

The purpose of the Oklahoma Native Plant Society is to encourage the study, protection, propagation, appreciation and use of Oklahoma's native plants.

> Volume 28, Number 4 Winter 2013

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15 February 2014

Gaillardia

The Oklahoma Native Plant Society Newsletter

CALENDAR

Note: the events dated below are followed by either a page number for further descriptions or the contact person.

Dec 2: NE Chapter Meeting at Tulsa Garden Center, speaker is Monica Macklin, Page 10

Dec 7: ONPS Board Meeting at OCU at 10. Contact Adam Ryburn.

Jan 13: Central Chapter Meeting at OCU, speaker is Steven Karpowicz, Page 9

Fabulous Wildflower Fridays, the 3rd Friday of each month, Page 10

Note: all members are invited to all meetings, including board meetings, and are encouraged to bring guests.

ONPS THANKS THESE DONORS

General Fund

In Memory of Betty Kemm

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PRESIDENT'S PARAGRAPH

Adam Ryburn

At the end of October I sent an email out on the ONPS Listserv (OKPLANTS-L@lists.ou.edu) announcing the passing of a very dear friend to ONPS, Betty Kemm. Betty passed away on Friday, Oct. 25, at the age of 88. She was one of the founding members of ONPS; serving as the organization's first State President. She was instrumental in the decision to form geographically located chapters in ONPS and served as Northeast Chapter's chairperson for ten years in the era from 1990-1999. Betty received the Beth Snodgrass Award and was the third recipient of our own Service Award. She was extremely influential in spreading the word of ONPS to her friends; many of which joined the organization because of her.

I plan to honor her dedication to promoting the native plants of Oklahoma by giving a 2014 gift membership to ONPS to some of my friends and hope you will join be with similar tributes.

Take care and happy botanizing.

BETTY KEMM

Betty Kemm, first State President and Charter member of ONPS, passed away in Tulsa on Friday, October 25, 2013. Betty served two terms as State President, was instrumental in formulating the concept of geographically situated ONPS chapters, and assumed the chairmanship of Northeast Chapter in 1991, continuing in that role through 1999.

Betty served on several occasions as a member of the State Executive Board as a Director; she was co-editor of the GAILLARDIA during a four-year period. She hosted numerous planning sessions, committee meetings, and preparation sessions for State Meetings, Indoor Outings, and field trips in her own home. She was a frequent speaker at environmental, conservation, and garden club events, always sharing her expertise on native plants and particularly, use of natives in the home environment. She always enthusiastically credited ONPS as the source of her inspiration where natives were concerned.

Betty was preceded in death by her husband James. She is survived by daughter Kathy Doss (also an ONPS member who often accompanied her mother to Northeast Chapter meetings, especially in Betty's later years.) Services for Betty were held at First Presbyterian Church in Tulsa on October 29.

Because of her commitment and work on behalf of ONPS, Betty was chosen to receive the 2002 ONPS Service Award, the third individual to have been so honored. It was fitting that the letter of recommendation for Betty was co-authored by the first two recipients of the Service Award, Ruth Boyd who received the first-to-be-presented Service Award in 2000, and Dr. Paul Buck, the 2001 recipient. In that letter, Ruth and Paul close with these words:

"We are blessed to have among us one who so willingly puts her heart and soul into the Oklahoma Native Plant Society."

Those of us who had the pleasure of knowing and working with Betty can echo those thoughts; she was indeed one who exemplified the best in ONPS.

BOTANIST'S CORNER

Ouch!!!

Ron Tyrl

While strolling through Oklahoma's prairies and forests, have you suddenly experienced a burning sensation, pain, or intense itching, followed quickly by a reddening and swelling of your skin, even though no insects are about? If so, you likely have come in contact with the stinging hairs of one of our state's toxic plants. In a previous column (Itch & Scratch) I described the perils associated with poison ivy and its relatives, but *Toxicodendron* is not the only genus to cause itching and an intense desire to scratch. The culprits this time are species of *Urtica* (nettle), *Laportea* (wood nettle), *Cnidoscolus* (bull nettle), *Tragia* (noseburn), and *Cevallia* (stinging serpent).

