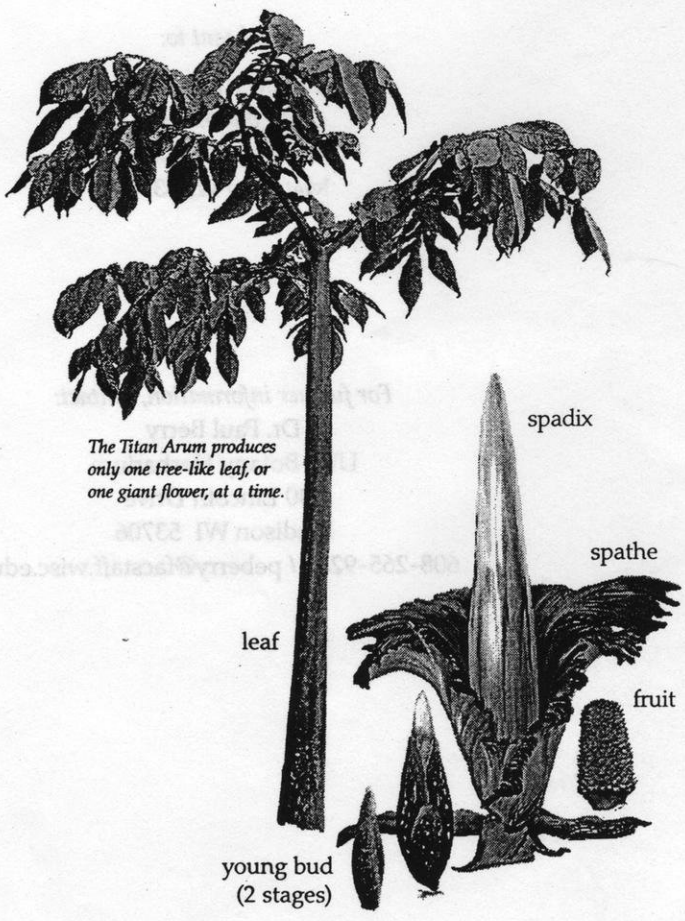
The Titan arum grows from a large tuber that can weigh over 170 pounds; the flowering stalk can reach 10 feet and open to a diameter of three to four feet. Thousands of flowers are hidden inside at the base of the **spadix,** the fleshy central column. The large, frilly-edged, leafy "skirt" enclosing the spadix is the **spathe,** which when open resembles an upturned, fluted bell with a maroon interior. Only when the spathe is completely unfurled are the flowers mature. This entire, giant flowering structure is called an **inflorescence.**

Male and female flowers are separate, with the female flowers receptive first, the male flowers releasing pollen the next day. In nature, this timing ensures cross-pollination with another Titan flower; however, solitary cultivated blooms occasionally manage to self-pollinate.

The spathe unfurls about 3 weeks after the bud tip first appears. (Our plant's growth rate has ranged up to 6.5 inches inches per day, with an internal temperature of the spadix tip, measured with infrared equipment, reading 30°C!) The huge inflorescence opens abruptly—within hours—and typically stays open for only a few days. Collapse of the spadix takes place after three to five days. If flowers are successfully pollinated, the surrounding spathe eventually falls off, exposing the maturing seeds. When ripe, the cherry-sized fruits turn a bright orange-red, a color attractive to birds which pick the berries off, digest the flesh and excrete the "pit" or seed. In this way, the plant is dispersed in nature.

The fully open inflorescence emits a repulsive, "rotting-fish-with-burnt-sugar" scent. The odor, strongest at night, is to attract pollinators, which in Titan's Sumatran home are mainly carrion beetles and flesh flies. Most fly- and beetle-pollinated "carrion" flowers are similarly colored and perfumed.

For most of its life, the plant regularly produces a single, umbrella-like leaf that is itself quite "titanic." In the wild, this leaf can reach 20 feet tall and 15 feet across. In cultivation the leaf usually grows 12 feet high, with the stalk as thick as a person's thigh before branching into a single, compound leaf. An individual leaf lives for about a year. The tuber then enters a short dormant period before producing another leaf or—if you're very, very, lucky—a *Bunga Bangkai.*



The Titan Arum produces only one tree-like leaf, or one giant flower, at a time.

The University of Wisconsin–Department of Botany welcomes you to our world-class teaching and research facilities.

We need donors to help develop the second half of the Botany Garden, in the area adjacent to Lathrop Hall below the greenhouse complex. This new garden display will feature walkways, a waterfall and a gazebo, creating a green oasis in the central campus area. Varied plantings will serve classroom activities while offering an aesthetic respite for campus and city visitors. Later plans include a new tropical conservancy dome on the hill adjacent to our present greenhouses.

The first stages of site preparation have been completed, from selecting the design for the entire garden area to erecting the iron fence along University Avenue. We are now soliciting funds to cover the estimated $500,000 needed for the full garden expansion.

Your contribution will add beauty to the campus while promoting education and the appreciation of botanical sciences.

Gifts should be made payable to:
UNIVERSITY OF WISCONSIN FOUNDATION–BOTANY GARDENS AND GREENHOUSES FUND

and sent to:

DEPARTMENT OF BOTANY
132 BIRGE HALL
430 LINCOLN DRIVE
MADISON WI 53706

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Botany

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CONTACT: Judith Kornblatt, (608) 262-9762

TEACHING ASSISTANTS RECOGNIZED FOR EXCELLENT INSTRUCTION

MADISON -- For performance that went above and beyond their job title, eight University of Wisconsin-Madison teaching assistants were honored this month with Graduate School Excellence in Teaching Awards.

Graduate students were nominated by their departments and evaluated by a faculty committee, chaired by Associate Dean Judith Kornblatt. Each winner received a $1,000 award.

"We look at a number of criteria some of which were innovation and mostly initiative-people who would take the initiative to do different projects to improve their teaching, help the class in ways that might not have been in mind- as well as leadership and mentoring other TAs," Kornblatt says. Also considered were the variety of teaching assignments, and the written comments and numerical scores from undergraduates' evaluations, she says.

This year's recipients are:

Thomas A. Brandner, a dissertator in botany, who has taught four courses and created new assignments, exercises and a course web page for his students. His adviser, professor Timothy Allen, says: "There is no room to be better than Tom Brandner."

Jonathan Ward Chipman, a doctoral student in environmental monitoring, who comes from a family of teachers. After tackling five courses at UW-Madison as a TA, he is known for his passion and ability for teaching.

Robert F. Darcy, a dissertator in English, who made students sad to leave his sections at the end of each semester, according to their evaluations. Teaching such classes as "Revolution, Rebellion and Restraint," Darcy received a rating of Excellent+ in more than one semester from his adviser, professor Susanne Wofford.

James Franciscus Gilhooly, a zoology dissertator, who used his teaching experiences to contribute to the department's planning for new lab facilities. He has taught more than 850 students over six semesters and is a volunteer in community outreach for biology education.

Pilar Gonzalez-Doupe, a doctoral student in counseling psychology, who also volunteers in community outreach education. As a TA, however, she did an impressive job co-teaching with a professor as a model for co-leading counseling groups.

David T. Kung, a mathematics dissertator, who won his department's teaching award in 1997 and was a Letters and Science Teaching Fellow in 1998. Kung was praised for his mentoring of other TAs, receiving a grant to design a Web page for sample math exams, and for organizing "Sidewalk Math" on the Van Vleck plaza.

Buffy Smith, a dissertator in sociology where she also won the 1998 teaching award, creates an inclusive classroom environment even in difficult classes, such as "Race and Ethnic Relations." She is so beloved by her students that they "talk about her as if she were a member of their family," says her adviser, professor Gary Sandefur.

L. Fernando Tejedo-Herrero, a doctoral student in Spanish and Portuguese, who is used as a model for new TAs in the department, according to Sarah Fritz, director of basic language. One student notes: "His enthusiasm is contagious, which is very important at 7:45 a.m."

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-- Eileen Gilligan, (608) 265-5359

Botany

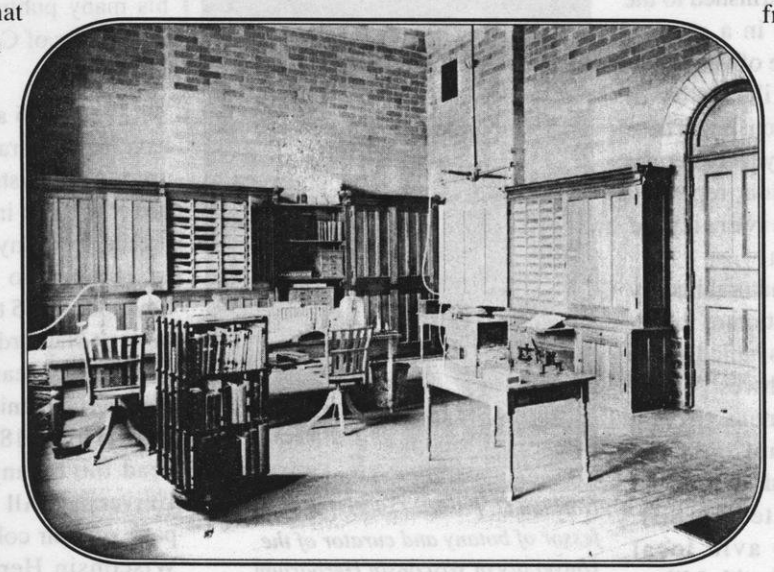
"A Cabinet of Natural History": The University of Wisconsin–Madison Herbarium's Sesquicentennial, 1849–1999

by Hugh H. Iltis and Theodore S. Cochrane

Taxonomy—the science that identifies, names, and classifies all creatures great and small, taxon by taxon—reflects the world's wonderful biological diversity, or biodiversity, *which today, in the face of increased economic expansion, increasingly unsustainable human population, and the resulting worldwide destruction of nature, has become the dominant focus of our attempt to assess the health of our living environment—our Mother Nature, if you please—whose survival we dare neglect only at our own peril. Wisconsin is not exempt from all these problems; and even here biodiversity acts as a poster child for life and its survival, the ecological barometer of how we treat the environment. To document biodiversity, we need pinned insects and stuffed bird skins housed in museum collections, and we need pressed plants in herbaria.*

Herbaria, then, are museum collections of plant specimens, carefully chosen, pressed, and dried; mounted together with labels bearing pertinent collection data on a stiff sheet of high-quality paper; stamped to show ownership; and filed according to an accepted system of classification into steel storage cabinets that protect the contents from both insect and fire damage. Such specimens are available for reference or other scientific purposes and, if well kept, remain useful forever—well, at least for hundreds of years.

In a very real sense, herbaria function as giant card catalogs, nature libraries that permanently store actual plants, roots and all, together with notes and photographs that have been gathered continually in the wild and in the garden for four centuries by taxonomists, geographers, anthropologists, and amateurs in their quest to identify, name, and classify all the plants on the face of the earth. There are over 3,000 public herbaria in the world today, holding a total of half a billion specimens. But thousands of private herbaria exist as well, a testimony to the human love affair with plants.



The University of Wisconsin Herbarium in Science Hall in the 1890s. Some of these handmade wooden cabinets are still in use.

In Wisconsin, environmental traditions and herbaria have had a long history. Plant taxonomists in particular have played a crucial role in exploring the state, from Thomas Nuttall, who, as a member of the Astoria Expedition, collected specimens along the Wisconsin and Mississippi rivers in 1811, to polymath Increase A. Lapham, who arrived in Milwaukee in 1836, to the present. By building a factual infrastructure for biodiversity, they played a crucial role in shaping our conservation traditions.

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When Wisconsin entered the union in 1848, the state constitution provided for the "establishment of a state university at or near the seat of state government," vesting its administration in a board of regents. This body met first in Madison on October 7, 1848, and again on January 16, 1849. Among the initial orders of business was a proposal that the

regents deemed it "expedient and important" that "efforts should be made at once to begin the formation of a 'cabinet of natural history.' To this end the board accepted the offer of Mr. Horace A. Tenney, a young journalist and public-spirited citizen of Madison, to undertake such a collection" which by early 1849 contained "50 specimens of minerals; 46 fossils; and 12 natural curiosities, chiefly Indian arrow heads and axes" (Bryan, 1950).

At the same time, Tenney submitted to the board a letter from Increase A. Lapham (1811–1875), a thirty-seven-year-old civil employee and enthusiastic botanist of Milwaukee and author of the earliest checklist of Wisconsin plants (1836). Lapham wrote:

> I have sent you . . . a box of specimens for the proposed cabinet of the University of Wisconsin . . . I propose further to present the University a pretty extensive Herbarium or collection of dried plants—about one thousand or fifteen hundred species—embracing nearly all those heretofore found in Wisconsin, together with others from the United States, and from Europe, provided the Regents will pay the expenses of the paper and portfolios necessary to contain the plants. This will not exceed ten cents for each plant.

John Jefferson Davis (1852–1937), curator of the University of Wisconsin Herbarium, 1911 to 1937. Davis was president of the Wisconsin Academy, 1903 to 1905, and his history of the Academy appeared in Transactions in 1907.

In the 1851 *Report of the Board of Regents*, we learn that "the Herbarium furnished to the University by Dr. Lapham is in a state of careful preservation and will be of very great value to the future students as illustrative of the natural production of Wisconsin." These specimens, some of which 150 years later are still maintained in our collection, represent the beginnings of the University of Wisconsin–Madison Herbarium.

By 1865 the university's "natural history cabinet," which, with the exception of that at the University of Michigan, was hailed as the "finest collection in the Northwest," contained 3,000 herbarium specimens (Bryan, 1950). Among these were not only the Lapham specimens mentioned above, but also many specimens collected by S.H. Watson and T.J. Hale, two avid local botanists, the former connected with Milton College southeast of Madison. Watson and Hale gathered large duplicate sets of plants from 1858 to 1862 from all across southern Wisconsin, but mostly from around Madison, for exchange with or sale to major eastern herbaria. Again, excellent series of these, including prairie species now rare or extinct in Wisconsin, are still in the university herbarium. (Two years before Milton College was disbanded in 1984, its herbarium of some 3,000 mounted and unmounted sheets, mostly collected by Watson and Hale, was acquired by the herbarium in Madison.)

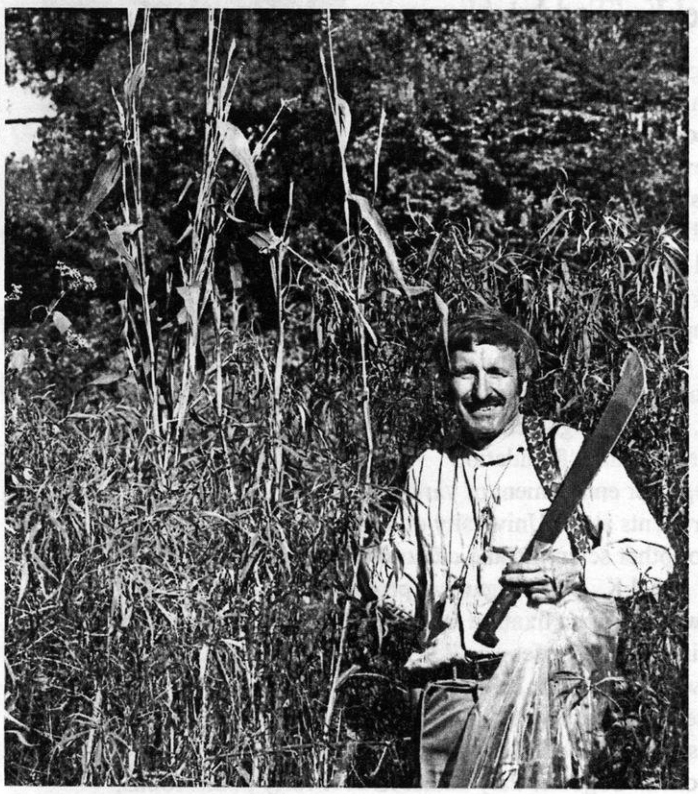
A legislative act in 1876 authorized the governor to purchase for $10,000 the library and cabinet of the recently deceased Lapham, who in 1870 had founded what later became the U.S. Weather Bureau. This cabinet, said to contain a herbarium of 20,000 specimens, included valuable collections made in Mexico, France, Germany, Kentucky, Massachusetts, Ohio, and Colorado, among other places. One special item obtained for the old University of Wisconsin Herbarium and still carefully preserved as an icon was a copy of Asa Gray's (1810–1888) bound herbarium volume, *North American Gramineae and Cyperaceae* (1834; see McVaugh, 1968), with a dedicatory letter to Lapham by its then twenty-four-year-old author. In addition, a complete set of loose pages with attached specimens from this volume were in Lapham's herbarium as well. Though Asa Gray, a year older than Lapham, eventually became America's most outstanding botanist, through the years he always sent his Wisconsin friend copies of his many publications. In 1852 he named a new genus of Compositae *Laphamia*.

Harold Hone

Norman C. Fassett (1900–1954), professor of botany and curator of the University of Wisconsin Herbarium, 1937 to 1954. "It was he who developed the herbarium into a nationally respected institution." Courtesy the University of Wisconsin–Madison Archives.

Between 1875 and 1900 Wisconsin seems to have been a training ground for young and untried botanists who went on to bigger and better schools in the East. Most of these scientists were mycologists: J.C. Arthur, 1879 to 1880, who went on to Purdue; A.B. Seymour, 1885 to 1886, who went on to great fame at Harvard; W. Trelease, 1881 to 1886, who soon became the first director of the Missouri Botanical Garden in St. Louis; and R.A. Harper, 1898 to 1911, who went on to head the botany department at Columbia University. All of these scientists donated parts of their collections to the University of Wisconsin Herbarium. In 1884 Trelease reported that

> the University herbarium, which is located in the room devoted to my original work [in South Hall], is based on the Lapham



Michael Nee, New York Botanical Garden

Hugh H. Iltis with Zea diploperennis, *a rare endemic perennial "teosinte," on the edge of a fir-oak cloud forest on top of the Sierra de Manantlán, Mexico, at 7,000 feet elevation, near what is now the Las Joyas Biological Station of the University of Guadalajara, January 2, 1979.*

> herbarium estimated to contain between 10 and 12 thousand *species*, which has been thoroughly poisoned and is being properly mounted as rapidly as possible. Since it came into my charge it has been augmented by donations . . . and by between 3 to 5 thousand specimens from Professor Henry's herbarium and my own. Henry later became the influential dean of the College of Agriculture. [Note that here "poisoned" means dipping the specimen in alcohol-dissolved sublimate of mercury, a practice no longer followed in Wisconsin.]

C.R. Barnes, at the university from 1887 to 1898, greatly enriched the collection of bryophytes with many classical exsiccatae sets. He was the coauthor of the book-length *Analytical key to the genera and species of North American mosses* (Barnes & Heald, 1897). Together with his colleagues, Barnes organized the 1893 meeting in Madison of the American Association for the Advancement of Science, during which, at his insistence, the precursor of the Botanical Society of America was founded (Tippo, 1956).

The question of whether or not parts of the original university herbarium went up in flames in the Science Hall fire of 1884 is still not resolved. It seems, however, that at least parts of the Lapham herbarium purchased in 1876 had been moved to safe quarters in South Hall shortly before the fire. In any case, a note in the University of Wisconsin Archives from *The Badger* yearbook of 1889 stated that the herbarium then contained only 8,000 specimens. Transferred in the late 1880s to Science Hall, freshly renovated after the destructive fire, it found its permanent home circa 1910 in the newly constructed Birge Hall, where it has been ever since.

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During the early 1900s herbarium administrators included L.S. Cheney (1858–1938), who, as curator between 1891 and 1903, greatly expanded the bryophyte collection, and R.H. Denniston (1874–1957), curator between 1903 and 1910. A special place in this chronicle must be reserved for J.J. Davis (1852–1937), a physician and amateur mycologist who, starting in the 1880s, became such an excellent scientist that in 1910 he was asked to accept the curatorship of the herbarium, a position which he held until 1937. Starting in 1893, he was the author of scores of new species of rusts and molds, especially in his "Notes on parasitic fungi in Wisconsin" (Nos. 1–20, all in *Transactions of the Wisconsin Academy of Sciences, Arts and Letters*, 1915–1937). Davis collected over 15,000 specimens of that difficult group and thousands of vascular plants as well, but he is mostly appreciated for endowing the Davis Fund of both the botany and zoology departments, which for the past sixty years has supported countless University of Wisconsin biological research projects all over the world, from the Galápagos to New Guinea to the Apostle Islands.

In 1925 Norman C. Fassett (1900–1954) arrived fresh out of Harvard, where, under the great M.L. Fernald, he had taken as his thesis *The Vegetation of the Estuaries of Northeastern North America* (published in 1928). Fassett was a superbly able taxonomist, a tireless collector of Wisconsin's flora, and an elegant writer as well as a dedicated preservationist and supporter of Aldo Leopold's efforts to establish the University of Wisconsin–Madison Arboretum. It was he who developed the herbarium into a nationally respected institution; and during his twenty-nine years in Madison, the herbarium grew from 96,000 to 380,000 specimens, including well over 28,000 collection numbers of his own.

