

Oxytropis nana Nutt., a Wyoming endemic collected by Thomas Nuttall on his journey across Wyoming in 1834

WYOMING NATIVE PLANT SOCIETY
Box 1471
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Volume 4, Number 3 May 1985

New Address - The Wyoming Natural Heritage Program will no longer be the contact point for the Society. Direct correspondence to the address above or to an appropriate officer: Ann Aldrich, President, Box 3524, Lewistown, MT 59457; Tom Wolf, Vice President, 719D Brookhaven Ct., Ft. Collins, CO 80525; Ellen Collins, Secretary-Treasurer, 624 Rene Lane, Ft. Collins, CO 80524.

Newsletter - We are now doing three newsletters each year. These come out irregularly mostly because of the variability of the annual meeting date. Volume 3 #4 from last November should have been Vol. 4 #1 and Vol. 4 #1 should have been Vol. 4 #2. This one is the third of the Society year. In order to streamline the production of the newsletter, all future contributions should be typed single spaced with half inch margins on both sides. Style of type is not especially critical, but the type should be dark enough to reproduce well. Since this copy will be used directly, strike-overs and messy corrections are not appropriate. Follow the format in past issues of the newsletter. Send your material in early to ensure inclusion in the next issue.

Treasurer's Report - Previous Balance $383.34
Expenses 33.08
New Balance $350.26 EC

President's Message - Greetings from Montana! I accepted a transfer to the Lewistown, Montana BLM office as planning coordinator; all of this transpired during planning for the annual meeting. Few responses were received from our last newsletter about the annual meeting. Several comments received and following discussions presented an opportunity to meet in Yellowstone. This opportunity and Don Despain's gracious acceptance to host the meeting seemed more in keeping with the purposes of WNPS than just reviewing sites which Dorn, Lichvar and I have been perusing for the past several years. Not only will we be presented with good collecting opportunities, as last year, but Yellowstone also provides opportunities for families to pursue other interests. I admit that logistics also become easier having a member in residence near the meeting site. Don Despain is the host for the meeting with several others leading field trips. Details of the where and when for the meeting follow below. I hope as many members as possible will take advantage of our meeting. I think we have another excellent meeting planned.... how about Montana in 86? AA

Annual Meeting - The 1985 annual meeting of the Society will be in Yellowstone National Park. Dates are August 3-5. We will have a group camp site reserved at Bridge Bay campground on the northwest side of Yellowstone Lake for the nights of August 2, 3 & 4. This is just south of "Lake." This is between 30 and 40 miles from either the south or east entrances to the park. Plan to pay the entrance fee (about $2.00?) which should be good for the entire period plus extra days. Maps are available when entering the park. The tentative agenda follows. Saturday, Aug. 3, field trip led by Don Despain, see details after Don's botanical sketch below; Sunday, Aug. 4, Business meeting and field trips to Cub Creek, Pelican Creek, and other localities for rare plants; Monday, Aug. 5, field trip to Shoshone Lake (This is a hike about 6 miles one way. The Hayden survey in 1872 reported this as a special area for ferns. There is also a geyser basin here where we will look for more Agrostis rossiae and other rare plants.). We expect to see such things as Ross bentgrass, a Yellowstone endemic; sundew, an insect catching bog plant, and a number of species known in Wyoming only from the park.

Annual Election and Dues - Send in your annual dues of $3.00 (new members add $4.00 more) by July 15 along with your votes on the slate of candidates below or bring these to the annual meeting. Note that students and members over 65 pay half the above rate.

For President: Don Despain or Ellen Collins
For Vice President: Robert Lichvar or Erwin Evert
For Secretary-Treasurer: Phil White or Robert Dorn
For Board Member: Ann Aldrich or Virginia Wheeler

Vote for one person for each office.