Taxonomy & Ecology—Although these five genera produce essentially the same contact irritant dermatitis, they belong to three quite different families. *Urtica* and *Laportea* are members of the Urticaceae, or nettle family, which comprises approximately 45 genera and 1,000–1,500 species distributed primarily in tropical and subtropical regions. *Cnidoscolus* and *Tragia* are members of the widespread Euphorbiaceae, or spurge family, one of the largest families of flowering plants, with about 250 genera and 6,500 species. *Cevallia* is a member of the Loasaceae, or rock-nettle family, with approximately 14 genera and 280 species distributed mainly in the New World.



Urtica dioica. Figure from Thomé, O.W. 1885. Flora von Deutschland, Österreich und der Schweiz.

Urtica comprises about 45 species distributed nearly worldwide, but principally in temperate regions. Used by Pliny, the Roman natural historian, its name is derived from the Latin root uro, which means "to burn" and reflects the

painful effects of the stinging hairs (Huxley and Griffiths 1992). The density of these hairs may vary considerably, and they may be almost absent in some populations (Pollard and Briggs 1982). Systematic work by Woodland (1982) indicated that four species are present in North America, two of which are present in Oklahoma: U. dioica (American stinging nettle, tall nettle) and U. chamaedryoides (heartleaf nettle or weak nettle). Both species thrive in disturbed and nitrogen-rich soils of bottomlands, moist open woods, stream banks, and waste areas. Urtica dioica occurs across the continent from Alaska to the Atlantic Coast; whereas, *U. chamaedryoides* is distributed primarily in the southeastern quarter of the continent.

Comprising approximately 2 species in eastern North America and 19 in eastern Asia, *Laportea* is represented in Oklahoma by *L. canadensis*. Its name honors F. L. de Laporte, a French entomologist and plant collector in Florida and South America in the mid 1800s (Quattrocchi 2000). Typically encountered along streams or in seeps in rich moist soils of forests it is distributed throughout the eastern half of the continent and eastern half of the state, with disjunct populations in the Caddo Canyons.



Laportea canadensis. Photo by Raffi Kojianm, Gardenology.org

A New World genus, *Cnidoscolus* comprises about 50 species. Its name is derived from the Greek *knide*, for "nettle," and *skolos*, for "point," reflecting its abundant stinging hairs (Huxley and Griffiths 1992). Primarily

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neotropical in distribution with greatest diversity in Mexico, the genus is represented in North America by four species of which only *C. texanus* occurs in Oklahoma. Although we typically use the common name bull nettle, it is also known elsewhere as mala mujer, spurge nettle, or Texas bullnettle. Occurring in deep sandy soils, plants are characteristically encountered on the stabilized sand dunes on the north and east sides of Oklahoma's rivers and creeks. Its massive rootstock may be as large as a man's thigh in diameter and extend downward 12 feet or more (I'm not exaggerating).



Cnidoscolus texanus. Photo by Dwayne Elmore. Tragia comprises approximately 125–150 species in tropical and warm-temperate regions of both the Old and New World, with the center of species diversity in Brazil. In North America, 14–20 species are present, of which two occur in Oklahoma: T. betonicifolia (betony noseburn) and T. ramosa (bushy noseburn). Both species are quite inconspicuous in appearance and are frequently overlooked, until they are touched and a burning sensation announces their presence. They are found across the state, the former in open, sandy woods and the latter in open sites especially grasslands.



Tragia ramosa. Photo by Stan Shebs.

A monotypic genus, *Cevallia* occurs only in southwestern North America. In Oklahoma, subshrubs of *C. sinuata* are encountered on gypsum outcrops in Harmon, Jackson, and Greer counties in the extreme southwest.



Cevallia sinuata. Photo by Campbell & Lynn Loughmiller, Lady Bird Johnson Wildflower Center.

Distribution maps of these seven species can be accessed online via the PLANTS Database at plants.usda.gov and the Oklahoma Vascular Plants Database at oklahomaplantdatabase.org.

Stinging Hairs—Although plant stinging hairs have been tormenting us for countless millennia, the microscopist Robert Hooke (of cell structure

fame) is credited with the first published description of their appearance in 1665 (Thurston and Lersten 1969). Species of Urtica, Laportea, Cnidoscolus, and Cevallia bear stinging hairs (trichomes) that consist of a multicellular, bulbous, sheathing pedestal and a slender, siliceous, elongated, tapered, hollow cell with a slightly swollen tip. The slightly swollen tip of the hair is easily fractured and typically shears off at an oblique angle upon contact. The resulting sharp-pointed, hypodermic-like shaft penetrates the skin, thus allowing extrusion of the cell's chemical contents into the skin that produce a contact irritant dermatitis (Thurston and Lersten 1969). Former ONPS member Joe Pollard studied them extensively and suggested that they are a defensive adaptation against mammalian herbivores (Pollard 1986).