In 1927, through the efforts of Fassett and Davis, the university purchased (for only $800!) the herbarium of Levi M. Umbach (1853–1918), a professor at Northwestern College in Naperville, Illinois. It contained 50,000 mounted specimens and an even larger number of unmounted duplicates, and was especially rich in collections from the dunes and swales of northern Indiana and Illinois, then pristine lakeshore areas that now are covered by steel mills and miles upon miles of human settlements.

In his early years at Madison, Fassett emphasized exploration of the Wisconsin flora, eventually writing book-length treatments of the Wisconsin legumes (1939), ferns (Tryon et al., 1940, 1953) and grasses (1951, 1998), and nearly 100 other publications, including many of the taxonomically critical "Preliminary reports on the flora of Wisconsin" (Nos. 1–37, all

in *Transactions of the Wisconsin Academy of Sciences, Arts and Letters*, 1929–1953), each treating one or more plant families. This series was continued by H.H. Iltis and his students and associates (Nos. 38–69, all in *Transactions*, 1957–1987). Fassett's *Spring Flora of Wisconsin*, an eminently useful book, was first published in 1931 and is now in its fourth revised edition (1976). Concurrently, Fassett specialized in the taxonomy of North American aquatic plants, efforts which culminated in his illustrated *Manual of Aquatic Plants* (1940, 1957) and world monographs of several aquatic genera.

In the 1940s, stimulated by his friend Edgar Anderson, Fassett shifted to studying species by the evolutionary concepts of the "New Systematics" (Huxley, 1940), which resulted in many publications emphasizing a dynamic biogeography and the use of "mass collections," many of which are still in the university herbarium.

Finally, late in his all-too-brief life, Fassett shifted his interests to the Neotropics, initially (1944) as a member of the war-time U.S. Cinchona Mission to the Colombian Andes to look for the quinine-containing, anti-malarial *Cinchona* bark, and later (1950–1951, 1953) on two expeditions to Central America to study aquatic plants.

During Fassett's curatorship, from 1937 to 1954, Henry C. Greene (1905–1967), a specialist in parasitic fungi, built on the classical collections of Davis to enlarge the university holdings of these disease-causing plants to over 100,000 specimens. Now one of the three largest collections of this group in the United States, its holotypes voucher the many new species described by Greene in his "Notes on Wisconsin parasitic fungi" (I-XXXII, 1940–1966), published in the Academy's *Transactions* and summarized in *The Fungi Parasitic on Plants in Wisconsin* (1957, 1965). We still celebrate Greene as the patient planter of the Greene Prairie in the University of Wisconsin–Madison Arboretum.

Though ecologist John T. Curtis (1913–1961) had as his primary interest the dynamics of *The Vegetation of Wisconsin* (1959), he also worked on the systematics and ecology of orchids, contributing specimens from his travels in Wisconsin as well as in Haiti during World War II. With Greene, Curtis assembled *A Bibliography of Wisconsin Vegetation* (1955).

The special interests of a young R.M. Tryon enlarged the collection of ferns; and the ethnobotanist J.D. Sauer added his collections of pigweeds (*Amaranthus*), seabeans (*Canavalia*), and, as did many other University of Wisconsin biogeographers, plants from his exotic travels which, in Sauer's case, were of the world's tropical beaches.

John W. Thomson (1913), on the university staff from 1944 to 1984 and curator of the cryptogamic herbarium since Greene's death in 1967, enormously enlarged the university's lichen collection, which, together with the

Ethel K. (Toddy) Allen

O.N. and Ethel Allen in Rome, circa 1955.

The generosity of many benefactors has enabled the University of Wisconsin–Madison Herbarium to achieve and maintain its major status in the world. Above all others, the distinguished scientist Ethel K. Allen, known to her many friends as "Toddy," is an example of such individual support. A well-known naturalist and international authority in her own right, she is recognized as a "one-woman research foundation" through her endowment of various departments at the University of Wisconsin as well as her support of other scientific and cultural efforts in the state and nation.

Ethel K. Allen began her professional career as a research fellow in nitrogen fixation at the University of Wisconsin under the direction of Professors E.B. Fred, P.W. Wilson, and I.L. Baldwin. Starting in 1933, she and her husband, O.N. Allen, worked together as a team, first in Hawaii and after the late 1940s in the bacteriology department at the University of Wisconsin. Together they authored over forty publications, mostly on nitrogen-fixing bacteria that live in the roots of leguminous plants and fertilize the soil. The culmination of the Allens' work, which Ethel Allen completed after the death of her husband in 1976, was *The Leguminosae: A Source Book of Characteristics, Uses, and Nodulation*, published by The University of Wisconsin Press in 1981, an encyclopedic work of 830 pages used throughout the world.

The Allens' devotion to the University of Wisconsin and to the cultural scene in the world in general is reflected in their widespread and self-effacing generosity. Over the years, they contributed greatly to such organizations as the International Crane Foundation, the Milwaukee Public Museum, and the university's Department of Botany. They gave generously to university biological and agricultural libraries for the enhancement of their botanical holdings and established the Allen Centennial Garden on the campus.

A particularly helpful friend to the University of Wisconsin–Madison Herbarium, Ethel K. Allen's endowment provided funds to purchase specimens and to support special projects, publications, and expeditions. Specifically, it was her assistance that made possible the exploration of the Sierra de Manantlán in Jalisco, Mexico, including the crucial initial expedition that resulted in the discovery of a new species of perennial wild corn, a botanical event of great significance that led to the establishment of the giant Sierra de Manantlán Biosphere Reserve.

May this splendid gentlewoman be an example for others.

Hugh H. Iltis

The current main storage area at the University of Wisconsin–Madison Herbarium showing banks of space-saving compactors on the left and some of the old handmade cabinets from Science Hall on the right. INSET: A modern specimen cabinet, showing loan specimens of Clethra *carefully organized for an ongoing monographic study being done by an honorary fellow in the botany department, Luz María Gonzales of Fitchburg.*

gift of his own private lichen collection of 10,000 specimens in 1982, has not only grown into the best herbarium of New World boreal and arctic lichens, but forms the basis of monographs of North American *Physcia* (1963) and *Cladonia* (1967), and the magisterial and splendidly illustrated *American Arctic Lichens* (Vol. 1, 1984, Columbia University Press; Vol. 2, 1997, The University of Wisconsin Press).

❦

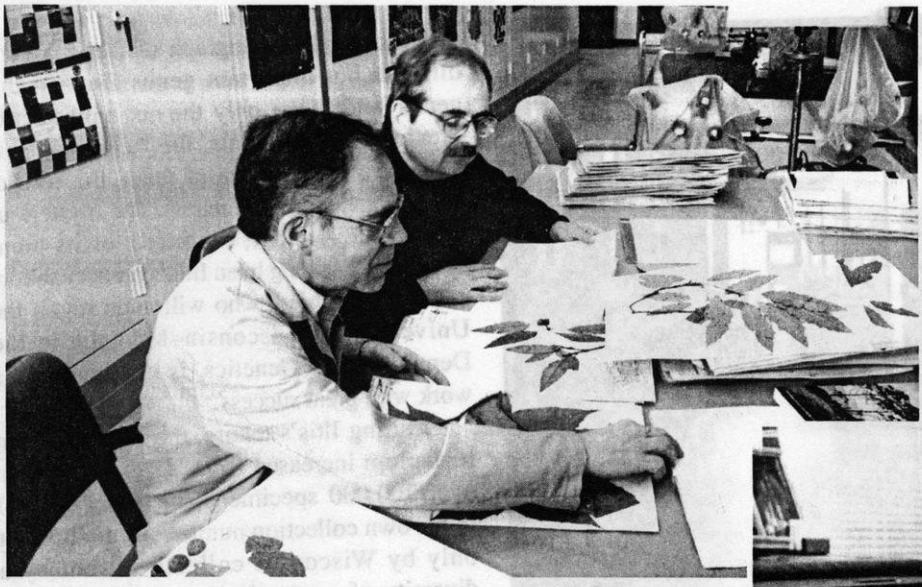
Fassett died in 1954. Hugh H. Iltis succeeded him in 1955 as curator and in 1967 he became director. A graduate of Washington University and the Missouri Botanical Garden in St. Louis, he was determined to enlarge the scope and facilities of the herbarium. He soon initiated widespread exchanges, diverse and intense Wisconsin and Neotropical explorations, and broadly based monographic studies, the latter often dealing with such taxonomically difficult economic plants as potatoes. A specialist of the tropical Caper family (Capparaceae) and also of the evolution of maize, he published in 1980, with his student J.F. Doebley, the first taxonomic monograph of the small and difficult but important genus *Zea*. To this genus belong not only the six wild taxa of Mexico and Guatemala, the "teosintes," but also, derived from one of them, the corn of the Indians, maize (*Z. mays*). The mysterious origin of this plant, especially of its monstrous ear, has long been Iltis's preoccupation, and now Doebley, who will soon rejoin the University of Wisconsin–Madison in the Department of Genetics, is continuing this work with great success.

During Iltis's tenure, the vascular plant herbarium increased from under 200,000 to over 700,000 specimens (including 40,000 of his own collection numbers), enriched not only by Wisconsin collections, but by a diversity of neotropical accessions, a large number of these from expeditions to Mexico, Costa Rica, and the Andes of Equador and Peru. Many of the graduate students from this period became world-class monographers and now hold positions in some of the most prominent botanical institutions in the country.

In 1970 Theodore S. Cochrane joined the herbarium as curator, with special interests in the flora of Wisconsin, including the giant genus *Carex*, of which there are some 160 species in the state composing nearly 10 percent of our native vascular flora and 90 percent of the state's taxonomic headaches. Cochrane was initially an understudy of *Carex* specialist J.H. Zimmerman, who was a student of both Fassett and Iltis and a well-beloved teacher and naturalist. Cochrane has now become one of a handful of experts in North America able to identify these taxonomically difficult plants.

Finally, in 1985, Mark A. Wetter, who studies Asteraceae, especially *Grindelia*, came from the New York Botanical Garden as collections manager and has since become a specialist in the use of computers in herbaria, an important talent in this day and age. Together with database manager Merel R. Black, he is now the moving spirit in computerizing the herbarium.

In 1981–82 a new wing was added to Birge Hall for both the Biology Library and the herbarium, and in 1987 a National Science Foundation facilities improvement grant of half a million dollars allowed the herbarium to be housed in 200 additional cabinets and modern compactors. But despite the added storage space, the fine modern quarters are already overcrowded and in dire need of expansion. The ever-increasing responsibilities related to the ecological awakening in this country and the accelerated rate of taxonomic research make this a serious problem, and we are hopeful of finding a donor



Theodore S. Cochrane (left) and Mark A. Wetter identifying a specimen of one of the more than thirty-three species of oak native to the Sierra de Manantlán.

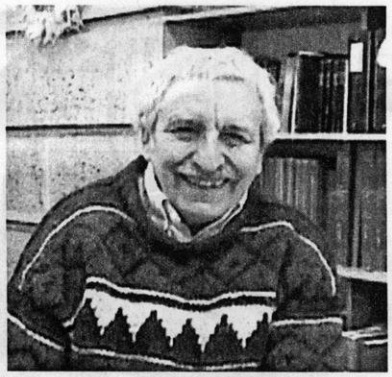
and adding extra floors to the wing to expand not only the herbarium but the crowded Biology Library as well.

❦

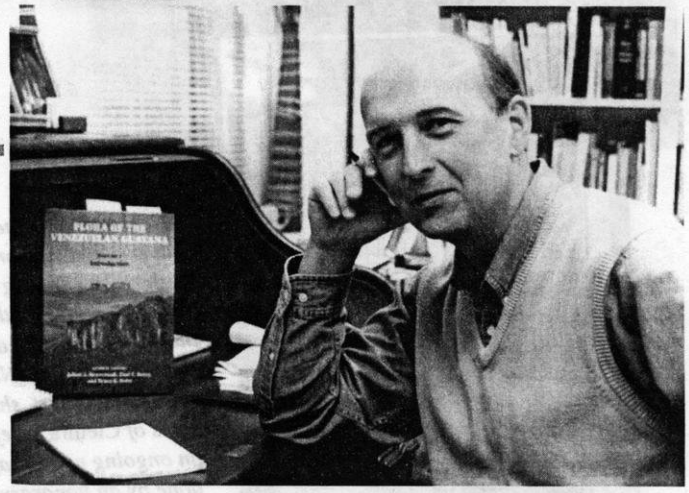
The significant growth of the herbarium over the past several decades is due to increased general collecting and taxonomically focused research by faculty and students; an extensive worldwide exchange program involving over 200 herbaria; a number of large purchases, such as the 1985 acquisition of part of the Catholic University of America herbarium (62,000 sheets); recent gifts, such as the splendid 8,000-sheet sedge collection of V.E. McNeilus (a University of Wisconsin alumnus living in Knoxville); the non-Wisconsin collections of the University of Wisconsin–La Crosse (42,000 sheets); and the enormous increase of interest in biodiversity since the first Earth Day in 1970 and the attendant expansion of botanical activity.

The University of Wisconsin–Madison Herbarium Library, a noncirculating research collection of nearly 100,000 books, journals, and especially reprints, and the herbarium map collection of nearly 10,000 maps, atlases, and related items are indispensable components of our well-integrated herbarium/library complex. Associated with the herbarium are a cytology laboratory under the guidance of Robert R. Kowal and a molecular systematics laboratory under the leadership of Kenneth J. Sytsma. Both fields have established strong roots in the taxonomy section, and many graduate students and visiting scientists now combine chromosome counting and molecular analysis with taxonomy to arrive at sophisticated evolutionary trees for their special groups.

The University of Wisconsin–Madison Herbarium has become a collection of national and international importance



Merel R. Black



Claudia Lipke

TOP: Hugh H. Iltis in his habitat.

ABOVE: Paul E. Berry, herbarium director, sitting at J.J. Davis's roll-top desk (used by all succeeding curators and directors), with a copy of Volume 4 of the Flora of the Venezuelan Guayana *(1998), a ten-volume project of which he is editor-in-chief.*

with nearly one-third of its more than one million specimens collected from within the state and some 160,000 from the Neotropics. But a herbarium is only as good as the accuracy of identification of its specimens. Because the herbarium is used continually as a reference for checking identifications, we have over the years shipped tens of thousands of specimens on loan to hundreds of taxonomic experts all over the world to obtain their authoritative opinions for as many specimens as possible.

Through legislation signed by Governor Thompson in 1995, the herbarium has been officially declared the State of Wisconsin Herbarium. Increased cooperation with the Wisconsin Department of Natural Resources bodes well for the future.

The herbarium also serves as the basis for several major, long-term floristic and distributional projects. During the past twenty years, one major initiative has been the floristic exploration of the Sierra de Manantlán, a lofty mountain ranging from subarid scrub to cloud forest, lying between Guadalajara and Puerto Vallarta in the states of Jalisco and Colima in south-

western Mexico. It is the only home of *Zea diploperennis*, a rare perennial relative of maize, the sensational discovery of which in 1977 led not only to the establishment ten years later of the 345,000-acre Reserva de la Biosfera Sierra de Manantlán, but also to many cooperative research projects between our herbarium, the University of Wisconsin–Madison's Institute for Environmental Studies, and the Universidad de Guadalajara's Instituto Manantlán de Ecología y Conservación de la Biodiversidad. Field work on this mountain by botanists of the University of Guadalajara and the University of Wisconsin–Madison Herbarium resulted in the book-length *Flora de Manantlán* (Vázquez et al., 1995) listing 2,800 species of vascular plants, including scores of endemic species, for a region 1/100th the size of Wisconsin, where we have only 1,700 native species and only one endemic.

Finally, as in most colleges and universities, the herbarium is used as a source of teaching materials. The holdings have been used in the training of advanced undergraduate and graduate students in systematics, ecology, biogeography, and natural resources not only in Wisconsin but in hundreds of other institutions, in the United States and abroad, which borrow our specimens, as we borrow theirs, for taxonomic studies.

❦

The arrival in 1997 of the eminent taxonomist Paul E. Berry, who, after Iltis's forty-two-year tenure, became the new director of the herbarium, meant that some overdue redirections for the herbarium were in order. Berry, formerly of the Missouri Botanical Garden in St. Louis, is organizing and completing the ten-volume *Flora of the Venezuela Guayana*, a region containing nearly 10,000 species of vascular plants.

Together with M.R. Black, Berry has now introduced the computer age into our establishment. They have spurred the completion of two major Wisconsin floristic projects that are about to be published after decades of preparation: the *Checklist of the Vascular Plants of Wisconsin* (Wetter et al., 1999), a book listing the names and synonyms of all Wisconsin species (1,700 native and 700 introduced flowering plants, conifers, and ferns); and the *Atlas of Wisconsin Prairie and Savanna Flora* (Cochrane and Iltis, 1999), which presents detailed distribution maps and ecological descriptions for approximately 350 of the most important species of these beautiful but now so critically endangered ecosystems. Both of these studies will be published jointly by the University of Wisconsin–Madison Herbarium and the Wisconsin Department of Natural Resources in the latter's technical bulletin series and are preparatory studies toward the future publication of the *Wisconsin Floristic Atlas* and the *Flora of Wisconsin*. All of these studies will be widely used by academia and the general public and soon will play their role in the forthcoming efforts to reauthorize the Endangered Species Act.

❦

Since 1849 the University of Wisconsin Herbarium has been a quiet but important influence on the scientific and cultural life of the state. The staff and students have made major contributions to science and to the welfare of the people of Wisconsin. By informing the world at large of the crucial and indispensable role that field biology, plant taxonomy, nature preservation, and museum collections such as herbaria must play in trying to find the elusive solutions to today's seemingly unsurmountable environmental and economic problems, they have led the way to a better, ecologically saner Planet Earth.

We must strive to be good ancestors to future generations.

Much work remains to be done before we can fully understand our rapidly vanishing flora, its ecology, its pollinators and its evolutionary genesis, and so furnish a factual basis for its preservation. Therefore we urge all readers intrigued by Wisconsin's biotic wealth to become involved in its exploration. There is much to be learned, and even the rankest amateur, with care, can make a valuable contribution to our knowledge. The better we get to know our flora, the more we shall be able to appreciate it. And the greater our appreciation, the greater our will to fight for its preservation. *We must strive to be good ancestors to future generations* (Bartz), so that in the centuries to come our children and their fellow citizens may continue to be empowered with a sense of wonder by the rich biota that adorns the land we call Wisconsin. ❧

Sources:

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David Tenenbaum. "Seeking Teosinte." *Wisconsin Alumni*. Madison: Wisconsin Alumni Association, May–June, 1988. 18–21, 29–30.

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An extended bibliography, prepared by Theodore S. Cochrane, is available from the Academy office on request, as well as a list of other herbaria in Wisconsin. Photos, unless otherwise indicated, courtesy the University of Wisconsin–Madison Herbarium. For information on visiting the herbarium, call (608) 262–2792.

Botany, Dept of

Logging history

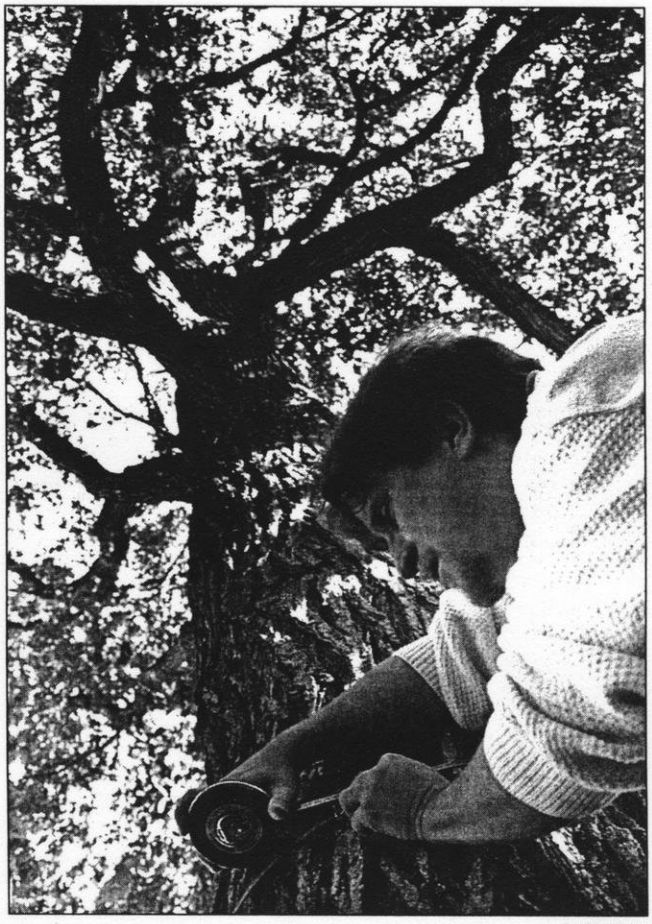
Trees aren't just window-dressing on campus.

They're also valuable sources

of learning and history.

A new project gives them their academic due.

— by Brian Mattmiller



Ryan O'Hara Theisen

Environmental Management surveyor Glen Barry takes measurements of an Observaotry Hill elm tree as part of an effort to map the campus's trees.

