



FRIENDS

*Of The University
Of Montana*

HERBARIUM

Spring 2001

The Herbarium Gets a Facelift

By David Dyer

Thanks to a pool of state money that was specifically earmarked to improve university instructional spaces, the UM Herbarium received a much-needed renovation last summer. Class rooms and labs in the Natural Sciences (Botany) Building were the primary recipients, and we got the Herbarium added to the list because it is indeed a place where student instruction occurs. Because of the focus on instructional spaces, the preparation room received most of the attention. Improvements in this room include a new white tile floor (instead of the old dark concrete floor), new fluorescent lights, one new countertop, and a new coat of paint on the walls. The entire Herbarium facility received new blinds on all the windows, air-conditioning, and a separate humidity control system.

All of these improvements make the Herbarium a more pleasant place to work, but the biggest benefit is to the irreplaceable plant specimens. The Herbarium, like any other archival-stored museum collection, needs to be kept in consistent environmental conditions. We have been monitoring the temperature and humidity in the Herbarium for several years and have documented the need for improved environmental controls.

Before this new system, the temperature would vary by as much as 30 degrees F. between summer and winter, and the relative humidity would fluctuate by 30 percentage points.

(Continued on page 4)



The Herbarium preparation room after renovation

Thank You !

The following individuals and organization have become new members between the last newsletter and March 1, 2001:

**Nancy Brown
Frank Dugan
Anne Garde
Marilyn Marler**

**Scott Miles
Peter Rice
Jeanette Sainz
Missoula County
Extension Service**

2001 Friends of the UM Herbarium Annual Meeting

The Annual Meeting of the Friends of the UM Herbarium will be held Saturday, November 17, from 10 a.m. to 2 p.m. The meeting will be held in Room 202 of the Natural Sciences (Botany) Building on the UM Campus. This is the annual meeting of the Board of Directors and is open to the membership.

Friends

Of the University
Of Montana

Herbarium



Biological Sciences
University of
Montana
Missoula, MT 59812

The Mission of the Friends is to secure support for and to enrich the collections and operations of The UM Herbarium

Board of Directors

Barry Brown
Joe Elliott
Bonnie Heidel
Peter Lesica
Bruce Maclay
David Dyer, ex officio

The *Friends Newsletter* is edited by Peter Lesica and David Dyer.
Layout by Drake Barton and Kathy Lloyd

Notes From The Board

Every user of the Montana Natural Heritage Program (MTNHP) plant data services is, at some level, an indirect herbarium patron. As staff botanist, I act as an intermediary, a primary user/researcher, and architect of plant information that is part of reliable, comprehensive information on Montana's biodiversity. Herbaria are integral to real-world applications of MTNHP data by land management agencies, researchers, educators and students, consultants, and many others.

Herbaria are the first place to start in any taxonomic problem solving. For example, one species not in the current state flora (Dorn 1984) is *Primula alcalina*, collected by Frank Rose in 1936 and deposited at MONTU. Was it an albino phase of the more common *Primula incana*, or an authentic voucher of *P. alcalina*, a narrow regional endemic? Sylvia Kelso, a Flora of North America (FNA) reviewer, verified this specimen at our request. As a result, *P. alcalina* will be recognized as part of the Montana flora in an upcoming FNA volume. In light of habitat loss around its original collection site, it may be the only extirpated species in the state.

Herbaria are documentation repositories, and specimens help build fundamental floristic information and provide the basis for comparing floras. After Wallace Albert discovered *Carex pallescens* as a new addition to the Montana flora, a misidentified specimen in the MONTU folder of its "look-alike" was sent off for annotation. These represent the first, 1000-mile disjunct records in western North America for the species and publication in a technical note is in progress.

Herbaria act as springboards for all species' status reviews. Beginning with the Montana Rare Plant Project, that was the precursor of the first Montana plant species of special concern list, herbaria continue to help maintain the state plant species of special concern list and supporting databases of the MTNHP. The information base has been changed and expanded by surveys, research, and literature reviews for most species and their populations.