Proceedings Available - Proceedings from the Wyoming Natural Area Needs Workshop, held November 14-15, 1984, in Riverton, WY have been published by The Nature Conservancy. Copies are available free of charge to participants. If you participated and have not received your copy yet, contact Tom Wolf (303-493-1407, 719D Brookhaven Ct., Ft. Collins, CO 80525). If you did not attend the workshop but are interested in obtaining a copy, also contact Tom. There may or may not be a charge to help defray mailing costs. EC

Preliminary Sketch of Botany in Yellowstone National Park. Being a short, annotated compilation of interesting and not-so-interesting names and dates of those who explored the phanerogamic flora of the park.

Since the "discovery" of the Yellowstone area, a series of colorful and interesting people have been involved in botanical investigations in the park. The first official exploration expedition, the Hayden Survey of 1871, was accompanied by Robert Adams who was assistant botanist at the beginning of the trip but became the sole collector when the expedition reached Fort Ellis near Bozeman. They entered the park at the present site of Gardiner, traveled to Yellowstone Lake, over to the Fire Hole River, down to Heart Lake, back to Pelican Creek, over to the Lamar River, then down river and back to Bozeman. This trip began early so a number of flowering specimens were collected.

The next year Hayden was in charge of another exploration trip into the now officially designated national park. The expedition was split into two groups, one entering from the west accompanied by John M. Coulter and the other from the north accompanied by Walter Platt. In his report Coulter commented on the differences between the flora of the east and west slopes and found very few. He also included a table of timberline elevations for various mountains across a latitudinal gradient and noted the lowering of timber line with increasing latitude.

The next year (1873), the Jones expedition explored the park entering from the east side (Jones Pass). The official naturalist of the expedition was C.C. Parry. He was the first to publish on one of the outstanding features of the Yellowstone landscape. Speaking of lodgepole pine: "Mile after mile of continuous forest may be traversed without seeing any other arborescent species, and their tall, straight, uniform, trunks and scattering foliage will be always associated with monotonous and disagreeable features of the park scenery." Today the only ones who complain about this phenomenon are those who, like Parry, know what species they are looking at and who walk through a great deal of the park.

In 1881 and 1882, Sheridan made exploration trips into the park. The surgeon, W.H. Forwood, was given the responsibility of collecting plants on both expeditions but it was late summer when they arrived in the park and not many specimens were collected.

Frank Tweedy was probably the next serious collector to do much in Yellowstone. He spent August and September of 1884 and June through September of 1885 in the park, collected 605 species, and published a flora in 1886 based on his collections and those of the previous collectors. Aven Nelson's autographed copy of this flora is in our research library.

In the summer of 1895, Per Axel Rydberg and C.L. Shear were commissioned as "field agents" for the Division of Agrostology of the U.S. Department of Agriculture and sent to Montana. Rydberg spent that summer and the next in Montana collecting mostly "grasses and other forage plants." This must have whetted his appetite for new species because by 1897 he had found a sponsor and mounted a "botanical expedition" to Montana and the Yellowstone National Park. He was assisted by Mr. Ernst A. Bessey, then of the University of Nebraska. They based in Bozeman and made an extended trip up the Madison River into the park, as far south as Shoshone Lake, back up to Yellowstone Lake, then over to the Norris area and north back to Bozeman by way of the Yellowstone River.

On this trip, Rydberg recorded that he collected 1,800 numbers representing 800 species and over 20,000 specimens. He doesnt say how many of the Yellowstone collections were "new" species but he does say that his Montana and Yellowstone collections netted him 775 species not in Coulter's Manual and 163 species new to science. He also mentions a Yellowstone collection by Dr. J.N. Rose, the particulars of which I have not yet tracked down.

In 1899, Aven Nelson mounted a "Botanical Expedition" to the "new park" for the express purpose of collecting plant specimens. (They collected 1,400 numbers with 15-40 specimens each.) Horses and wagons were sent by rail to Monida, Montana, from whence the expedition started. The expedition entered Yellowstone on June 20. A large circle was made through Yellowstone until September 5. Then they went south to the Grand Tetons and back to Monida. Accompaning him on the trip were two young, enthusiastic students, L.N. Gooding and Elias Nelson. Both went on to bigger and better things making quite a name for themselves in plant taxonomy. Gooding credited this trip with fueling his "budding ambition to become a botanist."