THANKS TO 150 YEARS OF DIVERSE TREE-PLANTING, Michael Adams never has to leave the UW-Madison grounds to teach his Botany 402 field course. Each semester, Adams' students learn to identify by sight more than 200 species of trees during field tours of campus and the Arboretum.

"There's far more diversity on this campus than I could ever cover in one semester," Adams says.

That is one way to measure the value of the more than 6,000 landscape trees on university grounds. Beyond enhancing the physical beauty of campus, trees are a great academic resource and provide a connection to the state's natural heritage.

A new project may lead to a broader appreciation of the campus landscape. Physical Plant's Environmental Management office and the Land Information and Computer Graphics Facility are conducting an inventory of all significant landscape trees on campus. The project will culminate in the first-ever computerized map that details location, species, condition and other vital statistics of campus trees.

"Trees are an important part of the heritage and beauty of this campus," says Daniel Einstein, environmental management coordinator, who oversees the project led by assistant Peter Wold. "It's important to catalog this collection," Einstein says. "This will give us an opportunity to improve landscaping and complement the academic value of campus trees."

The map could add to the value of campus grounds as an outdoor classroom, he says.

The inventory will serve as a learning tool in itself, by highlighting the historic and cultural features of UW-Madison's tree collection. The American elms on Bascom Hill, for example, are a striking example of trees that were once ubiquitous along Wisconsin streets, before Dutch Elm Disease decimated the species. The campus trees were saved through fungistat treatments over the past four decades.

Other remarkable points on campus are the towering willow and oak trees along Howard Temin Lakeshore Path, and the wide diversity of trees on Observatory Hill, including a native bur oak that's more than 320 years old.

The lakeshore path was originally used in the late 1800s as a scenic carriage drive by city residents seeking a "getaway to the country." Although in the heart of campus today, the path still inspires that sense of undisturbed nature.

"I have visited a lot of campuses and this is one of the most beautiful I've seen," Einstein says. "It's remarkable to have all these natural attributes, yet be on an urban campus at the same time."

So far, just about every landscape tree on campus has been entered into the inventory, Wold says. Using aerial photographs, LICGF staff members Glen Barry and Fernando Gonzales are helping map the location of each tree.

Wold says the index for the map will list the species, condition, size and growth space, along with other historical information. They are also compiling a videotape record of damaged and diseased trees.

Eventually, selected trees will be given small name plates and incorporated into a natural features walk, which will guide individuals through exceptional areas such as Bascom Mall and Observatory Hill, Wold says. Also in the works is a World Wide Web page containing the map and index, and a "virtual tour" of campus trees, he says.

The inventory will also be helpful in maintaining trees on campus, says Karen Lawrence, grounds horticultural manager . In the 1970s, an estimated 145 different species were thriving on campus grounds, but Lawrence says that diversity has likely declined.

"We need a better mix of new trees being planted," she says. New plantings are mostly ash and honey locust. Other major trees such as basswood and maple are sensitive species that need to have specific site criteria met, she says, but many are being planted inappropriately.

Lawrence says the inventory will help campus tree-planters make better decisions on the best locations and types of trees to plant. Better plantings will not only improve diversity, but reduce disease caused when too many of a species are concentrated together.

The oldest oak, the Tripp orchard and other tall tales

• The oldest tree on campus is a bur oak south of Washburn Observatory, estimated at more than 320 years old — twice the age of the campus. Measuring more than 50 inches wide at its base, the tree is one of the few remnants of the expansive oak savannahs that defined pre-settlement Madison.

• Many of the largest American elms on Bascom Hill are almost as old as the campus itself. They were part of the first major tree-plantings on campus, in 1851 and 1852, when 700 elms were planted on the central campus grounds. Most of those were lost to Dutch elm disease, but the largest trees in Bascom Mall were saved through diligent maintenance over the past 40 years.

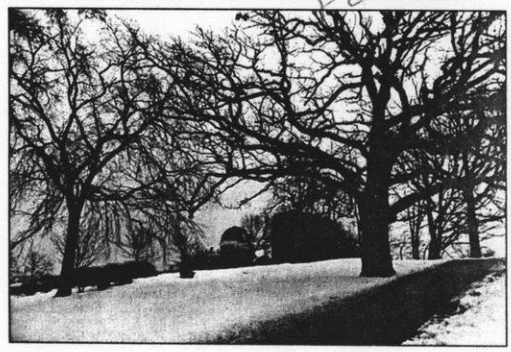
• Several state-record-breaking trees can be found on campus, including two yellowwood trees in the courtyard of Adams Hall that were planted in 1926. They are the largest in Wisconsin.

• In the late 1800s, Observatory Hill was covered with a vineyard on its south slope, and a fruit tree orchard facing the lake. The 10-acre orchard was started to find apple tree varieties that would be suitable for Wisconsin weather. Remnants of the apple and pear trees still exist between Tripp and Elizabeth Waters residence halls.

• In the 1970s, Wisconsin researchers developed the first new elm varieties that were resistant to Dutch elm disease, allowing cities across the country to start planting elms again. An example of those patented elm varieties, called Sapporo Autumn Gold, is growing just west of the Veterinary Science building.

• The most common and abundant trees today are green ash, white ash and honey locusts. The trees are hardy and adapt well to urban settings, but campus groundskeepers are encouraging the planting of other species to create a better mix of trees.

Source: "The Trees of the University of Wisconsin-Madison Campus," by Horticulture Professor Edward Hasselkus and horticulture teaching assistant R. William Thomas. Written in 1975.



Jeff Miller

320 Madison winters and still going strong: The craggy bur oak south of Washburn Observatory is the campus's oldest tree, predating campus by nearly 200 years.

JUPITER-COMET COLLISION: THE MOTION PICTURE

The comet Shoemaker-Levy's pummeling of Jupiter last July produced some memorable images of one of the solar system's most violent events. But for the first time, a scientist has caught it all in splendid motion, thanks to technology available at the UW-Madison Space Science and Engineering Center.

Sanjay Limaye, a planetary scientist at SSEC, teamed with researchers from the Swedish Royal Academy of Sciences (SRAS) to pull together remarkably crisp images of the comet collision in "motion picture" form. The images were collected from a unique solar telescope owned by the SRAS in the Canary Islands by Mats Lindgren, an astronomer at Uppsala University in Sweden.

The video was created in January with software from UW-Madison's McIDAS system -- short for Man-computer Interactive Data Access System. McIDAS is used to create meaningful images of the billions of bits of weather data collected from around the world. The software used by Limaye was developed with NASA's support to extend McIDAS tools to images of other worlds in the solar system.

Unlike any other images collected on Shoemaker-Levy, Limaye and Lindgren's video illustrates the "short-term evolution" of each of the comet's impact sites, including the expanding ring of mass from each collision. They were taken every 10 seconds over roughly four hours during consecutive nights after the comet's impact. Limaye will add more images to the video and present the work in May to the annual Space Telescope Science Institute meeting.

CONTACT: Sanjay Limaye, (608) 262-9541; limaye@ssec.wisc.edu

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POLLUTION CONTROL PROJECT MAPS OUT A CLEANER LAKE SUPERIOR

With most of the Great Lakes, a certain level of pollution has been "written off" as an unavoidable byproduct of developed shorelines. Not so for Lake Superior, where a recent binational agreement set a lofty goal of "zero degradation."

As a result of that U.S.-Canada pact, a number of state and federal water improvement projects have been established to keep the world's second-largest freshwater lake pristine. Stephen Ventura, a UW-Madison soil science professor, is in the second year of a project using Geographic Information System (GIS) technology to identify non-point source pollution in the Lake Superior watershed. The information is helping cities over 5,000 in population bordering Superior control their storm-water runoff.

In addition to identifying where most pollution is coming from, Ventura's digital maps can be used to help direct city planners to the best sites for detention ponds and settling basins to contain polluted water. Urban storm water typically carries a "witch's brew" of pollutants, from pesticides to volatile organic compounds. Ventura helps transfer GIS technology to officials from 14 cities bordering Superior, including Superior and Ashland, Wis.; Duluth and Hibbing, Minn.; and Marquette and Sault Ste. Marie, Mich. The research is helping these cities comply with the new U.S. Environmental Protection Agency standards.

CONTACT: Stephen Ventura, (608) 263-2086; sventura@macc.wisc.edu

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Botany, Dept. of

3/8/95

Science tips -- Add 3

'VIRTUAL FOLIAGE:' UW-MADISON DISPLAYS OVER 3,000 PLANT IMAGES ON-LINE

For professional botanists, students or simple nature lovers, that old indispensable pocket field guide now has a high-tech companion. UW-Madison's botany department has created a digital library of more than 3,000 plant images that is available publicly on the university's internet connection, WiscInfo.

Mike Clayton, an instructional specialist with the department, said the program is being used in botany courses to help students visually identify plants, define their characteristics and classify with other plant species. In a highly visual field like botany, Clayton says the educational benefits are phenomenal. Students can run random word-searches for specific images; enlarge, cut and paste images to serve classroom needs; and help self-correct their own observations from the field.

It also represents the future of botanical archives, Clayton said. Faculty who have their life's work collected in dusty boxes of 35 mm slides can have those images transferred in digital form, making them suddenly accessible to everyone. The collection is also highly adaptable to high school curriculum and for nature buffs trying to identify anything from wildflowers to morel mushrooms. The material is available under "Course Materials and Other Educational Resources" in WiscInfo, or on the World Wide Web.

CONTACT: Mike Clayton, (608) 262-2333; clayton@facstaff.wisc.edu

###

— Terry Devitt, (608) 262-8282
— Brian Mattmiller, (608) 262-9772

9/8/89

Washington Avenue. According to artist Michael Burns, the sculpture will consist of polished geometric shapes in quartzite, limestone, granite, bronze and iron. Installation is expected by October.

A founder of both UW-Madison's real estate and urban lands program and the McBurney Center for Persons with Disabilities, Graaskamp died in April, 1988.

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UW GRAD STUDENT WINS HUGHES FELLOWSHIP

UW-Madison graduate student James Langeland was among 61 students from across the country to receive fellowships this summer from the Howard Hughes Medical Institute for study towards graduate degrees in the biological sciences.

The doctoral fellowships promote excellence in biomedical research by giving up to five years of support for full time study. Each $23,000 fellowship includes a $12,300 annual stipend and a $10,700 allowance to the fellowship institution.

Langeland began his doctoral studies at UW-Madison in developmental biology.

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uw news

From the University of Wisconsin-Madison / News Service, Bascom Hall, 500 Lincoln Drive, Madison 53706 / Telephone: 608/262-3571

Botany Dept

Release:

Immediately

7/27/89

CONTACT: Charles F. Delwiche (608) 262-0657, Norman Thomson (608) 263-4642, Linda E. Graham (608) 262-2640

WISCONSIN RESEARCHERS FIND CLUES ABOUT FIRST LAND PLANTS

By Terry Devitt
University News Service

MADISON--Probing the secrets of a common green alga, University of Wisconsin-Madison scientists have uncovered what they believe are key evolutionary links that paved the way for the first colonization of land by plants some 400 million years ago.

Writing in the July 28 issue of the journal Science, Wisconsin botanists Charles F. Delwiche, Linda E. Graham and Norman Thomson describe the presence in algae of materials similar to those that support the vascular structure of land plants and that allow them to stand upright and compete for sunlight.

By identifying in a common group of green algae lignin-like materials, the biological concrete that allows plants to withstand pressure and endure the trials of life on land, the Wisconsin researchers have uncovered a missing evolutionary link for plants.

Land plants have long been believed by scientists to have evolved from green algae -- mostly aquatic, plant-like organisms that rely on photosynthesis, but that have no leaves, stems or root systems. How the tiny organisms adapted to terrestrial life has been a puzzle to scientists.

The group of green algae studied by the Wisconsin researchers is known as Coleochaete and was obtained from northern Wisconsin's Lake Tomahawk.

-more-

A tiny organism, about the size of a period, Coleochaete is found in clean, fresh water throughout the world. And of any living alga, it exhibits the greatest similarity to land plants.

"We know that there is a relatively small group of organisms from which land plants could have derived," said Delwiche. "A big question was what was it about the ancestors of land plants that allowed them to survive and succeed on land?"

The findings of the Wisconsin group raise questions about the dominant role of lignin-like materials. Such materials have long been recognized as having two critical functions: providing structural support for plants and useful antimicrobial properties.

It has long been thought that the antimicrobial properties of lignin-like materials arose secondary to their structural characteristics.

But the Wisconsin research suggests that lignin-like materials evolved prior to the separation of land plants, with their requirement for the rigid properties of lignin-like materials, and their algal ancestors.

Lignin-like materials, explained Thomson, are biopolymers having molecular structures made up of many different subunits. When the subunits are linked together, he said, they form a rigid and durable barrier that microbes are unable to penetrate.

"That rigidity was fortuitous," said Delwiche. "When algae began to survive on land, that property then became important in the development of plants."

Although there are some species of modern algae known to colonize land, mostly in damp or muddy environments but also in such curious places as sloth fur, it is generally agreed upon by scientists that these were independent colonizations of the land.

"There are species of algae that colonize land," Delwiche said, "but

they're not of the same lineage as land plants."

The UW-Madison researchers found that the lignin-like materials occur in the cell walls of algae that are undergoing sexual reproduction.

In addition to the discovery of lignin-like materials in algae, another durable material known as sporopollenin was found in the reproductive cell walls of the algae.

According to Delwiche, the durable properties of lignin-like materials and sporopollenin may give paleobiologists important clues about ancient algae.

"A critical point is that this knowledge of living organisms may help paleobiologists interpret the fossil record," said Delwiche. "We now have a better understanding of the materials likely to survive the chemical process of fossilization."

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-- Terry Devitt (608) 262-8282

Add 1--UW-Madison Newsbriefs

9/4/85

VOLUNTEER PLACEMENT DAY IS WEDNESDAY

Representatives of more than 60 campus and community agencies will be on hand to discuss volunteer opportunities with students at Volunteer Placement Day Wednesday (Sept. 11) from 9 a.m.-4 p.m. in Great Hall of Memorial Union.

The event, held each semester and sponsored by the campus Volunteer Services Office, allows agencies that rely on volunteers to hook up with students willing to offer their time to help.

The last placement day in January drew about 1,400 students, most of whom eventually signed as volunteers with one of the agencies represented, according to organizers.

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ARBORETUM OFFERS PLANT GROWING CLASS

How to grow plants from seeds, cuttings and layers will be the subject of a class at the UW-Madison Arboretum Saturday, Sept. 14, from 9 a.m.-noon.

The fee is $4 and advance registration is required. To register, or for further information, call the McKay Center, (608) 263-7888.

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LAWRENCE MEMORIAL AWARD GIVEN TO UW-MADISON GRADUATE STUDENT

George E. Schatz, a graduate student in the UW-Madison botany department, is the recipient of the Lawrence Memorial Award.

Administered by the Hunt Institute for Botanical Documentation at Carnegie-Mellon University, the award was made on the basis of Schatz's graduate work and includes a $1,000 prize to be used for research-related travel.

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feature story

From the University of Wisconsin-Madison / News Service, Bascom Hall, 500 Lincoln Drive, Madison 53706 / Telephone: (608) 262-3571

Release: **Immediately** **4/18/85**

CONTACT: Thomas Volk (608) 262-9873

MORELS: BOTANY STUDENT SEEKS TO CULTIVATE A DELICACY OF NATURE

By TERRY DEVITT
University News Service

MADISON--Each spring, usually during the warm and wet weeks of May, thousands of mushroom fanciers take to Wisconsin hillsides and forests in search of one of nature's greatest delicacies: the morel.

But Thomas Volk, a University of Wisconsin-Madison graduate student and one of the few people in the country to study the intricacies of the spongelike morel mushroom, doesn't profess to be one of those spring treasure hunters. For Volk, the real search for the elusive mushroom begins in the lab.

Volk, working under the direction of botany professor Thomas J. Leonard, is attempting to cultivate the morel in the laboratory, something that has been done only twice before.

Success, says Volk, would spawn not only a new delicacy for supermarket shelves, but also a financial windfall for whoever finds the key to the cultivation of the morel. Wild morels now sell in farmers' markets for $5 or more per pound.

According to Volk, it is easy to grow morel mycelia -- underground networks of thread-like tissue -- in a petri dish. Getting the mycelia to produce the cone-shaped fruit is the hard part.

"The fruiting bodies are solely for the purpose of producing and

-more-

disseminating spores," he said. "They appear only briefly each spring and only in certain locations and conditions."

Volk has used the UW-Madison Biotron to simulate the right mixture of light, temperature and humidity for his efforts to coax morel mycelia into fruiting.

scientists have tried for many decades to grow morels, according to Volk. In 1981, it was reported that Ronald Ower of San Francisco State University grew 16 morels in a bed of wheat grain. Ower has since patented his process and shortly after his successful experiment the feat was repeated by scientists at Michigan State University.

This limited success in the lab, however, has yet to materialize into commercial production.

Volk said the secret to fruiting morels seems to lie buried in the complexities of the morel's sex life, a life complicated by the fact that in the world of fungi there are more than just two sexes. In fact, Volk and others who study the morel are unsure just how many sexes are involved.

Morels, according to Volk, start life as spores the size of dust motes. Released from the fruit of the mushroom, the spores are blown by the wind or carried by water to favorable locations where they germinate and develop into mycelia. Just one mushroom can have as much as a mile of the underground threads, said Volk.

Volk, who works in a Birge Hall lab cluttered with hundreds of mycelium-bearing petri dishes, spends most of his time peering through a microscope in an effort to understand the intricacies of morel mating, the details of which have never been traced. "I'm trying to understand mating reactions at the microscopic level," he said.

Admittedly, Volk and the other scientists seeking to solve the mystery of morel reproduction are tight-lipped about the details of their findings. They

are afraid the details might tip off the competition in the race to be the first to fruit the nutty-flavored mushrooms in a controlled and repeatable fashion.

Aside from mating activity, morel production seems keyed by environmental triggers such as moisture, temperature and chemical substances in the soil. Since morels are frequently found growing under newly-dead elm trees, it is Volk's guess that living elms may produce a substance that enables morel mycelia to thrive. When the tree dies, the absence of that substance may then spur the mycelia to fruit.

Volk's experiments with environmental triggering in the UW-Madison Biotron -- a facility used to create special environmental conditions -- have, so far, been unsuccessful. All Volk has been able to coax from his mycelia are small gray or brown lumps. The lumps, explained Volk, represent the initial stage of the morel fruit, yet they are far from the six-inch mushrooms commonly found in the wild.

But while Volk has yet to fruit his first true morel, his efforts and the work of other scientists around the country may someday result in the taming of this wild delicacy.

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-- Terry Devitt (608) 262-8282

uw news

From the University of Wisconsin-Madison / News Service, Bascom Hall, 500 Lincoln Drive, Madison 53706 / Telephone: 608/262-3571

Release: Immediately 3/21/85

CONTACT: Bruce F. Benz (608) 262-2792

ANCIENT CORN MAY SHED LIGHT ON MEXICO'S PAST

By DAVID J. KRUPA
UIR Science Writer

MADISON--A small collection of 1800-year-old corn cobs may help a University of Wisconsin-Madison researcher unravel the pre-Columbian history of Mexico.

Bruce F. Benz, a doctoral candidate in UW-Madison's botany department, says analysis of archaeological maize suggests a link between the pre-Aztec city of Teotihaucan and the highland region of Puebla roughly 100 miles to the east.

Benz found striking similarities between fragments of ancient corn recovered from Teotihaucan and indigenous maize currently grown in Puebla. He said this similarity could indicate that both descended from the same seed stock.

Teotihaucan, an archaeological site located in the Valley of Mexico northeast of Mexico City and famous for its two colossal pyramids, has puzzled anthropologists for many years.

Benz, tucked away in an office brimming with corn ears of every shape, size and color, compared ancient corn fragments recovered from Teotihaucan and modern races of corn found throughout much of south central Mexico.

Benz said ears collected from small farms in Mexico today contrast sharply with the large-eared hybrid corn commonly grown in developed nations. Hybrid

-more-

corn, he said, has been so altered by breeding that it scarcely resembles the old-fashioned types often grown by native Mexican farmers. The native corn varieties are more like their ancient maize relatives, he said.

"The links between modern Puebla's primitive-looking corn and the ancient corn remnants from Teotihaucan support recent speculation that the ancient city developed as part of a wave of pre-Aztec settlement from the east," said Benz. "It's plausible that people brought their corn seed stock with them when they founded Teotihaucan, a city which became the region's capital.

"Since farmers are reluctant to give up familiar, dependable seed in favor of new or untried races, archaeological cobs may tell us about the movements of these early peoples," he said.

Teotihaucan sprang up in the first century B.C., grew to a bustling metropolis of about 150,000, then met its demise around 700 A.D. Where its occupants came from, and why they settled there in such great numbers, remains unclear, said Benz.

"Corn from Teotihaucan and other sites can help us understand the relationship between cultural history and the evolution of maize," he continued. "Once dated, corn fragments can be used to map out the evolution of maize. If we can trace the movement of various corn races, they become important markers of human activities as well."