Today, close to 10% of all records among the over 2500 vascular plant occurrence records in the state are based strictly on herbarium specimens at the University of Montana. In fact, 5% of all state species of special concern are known only in the state from records based on specimens found at MONTU.

The systematic review of the state nonvascular flora for species' rarity is underway, drawing heavily from the expertise of UM alumni and the Herbarium accessions. MONTU and Forest Service (MRC) bryophyte collections were reviewed in the first review of moss species' status in the state compiled by Joe Elliott.

The MTNHP has developed a new electronic springboard for vascular plant species' status reviews in the form of the Montana Rare Plant Field Guide (see <http://nris.state.mt.us/mtnhp/plants/>). It greatly expands on Herbarium information by providing a search image for species and their habitats, while summarizing current status and distribution, directly linked to current databases. It also incorporates more detailed information on surveys and studies and provides the best available illustrations and photographs. But, there is still no substitute for the Herbarium!

In short, the roles of the Herbarium and the Montana Natural Heritage Program are linked and mutually beneficial in providing information for responsible land-use decisions that reflect the floristic endowment in Montana, our expanding knowledge of it, and the fundamental nature of plant information in the biological and natural resource management sciences.

Bonnie Heidel

Botrychium crenulatum
W.H. Wagner

A tiny fern of the
genus *Botrychium*

First described by
Warren Wagner

Illustration by
David H. Wagner
from *Guide to the
Species of Botrychium
in Oregon*



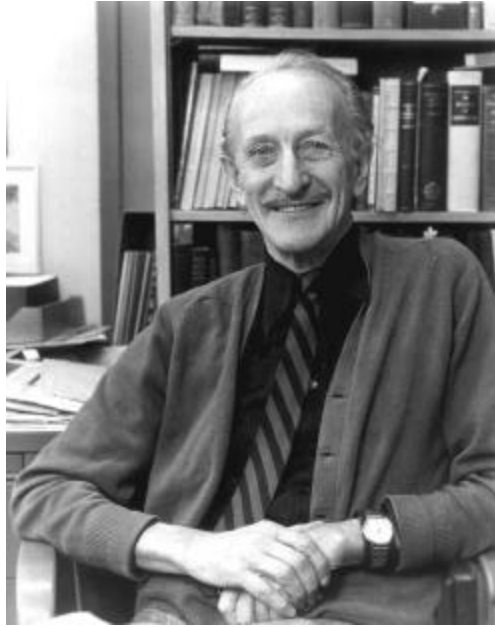
Activities

The Clark Fork Chapter of the Montana Native Plant Society held three meetings in the Herbarium in 2000. Peter Lesica helped members learn to identify our native paintbrushes. Peter Stickney gave a presentation on Montana's bulb-bearing lilies. The finale was Loren Bahls coming from Helena to show us the wonders of the world of algae.

Rupert Barneby (1911-2000)

"He is a true scholar." These are the words Reed Rollins used to describe Rupert Barneby, certainly one of the greatest and most productive plant systematists of the 20th century. The volume and depth of his achievements are staggering. Twenty years ago it was estimated that he had already published 6,500 pages of scholarly work. Undoubtedly Rupert Barneby knew more about the Legume Family in North and South America than anyone who ever lived. He published several monographs, including *The Atlas of North American Astragalus*; *Intermountain Flora: The Fabales*; *Sensitivae Censitae: A Revision of the Genus Mimosa L. (Mimosaceae) in the New World*; and *Silk Tree, Guanacaste, Monkey's Earring: A Generic System for the Synandrous Mimosaceae of the Americas*. He described over 1,000 species new to science. In 1999 the International Botanical Congress presented Rupert Barneby with its prestigious Millennium Botany Award for a lifetime contribution to science.