Shortly after entering the West Entrance, the Nelson party camped and collected. During the afternoon they set out their press driers in the warm sunshine to dry. An army trooper came upon the scene. Nelson records the incident in an article in Plant World, the predecessor of Ecology. "Our first camp in the Yellowstone Park was pounced upon by one of the mounted guards as follows: 'Pick up all those papers that you have thrown out here'. 'Yes sir, as soon as they are dry'. Questions now followed from him." Nelson's daughter recorded that they were then escorted to Mammoth to get a proper collecting permit. Further quoting from the Plant World article:

> "These same driers were a source of much wonder throughout the season, especially to the tourists in the Park (may they not be taken as

representative Americans?) (editorial note, AMEN). Some thought that they were used under the camp beds; others said, 'I see that you are photographers', and one wondered what we were doing with so much 'fly paper'. One intelligent tourist watched, for some time, my assistant collecting a small, bright-colored flower (Eunanus nanus) [Mimulus] and then astonished him with, 'Do you use those for fish-bait?'"

The army had jurisdiction over the park from 1886 to 1916 and the emphasis was on protecting the park, not on understanding or interpreting it. After the National Park Service was established an idea began to blossom, that the parks should be used for educational purposes, and ranger naturalists were employed. In the early 20's, Dr. H.S. Conard was in the park during the summer season, collecting plants and talking to tourists and summer seasonal naturalists. The 1925 reports contain a copy of his speech to the newcomers on the virtues of Yellowstone. By 1928, he was listing himself as ex-Chief Park Naturalist, but I can find no record of him being the official Chief Naturalist. Before he left, he established an herbarium in Mammoth that has continued to the present day and now contains about 5,000 sheets.

One of the early naturalists was Herma Albertson. She became interested in all things natural, especially plants. She later obtained schooling in plant taxonomy. She also became interested in the Chief Ranger George Baggley, and became Herma Baggley. By 1936, she was coauthor of the Plants of Yellowstone with W.B. McDougall, which endured with revisions until 1972.

McDougall was a botany professor at the University of Illinois, wrote one of the early plant ecology texts, and came to Yellowstone to be the park botanist. He wrote a key to the Yellowstone flora in 1931. After just a year or two in Yellowstone, he went on to the Washington level and advised the entire Park Service in botanical matters.

Most recently, Dr. Don G. Despain went through all the records and specimens in the Rocky Mountain and Yellowstone herbaria and produced the present Field Guide to the Yellowstone Flora. This is mostly a copied version of the Flora of the Pacific Northwest reduced to include only the Yellowstone representatives.

The Yellowstone flora is not very distinguished. With all our thermally created niches we apparently have only one endemic species, Agrostis rossae. We do have a couple of tropical to semi-tropical outliers, Chara zeylanica and Eleocharis flavescens that have found a refugium in some of the warm water. Yellowstone is the type locality for a number of species. I hope to make a count of them before too long. Occasional collectors still come to the park and occasionally find species not listed in any of the other lists.

Plant collecting, both legal and illegal, will continue and more discoveries will be make. In a place like Yellowstone, it can't be helped. D. G. D.

Field Trip, Saturday Aug. 3. Don Despain will conduct a transect of the vegetation of Yellowstone emphasizing the geological control of vegetation patterns in the park. From Bridge Bay we will travel to Hayden Valley, Canyon Village, Mt. Washburn, Tower Junction, Mammoth and Gardiner. If time permits we will return by way of Old Faithful to look at some of the thermally influenced vegetation and some odd-ball species like Drosera. The transect will include everything from near Great Basin desert to Alpine tundra. The itinenary will be negotiable at the outset and along the way.

Botanical Novelties - The new series under this heading will examine the vascular plants that are endemic to the State of Wyoming. An endemic is an organism that has a restricted range. Thus, a Wyoming endemic has never been found outside of Wyoming. There are approximately 25 to 30 species of vascular plants that are Wyoming endemics.