The Teotihaucan study is part of a larger effort to develop a new classification scheme for all the races of corn in Mexico, said Benz. He explained that the evolution of corn from its closest relative, teosinte, has been hotly debated among botanists and archaeologists.

Teosinte, a wild plant that produces dozens of tiny ears, belongs to the same group of grasses as corn. Benz said differences between corn ears and the ears of teosinte have complicated efforts to trace corn's evolution.

But in 1979, UW-Madison botany Professor Hugh H. Iltis proposed the "Catastrophic Sexual Transmutation Theory," a radical hypothesis that

resolves fundamental problems in the evolutionary steps to corn from teosinte. Teosinte, still found in parts of Mexico today, is believed by most biologists to be the ancestor of corn.

Iltis, director of Benz's National Science Foundation-sponsored project, maintains that the female corn ear did not evolve from the female ears of teosinte. Rather, he says, the corn ear evolved from teosinte's male tassel by a process of "feminization."

Iltis says that this sexual change, which accounts for maize's sudden appearance in Mexico about 8000 years ago, may have been triggered by a fungal infection, genetic mutation, or unusual environmental stress. Once the hormone balance in the tassels of certain teosinte plants shifted enough to cause a change in sex, explains Iltis, the feminized parts of the tassel became dominant, drawing in a greater share of the plant's nutrients and increasing in size.

"Early cultivators apparently keyed in on this chance occurrence, and furthered the trend by selective breeding," said Benz. "Iltis' theory models the evolution from teosinte to primitive corn that eventually gave rise to the races of corn found today.

"I've used the model to isolate key traits that vary according to race, thereby establishing a 'yardstick' for gauging primitiveness of different corn specimens in the archaeological record."

Benz stressed that historical reconstructions based on the archaeological fragments are only "best guesses" based on probabilities. He said his preliminary conclusions about the corn at Teotihaucan, which he will discuss at the 8th Annual Midwest Mesoamerican Conference in Madison this weekend (March 23 and 24), need to be refined by further analysis of maize of greater and lesser antiquity than the 1800-year-old cobs he has analyzed.

A scant 25 cob sections from the temple site were available for comparison with contemporary races in the Valley of Mexico, and Benz cautioned that the small sample could skew his results.

He said the cooperation of Mexican scientists at the Universidad Nacional Autonoma de Mexico made his work possible, and that further studies on the evolution of maize will depend on continued collaboration.

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--David J. Krupa (608) 263-2876

uw news

From the University of Wisconsin-Madison / News Service, Bascom Hall, 500 Lincoln Drive, Madison 53706 / Telephone: 608/262-3571

Botany Dept

Release: Immediately 11/28/84

UW-MADISON NEWSBRIEFS

BOARD OF VISITORS TO MEET FRIDAY

UW-Madison's Board of Visitors will hold its next meeting at noon Friday (Nov. 30) in the 14th floor conference room of the WARF Building, 610 W. Walnut St.

The program will feature a discussion with representatives of the Wisconsin Alumni Association Student Board and a presentation by Thomas S. Johnson and May H. Fraydas of the university's Career Advising and Placement Services.

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BOTANY DEPARTMENT RECEIVES ELECTRON MICROSCOPE

UW-Madison's botany department recently received a new electron microscope on a $115,000 grant from the National Science Foundation.

The state-of-the-art microscope is completely modular, allowing for possible expansion of the system. The new microscope replaces a 20-year-old model and will be used for a variety of research projects, according to department chairman Eldon H. Newcomb.

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feature story

From the University of Wisconsin-Madison / News Service, Bascom Hall, 500 Lincoln Drive, Madison 53706 / Telephone: (608) 262-3571

Release: Immediately 1/4/84

CONTACT: John Seaton (608) 262-2235

by Jacqueline Kelley,
University News Service

GREENS CAN CURE WINTER BLUES

MADISON--If you're winter weary and want to beat the cold-weather blues, John Seaton suggests you let some green into your life.

"Green plants this time of year are especially life-giving for me," said Seaton, who is the greenhouse and botany garden director at University of Wisconsin-Madison. "You see a new shoot or leaf when you come downstairs in the morning, a new beginning, and it's very exciting."

But before slipping to the store to buy whatever looks appealing, Seaton suggests choosing plants that will survive the humidity, light and temperature conditions in a home.

WINTER HUMIDITY

A basic problem during winter is that plants require a higher humidity than most houses can provide, Seaton explained. Plants become stressed and may lose leaves and otherwise look sick. If you don't have a commercial humidifier, "a saucer with water and pebbles in it by each heat register will help you and your plants," he said. "Also, plants grouped together tend to humidify one another. And plants enjoy visiting a steamy bathroom while you shower or bathe.

"Some people mist their plants in winter, but I don't recommend it. Once you start misting, you must continue -- you encourage tender, new growth which requires faithful misting."

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LIGHT AND TEMPERATURE

"Nowadays you don't have to be stuck with just putting plants near a window," according to Seaton. "There are many different and not-too-expensive artificial light sources which you can train onto your special areas, often with dramatic effect.

"If you have plants in a northern exposure, you should move them to a southern or western exposure, and a little back from the glass to avoid a strong thermal gradient," Seaton said, adding that closing curtains or shades at night is good for nearby plants. So is moving them farther from the window.

"Now that we've been encouraged to turn down thermostats," Seaton said, a lot of plants do much better, including a number of annuals that you would put in the garden in spring and summer. Some will flower in the winter. The ordinary gilly flower, or stock, for example, has a wonderful scent, and you can usually get it to flower if you have a cool room."

BUYING IN WINTER

Should you buy plants in cold weather, Seaton suggests being careful to make sure they're well protected -- wrapped in at least two layers of newspaper as well as another outer wrapper -- before you bring them home.

Generally, he said, it's better to buy plants from a reputable greenhouse or nursery, where you can also find expert advice. Sometimes you can get bargains at a supermarket or department store, but he suggests buying soon after the shipment arrives because plants can deteriorate under untrained personnel.

"You can get quick results with many bulbs if you force them, especially the paper white narcissus -- you can almost see them grow," Seaton said.

"Late winter, just before the spring spurt of growth, is a good time to knock out your old plants, repot them, and get your fingers in nice warm potting soil," he said. "Plants periodically need more room to grow, much as growing feet need larger shoes."

WHEN AND HOW TO WATER

Seaton said more plants are killed by bad watering practices than by any other means and suggested several ways to tell if a plant needs water:

-- Look. If leaves are dull and limp, and the soil is light brown and dusty, your plant is pleading for water.

-- Feel. The soil may be dry on top but moist just underneath and not need water. Pick up the pot. You will soon get to know by feeling its weight if you need to water.

-- Rap. If your pot is clay or unglazed ceramic and not cracked, rap it sharply about a third way down with your knuckle. If the soil is dry, you'll hear a slight ringing sound. If moist, you'll hear a dead sound.

-- If the soil is moist and the plant still flags (droops), you have watered too much. Withhold moisture until it dries.

Seaton suggests watering heavily and infrequently rather than lightly and often. Fill the pot to the top and let drain. If the soil is the lightweight kind that many growers use -- mostly peat -- you may have to soak the pot in standing water a few minutes because this soil dries easily and the water flows straight through.

In hard-water areas, distilled water is best for azaleas, gardenias and African violets. You can get such water from refrigerator frost, rain and snow. For other plants, unsoftened water is preferable to softened. Let the water stand overnight to reach room temperature and to allow chlorine and other additives to evaporate.

ADDED TIPS

For plant lovers at any time of year, Seaton offered some further tips:

-- Remove dead leaves. They can harbor fungal infections and insect eggs.

-- If you notice an insect problem, it's a good idea to isolate the plant and treat accordingly. Spray the other plants with a dilute solution of mild detergent -- two teaspoons to a gallon of water. Regular washing will keep

down red spider mites, scale and mealy bugs. For a special treat, put your plants out in a gentle spring or summer rain. Hairy-leaved plants such as gloxinia and African violets should not be sprayed.

-- Plants should be periodically rotated if light comes from one direction.

-- When feeding plants, follow the manufacturer's directions. More is not necessarily better.

-- The more you find out about your plants, the better you will be able to take care of them. There are many good plant books at stores, nurseries and libraries.

-- Remember that plants are living, growing organisms that require TLC -- tender, loving care. They will repay you many-fold.

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uw news

From the University of Wisconsin-Madison / News Service, Bascom Hall, 500 Lincoln Drive, Madison 53706 / Telephone: 608/262-3571

Release: **Immediately** 10/22/82 ns

UW-MADISON NEWS BRIEFS

CONTACT: Tom Johnson (608) 262-3921

GRAD SCHOOL INFORMATION DAY SET

A Graduate School Information Day, featuring representatives of 26 graduate schools nationwide, will be held Wednesday (Oct. 27) from 10 a.m.-4 p.m. in Great Hall of the Memorial Union.

The representatives will provide information on their graduate programs in business, public policy, urban and regional planning, health and hospital administration, human systems, and social planning and administration.

UW System schools, as well as universities as far-ranging as Princeton, Northwestern and Texas, will be represented.

The event is free and open to the public. It is sponsored by the UW-Madison Career Advising and Placement Service and advisors of the UW-Madison College of Letters and Science.

Further information is available from Thomas Johnson, director of the Career Advising and Placement Service, at (608) 262-3921

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CONTACT: Eldon H. Newcomb (608) 262-2092/262-2643

BIOLOGY READING ROOM DEDICATED TO FORMER COLLEAGUES

The Fisk-Clarke reading area in Birge Hall's new biology library was informally dedicated last week at a gathering of donors and faculty members.

- more -

Add one--news briefs

Botany department chairman Eldon H. Newcomb said the name of the reading area honors two UW-Madison botanists, the late Emma L. Fisk and the late Herbert M. Clarke, both known for deep commitment to students. Fisk taught from 1926 to 1963, Clarke from 1946 to 1974. Clarke also served as an assistant dean of student affairs from 1957 to 1973.

One of the donors, UW System President Emeritus John C. Weaver, now at the University of California-Los Angeles, was unable to attend but wrote a letter in which he acknowledged that "Emma Fisk was one of my all-time favorite teachers and was my minor professor on my Ph.D. committee. I've always thought the world of her."

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UIR RESEARCH NEWS

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Additional Information: Robin Kimmerer (608) 262-6207

May 17, 1982

NATURAL RE-ESTABLISHMENT OF PLANTS ON MINE TAILINGS

by David Mladenoff
UW Science Writer

Madison, Wis.--Research on abandoned lead and zinc tailings in southwestern Wisconsin is yielding knowledge useful in restoring mined land.

Botanist Robin Kimmerer of the University of Wisconsin-Madison is studying plant species that naturally colonize mine tailings hoping to find cost effective and successful reclamation methods.

Most of the mine dumps in the area pre-date strict reclamation regulations. Until recently, Wisconsin law did not require that mining companies stabilize mine wastes and re-establish plant cover.

Lead-zinc tailings are the waste products from partial processing of ore. They are mostly gravel-size chunks, little less than a third of an inch in diameter, dumped near the mine site.

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add one-- mine tailings

Because of high alkalinity, toxic concentrations of metals, and lack of nutrients, natural revegetation occurs very slowly on mine tailings.

Moreover, surface temperatures reaching well over 130°F in summer and poor water-holding capacity of the rock add to the harshness of the sites for young growing plants.

Kimmerer is learning which plants naturally invade the tailings, establishing the initial plant cover, and whether or not they persist and spread over the entire tailings site. She is also identifying species that invade the area after the pioneers have become established, and which are better than others for reclamation purposes.

To do this, she located several abandoned mine sites and, from a variety of sources, determined how long each site had been left undisturbed. She ended up with a series of sites abandoned from 1900 to 1971, an ideal sample on which to study natural plant succession and invasion.

To identify the environmental factors influencing vegetation patterns, she measurednitrogen and zinc content of the tailings, acidity, depth of the tailings, organic matter in surface soil, texture, slope, and distance from the edge of the tailings dump. Results thus far have revealed both some expected patterns and several surprises.

The first plants to invade the barren tailings seem to be predominantly annual grasses and forbs such as mullein, ragweed, and sweet clover. Kimmerer found that the plants colonize extremely slowly during the first 20 years following abandonment of the site (see figure).

-more-

add two-- mine tailings

"Basically," she says, "the sites are such harsh environments for the plants that there are few species that can tolerate the conditions. These conditions do not change for a long time."

Also, during early stages, there is natural selection of strains of plants--known as ecotypes--that can survive the harsh conditions. Once there are tolerant survivors on the tailings, offspring of these plants can begin to spread, she theorizes, and there is then a surprising jump in the rate of colonization. Her data show that there is, indeed, a marked increase in plant cover on sites 20-35 years old.

The data also show another plateau in the rate of vegetation spread from sites 35-65 years old.

"This may be caused by a nutrient limitation," she states. "Lack of organic matter in the soil may halt the further development of the vegetation."

A second increase in vegetation cover after 65 years includes tree species as an important component--cottonwood, slippery elm, box elder, and black cherry. These trees have been present from earlier phases of colonization but during the later years their size is sufficient to moderate the environment. An increase in species diversity--the different kinds present--also takes place during this next period, with the addition of native prairie forbs such as bergamot, columbine, verbena, and little bluestream grass.

These species tend not to be very abundant but are scattered over the sites.

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add three-- mine tailings

To test if nutrient deficiency and the harsh environment were factors preventing plant establishment, Kimmerer established experimental plots on sites that were bare as well as sites with partial and full cover. The plots received different treatments: prairie hay mulch, treated to destroy any seeds, and fertilizer were applied to different plots of each type.

On the bare plots, no increase in plant cover was observed with fertilization. On the intermediate and fully vegetated plots, the plants were greener but there was no increase in productivity.

"This," according to Kimmerer, "may be due to prudent survival strategies adopted by species capable of living in this environment; the plants sequester the nutrients rather than route them to increased growth. Heavy fertilizer often used in reclamation may not efficiently enhance the productivity of these adopted plants.

She observed a dramatic increase in the number of seedlings on formerly bare plots that were mulched, resulting in an increase in biomass of several orders of magnitude. This, Kimmerer believes, is likely due to the amelioration of the hot and dry surface conditions in bare tailings, which retards initial establishment of plants.

Mining may take place elsewhere in regions where climate differs, and where different plant species are present, but Kimmerer believes that information gleaned from the study will be useful in reclaiming old mine sites elsewhere.

Use of properly adapted plants, adequate site preparation, and appropriate use of fertilizer and mulch all seem to be measures that can contribute to both successful and cost effective reclamation of land in many regions where mining takes place.

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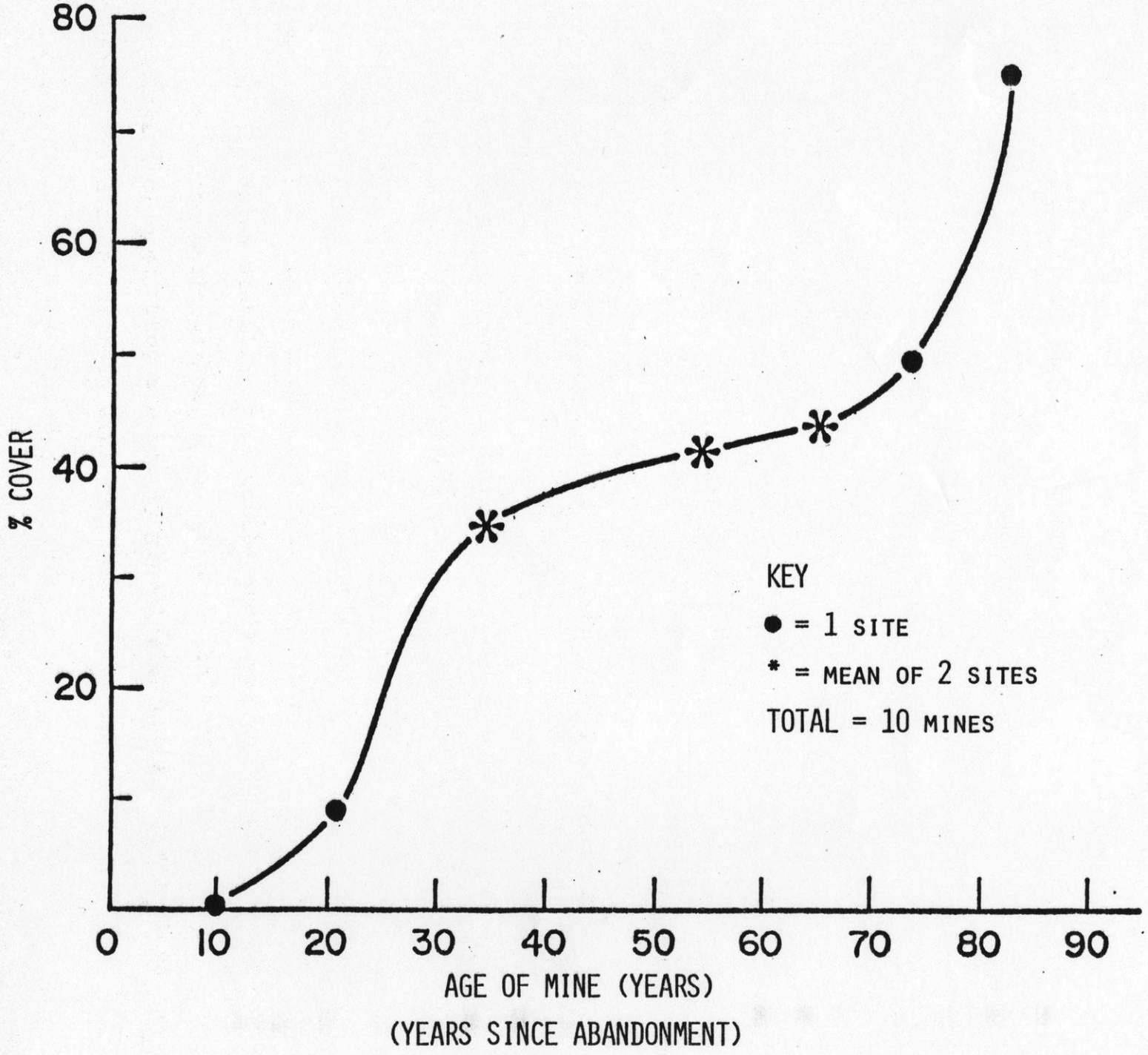
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(YEARS SINCE ABANDONMENT)
KEY
● = 1 SITE
* = MEAN OF 2 SITES
TOTAL = 10 MINES

feature story

From the University of Wisconsin-Madison / News Service, Bascom Hall, 500 Lincoln Drive, Madison 53706 / Telephone: (608) 262-3571

Release: Immediately 8/20/81 jk

CONTACT: Wayne M. Becker (608) 262-5833

BIOLOGY STUDENTS PREPARE FOR DILEMMAS

MADISON--Abortion, test-tube fertilization, world hunger--these are the tough topics of a University of Wisconsin-Madison course for advanced biology students who will be the scientists and physicians of tomorrow.

Rather than let students passively listen to lectures, the course forces them to discuss five or six environmental or biological-medical topics in depth.

"The students soon learn," said botanist and course teacher Wayne M. Becker, "that there are seldom black and white--good or bad--answers to these emotion-packed issues. We look instead for starting presuppositions that inevitably lead to certain conclusions.

"I challenge them by asking 'Why do you think this way?' and 'Can you see that someone else starts from a different position and logically ends up with a different answer?' One of the results, I hope, is to increase their respect for others, that their adversaries are not mindless idiots."

Although the students are well-grounded in biology, Becker said, "we sometimes consult experts for background information. We won't accomplish anything by pooling our ignorance."

Sometimes Becker himself is surprised by specialists brought to class, he said, and cited a topic covered last year, the U.S. health care system.

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"I never realized the dichotomy between health and our health care delivery system--the nurses, doctors, hospitals," he explained. "Our speaker, an M.D., said that of the whole spectrum of things having to do with human health, only a very limited aspect--perhaps 5 to 10 percent--is covered by the health care delivery system, yet that's where nearly all the money and effort go. The rest--preventive maintenance such as adequate exercise, sleep and diet--is outside the system."

The same speaker also said that one factor alone has been the main influence in decreasing maternal mortality in the U.S. during this century--physicians washing their hands before deliveries.

Likewise, in Wisconsin in recent decades, the greatest decrease in infant mortality came from an equally simple procedure--physicians have been taught that newborns must be kept warm.

"These examples, of course, led to discussing the morality or wisdom of huge outlays of money for extraordinary procedures such as kidney dialysis that help only a few people," he said. "And who decides who uses the limited number of machines? What are--or should be--the criteria? These are agonizing questions, but they will surely be faced by many of the students."

When his class in "Biology, Society and Human Values" discussed animal rights, the conclusions boiled down to economics. Becker asked, for example, if chickens have a right not to be jammed in a coop with thousands of other chickens? And if so, are we willing to pay $2 a dozen for eggs?

The law also plays an integral role in the course. "Almost anything with an ethical dimension eventually leads to a legal dimension," Becker noted, "because sooner or later we legislate about it."

He pointed to the current debate about when a fetus becomes a person. "This will result in legislation," he predicted. Other examples include laws that control the conditions of human experimentation, recombinant DNA technology and handling of radioactive material.