In spite of these achievements Rupert will best be remembered by those who knew him for his kindness and generosity. He was described as shy, modest, even self-effacing. He always had time to help someone with their problem. Countless taxonomic articles describing new species acknowledge Barneby for helping write the required Latin diagnoses. I first wrote to Rupert in the early 1980's and was pleasantly surprised at how quickly he replied. I feel certain that he must have put the requests of others before his own work. Even when I misidentified half the specimens I sent, he always applauded my cleverness for getting the other half right. He always thanked me for the



Rupert Barneby, N.Y. Botanic Garden, 1982

collections and assured me how valuable they were. No matter how bad my mistake, he always had a good word. I once sent him a specimen of what I thought was a species of *Dalea* from southern Utah and asked why I couldn't find it in his monograph of the Fabaceae in the *Intermountain Flora*. He responded that he was delighted to hear my plant wasn't among the Intermountain legumes because it was *Polygala acanthoclada*. A set of short articles about Barneby published in the 1981 issue of *Brittonia* emphasize his willingness to help and encourage his colleagues.

Rupert Barneby was born and raised in England and attended Cambridge University where he obtained an undergraduate degree in History and Modern Languages. His knowledge of Latin and Greek was exceptional. He was groomed to be a diplomat, but his heart was in botany. He and his life-long friend, Dwight Ripley, developed a passion for rock gardening and took many trips to the Mediterranean region to collect unusual plants. In the late 30's the two moved to California and began to explore the desert Southwest. Barneby's interest in *Astragalus* began there and never waned. In 1945 he and Ripley moved to New York and began rock gardening at their home on Long Island. Barneby's western collecting continued, and he began to work at the New York Botanical Garden where he stayed for 50 years. Barneby published his monograph of *Oxytropis* in 1952 and his masterpiece on *Astragalus* in 1964. Around 1970, he began to work more on tropical legume groups.

In his later years Rupert lived on the grounds of the New York Botanical Gardens and worked tirelessly until shortly before his death last year.

Rupert Barneby led an exemplary life. We will miss him because we no longer have a willing guide to our milkvetches and lupines, and because he showed us that humanity and scholarship can go hand-in-hand.

Peter Lesica

Montu People

Kathleen Ahlenslager

There was a time when a person interested in natural history studied plant taxonomy for their formal education. Kathy Ahlenslager is one of these. Kathy grew up in California's Central Valley. She earned an undergraduate degree at UC Santa Barbara. In her plant taxonomy course she explored local natural areas and got excited ferreting out wildflowers. Getting excited was never enough for Kathy, she wanted to get others excited too, so she volunteered in Yosemite National Park doing environmental education projects. Then in 1978 she got a summer job as an interpretive naturalist in Glacier Park, and she was hooked. She went back to California that winter and took

botany and entomology classes at California Polytech at San Luis Obispo. In her spare time Kathy joined the California Native Plant Society and traipsed the hills with professors who actually knew the flora. When the California spring was over Kathy returned to Glacier, and she never looked back.

Kathy came to the University of Montana in the fall of 1980. She chose Kathy Peterson as her advisor and a group of Mexican mints in the genus *Salvia* as her thesis project. Of course, Kathy had a burning passion for numerical phenetics and systematics, but that collecting trip to Mexico probably helped spark her interest as well. After receiving her graduate degree Kathy became the part-time collections manager at MONTU. It was during this time that boxes of pressed plants that had been sitting around for 20 years were finally processed, and MONTU's holdings went over 100,000. During her entire tenure at UM Kathy continued to work in Glacier Park, and logged in 12 summers before she finished.

(Continued on page 4)



Briefs

New Acquisitions

The UM Herbarium received a total of 704 specimens for accession in 2000. These included exchange material from several herbaria: **Gray Herbarium of Harvard** (6), **University of Kansas** (52), **Snake River Plains Herbarium** (27). **Drake Barton** and **John Pierce** contributed 12 vascular plant specimens from Swan Lake and Stillwater State Forests. **Loren Bahls** donated 100 microscope slides of Montana diatoms. **Joe Elliott** contributed 273 moss specimens from Montana. **Bonnie Heidel** of the Montana Natural Heritage Program provided 23 vascular plant specimens from Montana. **Steve Kohler** donated 21 specimens as vouchers for his studies on the butterflies of Montana. **Peter Lesica** gave 169 vascular plant specimens plus duplicates. **Peter Rice** and **Chris Toney** donated 23 collections of introduced plants from Montana.