Agrostis rossiae Vasey Ross Bentgrass

This little annual grass grows on hot spring formations in the Upper Geyser Basin of Yellowstone Park. It has never been found elsewhere. It was first collected by Edith Ross in 1890 and was described by George Vasey, a grass specialist, in 1892. So far as is known, this is the only vascular plant that is endemic to Yellowstone Park. Ironically, narrow endemics in the grass family are extremely rare, at least in this part of the world. Ross bentgrass flowers as early as March to as late as May on the hot marl around the hot springs. By summer it is normally dead and dry. It usually grows to about 15 cm (6 in.) high. One might expect more endemics on these unusual habitats, but moisture stress is probably the primary factor inducing species formation in this region as most of our endemics are in the dryer areas of the state, and endemism increases to the southwest and decreases to the northeast of Wyoming.

Abronia ammophila Greene Yellowstone Sand Verbena

There is disagreement on the validity of this taxon. Porter (U. Wyo. Agr. Exp. Sta. Res. J. 20) and Galloway (Brittonia 27:328-347) recognize it as a species while Hitchcock (Vasc. Pl. Pac. N. W., Pt. 2) and Dorn (Man. Vasc. Pl. Wyo.) do not recognize it at any rank but consider it the same as the widespread A. fragrans. Porter does note, "perhaps not distinct from the following species" (A. fragrans). Galloway considers it an annual. A. fragrans is a perennial. He does not use this for separating the two, however. It is known from only two locations, which are rather different in habitat. The first collection was by

Frank Tweedy at the mouth of Pelican Creek on sandy beaches of Yellowstone Lake in 1885. E. L. Greene described the taxon in 1900 based on this collection. The other location is on sandy hills near Big Piney. Perhaps the Society members can obtain additional data on the Yellowstone population this summer when visiting other rare species which also occur at this location. RD

Some Notable Collections for 1984 - Field work in the North Fork Shoshone River drainage uncovered the following seldom collected or interesting species: Helictotrichon hookeri, Potomogeton freisii, P. praelongus, Veronica anagallis-aquatica, Cryptantha affinis, Corallorhiza mertensiana, C. wisteriana, and the very minute Gymnosteris parvula. The flora of the N. Fk. Shoshone drainage area now stands at about 1100 species of vascular plants.

Notable from Yellowstone National Park near the outlet of Lewis Lake was a collection of Trautvetteria caroliniensis, the first in the state since Tweedy's collection of 100 years ago. Here, about a dozen colonies were observed in full bloom on August 14 in moist-wet soil in open, mixed conifer forest. While nearby, there were found Menziesia ferruginea (unreported for YNP), Tofieldia glutinosa, Potentilla palustris, Juncus tweedyi, Carex luzulina, C. oederi, Melica subulata, and Festuca occidentalis, an unusually rich assemblage of interesting species even for YNP. Potomogeton pusillus, new for the park, was collected near Sylvan Lake later in the summer while trying unsuccessfully to substantiate the 1917 report (M. Cary, Life Zone Investigations in Wyoming) of Menziesia in this area.

A one day collecting trip, my first, into the Gros Ventres in the Swift Creek area yielded the following first records for the range: Piperia unalascensis, Agrostis humilis, Salix eastwoodiae, Haplopappus lyallii, and Draba nivalis. I also picked up an interesting Carex in section Ferrugineae that I still haven't been able to nail down.

Enroute to the Wind Rivers, Eleocharis rostellata, new for Sublette Co., and Ranunculus repens, new for the state, were encountered at Kendall Warm Springs. Heavy rains prevented collecting one of the two days alloted for the Winds. However, a one day trip into the alpine of Osborn Mtn. east of the Green River Lakes proved to be very interesting, where in one very small (20 ft^2) boggy area were found growing Phippsia algida, Juncus biglumis, Carex bipartita, C. incurviformis, Poa lettermannii, and Saxifraga chrysantha, all previously unreported for the range.