Becker, a cell biologist, has been granted a leave by UW-Madison to study in the philosophy department of Harvard University in the spring of 1982. He said he is looking to broaden his own background in moral philosophy and ethics.

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uw news

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Release: Immediately 4/9/80 jhs

DELEGATION FROM WEST GERMAN RESEARCH FOUNDATION VISITS UW-MADISON

MADISON--A delegation from West Germany's Alexander von Humboldt Foundation, which awards fellowships for scientific research in Germany, finished a four-day visit to the University of Wisconsin-Madison Wednesday.

The visit, according to a foundation representative, was to exchange ideas, meet former Humboldt fellowship winners, and strengthen scientific ties between the United States and West Germany.

Delegation members, including Hellmut Hanle, Bonn, head of the Humboldt award program, also were presented to Gov. Lee Dreyfus.

Eight UW-Madison scholars are former von Humboldt Senior Scientist Awardees and two others--history Professor William J. Courtenay and Robert D. Warmbrodt, a post-doctoral student in botany--are winners presently in Germany.

Founded 120 years ago, the foundation distributes about $20 million a year in German Federal Foreign Ministry funds on its fellowship program. It was begun a year after the death of its namesake, who conducted scientific expeditions in South America, Mexico, Russia and the United States.

Research fellowships are awarded so young scholars with doctorates can carry out their own, one- or two-year research projects in Germany. Scholars of all nations are eligible and, of the 480 fellowships offered each year American scholars win about 12 percent. Another special program begun in commemoration of the Marshall Plan awards $2.75 million each year to U.S. scientists for longer-term research in Germany.

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Other members of the Humboldt delegation are Mrs. Hilde Rostosky, Bonn, head of the press and public relations section; biochemistry Professor Hans Faillard, Saarbrucken, of the University of the Saarland and a Selection Committee member; and pharmacy Professor Richard Neidlein, University of Heidelberg, a Selection Committee member.

Former Senior Scientist Awardees from UW-Madison are professors Ray F. Evert, plant pathology and botany; Harlan L. Goering, chemistry; John E. Kutzbach, meteorology and environmental studies; Heinz H. Lettau, meteorology and civil and environmental engineering; John S. Mathis, astronomy; Kirk W. McVoy, physics; Ramon E. Moore, computer science; and Frederick L. Roesler, physics.

Among stops on the foundation delegation's itinerary at UW-Madison were meetings with department chairmen, deans and former award winners.

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uw
news

From The University of Wisconsin-Madison / University News and Publications Service, Bascom Hall, Madison 53706 / Telephone: (608) 262-3571

Release:

Immediately **6/9/72 jb**

MADISON--One of the few bogs in Wisconsin's driftless area, the Hub City Bog near Richland Center, has been purchased by the University of Wisconsin for teaching and research purposes.

UW System regents voted Friday to purchase the 50-acre tract from The Nature Conservancy for $1,000. Funds came from the Davis Trust Fund of the UW-Madison botany department.

The tract, which bears a rare stand of white pine and an assortment of plants ordinarily found in more northern counties, is expected to come eventually under management of the UW-Madison Arboretum Committee or botany department personnel at UW-Richland Center.

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feature story

From The University of Wisconsin-Madison / University News and Publications Service, Bascom Hall, Madison 53706 / Telephone: (608) 262-3571

Botany

Release:

Immediately 12/8/71

By Tom Menzel

MADISON--The southern third of Wisconsin is the most productive, but some of the state's finest soil is covered by concrete, according to a joint study by botanists on the Madison and Milwaukee campuses of the University of Wisconsin.

Prof. Grant Cottam, chairman of the botany department in Madison, and Evelyn A. Howell, a graduate student, cooperated with Prof. Forest W. Stearns and Nic Kobriger of UW-Milwaukee to compile a productivity profile of Wisconsin. The study was funded by the International Biological Program.

They found that the high productivity of the southern third of the state correlates with the best soil and climatic conditions. And as expected in an agricultural state like Wisconsin, there is also a close relationship between total productivity and population--the more concentrated the population, the greater the productivity.

But the study points out that high population corresponds with productivity only to a point. Milwaukee County, for example, is located on high potential soil with a population per acre about 800 times that of some northern counties. On a vegetation map, however, it appears to be a desert.

A question raised by the report is the advisability of locating major population centers on the most valuable and potentially productive land like Milwaukee County.

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Add one--productivity profile

Highways are a big land user. Cottam pointed out that a superhighway covers 40 acres of land per mile, and the study shows they usually are built on the best, level soil.

"We have overbuilt the road system already," Cottam said, "and we are just going to have to find a new way to travel. Fifty years ago we made it by train, and maybe we'll have to return to this or something like it."

In comparing total production with various growth factors, the study shows that correlations with geology, topography, and vegetation are not good. One speculation is that the vegetation in these areas doesn't respond to the environmental factors that are connected with high productivity.

For example, in northern counties, productivity corresponds with summer temperature and differences in the soil, while in the south the strongest correlation is with soil and population. The conclusion is that well-managed crops are capable of producing higher yields than most kinds of upland native vegetation.

With modern methods of agriculture, the potential of even bad soil can be improved. So temperature is the principal limiting growth factor. In the north the growing season is less than 100 days, while in the south it approaches 175 days.

With this short growing season, the north is not capable of growing the corn, oats and alfalfa that the south can, so production of forest type crops is highest in the north.

In view of the historical and economic importance of the pine lumbering industry in Wisconsin, it is surprising to find that the total production of pine is the lowest of any forest type. The report points out this is because

-more-

most of the pines were cut prior to 1920, and the land they were growing on was burned at least once.

Wisconsin produces somewhere in the neighborhood of 72 million metric tons of plant matter in a year. And it takes energy to produce it.

In their report, the researchers stressed that "it is essential to know how much energy is required by our present farming practices to produce the food and fiber we now use. Energy is one of the most critical factors limiting development of our civilization, and we should know how long we can continue our present practices in view of the limited sources, especially petroleum."

###

uw news

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Release: Thursday p.m., Sept. 2

UIR SCIENCE WRITING DIVISION (263-2877)

By Linda Weimer
UW Science Writer

FORT COLLINS, Colo.--(Advance for Thursday p.m., Sept. 2)--A team of University of Wisconsin scientists revealed Thursday the results of a year-long, intensive study of Madison's Lake Wingra.

The study, part of the International Biological Program effort underway at Wisconsin, is the first step in a four-year project to gain a comprehensive understanding of the lake's systems. This knowledge can then be applied generally to management problems on other similar lakes.

"Lake Wingra was chosen partly because it seemed to be a natural system that would be easy to sample and study, and partly because it is representative of lakes that have been disturbed and altered by man's activities," said UW-Madison postdoctoral researcher James F. Kitchell.

Kitchell and four other members of the research team discussed their findings at a meeting of the Ecological Society of America at Colorado State University in Fort Collins, Colo.

In an interdisciplinary approach, each member of the team looked in some detail at one specific group of organisms to determine how energy and nutrients are passed through the lake system.

Joseph Koonce, who studied the algae and other phytoplankton in the open water of the lake, reported that Lake Wingra is far more euthrophicated than had been initially suspected.

- more -

"In fact," noted the UW-Madison limnology graduate student, "the values for Lake Wingra are higher than the highest values reported in the literature." He attributed this, in part, to the fact that few lakes have been studied as intensively as Wingra.

"The exciting thing is that the levels of noxious problems--algae scum, for instance--so apparent in lakes like Madison's Mendota are extremely low in Wingra," explained Koonce. "This indicates that we are dealing with a highly efficient system which uses to its advantage most of the organic material it produces and which will set a good example for other, less efficient lakes."

In the lake's system, the phytoplankton Koonce studied serve as food for the zooplankton--small, drifting animals like the Daphnia, or "water flea," which were studied by another biologist, Ray White.

White described Wingra as a lake within a lake. Along the shoreline, a dense jungle of aquatic plants comprises 30 per cent of the lake's surface area in the summer, while out in the open water zone, White said, the lake is a free-floating soup of organisms.

This diversity of habitats has made White's job of catching, identifying and studying the zooplankton extremely difficult.

White discussed distribution of the zooplankton in these habitats and its variation during the year. He noted that the system is very complex, "maybe more than we can monitor in an efficient way."

He also reported that as Wingra has aged and become more productive, the number of kinds of zooplankton has greatly diminished.

"While Birge counted 48 different kinds in 1891, we counted only 23 in our 1971 survey," said White. "This bears out what seems to be a general finding that as an ecosystem becomes more productive (eutrophic, in aquatic systems), the diversity of species decreases."

Zooplankton, in turn, feed Lake Wingra's fish population--the distribution, movement and diet of which were described by Paul Baumann, also a limnology graduate student.

Baumann noted that the lake contains very large numbers of very small fish (about five inches long)--primarily bluegill, sunfish, striped bass and two species of crappie.

Kitchell, who has drawn on this information in his work, presented the results of his computer modelling studies of the bluegill's energy-nutrient budget.

"In simulating these budgets, the computer often has no feel for what would be an irrational response," he noted. "For example, the computer may describe predation by fishes far in excess of what they are actually capable of eating."

To overcome this problem, Kitchell defined upper and lower "reality" limits which describe the maximum and minimum energy-nutrient budgets possible, given the fish's diet, excretion, metabolism, growth and reproductive capacity.

"If these kinds of limits can be generalized," he said, "they can essentially describe what a fish population requires to survive at equilibrium or to develop to an optimum level."

Botany professor Michael Adams discussed his study of photosynthesis of the lake weed, Myriophyllum spicatum. Photosynthesis is the process by which plants use the energy from the sun to convert carbon dioxide to organic material.

In Lake Wingra, Prof. Adams determined how net photosynthesis rates may be related to factors such as temperature, depth, season, alkalinity, and available nutrients including phosphorous and nitrogen.

He found that plant growth is very slow when the lake is covered by ice but speeds up rapidly when the ice breaks. Then growth slacks off but speeds up again, he suspects, later on in the summer.

Add three--Lake Wingra

The next step in the Lake Wingra project will be to convert the raw data so far collected into a group of mathematical statements and draw them together into a model that will describe how the total lake system behaves.

When this is done, the scientists will return to Lake Wingra to test and refine their model. The Wisconsin model will eventually be combined with models of other aquatic systems. This will be used by lake management authorities and ecologists to understand how lake systems are affected by both natural and man-made activities.

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feature story

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Release: Immediately 6/10/71

By VIVIEN HONE

MADISON--"A foreign language is never 'your own' until you stop translating, until you can think and express yourself only in that language."

With this axiom among linguistic educators in mind, the University of Wisconsin offered for the first time during the past semester an experimental course called Botany 130. Earning five credits toward a science requirement or in German, the Madison campus "total immersion" course was conducted entirely in German.

Ursula Thomas, innovative professor of German and education, who sparked the experiment, points out that somewhat similar approaches to teaching a foreign language are being made at certain high schools in the east, but this is the first time, to her knowledge, that a university provided a total and stimulating language environment combined with the equally important prize of new learning in botany, an entirely separate field.

Sixteen young men and women enrolled in the course and stuck with it. All had to have some background in German but botany had to be a new field. All were required to have had either four years of German training in high school or four college semesters of German instruction. Most of them plan to become high school teachers of German.

"I believe we can say we had a majority of happy people in the course," Prof. Thomas pointed out, "and many saw this as a particular opportunity and challenge."

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German departments are, of course, primarily interested in developing literary appreciation and criticism for their students, she explained, "but here we have an opportunity for these future teachers of German to have more practice in German with subject matters outside the literary. They should then be all the better equipped to deal with the broad spectrum of their future students."

Imported from the University of Goettingen staff to teach the "total immersion" sort of experiment, Prof. Wolfgang Heyser is primarily a botanist. But, according to Ursula Thomas, he is also a born language teacher, and a particularly charismatic one. This talent he combines with breathing into the science of plant life an unmistakable magic and thereby eliciting an unmistakable and enduring interest from his students.

The manual used in the course was translated into German by Heyser and his German botanist wife. German was used exclusively in the lecture and lab periods.

But it was in the twice-a-week discussion sessions that the students got the best workout, their best practice in conversational German. They asked questions and they replied to any in German. There is another axiom among foreign language experts which again applies here. "The best students are those least afraid to make mistakes." They learn by their errors.

Tests given in the language experiment--comparable to those given in the usual introductory botany course taught in English--showed scholastic achievements about on a par. But if student assessment is the measurement of success, there is even more reason for encouragement.

Asked how they like Heyser's course, enrollees answered "just great." One feminine student who had not planned to make German either her major or minor became so enthusiastic that she has settled on a German minor and plans to teach German.

Prof. Heyser reports: "I know they are enthusiastic about Botany 130 for they crowded around to ask questions at the discussion sessions. They not only thought over the problems but brought plants of all kinds for identification."

From the viewpoint of Prof. Grant Cottam, department chairman:

"The introductory course taught in German was a highly successful experiment. We were fortunate in getting a very competent instructor. There is no question that the students received excellent training in botany, and I very much hope that we can make the course a regular part of our curriculum."

And finally from the viewpoint of Prof. Thomas, the visionary who pushed until the experiment was undertaken: "We expect to offer the course at least once every other year--and next time there will be field trips added to the instruction. Most important, however, is the feeling that the students were so greatly imbued with the material and much more practiced in thinking and feeling in German.

"All but one of those in the experimental course passed his oral proficiency tests in German for certification for teaching. And for almost all of them, botany and German are now truly fused."

###

NEWS OF THE UNIVERSITY OF WISCONSIN

From the University's Statewide Communications Service, 1752 Van Hise Hall, Madison 53706

Release **Immediately** **10/16/70 jb**

STERLING REPORT

MADISON--A summary compilation of the personal losses suffered in University of Wisconsin departments as a result of the Aug. 24 bomb explosion on the Madison campus was presented to the UW regents Friday.

Prepared by faculty members with offices, laboratories, and classrooms in the Sterling Hall area, hit hardest by the blast, the report was requested by Regent Ody J. Fish.

"The greatest loss was Dr. Robert E. Fassnacht," Physics Prof. J. R. Dillinger stated. "He had developed special talents for working with superconductors while earning his Ph.D. which was granted in 1967. He stayed on as a research project associate to pursue other problems defined by his thesis work."

Dr. Fassnacht, working late hours on a low temperature physics project, was killed in the explosion and four others were injured.

A summary of the individual reports:

ASTRONOMY--Teaching facilities damaged, and one classroom lost for the full semester; planetarium suffered interior damage and will not be available for elementary courses or ILS classes, and visitor nights have been cancelled; numerous books and journals destroyed in the library area; six offices still not usable; considerable research equipment and data severely damaged or lost; two professors lost years of data reduction and analysis effort, and a Ph.D. candidate lost 90 per cent of his thesis and notes and books valued at $1,000.

- more -

Add one--regent report

BOTANY--Two professors each lost a month on experiments and another lost 57 electron microscope plates.

PHARMACY--Undergraduate teaching laboratories damaged and equipment and supplies destroyed; 25 teaching and research programs interrupted; offices of Extension Services in Pharmacy destroyed with loss of files and mailing lists, and one special course was cancelled; Prof. Melvin H. Weinsvig lost collection of slides, teaching aids, and literature for far-reaching program on "Drug Respect"; education of numerous pharmacy students delayed or hampered; graduate students and faculty lost heavily in personal and professional material.

PHYSICS--Department's tandem electrostatic accelerator suffered near total damage to ion sources at low energy end; of local design, these cannot be replaced; a $250,000 on-line computer and associated equipment also suffered great damage; total loss estimated at $500,000 plus 18 man-years of work in nuclear physics area alone; two professors lost six months in research delay;

Graduate students lost heavily in personal property, equipment, and notes; enrollment in physics course limited for first time; Prof. R. R. Borchers forced to delay or resign a Guggenheim fellowship for research in Brazil; laboratories damaged so badly that restoration still problematical; serious loss of research files and records; loss of nearly all experimental apparatus constructed or acquired in 15 staff years in one area, 24 years in another.

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uw news

Botany Dept.

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Release: **Immediately** **7/3/69 jb**

MADISON--An internationally known expert on algae, Dr.Bohuslav Fott, is serving as visiting professor of botany on the Madison campus of the University of Wisconsin this summer.

Chairman of the department of botany at Charles University, Prague, Czechoslovakia, Dr. Fott is widely known for his research. This has included work on all types of algae, particularly those important in biological productivity, in mass cultivation for economic uses, and in sanitary engineering.

An author, he has served as president of the International Phycological Society, honorary vice president of the International Botanical Society, and as chairman of the Charles University Botanical Institute.

Dr. Grant Cottam, of the UW department of botany, is teaching plant ecology at the University of Washington, Seattle, this summer.

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uw news

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Botany

Release: Immediately 6/26/70 jb

MADISON--New chairmen for 15 departments in the University of Wisconsin College of Letters and Science were announced Friday by Dean Stephen C. Kleene.

The following will assume their new offices next September:

Profs. A. Neil Skinner, African languages and literature; Grant Cottam, botany; John E. Willard, chemistry; Vernon Hall, comparative literature; George E. Collins, computer sciences; Edwin Black, communication arts;

Charles T. Scott, English; Louis Rossi, French and Italian; Robert E. Frykenberg, Indian studies; Robert A. Kimbrough, Integrated Liberal Studies;

Wolfgang R. Wasow, mathematics; Eberhard W. Wahl, meteorology; Gerald C. MacCallum, philosophy; William Epstein, psychology; and Karl E. Taeuber, sociology.

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U.W. NEWS

Botany Dept

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706
Telephone (Area Code 608) 262-3571 Release: Immediately

3/29/66 mcg

MADISON, Wis.--Persons interested in any aspect of man's relation to nature are invited to attend the symposium on the International Biological Program (IBP) to be held on the Madison campus of the University of Wisconsin April 1-2.

The invitation is issued by Prof. Paul J. Allen, chairman of the botany department and of the University Graduate Biological Division which is sponsoring the symposium. Meetings will be held in Birge Hall and the Social Science building.

Experts will discuss such subjects as "Human Adaptability," and "Increasing the Biological Productivity of the World: Some Very Old Problems and Very New Solutions."

The organizing committee for the symposium includes Prof. William S. Laughlin, anthropology, member of the U.S. National Committee for IBP, chairman; and Profs. Oscar N. Allen and Perry W. Wilson, bacteriology; Arthur D. Hasler, zoology and Orie L. Loucks, botany.

The IBP, which was formed in 1960 to further international basic research in the biological sciences, encourages study of current problems of great moral, aesthetic, and economic significance. The International Council of Scientific Unions coordinates all efforts.

Among experts scheduled to speak during the symposium are:

Dr. Kenneth Watt, professor of zoology, University of California at Davis, former head of the statistical research and service unit for the Canadian department of forestry, and a specialist in experimental and theoretical population dynamics formulas;

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Add one--IBP symposium

Dr. W.H. Schull, professor of human genetics and anthropology, University of Michigan, and former geneticist with the Atomic Bomb Casualty commission in Hiroshima, Japan; and

Dr. John Cantlon of the division of environmental biology, National Science Foundation, Washington, D.C., who will discuss "Ecosystems and the IBP" during the opening session of the symposium Friday in 145 Birge Hall at 4 p.m.

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U.W. NEWS

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706
Telephone (Area Code 608) 262-3571

Release:
Immediately

3/24/66 mcg

MADISON, Wis.--The University of Wisconsin department of botany in cooperation with the Citizens Natural Resources Association will sponsor a conference in the Wisconsin Center April 16.

Titled the "Citizens' Conference on Pesticides," the meeting will be open to all interested persons.

Scheduled to speak are Profs. Aaron Ihde, departments of chemistry and history of science and chairman of integrated liberal studies; James Crow, chairman, genetics and medical genetics; Grant Cottam, botany; Joseph Hickey, wildlife management; and H.C. Coppel and James W. Apple, entomology.

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Botany Dept.

U.W. NEWS

From The University of Wisconsin News and Publications Service, Observatory Hill Office, Madison 53706
Telephone (Area Code 608) 262-3571 Release: PMS of August 18
8/6/65 mes

JOINT MEETINGS OF BIOLOGICAL SOCIETIES
sponsored by
THE AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES
University of Illinois - Urbana, Illinois

URBANA, Ill.--(Advance for PMS of August 18)--Spring flowers--the daffodils growing in your garden as well as the Dutchman's breeches found in woodlands--need a period of cold weather before they can bloom.

These plants, called the spring ephemerals because they grow fast and are short-lived, remain dormant ten months out of the year. They grow and bloom only in the relatively short period from mid-April to mid-June; for the remainder of the year they are in a nonvegetative, "resting" stage.

"These plants have adapted to growing and completing their life cycle early in the spring at cold temperatures," a University of Wisconsin researcher said. "Since they grow mostly in woods, it is to their advantage to grow rapidly in the spring before the dense shade of trees develops. By the time leaves come out on trees, the plants have already died down."

Botanists do not yet know all the factors controlling dormancy. They do not know what conditions are necessary to break this period of slumber in the spring.

Paul Risser, (Sun Prairie, Wis.) a graduate student at Wisconsin studying the problem, found temperature to be the most likely factor controlling dormancy.