Loans for Research

The UM Herbarium sent two loans to Debbie McNiel who has now completed the illustrations for a book on the flora of Glacier National Park. Bruce Ford of the University of Manitoba was loaned specimens of *Carex backii* and *C. saximontana* for a taxonomic study of *Carex*. Richard Olmstead at the University of Washington was given a loan of *Mimulus cusickii*, *M. clivicola* and *Penstemon eriantherus* for a study on morphological adaptations to rarity.

Publications Based on MONTU Specimens

Ertter, B. 2000. Floristic surprises in North America north of Mexico. *Annals of the Missouri Botanical Garden* 87: 81-109.

Johnson, L. A. and T. L. Weese. 2000. Geographic distribution, morphological and molecular characterization and relationships of *Lathrocasis tenerrima* (Polemoniaceae). *Western North American Naturalist* 60: 355-373.

Lesica, P. and T. H. DeLuca. 2000. Sweetclover: a potential problem for the Northern Great Plains. *Journal of Soil and Water Conservation* 55: 259-261.

... Herbarium facelift

(Continued from page 1)

The new air-conditioning system will keep the collection at a cooler temperature in the summer, will filter out damaging air pollutants such as sulphur dioxide, and keep out insect pests which used to have easy access through open windows! The humidity control will allow us to keep the specimens at a higher relative humidity which will prevent the plants from becoming too dry and brittle. But probably the biggest advantage of this system is that we can now prevent the wide swings in environmental conditions which are the most damaging climactic factors to museum specimens. Constant changes in the temperature and humidity leads to swelling and drying of the plant fibers which causes brittleness and warping.

Museum curators find it interesting that as computers became more common, people were quick to air-condition offices and labs because it was "good for the computers". But permanent, irreplaceable museum collections often didn't receive climate control until much later. (Our Herbarium collection was valued at over \$1.5 million in 1991.)

The lighter and brighter appearance also has benefits to the collections. The light colored floor allows us to see any accumulated debris on the floor and keep it cleaned up. The dust, dead insects, and small plant fragments on the floor can provide a food source for insect pests that could later get into the collection. The new white cabinets allow us to more easily detect the signs of an active insect infestation that might start within a cabinet. The overall brighter appearance of the facility also means that we can use reduced artificial light or even natural light from the windows. This means that less damaging UV light will reach the specimens.

Thanks to the Friends of the Herbarium, who generously contributed the new herbarium cabinets, the Division of Biological Sciences, and the University of Montana, we are well on our way to a quality facility to house the nation's best collection of the flora of the Northern Rocky Mountains.

(Continued from page 3)

... Kathleen Ahlenslager



Kathy & family, Colville, May 1994

Kathy also helped start the Montana Native Plant Society in 1987.

In 1990 Kathy left Montana to become the botanist on Olympic National Forest in western Washington. She stayed for only a year before moving to eastern Washington and becoming the botanist on the Colville National Forest. That summer she returned to Glacier just long enough to marry her grad-school sweetheart, Chris Loggers. Two years later their daughter, Elise, was born. Kathy's main work as forest botanist has revolved around rare and endangered species. Tiny ferns in the genus *Botrychium* are her specialty, and

her research has given Kathy an international reputation. Saving little ferns and raising a daughter keep Kathy pretty busy, but that's the way she likes it. Montana hasn't been forgotten and this summer the family plans to return to Glacier Park for their 10th wedding anniversary.

Peter Lesica

Saving the Standards

The Type Collection at the UM Herbarium

The University of Montana Herbarium (MONTU) is the closest thing to a census bureau for plants in western Montana, representing much of what is known about the distribution and abundance of plants. What most people do not realize is that the Herbarium also houses taxonomic standards for plants, with 221 type specimens.

When spotted knapweed first appeared in North America, how did taxonomists know that it was a European weed, *Centaurea maculosa*, instead of something else – perhaps an undescribed species? Taxonomy rests on a system of standards: for each species that is described new to science, there is a type specimen. This type specimen represents what the taxonomist believes is typical of the newly described species. “Just like Greenwich mean time sets the standard for time throughout the world, the type specimen sets the standard for what a particular species is like,” states Peter Lesica.