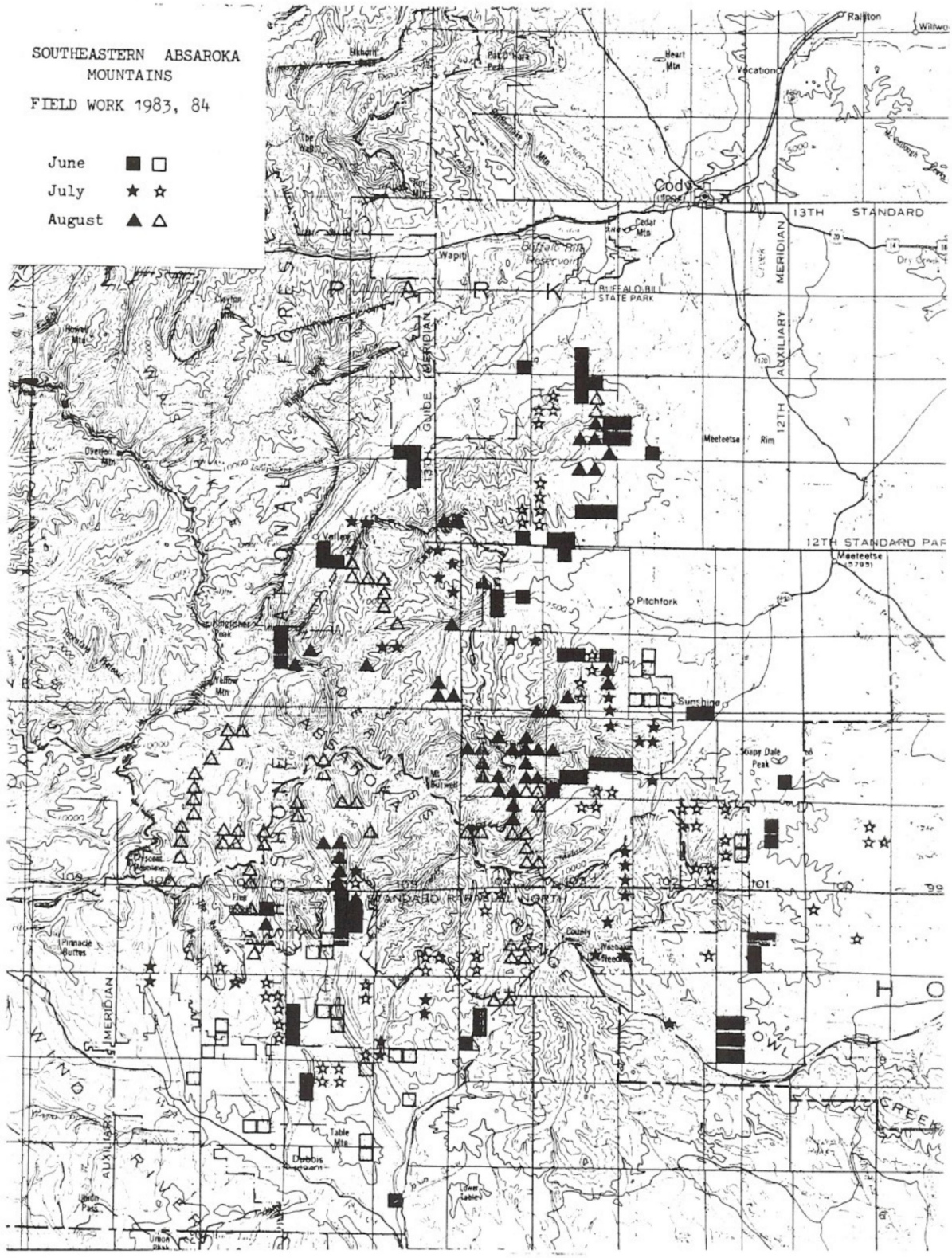
Finally, mention should be made of field work done with WNPS members (during last annual meeting) at the Cathedral Cliffs Wetland in Park County, undoubtedly the most exciting (at least for me) and productive of noteable collections for 1984. In this amazing area, previously uninvestigated and thus its considerable values unknown and unsung, was found an extraordinary assemblage of plants and habitats. Here the following new state records were taken: Arctostaphylos rubra, Carex microglochin, C. scirpiformis, Kobresia simpliciuscula, Primula egaliksensis, Salix myrtillifolia, and Scripus pumilus. Most of the above listed species occur in sizable, vigorous populations and are unknown from other stations in the state while a few are not known elsewhere in the lower 48 states. Additionally, the Cathedral Cliffs Wetland, this prima donna assoluto of natural areas, is home to dozens of other rare plants some of which are Carex buxbaumii, C. diandra, C. limosa, Eleocharis rostellata, Aster junciformis, Orchis rotundifolia, and Salix pseudomonticola. A more complete listing of rarities, phytogeographical analysis and implications etc. of the Cathedral Cliffs assemblage will have to wait for future issues. EFE