"Almost all plants require certain amounts of cold treatment to break dormancy in the spring," he said. "Some require at least a month of cold weather, and others as much as three months or more for best growth." He explained his research to the Ecology Society, meeting with the American Institute of Biological Sciences at the University of Illinois.

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He treated several woodland plants--dog-tooth violet, Dutchman's breeches and spring beauty--to different durations of cold treatment to correspond to the low temperatures found in nature in the early spring months.

"The longer the cold treatment, the more rapidly plants came up from the ground and the larger they grew," he found. "However, their life span was shorter and the plants died down more quickly."

Risser will next study the sugar and amino acid contents of the plants as related to possible factors breaking dormancy in spring. What sugars and amino acids are present, as well as the amounts in which they are present throughout the life cycle of the bulbs may have an important correlation with dormancy.

Risser is a Ph.D. student of Prof. Grant Cottam, a plant ecologist. Financial support for his research is provided by the Wisconsin Alumni Research Foundation.

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U.W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON, WISCONSIN 53706

2/18/65 mes

RELEASE: Immediately

MADISON, Wis.--Dr. Denzel Edwards, plant ecologist from South Africa, is doing research at the University of Wisconsin this semester under a South African government study grant.

He is senior officer of the Botanical Research Institute, Department of Agriculture, in Pretoria, South Africa, and came to Wisconsin to study methods and concepts developed by Wisconsin ecologists. He is working under Prof. Grant Cottam of the botany department.

Before coming to Wisconsin, Dr. Edwards studied with plant ecologists in France, Switzerland, Germany, Holland, Belgium, and England as part of his year travel-study grant. He received the B.S. and M.S. degrees from the University of Cape Town and the Ph.D. from the University of Natal. His doctoral research was on the plant ecology of the Tugala River basin in Natal Province.

Dr. Edwards, his wife and two children are living at 1719 Chadbourne Ave., Madison.

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Botany Dept

U.W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON, WISCONSIN 53706

5/8/64 jl

RELEASE: Immediately

MADISON, Wis.--An outstanding example of a maple-basswood forest to be used for study and research by University of Wisconsin scientists has been acquired as a result of action by the UW regents Friday.

The woods is known as Abraham's Woods and is located in the township of Albany in Green County, Wisconsin. It was obtained for the University from The Nature Conservancy, an organization for the preservation of natural areas, for $2,000.

The sum required for the purchase was charged against the income from the John J. Davis Trust fund.

The woods is situated on a 40-acre tract and is one of the largest examples of a maple-basswood forest still remaining in southern Wisconsin.

"Maple-basswood stands are considered to be the climax, or terminal, forests of the region," Grant Cottam, professor of botany, pointed out in describing the wooded area.

"In many ways they are the most magnificent forests we have. They have the greatest vegetational complexity and, since they are the end point toward which succession in this region trends, they are an important standard against which other forests and the effects of man's disturbance can be assessed," Cottam said.

He added that the wooded tract is an important addition to the University's areas available for study and research in botany, zoology, and other biological sciences.

##

WIRE NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

2-8-63: gr

RELEASE: Immediately

MILWAUKEE--A total of $2,878,678 in gifts and grants, including $1,860,048 from the National Institutes of Health for medical research and teaching, was accepted by University of Wisconsin regents Friday.

The NIH total included $327,406 for the radiotherapy research center in the department of radiology, and a previously announced sum of $1,006,280 toward constructing and equipping pharmaceutical chemistry research facilities, the new veterinary science research building, and the entomology-plant pathology research facility.

The National Science Foundation presented a total of $478,570 for 10 natural science projects, including $113,000 for electron microscopic investigations of higher plant development in the department of botany and $100,000 for expansion of the computing system in the Numerical Analysis Laboratory.

All told, federal agencies provided $2,378,509.

The Carnegie Foundation provided a previously announced $90,000 for support of an experimental program of graduate fellowships for women, and the University of Wisconsin Foundation provided $3,314, a portion of which was given in memorary of the late Russell J. Dymond, Madison, for the UW Arboretum.

###

WIRE NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

2/8/63 jb

RELEASE: Immediately

MILWAUKEE, Wis.--Sixteen contracts totaling $1,885,904 for service and research to be performed by the University of Wisconsin for federal agencies, including a $1,050,000 extension of the contract for operation of the Army Mathematics Research Center on the Madison campus, were approved by UW regents Friday.

The center was established at Wisconsin six years ago to conduct advanced research in higher mathematics. The University's contract is with the Chicago Ordnance District of the U.S. Army. The extension assures continuance of the center to June, 1967, and provides funds to June, 1964.

Other contracts, agencies, and amounts approved by the regents:

Three with Army Research: with the UW meteorology department, $85,000; pharmacy, $18,990; and psychology, $37,800; Atomic Energy Commission, $38,000, physics department;

National Aeronautics and Space Administration, three projects with the Space Astronomy Laboratory, covering separate allotments of $336,661, $45,000, and $100,000; Navy Research, $11,285, mathematics department; U.S. Department of Agriculture, $3,000, botany;

Armed Forces Institute, three projects with the Extension Division, covering allocations of $8,155, $4,953, and $3,073; U.S. Army, $1,507, military science; Air Force Research, $24,480, minerals and metals, and $118,000, meteorology.

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Botany Dept.

U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

1/10/61 gr

RELEASE: Immediately

MADISON, Wis.--Three University of Wisconsin botanists have been awarded certificates of merit by the Botanical Society of America, it was announced Wednesday.

The Wisconsin scientists are George W. Keitt, Kenneth B. Raper, and Folke K. Skoog.

Certificates were given to 69 American botanists whose research and teaching made outstanding contributions to botanical knowledge.

Keitt, professor emeritus of plant pathology, was cited for his work in fruit tree diseases and chemical control of growth and differentiation. He is internationally known for his research in control of major orchard fruit diseases. Prof. Keitt received his M.S. and Ph.D. at UW. He was chairman of the plant pathology department from 1930 to 1955.

Raper, professor of bacteriology and botany, was cited for his work on fungi and on development of penicillin-producing molds. He was called "the world's foremost authority on the common molds of the Penicillium and Aspergillus group, and benefactor of countless thousands" when he received an honorary degree from the University of North Carolina last June.

Skoog, professor of botany, was cited for his work in plant physiology, especially tissue culture, hormonal regulation of plant growth, and physiology of algae. Prof. Skoog has received numerous honors for purifying the chemical kinetin, which makes cells divide.

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Botany Dept.

U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

11/1/61 gr

RELEASE: Immediately

MADISON, Wis.--A book describing the plant life along the coastline of a remote tropical island has been written by a globe-trotting University of Wisconsin botanist.

Prof. Jonathan D. Sauer spent a southern hemisphere winter in 1959 on the Indian Ocean island of Mauritius (the former Ile de France), 500 miles east of Madagascar. He studied those plants which were within reach of the waves and salt spray.

His book, "Coastal Plant Geography of Mauritius," describes the kind, origin, distribution, approximate number of species, and the environmental conditions influencing them. It includes pictures, tables and charts.

Sauer was accompanied on the expedition by Profs. William McIntire and Harley Walker of the Louisiana State University Coastal Studies Institute. The investigation was conducted under auspices of the institute.

"To all three of us the prospect of spending some months on an island far out in the Indian Ocean was rather forbidding, but we learned that instead of being cast into limbo we had been admitted to a field worker's paradise," according to Sauer.

"The coasts of Mauritius are an especially glorious complex of high basalt cliffs exposed to heavy surf, clean beaches of coral lagoons, swampy bayshores, various other substrate (soil) and exposure conditions."

-more-

Add one--botany book

Sauer studied Mauritius because its environmental conditions are almost as ideally arranged as a laboratory experiment, and because its beaches had been radically changed by man, who arrived in the 16th century. The long-run effects of such changes is of great scientific interest.

The project was part of an attempt to understand the relationships between plant distribution and environment, the dynamics of plant geography and the history of plant migration. Sauer has combed some 80 coasts in his research.

"In the end, the time was too short and the only unpleasant part of the work was the belief that none of us would ever be able to return," Sauer lamented.

The Mauritius reconnaissance was supported financially by the Office of Naval Research. The book was published by the Louisiana State University Press. last week.

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Botany Dept.

U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

9/15/61 rf

RELEASE: Immediately

MADISON--A man who learned to love plant life study during his student days at the University of Wisconsin over half a century ago has given the UW botany department funds to help further its field studies on plant life.

He is the late John R. Heddle of Racine, who made a "Living Memorial" bequest of $1,000 to the University. The bequest was accepted by the UW regents at their meeting here Friday.

Mr. Heddle, who received his bachelor of arts degree from the UW in 1910, provided in his will that the bequest was to be used for furthering the botany department's field work on higher plants.

Heddle entered the UW from Ord, Neb., High School in 1906. He majored in botany, and his scholastic record shows that he was a good student during his entire University career. His thesis research for his B.A. degree was on "Plant Geology of the University Bay Region."

Following his graduation, he served as an assistant in the UW botany department in 1910-11, then worked in the Milwaukee City Museum, and later was employed by the U.S. Department of Agriculture. He died last July 13.

Heddle returned to the UW campus several times after his graduation in 1910 to carry on advanced studies on plant life. He studied in several botany courses in 1917, and again in 1920-21, when he also served as an assistant in the Herbarium of the UW botany department.

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Botany Dept.

U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

8/25/61 rfe

RELEASE: in PM's of Monday, Aug. 28

LAFAYETTE, Ind.--(for PM's of Monday, Aug. 28)--Basic research in a little studied area of botany by University of Wisconsin scientist R. F. Evert has turned up some new ideas about the growth of certain plants.

In a paper presented Monday during a meeting of the Botanical Society of America being held this week in conjunction with the American Institute of Biological Sciences at Purdue University, Dr. Evert reports that, contrary to popular belief, production of the food-conducting tissue (phloem) in the apple tree begins before wood or xylem, the water-conducting tissue, production.

A previous study by the botanist showed the same phenomenon occurs in the pear tree. This was the first time either species had been studied in such detail.

Dr. Evert goes on to explain that the wood produced during one growing season generally remains functional for several years and thus can conduct water for two or more successive years. However, he continues, it is quite a different story with the phloem.

By late November or early December all the food-conducting cells of the phloem have died. Consequently, the apple tree is left without a quick way to carry food from one part to another during the winter. At that time, the plant cells live upon food stored within themselves or adjacent cells.

-more-

One of Evert's main problems was to determine when and where the first food-conducting cells are produced when growth is resumed in the spring. He found that the precursors of these cells are already present during the winter in the cambial region. The cambium is a perpetually young tissue situated between the phloem and the xylem, and responsible for the production of new phloem and xylem each year.

"Early in April, before the buds begin to break and new leaves are produced, a few rows of cambial cells enlarge to produce new food-conducting cells," Evert explains. "And, unlike the pattern of growth reported for other trees, the cambial region continues to produce new phloem for about one and one-half months before it begins new xylem production."

The scientist goes on to say that in spite of this late start, xylem production is much greater than phloem production, and generally continues for a longer period of time. Therefore, during any given year, much more wood is usually produced than phloem.

He points out that practically all growth is completed by the middle of August. Late in September, the first formed food-conducting cells begin to die, and by late November or early December, all food-conducting cells are dead. The cycle then repeats itself the following year.

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MADISON NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

5/8/61 jl

RELEASE: Immediately

MADISON--A field trip to one of southern Wisconsin's most notable wooded areas is to be held Sunday, May 14, directed by three University of Wisconsin scientists.

The area is Abraham's Woods, now under process of preservation by the Wisconsin Chapter of the Nature Conservancy. Leaders of the field trip are to be Profs. Grant Cottam and Hugh Iltis of the UW botany department and Prof. Joseph J. Hickey of the UW department of wildlife management.

All interested persons are asked to assemble at parking lot 31 at 1:15 p.m. Lot 31 is between Babcock Hall and the Horticulture Building.

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Botany Dept.

FEATURE STORY

1/4/61 jl

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

RELEASE: Immediately

By JAMES A. LARSEN

MADISON, Wis.--A traditional forest enemy--fire--can actually be employed as a most useful tool in effective management of land for production of game and for many other purposes, according to University of Wisconsin botanists who recently completed a study of specific effects of fire on various forest and vegetation types.

The botanists, Richard Vogl and Prof. John T. Curtis, conducted before-and-after studies of vegetation on game management areas in the state where burning is conducted as a matter of routine. They also studied burned areas in southwestern Wisconsin, in the University Arboretum where burning is used to help maintain an experimental prairie, and in many northern areas known to have burned in the recent past.

The research was carried on by the University with funds provided by the Wisconsin Conservation Department.

The studies were conducted primarily in three major vegetational types found in the state--the southern Wisconsin prairie and oak-opening, the central Wisconsin jackpine and scrub-oak savanna transitional forest, and the northern pine-hardwood forest.

Contrary to established ideas, fire is fully capable of killing a certain percentage of the oak grubs found in abundance on typical Wisconsin prairie lands, but only after the areas have burned repeatedly. Even after six burns, some 75 per cent of the grubs survive.

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The botanists point out that this high survival results from the fact that even intense fires heat the surface layer of soil in most places very little. Although seeds and rhizomes under burned brush piles and logs are often killed, only the uppermost layer of duff is destroyed in most spots and living things beneath this layer escape without harm.

While the heat of a prairie fire may be intense a few feet above the ground--sometimes well into the 1000 degree range--there may be no heating at all an inch or two below the surface of the ground.

Vogl and Curtis used special pyrometers to show that, for example, at four inches above the ground, temperatures may often rise to 325 degrees during burning, but it seldom reaches more than 150 degrees a half inch below the surface, 60 degrees at an inch below, and at two inches below there is no appreciable increase.

They found that a backfire--a fire creeping slowly against the wind--heats the ground the most, and a headfire sweeping before the wind usually heats the ground but little. In the latter burn, peak intensity of the temperature is found at heights of 18 inches or more above the ground.

The botanists learned that fires in the southern Wisconsin oak and oak-opening forests and the central Wisconsin jackpine and oak-scrub forests tended to increase the species of plants most often found on prairies--the prairie grasses and annual herbs. In terms of game management, fire in such areas is useful for increasing plant species valuable for game animal foods and for eliminating less valuable saplings and shrubs.

In the northern forests of pine and hardwood tree species, fire seems to be less useful as a game management tool because it often changes the ground vegetation from northern forest herbs to the less valuable braken fern and grasses. Openings in the forest, however, are necessary for game animals, and fire is a useful tool for creating these open areas.

-more-

Add two--botanists

Recurrent fires in the pine barrens in the northwest part of the state have been responsible for holding this area in its present state for many decades, according to Vogl and Curtis.

A very useful technique for safely burning large areas has been developed by game manager Norman Stone on the Crex Meadows Game Management Area in Burnett County, the botanists point out. Marshes are burned while the uplands are still covered with snow; the latter areas serve as an effective firebreak. When the snow disappears, the uplands are burned, and the bare marshes serve as a firebreak. Using this method, as much as 1100 acres have been safely burned in one day.

Management of the Crex Meadows, which has also included diking to increase water areas, has greatly enhanced the value of the area for waterfowl nesting, the botanists point out. In 1948, it was estimated that some 500 ducks were produced on the area. In 1958, the figure had increased to 5,000. Opening up of forested areas by fire also increased the available habitat for prairie grouse.

Controlled burning, the botanists add, increases the production of useful plant species on many waterfowl areas, and can be employed to open up marshy sites that have such a dense carpet of dead and dry remnants of old vegetation that ducks do not attempt to penetrate the areas for nesting.

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Botany Dept

FEATURE STORY

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

RELEASE: Immediately

3/21/60 db

By DAN BOTKIN

MADISON, Wis.--Jonathan Sauer has been beachcombing for botany on 80 remote coasts during the past two summers to study seaside deserts and learn why plants grow where they do.

The University of Wisconsin professor has combed the beaches from the Caribbean to the Indian Ocean, collecting and studying the plant life along the zone of land just above the reach of the tides which, he says, "is an uninhabitable desert for ordinary land vegetation."

"This is the habitat of a special vegetation, dominated by a small number of species," he said. "Most of the species thrive under persistent wind and salt spray and survive occasional poundings by storm waves. They can live on raw sand and bare rock. They are true pioneers."

Sauer's collected treasures from combing this coastal zone include a species of giant bean, which, according to his description, was "peddled in Panama for medicine, polished and set in silver in Yucatan, and cut into toys in Jamaica." The beans--seeds of legumes called Dioclea, Entada, and Mucuna--can float for years and still sprout. They have been the source of many legends and may even have been the beans for Jack's beanstalk.

But finding such seaside treasures was not Sauer's sole goal. He was studying local distribution and world migration patterns of plants. The work is, he says, "a small opening wedge" in an attempt to understand the relationships between plant distribution and environment, the dynamics of plant geography, and the history of plant migration.

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Sauer studied coastal vegetation because here the environment, though desert-like, changes constantly under the force of wind and tide. Beach plants maintain their numbers, Sauer says, "by continuous colonization of ephemeral sites that the sea is forever creating and destroying. Most of them are well-equipped for such perpetual migrations by having buoyant and impermeable seeds or fruits that remain alive for weeks, months, or years while being carried by ocean currents."

Sauer rates coastal vegetation among the most cosmopolitan of the world's plant types. Long-lived seeds have permitted these plant species to spread from island to island, often around the world.

Thus, for two reasons, coastal plants make ideal subjects for Sauer's study of plant distribution and migration; they must adapt quickly to a changing environment, and they have spread over large portions of the earth.

Sauer began beachcombing in late June, 1958. He traveled to 80 shorelines in the Caribbean--including remote beaches on Antigua, Barbados, St. Lucia, Grenada, Curacao, Jamaica, and Haiti.

The coasts he combed ranged from those "fully exposed to prevailing winds, surf and spray," to quiet bays and estuaries. He walked on coral sands, black mineral sands, and wave-built beaches of shells.

Sauer found that the typical remote and uninhabited beach had "an outer belt of sparse, low herbs, creeping vines, or certain grasses," but that the dominant coastal species were all evergreen perennials with thick, leathery leaves.

The shore plants along with riverbank plants, he says, "are the sources of the most successful plants of artificial habitats, namely weeds and crops." The rugged pioneering plants include species of morning-glory, sunflower, and coffee. Even some of the most familiar American weeds--including goosefoot, ground-cherry, and cocklebur--are represented. Sauer's Caribbean beachcombing also revealed "a motley assortment of escapes from cultivation, such as indigo, caster-bean, papaya,

periwinkle, and watermelon."

In all, Sauer found about 250 different plant species surviving on the coastal deserts. The real botanical treasure of his beachcombing was 800 museumm specimens which he collected in the Caribbean.

Sauer's visits to the 80 Caribbean beaches were short ones--sometimes only a few hours, sometimes a few days. In 1959, however, Sauer spent an entire summer on one island--Mauritius, a British colony 500 miles east of Madagascar in the Indian Ocean.

This island was uninhabited until the 16th century, in fact, the only mammals living on it were flying foxes. Inland, the vegetation was composed of local plant species which had evolved on the island. On the coast, vegetation was more like that found elsewhere, since the long-lived, floating seeds of coastal plants enabled them to migrate to this out-of-the-way island.

Sauer studied Mauritius because its beaches had been radically changed by man. Plants and animals introduced since the 16th century have largely destroyed the island's indigenous vegetation.

He also found extreme changes along the shore even though many beach plant seeds had floated to the island before man's arrival. The most conspicuous change along the shore was the presence of Casuarina trees which had been intoduced from Australia. But Sauer also found that the introduction of new plants had changed the geology of the island. For example, foreign grasses were making temporary sand dunes into permanant structures.

Sauer said that the geological effects of new plants on the island is under further study.

In addition to studying man's effects on shore vegetation, Sauer sought to understand the movements of vegetation on the island, and the effects of soil erosion and deposition, land uplife and submergence, on these movements.

add three--beaches

Sauer finds that surf intensity largely controls the distribution patterns of existing beach vegetation. He also discovered differences in plant distribution caused by variation in the type of sand on the beaches and the amount of rainfall.

Sauer's studies were sponsored by the Geography Branch of the Office of Naval Research. His work on Mauritius was done under the administration of the Coastal Studies Institute of the School of Geology, Louisiana State University.

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Botany Dept

U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

11/24/59 jl

RELEASE: Immediately

MADISON, Wis. --In 1836, writing the concluding paragraphs to the journal describing his five-year voyage around the world in the Beagle, Charles Darwin expressed his belief that every "traveller should be a botanist, for in all views plants form the chief embellishment."

A new volume published by the University of Wisconsin Press, "The Vegetation of Wisconsin" by University botanist John T. Curtis, provides what is--and what undoubtedly will remain for years to come--the standard sourcebook for everyone interested in the vegetation of Wisconsin and her neighboring states, the forests and fens, prairies, meadows, and bogs.

Not a guidebook in the usual sense, the volume summarizes the ecological work of botanists in Wisconsin from the day of Increase Lapham (who published the first list of plant species found in Wisconsin in the same year Darwin closed his journal) to the recent work of the University of Wisconsin's Plant Ecology Laboratory, one of the nation's outstanding centers of botanical research.