We cannot census what we do not know; type specimens

Astragalus lackschewitzii

One of MONTU's type specimens

by Bonnie Heidel from *Systematic Botany*



represent species new to science. All plant census work hinges on a system of standards and the research based on type specimens. Thus the type specimen of spotted knapweed was deposited in the herbarium facilities of the Royal Botanical Gardens in Kew, England after it was first discovered in Europe, and the endowment of type specimens at MONTU is comprised of New World species, approximately half of them from Montana.

What distinguishes a type specimen from other mounted museum material? Apart from the taxonomic research associated with it, nothing is different but the added label. Because of the exceptional value to science, all the type specimens at MONTU are housed in a separate herbarium cabinet made available by Friends of the Herbarium donations. Storage in a separate cabinet provides additional levels of protection. Since the UM Herbarium receives a relatively high level of use, the most valuable specimens are protected from routine handling which may eventually cause wear or breakage. The cabinet can be closely monitored for insect pests and has an insect trap on the bottom shelf to ensnare any insects that might enter the cabinet. Like the other newer cabinets in the Herbarium, it is airtight

to prevent dust and air pollutants from entering and is insulated to guard against fluctuations in temperature and humidity. For further protection, each type specimen is housed in an individual lightweight species folder and then a more rigid genus cover. Both of these are made of an archival, acid-free paper and will help prevent the specimen from fading or becoming brittle. Filed with many of the type specimens are the published monographs in which they are cited.

Specimens inside the type specimen cabinet represent many recently described species from Montana and adjoining states, a select set of Montana specimens collected by earlier generations of botanists, and a wide range of other North American type specimens. Specimens for most state endemics are deposited at MONTU, taxa which are found in Montana and nowhere else in the world, including the holotype specimens of *Arabis fecunda* Rollins and *Astragalus lackschewitzii* Lavin & Marriott. The collection also includes recently described species from adjoining states. When *Cymopterus davisii* Hartman was described as a new state endemic species of Idaho by Ronald Hartman (RM), paratypes were distributed to other major herbaria of the Rocky Mountain region.

The MONTU type collection does not contain many of the species that were first discovered in Montana because the majority were collected before the turn of the century and prior to establishment of the University of Montana Herbarium in 1898. Most of these were sent to Europe or to the eastern United States. The Herbarium does contain a few specimens from early collectors such as Per Axel Rydberg, Charles Bessey, Joseph Blankenship and F.D. Kelsey.

The type specimen collection also represents taxa below the species level. For example, when Winward and Goodrich revised the taxonomic treatment of *Artemisia tridentata* varieties and subspecies, material was deposited at MONTU, including a syntype specimen of *Artemisia tridentata* Nutt. ssp. *vaseyana* collected in Montana.

The type specimens, associated monographs, and integrative floras are the standards that enable us to go into the field to build basic knowledge without having to reinvent taxonomy each time.

Bonnie Heidel and David Dyer

"TYPES OF TYPES"

- **Holotype** – sole or primary specimen on which taxonomic description is anchored
- **Isotype** – duplicates of holotype material
- **Paratype** – additional specimen on which description is based
- **Syntype** – all of multiple specimens, none of which were singled out as the holotype
- **Lectotype** – a type specimen selected from the syntypes during later taxonomic revision

Frederick Joseph Hermann (1906-1987)

Frederick Hermann is known to most botanists for his major taxonomic studies of sedges and rushes; however, his research in Montana and his contributions to the University of Montana Herbarium (MONTU) may not be as widely recognized. I first became aware of Fred Hermann's contribution to botany in Montana while working with the moss collection at MONTU. Fred Hermann deposited many moss specimens in the Herbarium as a result of his intensive studies of the moss flora of Glacier National Park. His studies of the moss flora of the Park resulted in a publication in *The Bryologist* that identified 390 moss taxa, 24 being new for the state.

Although we have few of Hermann's vascular plant collections at MONTU, LeRoy Harvey sent him many specimens for determination, so many have Hermann annotation labels. Dr. Hermann also was the first person to collect *Muhlenbergia glomerata* and *Juncus compressus* in Montana. He found these in Beaverhead County.