News from the Southeastern Absarokas - As many of you are aware, another intensive effort (over 10,000 numbers) by the Rocky Mountain Herbarium crew (Rob and Ruth Kirkpatrick, Ron Hartman and Ernie Nelson) has taken place the last two summers (1983 and 1984). As seen on the map, the circumscription of the study area is the mountainous region east of the South Fork of the Shoshone River and DuNoir Creek, west of the Owl Creek Mountains, north of Dubois, and southwest of Cody. The Southeastern Absarokas cover approximately 1800 square miles, although taking the steep terrain of the Absaroka volcanics into consideration, the actual ground surface is probably 3 or 4 times this figure. Sagebrush/grasslands exist at lower elevations while various types of coniferous forests are well developed at middle altitudes with extensive alpine habitats above tree line, leading to a high species diversity. Our housing and working facilities were provided by the Shoshone National Forest at Timber Creek Ranger Station and in Dubois.

Because much of the area is roadless and has a wilderness designation, backpacking trips up to eight days in duration were necessary to inventory the heart of the range. When out on these extended trips it was necessary to modify the standard "ice chest method" to preserve the plant specimens. Ron Hartman continued to out distance everyone with several one-day collecting trips during which he covered over 25 miles (one to the summit of Francs Peak, elevation 13,140 feet, the highest summit in the region). On one ironman day along the South Fork of the Shoshone south over Shoshone Pass he covered 40 miles and made 161 collections.

Although identification of approximately 70 percent of the material is complete no state records have appeared, although there are numerous collections of species which are poorly represented in the RM (herbarium) and previously thought to be rare in Wyoming. Noteworthy alpine species include: Oxytropis podocarpa, Trifolium nanum, T. haydenii, Castilleja nivea, Draba nivalis var. brevicula, D. cana, Senecio fuscatus, Carex engelmannii, and C. norvegica var. stevensii. Montane species of interest are Alnus viridis ssp. sinuata, Claytonia lanceolata var. flava, and Carex limnophila. Townsendia nuttallii was found to be fairly abundant at several sites in sagebrush/grasslands and on dry slopes. Two plants of particular interest are the yet undescribed "squaw teats umbel" and several collections of a taxon which approaches Lychnis kingii.

If you have collected in this area, I would appreciate receiving a copy of your collecting notes. Please send it to Robert S. Kirkpatrick, Dept. of Botany, Box 3165, University Station, Laramie, WY 82071. RSK



AA - Ann Aldrich
DGD - Don G. Despain
EC - Ellen Collins
EFE - Erwin F. Evert
RD - Robert Dorn
RSK - Robert S. Kirkpatrick
RWL - Robert W. Lichvar

Notable Collection - Other than the species reported on by EFE for the Cathedral Cliffs area, our only state record for 1984 was Silphium integrifolium from F. E. Warren Air Force Base in Cheyenne. The species is not known to be closer than extreme northeast Colorado and central Nebraska. RD & RWL

Annual Scholarship - Unless the Society 's costs increase drastically, we have some extra money available to put to use. I would like to propose making available each year (or every other year) about $100 for "gas money" for a student working on Wyoming's flora, whether it be in taxonomy, ecology, ecophysiology, mycology, or whatever. Details would need to be worked out. So bring your ideas to the annual meeting or make them known by letter. RD

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