Curtis also points out that many of the most cherished traditions regarding land management--fire control, expansion of public hunting grounds, and drainage--often do not achieve what is expected of them. He outlines some of the questions which research must answer before effective public policies can be instituted.

The volume is a summary of technical fact, written with a minimum of technical terms to make the facts available to the serious amateur or student, as well as the practical land manager, professional forester, wildlife biologist, anyone concerned with the land and its products whether such interest is "aesthetic or practical, horticultural or recreational, or otherwise."

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This is not intended to minimize the fact that much of the volume is given over to summary and discussion of interest primarily to professional botanists, foresters, and land managers. There is, however, a great wealth of material which will fascinate all who possess a more than passing interest in the Wisconsin landscape.

In his introductory pages, Curtis points out that, in a sense, Wisconsin is a vegetational melting-pot, for here are found many species with ranges which extend to the West as far as Alaska and the Yukon, others extending to the East as far as the St. Lawrence and the Alleghenies, many of which are typical of the western prairies, a few which are circumboreal, stretching across the spruce belts of Europe and Asia.

In other introductory sections--devoted to the geology, glacial history, physiography, climatology, and soils of Wisconsin--the volume constitutes a ready reference handbook to the fundamentals of the state's physical geography and the environment within which not only plants but a large community of people live and grow. At the close of each section devoted to the various forest types found in Wisconsin, a summary of economic utilization and practical management measures is provided. An entire chapter is devoted to the effect man, both aboriginal and modern, has had on the native vegetation of the state.

In the volume, Curtis also takes issue with many established practices of land management--as examples, traditional fire control, public hunting grounds, and drainage.

Not only many types of forest, but some of Wisconsin's most valued grouse habitat, is improved rather than harmed by fire. The replacement of open lands by forest has seriously reduced the area available for prairie chicken and sharp-tailed grouse, he points out.

"Not only the grouse harvest but the blueberry crop as well have become victims of the bureaucratic dictum, that since most forest fires are the source of economic loss, therefore all fires are bad and must be prevented at any cost," he writes.

"This dogma has been supported by such an intensive propaganda campaign that there is danger of its being accepted as truth. On the contrary," he adds, "the facts plainly indicate that fire is a normal environmental influence in the life of the forest; the evolution of such fire adaptations is clearly shown in the serotinal cones of jack pine.

"Fires have been burning in northern Wisconsin for at least 10,000 years and will continue to burn for another 10,000 unless artificially stopped. The forests of the region are adapted to this situation and the normal complements of species as we know them can exist only if it is continued...By all means, uncontrolled fires sweeping over large acreages are a tremendous danger to life and property and must be prevented by the best possible methods. On the other hand, controlled fire, burning when and where desired, can be used as a valuable tool in both silvicultural and game management operations," Curtis writes.

He points out that absence of fire tends to encourage the development of hardwoods at the expense of the more valuable softwood species.

Resulting upsets in insect populations and normal predators further complicate the situation, making more research on this particular problem most desirable.

"The logical solution to the problem," he continues, "lies in the acceptance of the quantitative evaluation of fire rather than its complete condemnation.

Curtis also points out that expansion of wet lands for game management purposes is a subject upon which more research must be conducted before it can be stated with certainty that it is a good thing.

"Many of these areas were used as mowing meadows prior to state control but have since developed into dense thickets as a result of protection," he writes.

"The continuing expansion of the hunting grounds program probably means that shrub-carr as a community type will also continue to increase in importance. It might be well if the actual game bird productivity of the type could be accurately assessed before many additional areas are allowed to progress to it, since some doubt appears to exist on the question," Curtis adds.

At the present time, sedge meadows are also in demand by commercial truck gardeners, he continues. This group would "like to drain all of the meadows and put them into production of such specialty crops as mint, lettuce, onions, and carrots.

"They realize that such use is a form of mining, since the muck soils of the drained marshes have only a short and predictable life before they are completely oxidized or blown away and the sterile subsoils are exposed, but they consider this to be little different than the exhaustion of a lead mine, quarry, or oil well, and something to which their rights as land owners entitle them," Curtis writes.

"The game managers and conservationists, on the other hand, would like to see the meadows protected and undrained," he adds, "so that a supply of game animals could be maintained for the recreation-demanding urban citizens. An important benefit to be derived from this last use is the continued activity of the meadow as a water-conserving reservoir which ultimately would benefit farmer and city man alike and might far outweigh the value of the game by-product.

But he points out again that these meadows must be managed effectively to maintain them in their present condition.

"On many of the lands acquired for game production purposes, the managers have failed to realize that the sedge meadow is not a permanent community but needs to be burned or mowed to be perpetuated. The resulting invasion of shrubs and trees is converting these areas to forest, which may well be neither productive of game nor efficient as a water reservoir," he adds.

In outlining the theoretical background for the studies conducted by the researchers in the Plant Ecology Laboratory, Curtis writes "it is not possible to erect a classification scheme which will place the plant communities of any large portion of the earth's surface into a series of discrete pigeonholes, each with recognizeable and describable characteristics and boundary limitations."

There are, in short, no hard and fast rules by which one forest type can be distinguished once and for all from every other type. While it is possible to characterize the extremes, there is always a broad gray zone between types into which can be fitted any number of intermediates.

While this may seem an esoteric approach to the non-professional, it is precisely this topic--currently one of the most controversial among plant ecologists--which gives the volume its greatest scientific value, and which, according to one description, makes the volume "one of the most important contributions in the field of plant ecology during the twentieth century."

The wealth of material--detailed studies of Wisconsin plant communities conducted by past and present members of the Plant Ecology Laboratory--constitutes a formidable body of evidence to support Curtis's thesis.

"It must not be assumed, however, that the vegetation of Wisconsin is a chaotic mixture of communities, each composed of random assortment of species," Curtis summarizes. There is a pattern to Wisconsin's landscape, for the reason that some 12 or 15 species of trees commonly achieve dominance over the rest of the plant community, and within each major forest type there is to be found a fairly typical assortment of herbs and shrubs. These communities of species represent nodes along a continuum, however, rather than discrete and separate units in themselves.

Thus, in the half of the state given over to the prairie-forest floristic province (found south of a line roughly crossing the state from the northwest to southeast corners) there are to be found the lowland willow-cottonwood-elm community, the elms and maples on moist sites, maple and basswood on well-drained sites, and

oaks and prairies on dry sites. To the north are found the lowland conifer communities, the hardwood lowlands with black ash and yellow birch, the moist uplands with mixed conifers and hardwoods, and the dry upland pineries. And each of these forest types has a characteristic assortment of herbs and shrubs growing beneath the trees.

In all, the volume summarizes the available knowledge concerning 21 major vegetational communities found in Wisconsin, in addition to 12 types of lesser importance.

A concluding chapter points up the intricate inter-relationships between all of these types, and here Curtis, in summary, says: "It is the task of phytosociology to describe the combinations of plants that do occur in each region of the world...and to reach an understanding of the material and energy changes which take place within them."

Curtis has contributed much to attaining this goal for Wisconsin, in addition to amassing much fundamental knowledge needed for an underatanding of the relationships between vegetation and climate, and the role of forests in regulating stream flow, stabilizing water tables, and producing and maintaining soil cover.

The author is professor of botany at the University of Wisconsin, where he has been a member of the faculty since 1937. He has directed the work of the Plant Ecology Laboratory since its inception more than a decade ago, taking leave for wartime research in Haiti and for two Guggenheim Fellowships, and also serves as chairman of the University's Arboretum Committee.

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NATIONAL SCIENCE FOUNDATION
WASHINGTON 25, D. C.

June 9, 1959

Mr. Robert Taylor
Director, University News Service
University of Wisconsin
Madison 6, Wisconsin

Dear Mr. Taylor:

In keeping with your request as a member of the American College Public Relations Association to be notified when Dr. Alan T. Waterman, Director of the National Science Foundation, announces award of an NSF grant in a letter to the president of your institution, I hope you may find a lead to a news story in the following information:

The University of Wisconsin has been awarded a grant of $47,400 by the National Science Foundation for the support of basic research entitled "Ecology of Soils Microfungi" under the direction of Myron P. Backus and William F. Whittingham, Department of Botany. The grant became effective May 29, 1959 and will be three years in duration.

You are welcome to develop the story as you see fit as part of your regular program of public information. If you recover extra clips from newspapers which use your story, we will appreciate receiving one of them.

Thank you for your continuing help in carrying to the public news about the Foundation and its cooperative programs with your institution. If I can be of further assistance, please do not hesitate to call on me.

Cordially yours,

Clyde C. Hall
Public Information Officer

FL 7-4

FEATURE STORY

[Botany, Dept of]

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

RELEASE: Immediately

1/28/59 jl

Also:
Du "Pix" filed under
[Meteorology, Dept of]
& numbered: 4507-m
under dateline 1/28/59

MADISON, Wis.--The American author Thoreau termed a lake "a landscape's most beautiful and expressive feature."

University of Wisconsin scientists are working to show that a lake is also one of the earth's most sensitive gauges for measuring the energy-budget which characterizes the climate of a region.

A lake, for example, gathers heat from the summer sun. It loses heat during the long, cold months of winter. This heat budget--usually expressed in calories--varies with latitude and who knows how many events of weather such as winds, rains, snow, and cloud cover.

The convenient thing about a lake heat-budget, the scientists explain, is that it summarizes all of these events of climate and weather--integrating all into one easily-calculated quantity. By measuring the water temperature at regular intervals throughout the year, it is possible to arrive at a summary figure characteristic of the climate of the area in which the lake is situated.

It is, in a way, a system of reducing a tremendous number of variables into one, easily understood figure which provides a scientific picture of how climate works on the landscape--upon the plants, animals, geological forms, and lakes.

Interestingly enough, the character of a lake is determined to a considerable extent by its heat-budget. Northern lakes are clear and cold, often supporting limited plant and animal life. More southerly lakes are warm, supporting a larger variety and quantity of living things.

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The same principle, in general, holds true for the vegetation which covers the landscape. Vegetation is subject to the same climatic events which work upon a lake. The plant life of a specific region, therefore, also represents, at least in part, a summing-up of environmental conditions.

The team of scientists embarking upon this study of lakes and regional vegetation is led by Prof. Reid A. Bryson, chairman of the University of Wisconsin meteorology department.

For an initial pilot-plant study of lake heat-budgets, begun in April of last year, lakes at 10 sites located roughly on a line between Lake Mendota at Madison--where the University of Wisconsin is situated--and Zed Lake at latitude 57° in northern Manitoba were selected.

Through the summer, University scientists took detailed temperature records of these lakes, using electrical thermometers attached to lines which permit the scientists to make readings at all depths.

The team conducting the work included, in addition to Bryson, James F. Lahey, climatologist, John Dutton, meteorologist and pilot of the especially-equipped airplane used to measure solar radiation, and James A. Larsen, project botanist. The radiation studies tie in with other meteorology department projects which are providing new information on the energy sources and transformations which power the world's weather.

Ice and lake studies are nothing new at the University of Wisconsin. One-time UW President Edward A. Birge began his academic career collecting data on the life-forms and heat-budget of Lake Mendota, beginning in 1894.

Since that time, lake heat-budget studies--or physical limnology as scientists term this particular field of research--have continued to be an important facet of UW meteorology department research.

Lake research expanded from Lake Mendota to other lakes in the northern part of Wisconsin during subsequent decades, and has also expanded into many other

departments of the University--including zoology, botany, chemistry, bacteriology, and a host of others--and Wisconsin scientists are rated among world leaders in studies of many different aspects of lake science.

Scientists on "Project Lakeice," however, are investigating the use of heat-budgets and vegetation as climatic indicators.

During the course of the pilot study this past year, data on the heat budgets of the lakes, regional climatic indices, and vegetation types surrounding the lakes, has been gathered, along with measurements of ice-thickness during winter.

With a field assistant, Peter Hanson, a UW graduate now working as an Air Force physiologist, Larsen spent the summer conducting botanical surveys of major types of vegetational communities in areas around the study lakes.

Dutton and an assistant, John Kutzbach, an electrical engineering student, concentrated on measuring heat content and thermal stratification of the lakes and making air surveys of radiation to and from land and water surfaces.

Two of the researchers, Lahey and Larsen, recently returned from a two-week tour of the lakes, now frozen and in the depths of the northern winter. During the course of the work at the northernmost lakes, daytime air temperatures of -20 were commonplace, and -40 was encountered at Moosenose Lake at Ilford, Manitoba.

Local residents were careful to explain that they were enjoying a mild spell. During Christmas Holidays, for example, temperatures of -60 were common throughout the province and -72 was reported from the mining town of Thompson, located just north of a point along the railroad to Churchill.

Using the data on lakes and vegetation now available from the pilot study, the scientists now begin the task of relating the two kinds of information. Using aerial photographs of large areas surrounding the lakes, the botanists will determine the percentage of area occupied by the various vegetation types. The meteorologists will make initial calculations of lake heat budgets. The relationships between the two--between climate and vegetation--will be studied.

Add Three--Lakeice

One of the practical implications of the project is that heat-budgets of remote lakes for which no accurate records exist can be inferred from studies of the vegetation surrounding these lakes.

From this inference, it may be possible to estimate thickness of ice for any particular lake during the winter months, after taking into account such things as snow depth, air temperatures, winds, and periods of time during which the ice may have been snow-free.

This information would be of considerable value to persons pursuing many types of activity in the Subarctic, and who plan to use remote lakes as airstrips or for winter transport using caterpillar tractor trains, for example.

In subsequent years, the Wisconsin meteorologists plan to penetrate farther north, into the little-known regions beyond timberline, where the vast Arctic tundra stretches across Canada's Northwest Territories.

Here the problems of ice--both of inland lakes and covering the sea where the atomic-powered Nautilis recently sailed--and of the relationships between vegetation and climate have been termed two of the most challenging in Arctic science.

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MADISON NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

RELEASE:

11/21/58 er

Immediately

Public lectures on a variety of topics ranging from "brainwashing" to bookworms have been scheduled for Monday, Nov. 24, by the University of Wisconsin.

Of special interest to military reservists and Korean veterans will be a talk on "Coercive Indoctrination," or brainwashing, as it was practiced by Communist forces in the Korean conflict.

Lt. Col. Bruce L. Bushard, the speaker, studied brainwashing in Korea and has done follow-up studies since the armistice. He is now with the department of psychiatry and psychology of the Surgeon General's Office, Washington, D.C.

The talk will be given at 8 p.m. in the auditorium of Service Memorial Institutes, sponsored by MEND, Medical Education for National Defense. Dr. Robert J. Samp is MEND coordinator.

Dr. Gilbert Otto, head of parasitology research for Abbott Laboratories in Chicago, will discuss the "Epidemiology of Hookworm," in the Bacteriology building auditorium at 4:30 p.m. Monday.

Dr. Otto, former dean of the School of Public Health at Johns Hopkins University, worked on hookworm control in the southern states, and was a consultant to the War Department in the South Pacific during World War II.

The UW botany department has announced a lecture by Prof. John G. Torrey of the University of California on "Polyploidy in Relation to Organ Formation in Plant Tissue Cultures." Prof. Torrey will speak at 4 p.m. Monday in Room 145, Birge Hall.

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add one--Monday lectures

Dr. Stephen Fazekas, of the Department of Microbiology, Australian National University, will speak on the "Mechanism of Neutralization of Animal Viruses by Antibodies" at 3:30 p.m. in the auditorium of the State Laboratory of Hygiene.

The Medical School has invited interested physicians to attend a lecture by Dr. Paul Kimmelstiel, professor of pathology, Marquette University School of Medicine, and Director of Laboratories at Milwaukee County Hospital, on the subject "Nephrosis." Dr. Kimmelstiel will speak at 9 a.m. Monday in the Service Memorial Institutes auditorium.

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FEATURE STORY

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

11/19/58 mcg

RELEASE: Immediately

By HAZEL McGRATH

MADISON, Wis.--In an exchange of benefits between Oklahoma Indians and University of Wisconsin anthropologists, the Indians have acquired a "walking blood bank" and the anthropologists a wealth of information on the genetics of blood groups.

As fringe benefits, Prof. William Laughlin has garnered honorary life membership in the Pawnee tribe, new skills in the performance of tribal dances, and a reputation as a champion in the hand games with which the Indians while away the long summer evenings.

Laughlin and Dr. Margery Gray of the Wisconsin department of anthropology traveled last July to the Oklahoma home of the Pawnee, the Wichita, and the Caddo to blood-type these Caddon tribes for a continuing study of blood group genetics. They were assisted by Sonja Homme of Stoughton, a Wisconsin anthropology major, and Renee Bock, graduate student at the University of Chicago.

"We started our work during the Caddo annual dances at Andarko," Laughlin explains. "I told the Indians what we wanted and what our study would do for them, and after obtaining their consent, we set up our collecting table and took blood specimens from their ears between dances. The University of Oklahoma Medical School loaned us a laboratory, and there Dr. Gray typed the blood.

"We gave every Indian a card containing exhaustive information on his blood type--not merely the usual O, A, B, and RH factors, but 11 different characteristics of his group. If and when he needs blood, there will be no delay in procuring the right type for him. We gave a master list to the U.S. Public Health Service so it will be a simple matter to collect quickly all blood of the types needed in an emergency."

-more-

From Andarko the party moved on to the town of Pawnee, where Chief Sun Eagle accompanied the researchers from door to door and helped them gather a genealogy of each family.

"The Chief pointed out to his people the advantages to them of the walking blood bank, the value of scientific information about Indians, and the contribution they were making to their history," Laughlin explains.

"We found the Indians very cooperative. We took part in their dances and games, and during the week-long trading visit of the Wichita to the Pawnee, we helped the Pawnee defeat the Wichita in the kind of guessing games--the 'which hand holds an object' type--they like to play. The Wichita camped on the dance ground during their visit and exchanged gifts and traded surplus products during the day.

"We found a higher frequency of blood type A among the Pawnees than we had expected. In contrast, the Caddos, who had been separated from the others for a long time, and had mixed with the Wichita but not the Pawnee, were low in type A."

Dr. Gray, who is completing the final analysis of the blood samples in her Wisconsin laboratory as basis for an article in the American Journal of Human Genetics, will continue the studies in Oklahoma on a grant from the National Institutes of Health.

Next summer, while she works in Oklahoma, Laughlin will go on an expedition to Southampton Island on the north side of Hudson Bay with UW visiting lecturer Chester Chard. They will cooperate with a Canadian party headed by Dr. Bruce Chown and Marion Lewis in blood typing all living inhabitants of the village and removing skeletons of their ancestors who were starved out in 1902.

The Laughlin-Gray work in Oklahoma is part of the continuing study, begun on a grant from the National Science Foundation, to find the relations between biological and cultural change over a period of 8,000 years in Oklahoma.

Other UW men engaged in the project are Prof. David Baerreis, chairman of

add two--Laughlin study

the department of anthropology; Dr. William Reeder of zoology who is identifying the faunal remains; and botany Profs. John T. Curtis, Grant Cottam, and Jonathan D. Sauer, who are advising on plant materials.

The blood-group portion of the study was supported by funds from the Wenner-Gren Foundation for Anthropological Research and the University Research Committee.

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WIRE NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

8/29/58 er

RELEASE: Immediately

BY GENE ROARK

BLOOMINGTON, Ind.--Malnutrition in poinsettia, evolution in the woods, and the damage done by woods-grazing cows were some of the topics discussed by the University of Wisconsin scientists at the American Institute of Biological Sciences meeting here this week, attended by 3,900 scientists from all over the world.

Prof. B. Esther Struckmeyer told how her poinsettia research in the horticulture department is aimed at identifying mineral deficiencies affecting the popular Christmas plant. Curling, discoloration, and wilting are some of the unsightly symptoms that plague growers, she said.

Evolution of plants is speeded up by disturbance of their habitat, and the result is sometimes a confusing mass of hybrids, according to Prof. Hugh H. Iltis of the UW botany department.

Prof. Iltis described undisturbed southern woods where the trees reproduce by root and stump sprouts, rather than sexually. "Without sex there is no evolution," he explained.

Some other plants fail to evolve because they are in a sense "immortal." The may-apple, which grows in many Wisconsin woods, has been found in clumps 500 years old. Some southern species are thought to be much older.

For his study of grazing damage, E. T. Cawley, also of the botany department, had to settle for "moderately" grazed woods because he found so few ungrazed areas in southern Wisconsin.

Comparing these with heavily grazed woodlots, Cawley noted that many plants became rare under grazing, and that tree reproduction was greatly reduced.

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MADISON NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

8/20/58 er

RELEASE: Immediately

MADISON, Wis.--At least 42 University of Wisconsin scientists will participate next week in the annual meeting of the American Institute of Biological Sciences at Bloomington, Ind., according to the program released by the Institute.

The 5-day meeting begins Sunday, Aug. 24, on the campus of Indiana University. Approximately 1,500 biologists, representing universities and laboratories all over the world, will read papers or take part in symposia and conferences.

Many others are expected to attend as observers.

Twenty-three professional societies, affiliated with the Institute, will participate. Field trips to areas in southern Indiana have been scheduled. Included are trips to caves, natural areas, and fossil beds.