His botanical work in Glacier Park also resulted in him naming a new sedge species, *Carex plectocarpa*, from an alpine meadow above the Hanging Garden, near Logan Pass. This same sedge was collected more than 50 years earlier by Marcus Jones, another famous botanist, above the Sperry Chalet in the Park. Jones named this sedge *Carex goodenovia* var. *dolia*. Lisa Standley now calls the plant *Carex lenticularis* var. *dolia* following a recent monograph she completed.

Fred Hermann grew up in the Upper Peninsula of Michigan, where he started collecting plants and sending specimens to the University of Michigan Herbarium at age 16. He corresponded with faculty members at Michigan while still in high school, and attended the University of Michigan where he received his bachelor's degree, master's degree and Ph.D. entitled "The Genus *Carex* in Indiana". In 1938, he joined the Bureau of Plant Industry (later, the Agricultural Research Service), where he wrote monographs of *Trifolium* (clover), *Arachis* (peanut), *Vicia* (vetch), and *Glycine* (soybean). During World War II, he worked in Columbia, South America seeking cinchona bark, a source of quinine.

Fred remained with the Bureau of Plant Industry until 1961, when he became Curator and Principle Botanist for the U.S. Forest Service Herbarium in Washington D.C. When the Forest Service Herbarium was moved from Washington D.C. to Fort Collins, Colorado in 1970, Fred welcomed the chance to get back to the West. Pete Stickney, while a Forest Service botanist, sent Montana specimens to Fred Hermann for inclusion in the Forest Service Herbarium. Fred also identified moss specimens for Pete which are now deposited in the Herbarium of the Forestry Sciences Laboratory on the University of Montana campus.

Peter Stickney, former Friends of the Herbarium board member and retired Forest Service botanist, had the opportunity to work in the field with Dr. Hermann several times in Glacier Park in 1966. Pete tells a good story about botanizing until after dark with Fred and having to walk out of the woods in the dark without the benefit of a flashlight or bear

spray. Daylight certainly passed quickly when they looked at every moss, sedge, rush, and flower along the trail, while uttering Latin binomials and exchanging stories of old botanists and plants they once knew. According to Pete, Fred not only knew the scientific names for a prodigious number of plants, he also knew the person credited with naming each plant. Fred's M.A. in Latin and Greek (University of Michigan 1931), no doubt, gave him an edge in pronouncing scientific names correctly (unlike some of us).

Over a career that spanned more than 50 years, Fred Hermann published 122 technical articles and named 82 taxa of plants. Two plants were named after him, *Carex hermannii* and *Grimmia hermannii*. Fred Hermann died in Fort Collins, Colorado on November 15, 1987, at the age of 81.

Joe Elliott

Some of Dr. Hermann's publications that may be of interest:

- Hermann, F.J. 1956. Range extensions in northwestern plants. *Rhodora* 58: 278-279.
- Hermann, F. J. 1964. A new *Carex* from Glacier National Park, Montana, Leaflet. *West. Bot.* 10: 65-68.
- Hermann, F. J. 1969. The bryophytes of Glacier National Park, Montana. *The Bryologist* 72: 358-376.
- Hermann, F.J. 1970. Manual of Carices of the Rocky Mountains and Colorado Basin. *U.S. Dept. of Agriculture Agr. Handb.* 364, 397pp.

Visitors to the University of Montana Herbarium

Local Researchers & General Public

Loren Bahls, Drake Barton & Kathy Lloyd, Joe Elliott, Beth Horn, Scott Miles, Jean Parker, John Pierce, Chris Ritchart

Glacier National Park

Shannon Kimball

Montana Natural Heritage Program

Bonnie Heidel

Montana DNRC

Steve Kohler

Salish & Kootenai Tribes

Joanne Bigcrane

UM Students

Maria Newcomb, Mo O'Mara, Dawn White

UM Researchers

Andrew Christie, Marilyn Marler, Bill Thompson

U.S. Forest Service

Bridget Barker, Roger Ferriell, Maria Mantas, Greg Peters, Jeremy Roberts, Steve Shelly, Toby Spribille, Peter Stickney

Bruce Barnes of Pendleton, Oregon has developed computerized, interactive plant keys. Walter Fertig from the University of Wyoming and Sylvia Kelso of Colorado College stopped by during the Conservation Biology meeting last June. Jack Nisbet from Spokane came by to look at *Nicotiana* specimens for his ethnobotany studies. Jeanette Sainz from Los Alamos, CA examined our collections of *Calochortus elegans*.

Warren H. Wagner (1920-2000)

It was another cloudy June day on the west side of Glacier Park, but it was bound to be different because Warren H. (Herb) Wagner and his wife Florence had come out from Michigan to search for moonworts. Herb Wagner is a world-recognized authority on ferns, and during the last years of his life moonworts (*Botrychium* spp.) were his passion. It was during his summers teaching at the University of Montana Biological Station in the late 70's and early 80's that Herb came to realize that the Northern Rockies were a global center of diversity for this genus. As proof, he described three new species from north-west Montana and adjacent Alberta during this period: *B. montanum*, *B. paradoxum* and *B. watertonense*. Herb was back in Montana again on this day in 1998 with his eye on describing at least two more species new to science.

This morning, Herb, Florence, a couple of visiting fernheads (one from each coast) and several of us novices drove up to Big Prairie in the northwest corner of Glacier. Herb and Florence had given a workshop on moonworts the previous day in the Flathead Forest building in Kalispell. We were pretty pumped, but Herb was more excited than any three of us put together. We spent the better part of the day on our hands and knees looking for these two-inch high plants, and we found a lot, at least five species. Late that afternoon we finally had enough and we went to a cafe near Coram, a small logging town near the Park, to regroup. Herb got a big table and proceeded to spread hundreds of little ferns out so that we could sort them into putative species. This display elicited everything from surreptitious glances to downright rubbernecking on the part of the locals. It was all in a day's work for Herb, and the rest of us had something to remember. Unfortunately, Herb died just a year and a half later, before he got to describe these new species.

Herb Wagner took his Ph.D. at the University of California, Berkeley in the late 1940's, working with Ledyard Stebbins, Lincoln Constance and Herbert Mason, among others. Afterward he went to Harvard for a year and then the University of Michigan where he remained for nearly 50 years. He and his wife studied hybridization in ferns and championed the idea that hybridization was important to evolution in the Plant Kingdom. Herb was also among the early proponents of using quantitative methods to infer evolutionary pathways. The guy really knew his ferns; he and Florence were working on a fern flora for Hawaii. In spite of all of that, Herb may be best remembered for his teaching- you just couldn't help but be interested in what he was talking about.

Herb left his mark on Montana botany. Many of the specimens collected by his Yellow Bay students are in the UM Herbarium. He described two new species from Montana with another two on the way. He was principle coordinator of the *Flora North America* fern treatments. He annotated specimens. Most of all he sparked our interest.

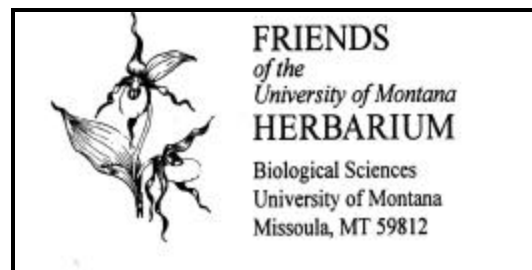


*Herb & Florence Wagner
Glacier Park, June 1998*

Peter Lescia

Yes! *I want to help protect the irreplaceable collections and enhance the facilities of the University of Montana Herbarium*

- | | | |
|--------------------------|----------------------------|----------------|
| <input type="checkbox"/> | <i>Regular Member</i> | \$15 |
| <input type="checkbox"/> | <i>Sustaining Member</i> | \$25 |
| <input type="checkbox"/> | <i>Contributing Member</i> | \$50 |
| <input type="checkbox"/> | <i>Organization</i> | \$50 |
| <input type="checkbox"/> | <i>Special Gift</i> | \$_____ |



Dues are for a period of two years. All contributions to the Friends are tax deductible to the full extent provided by law. All checks should be made payable to UM Foundation/Friends of the UM Herbarium.

Send checks to:

**Herbarium
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The University of Montana
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