UW scientists who will take an active part include:

Botany--Profs. Herbert M. Clarke, Paul J. Allen, Hugh H. Iltis, and William F. Millington; and Thomas G. Atkinson, Jack M. Bostrack, James R. Habeck, and Edward T. Cawley;

Zoology--Profs. Lowell E. Noland, Donald H. Bucklin, Roland K. Meyer, John T. Emlen, Jr., and Arthur D. Hasler; and William R. Schmitz, Panee Kaocharern, Nancy A. Schneider, and Helmut C. Mueller;

Plant Pathology--Profs. George W. Keitt, Russell H. Larson, Donald M. Boone, John C. Walker, Gerald Thorne, and James G. Dickson; and Vernon G. Perry and Riksh Syamananda;

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Genetics--Profs. Delmer C. Cooper and Robert W. Hougas; and Stanley J. Peloquin and Madan L. Magoon;

Enzyme Institute--Prof. Frederick L. Crane, and Robert L. Lester;

Horticulture--Profs. Ray.H. Roberts and B. Esther Struckmeyer;

Biochemistry--Profs. Robert H. Burris and Paul J. Kaesberg; and George E. Hoch, Kenneth C. Schneider, and John B. Mudd;

Bacteriology--Prof. Kenneth B. Raper; and Mildred S. Quinlan and Ian K. Ross;

Veterinary Science--Prof. F. Louise Wipf..

The UW department of plant pathology will send its entire teaching staff plus some 40 graduate students to the 15th anniversary meeting of the American Phytopathological Society, meeting in conjunction with the Institute.

During the history of the Society six UW plant pathologists have served as president. Profs. L. R. Jones, George W. Keitt, John C. Walker, Albert J. Riker, and James G. Dickson served in the past, and Prof. Glenn S. Pound, chairman of the department, is president-elect.

The UW Press will publish a special volume containing papers given during the Society's Golden Jubilee meeting.

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WIRE NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

6/9/59 jb **RELEASE:** Tuesday, June 9

MADISON--University of Wisconsin regents Tuesday approved 11 contracts for research and educational services to be provided by the University to agencies of the federal government.

The contracting agencies and funds involved:

Atomic Energy Commission, $13,538 for research in the botany department, $56,720 in four contracts for research in the chemistry department, and $8,500 for work in the department of entomology; Chicago Ordnance District, $416,000 for research in the U.S. Army Math Center; Callery Chemical Co., (Naval sub-contract), $10,000 for research in the department of chemistry;

Department of Health, Education and Welfare (Office of Vocational Rehabilitation), $5,002 for Extension Division workshop on vocational rehabilitation of the mentally retarded; Department of State (International Educational Exchange Service), $33,900 for Venezuelan student seminar in the Law School; and U.S. Armed Forces Institute, $7,041.10 for work in the Extension Division.

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U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

6/29/59 vh, jb

RELEASE: Immediately

MADISON, Wis.--Grants totalling nearly $62,000, recently made by the National Science Foundation to the University of Wisconsin, will support basic inquiries into the sciences of botany and genetics.

With a grant of $25,000, Prof. Kenneth B. Raper, departments of botany and bacteriology, will study the Aspergilli, common fungi often called "the weeds of microbiology," which are used commercially to produce citric acid. During the three-year support, Prof. Raper will write an extension for "The Manual of the Aspergilli," which he co-authored. It was published in 1945.

For work on another botanical publication, "The Manual of American Arctic Lichens," UW botany Prof. John W. Thomson will be supported by a $14,000 NSF grant. The taxonomist (specialist in the classification of plants) will travel to the central Arctic for the two-year study including identification of Arctic lichens.

With the third grant, $22,600, Prof. R. W. Hougas, department of genetics, will continue his attempts to produce improved strains of potatoes by breeding hardy Central and South American tubers with high-yield U.S. varieties. On the U.S. Department of Agriculture project carried out at Sturgeon Bay, Wis., he will be especially concerned with the problem of making fertile seeds from the different strains.

The grant supporting the Hougas work is for three years. All three of the NSF supports were scheduled to begin in June of 1959.

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U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

8/13/58 cfg

RELEASE: PM's of Wednesday, Aug. 27

BLOOMINGTON, Ind.--(Advance for PM's of Aug. 27)--A University of Wisconsin scientist said Wednesday morning that parasitic plant diseases are actually furthered by metabolic changes in the infected host plant, and not solely through self-action of the parasite.

The statement came in a paper, "Metabolic Considerations of Obligate Parasitism," by Prof. Paul J. Allen, associate professor of botany at the University of Wisconsin. The paper was delivered in the Symposium on Physiology of Parasitism of the American Phytopathological Society which is holding its Golden Jubilee meetings in conjunction with the American Insitute of Biological Sciences at Indiana University Aug. 24-28.

Diseases of plants incited by obligate parasites are distinguished from other diseases by prolonged survival of the diseased tissues. A relation resembling "peaceful co-existence" is established between the host and parasite, during which both the host cells remain alive and active and the parasite also grows and reproduces.

During this period of "peaceful co-existence" profound disturbances occur in the chemical transformation of the host plant. Test analysis of the parasite at various stages of the disease development has shown that much of the change occurs in the host and is not due to the metabolism of the parasite.

Continuing sickness of the plant is the immediate result of the host's own activities and many of the disease symptoms are exaggerations of a normal activity.

The changes in the host are important in providing the parasite with nutrients needed for development since investigation has found that the changes preceded the rapid development of the parasite. The changes in the host are interrupted in resistant plants and the parasite stopped developing.

The changes, which are induced by the parasite, alter the host in such fashion as to provide a more suitable nutrient environment for the parasite, and thereby actually further the disease, Prof. Allen said.

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U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

5/16/58 vh

RELEASE: 2 p.m., Saturday, May 17

MADISON, Wis.--(Advance for 2 p.m. Saturday)--A memorial event honoring the late Prof. Norman C. Fassett, widely-known University of Wisconsin botanist, for his efforts to preserve natural areas of the state was the occasion for a pilgrimage into the Baraboo Hills on Saturday.

Ceremonies including the dedication of a plaque to Dr. Fassett were held Saturday at 2 p.m. in Parfrey's Glen and were attended by the state's biologists, conservationists, and former students of the professor.

Parfrey's Glen, an unspoiled deep ravine in the rocks of the Baraboo Range, is the first among some 29 sites with natural vegetation which the state has acquired and keeps intact under the title of scientific areas. The lands are used as outdoor laboratories in teaching biology and for research scientists.

Prof. Fassett was one of the first prrsons to recognize the scientific value of these untouched lands and to urge their preservation. He was one of a three-member natural areas committee set up by the Wisconsin Conservation Commission in 1945. Dr. Fassett was the representative for the University.

The other two members were R. G. Wilson, forester, State Conservation Department, and Albert M. Fuller, curator for botany, Milwaukee Public Museum. Out of their initial efforts, state acquisition of parts of Parfrey's Glen took place in 1946 and purchase of the Cedarburg bog north of Milwaukee followed.

In 1951, the State Legislature created the State Board for the Preservation of Scientific Areas and 27 other natural territories became state property. Board members attended the ceremony Saturday. The members include Prof. John T. Curtis, UW botany department; Botany Curator Fuller of the Milwaukee Museum; C. L. Harrington,

-more-

superintendent of forest and parks, State Conservation Department; Daniel Q. Thompson, Ripon College; and Henry Kolka, Wisconsin State College at River Falls.

Prof. J. W. Thomson, UW botanist and former student of Dr. Fassett, spoke to the group, telling of Dr. Fassett's life and contribution. Curator Fuller outlined the history and development of the preserved areas.

The plaque erected at the site--a large wooden one--reads:

NORMAN CARTER FASSETT

1900-1954

Student and Teacher of Our Natural Flora

While chairman (1945-1950) of the Natural Area Committee, he selected Parfrey's Glen as the first Scientific Area in Wisconsin

At the time of his death, Dr. Fassett was known as one of the nation's leading taxonomists--classifiers of plants according to their natural relationships. He joined the staff of the University as instructor in 1925 and for the 29 years constituting his total professional life his services were devoted to the University and to the state's interests.

A forceful personality, Dr. Fassett was a brilliant and popular teacher and tireless research worker. Some 100 technical papers were written by him, and his influence on botanical and conservation thought was substantial. One Fassett volume, "Spring Flora," has gone into three editions and has been in steady demand by both amateur and professional botanists for 26 years.

The New England native returned to Maine before a fatal disease brought death at the height of his career in his 54th year.

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U. W. NEWS

[Botany. Dept of]

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

4/9/58 kg

RELEASE: 9:45 a.m. PST Monday, April 14
11:45 a.m. CST Monday, April 14

By KEITH GARDELS

SAN FRANCISCO--(Advance for April 14)--A University of Wisconsin biochemist reported today that the underlying mechanisms of a destructive plant disease--Fusarial wilt--are complex organic molecules produced by the fungi that invade the plant.

These molecules, called pectic enzymes, cause clots in the plant's "blood" stream. The clotting results in the plant wilting and dying.

Prof. Mark A. Stahmann, in a special paper before the agriculture and food chemistry division of the American Chemical Society, said that evidence is now being accumulated which suggests that this mechanism is the cause of a host of wilts.

This includes such ruinous wilts as Dutch elm disease and oak wilt which have eliminated the elm tree and oak from many eastern and midwestern cities, the costly vasular tomato wilt, and the Panama disease in bananas, costing several million dollars each year.

The Wisconsin scientist said that he and plant pathologist J.C. Walker began their studies on the biochemistry of wilt disease with tomato plants. They chose this plant because some strains wilt easily and die. Others are highly wilt-resistant.

The tomato wilt is caused indirectly by the Fusarium group of fungi. These parasitic fungi invade the vascular system of the plant, the system that channels fluids throughout the plant.

The Wisconsin researchers found a "clear demonstration" that Fusarial wilting occurs in this manner:

-more-

Add one--Stahmann

1. The fungi produce pectic enzymes inside the plant's vessels.

2. These enzymes attack a substance--called pectin--found in the wall tissue of the plant. They tear down the pectin to the point that soluble fragments of it pass into the plant's vascular stream.

3. When the pectin fragments enter this stream, they form into a pectin jelly which blocks the plant's conducting vessels.

The result: wilting.

Crude extracts and tissue fluids from resistant plants caused no demonstratable slowing-down in the growth of the fungi, Stahmann said.

However, when the fungus was grown on the tissue of resistant plants there was much less enzyme formation than on susceptible plants.

"This new technique of culturing parasitic fungi on the host tissue may thus be valuable in screening or detecting resistant varieties of plants," Stahmann said.

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[Botany, Dept of]

STATEMENT BY UNIVERSITY OF WISCONSIN PRES. E. B. FRED March 5, 1958
ON THE DEATH OF EMERITUS PROF. GEORGE S. BRYAN

The death of Emeritus Prof. George Smith Bryan closes a teaching career unique in the annals of the University of Wisconsin.

He was one of the University's most popular teachers and, for generations of students, made botany a fascinating subject.

His introductory botany lectures, which attracted classes with as many as 800 students, were a combination of dramatic flair and advanced scholarship.

He took his classes to Devil's Lake each spring to study plant life in that area, and for his own learning, made scientific expeditions to Peru and Tanganyka. Research and teaching were companion endeavors for him throughout his 33 years as an active member of the faculty. When retirment ended his formal classroom teaching in 1949, he redoubled his research in his laboratory on our campus until the onset of his final illness. Two of his scientific papers have been published in the past year. The textbook in general botany of which he was co-author has extended through five editions and is currently in use throughout the world.

To his wife and daughter I extend my most sincere sympathy in this sad hour.

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U.W. NEWS

Botany Dept

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

2/1/58 jl

RELEASE: Immediately

MADISON, Wis.--A stand of virgin red and white pines, probably the largest in Wisconsin and located on Lake Kewaguesaga in Oneida County, will be known as "The Finnerud Forest of the University of Wisconsin," the UW regents decided Saturday.

Two ninths interest in the stand has been given to the University by Dr. Clark W. Finnerud and his wife, Gertrude, of Chicago, and full interest is expected to be transferred in future years.

The UW regents assigned administrative responsibility for management of the forest to the University's Arboretum committee. The forest will be "maintained in its natural state as a part of the Arboretum property of the University for experimental purposes in a way calculated to reasonably preserve native fauna, flora, and other forms of life."

The move will assure University scientists of access to the property in the future for research purposes. The property in which the University has an interest comprises about 300 acres, which include both the pine stand and a conifer swamp. The area has been used for research purposes for a number of years.

University Pres. E. B. Fred paid tribute to the foresight shown by Dr. Finnerud and his wife in taking steps to preserve the area for scientific purposes. He pointed out that ecological researchers on Wisconsin's out-of-doors need stands of original pre-settlement forests to serve as base areas for comparison with present-day reforested sections.

Pres. Fred quoted the late Aldo Leopold in pointing out that historical

-more-

and aesthetic reasons also make preservation of the few remaining tracts of virgin timber imperative. These are spots, Pres. Fred said, where a "city-worn refugee from the south can hear the wind sing in tall timber."

The forest is near Minocqua, and University botanists have said that here lies as magnificent a stand of red and white pines as any in the State of Wisconsin.

Dr. Finnerud is a native of South Dakota who came to study at the University of Wisconsin, obtaining his bachelor of science degree in 1916. He obtained his medical degree from Rush Medical College in 1918.

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Botany, Dept. of
(See Birge Hall Pix File)

CUT LINES

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

10/9/57 cg

RELEASE: Immediately

MADISON, Wis.--Five special "environment" rooms, believed to be the first of their kind especially designed for zoology departments, are included in the $1,850,000 West wing addition to Birge Hall at the University of Wisconsin. Harold R. Wolfe, professor of zoology (right), and Brij B. Saxena, project associate in pathology and research assistant in zoology, examine one of the heavily insulated doors to the walk-in "environment" rooms. The rooms, with controllable light and temperature ranges, will permit animal physiology studies over extended periods of time under varying controlled conditions.

The new wing more than doubles the physical facilities of the UW botany and zoology departments, both nationally recognized in their fields for many years. Construction began in 1955 and is expected to be fully completed by Christmas.

--Gary Schulz Photo

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U. W. NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

10/9/57 cg RELEASE: Immediately

By Carl Galow

MADISON, Wis.--The University of Wisconsin's [botany] Dept of and zoology departments, nationally recognized for years in their respective fields, are expanding their physical facilities for the first time in 45 years.

The two departments have begun to use the $1,850,000 addition to Birge Hall, built in 1912. The new wing, which provides 83,000 square feet of additional space on 10 floors, doubles the departmental physical facilities of botany and zoology, Prof. Roland K. Meyer, chairman of the Birge Hall building committee, explained.

Long overdue, the addition equips botany and zoology with the tools to expand their vital roles in teaching and research.

Despite cramped facilities, the University was named first in the country among institutions which train students who go on to professional botanist status in a recent survey conducted by Charles Lyon of Dartmouth College.

UW zoology, which celebrated its centennial last year, was ranked third in the country in zoology departments in the recent Chicago study of educational institutions in America.

The new wing brings physical facilities of both departments up to par with advancements in research and academics over the 45-year period since Birge Hall was built.

Facilities in the old section had reached the near-impossible stage with hallways, the space under stairwells, and even a connecting passageway pressed into use in recent years for research projects, storage, and classes.

-more-

Add one--Birge Hall

A department history written by Prof. Lowell Noland of the zoology faculty pointed out that as long as 11 years ago, 1718 students were taught elementary zoology in facilities originally designed for 200 in 1912.

There are ten levels in the new wing, eight of which will be used for academic purposes and the zoology department's animal house. The top and bottom levels house utilities and mechanical equipment needed to maintain the elaborate temperature and utility features in the other floors.

The top academic floor, described as an "animal house," is specially designed to implement the zoology department's animal physiology research and advanced teaching. (Some 91 research papers were published by department members in 1956 alone.)

The animal house, the only air-conditioned floor in the new wing, is devoted completely to experimental animal housing and laboratories for animal research work, using 19 rooms.

Five special "environment" rooms in the 16-room lay-out on the next floor are believed to be the first of their kind specially designed for and used by zoology departments.

The rooms are heavily insulated walk-in storage rooms with controllable temperature and light ranges which will enable the department to carry on animal physiology studies over extended periods of time under varying controlled conditions.

The remaining floors have approximately 75 rooms, ranging from a 105-seat lecture room with power-driven projection screens, graduate lighting, and a complete projection booth, to nine special "environment" rooms for botanical studies, much like the controlled-environment rooms in the zoology area.

Greenhouse facilities at the rear of Birge Hall have also been expanded 100% with approximately 4400 square feet added in new glass houses and potting rooms.

The new wing is in partial use at present and full occupancy is expected by Christmas. Architects for the addition were the Madison firm of Law, Law, Potter, and Nystrom.

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Botany Dept.

U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

6/17/57 lars

RELEASE: Immediately

MADISON--The University of Wisconsin has trained more students who are now professional botanists than any other school in the nation, a survey reveals.

The survey, conducted by Charles J. Lyon, of Dartmouth College appears in Science, professional scientific journal.

Lyon made his study by counting the number of professional botanists named in the new American Men of Science, the Who's Who of the scientific world, and tabulating the universities from which they obtained their doctorates.

While many fields of science are partly botanical in subject matter, Lyon in his study, in addition to primary botanists or plant scientists, included only plant pathologists, physiologists, nutritionists, forest pathologists, and economic botanists. He did not include geneticists, bacteriologists, foresters, horticulturists, agronomists, or plant breeders.

Lyon found that Wisconsin placed at the head of the list of universities training American botanists. In order, the first 10 are: Wisconsin, 257; Cornell, 214; Chicago, 174; California at Berkeley, 163; Minnesota, 140; Harvard, 123; Michigan, 90; Iowa State, 88; Columbia, 86; Ohio State, 69.

Studies made annually of the number of doctorates granted by American colleges and universities have revealed that Wisconsin has ranked first for the past two years in number of Ph.D.'s granted annually, indicating that it is first choice as a training ground for many serious students who intend to become scientists and scholars.

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Botany Dept.

U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

RELEASE:

3/19/56 jl

Immediately

MADISON, Wis.--University of Wisconsin botanists have worked out a new method to guage the severity of the effect of browsing pressure on vegetation in deer yards.

Instead of using a few key browse species to estimate current browsing pressure, the new method employs many plant species and will be used to study long-term effects of browsing on vegetation in lowland deer yards.

The Wisconsin botanists--Prof. Grant Cottam, Prof. John T. Curtis, and research assistant James Habeck--have extended knowledge of the effect of browsing pressure to some 30 tree and 40 herb and shrub species.

Two other University research assistants took part in the development of the method, E. M. Christensen and J. J. Jones. The work was financed by the Wisconsin Conservation Department as part of its deer research program.

The method is probably limited to use by experts because "the observer should be able to recognize the indicator species at sight, which is not always an easy skill to acquire," the botanists point out.

The method was developed to learn whether deer pressure speeds up normal transition of one type of forest to another. The major succession route in northern Wisconsin lowlands used by deer for yarding is from tamarack and black spruce to white cedar and balsam fir to black ash to hemlock and yellow birch and, finally, to sugar maple and basswood.

-more-

In fact, the increased grassiness of deer yards is one of their more obvious botanical features."

It is still not known whether this increased grass is of benefit to the deer, the scientists add.

Some plant species that increase most under deer pressure in the lowland forest yarding areas are these:

Brome grass, bluejoint grass, beaked hazelnut, groundpine, braken fern, and staghorn sumac.

Plants that decrease in number under browse pressure are marsh marigold, roundleaf dogwood, Moccasin-flower, pyrola, ground hemlock, red currant, common fern, nightshade, and miterwort.

These plants are termed indicator species by the botanists, because they show how much deer pressure exists. None of them are necessarily significant as deer food plants.

By measuring the amount by which these plants decrease or increase, botanists can guage the severity of browsing pressure existing in the deer yard, the scientists say. It will also serve as a tool for long-term studies of changes in vegetation brought about by the presence of a good-sized deer herd in yarding areas.

The scientists point out that their method is still to be refined considerably, and the Wisconsin forests they have now studied will be watched in years to come to learn the effect of the deer herd on them.

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Botany

U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

3/19/56

RELEASE: Immediately

MADISON, Wis.--A register of all scientists conducting research on the ecology of the vegetation of the various regions of North America has been compiled by a committee of the Ecological Society of America headed by Prof. Grant Cottam of the University of Wisconsin.

The committee divided the continent into eight districts, and listed the scientists working in each district. The districts are the Northeast, Southeast, East Central, West Central, Northwest, and Southwest (all in the United States), plus Canada, and the territory of Alaska.

The research scientists listed are conducting ecological studies on the vegetation of the various regions of North America. Such studies are of great value in forestry and conservation.

Committee members along with Cottam are Rexford Daubenmire, Washington State College; Claire L. Kucera, University of Missouri; Jack McCormick, American Museum of Natural History; William Niering, Connecticut State College; and Royal E. Shanks, University of Tennessee.

Some 160 scientists are listed in the register and a supplement will be issued from time to time, Cottam said.

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