Stinging hair of *Urtica dioica*. Photo by Joe Pollard.

The stinging hairs of *Tragia* are quite different from those of the other four genera. They lack the pedestal and the bulbous tip. Instead there is a complex structure composed of a primary stinging cell, with a central vacuole containing a proteinaceous substance, surrounded by three shorter lateral accessory cells. On contact with the skin, the wall of the primary cell is pushed back, exposing a slender, pointed calcium oxalate crystal in the tip. This crystal is extruded on contact and penetrates the skin, which allows the cellular contents to enter the wound (Thurston 1976).

Our Response—When we brush against these stinging hairs and their contents are injected into

our skin, we typically experience immediately an intense itching; a burning, tingling, or prickling sensation; and a reddening and swelling of the skin at the contact site. In some instances, urticarial wheals appear. Depending upon one's sensitivity, these clinical signs persist for minutes to hours, but in some instances may last several days. In severe cases, neurological problems may occur.

We are not the only species affected. Although most commonly seen in horses and dogs, particularly the hunting breeds, most animals appear to be susceptible to the toxin(s) in these stinging hairs. Cattle, however, rarely show a response, and they, as well as sheep and rabbits may even eat the plants as forage (Pollard and Briggs, 1984).

Disease Genesis—The precise identity of the toxicant(s) is as yet unresolved, with considerable conflicting data having been collected. At various times, the contents of the stinging hairs have been reported to be: formic acid, enzymes, tartaric acid, oxalic acid, glycosides, alkaloids, histamine, acetylcholine, or serotonin. However, it does appear that there may be at least two distinct aspects of the disease problem. Some of the compounds are responsible for the immediate dermal reaction of pain, itching, and reddening, whereas others are associated with the longer-term or delayed responses such as paresthesia and peripheral neuropathy (see Burrows and Tyrl 2013).

If the contact area is localized, treatment is generally not necessary, but some relief may be obtained by application of a local anesthetic. On one of my field trips in the eastern part of the state, I was told by a local that immediately dowsing the area with urine stops the pain and itching. I have to admit I have not had the courage to again brush against *Cnidoscolus or Urtica* to see if this remedy really works. As you enjoy your next ONPS field trip, be on the lookout for these five genera. Hopefully you won't have to experience the effects of these hairs or the efficacy of the recommended remedy.

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"OKLAHOMA'S BOTANICAL HERITAGE" POSTER AVAILABLE AGAIN

Amy Buthod

"Oklahoma's Botanical Heritage" was the first poster produced and distributed by the Oklahoma Biological Survey. Originally conceived in 2003 by Kim Shannon, Bruce Hoagland and Amy Buthod, it was very popular and has been out of print for many years. With assistance from the Oklahoma Native Plant Society, the City of Tulsa's Mary K. Oxley Nature Center and The Nature Conservancy, we have finally been able to re-print the poster, and copies are now available to the public.



The full-color front of this 22 x 28" poster highlights the botanical richness of Oklahoma by focusing on both common and rare taxa from the state's five ecoregions: the shortgrass prairie, the mixedgrass prairie, the tallgrass prairie, the crosstimbers and the eastern forests. The back of the poster includes ecological information, species descriptions and information on contributing programs (including ONPS).

We hope the poster will help to increase Oklahomans' awareness of the beauty and diversity of our native plants. It is not available by mail, but can be found at the Oklahoma Biological Survey office in Norman, offices of The Nature Conservancy in Tulsa and Oklahoma City, the Mary K. Oxley Nature Center in Tulsa, the Martin Park Nature Center in Oklahoma City, headquarters of the Deep Fork National Wildlife Refuge in Okmulgee and at events and meetings of the Oklahoma Native Plant Society. Additional sites may be added; please feel free to contact Amy Buthod (amybuthod@ou.edu) for further information.

COLOR OKLAHOMA

Pearl Garrison

Color Oklahoma and the Oklahoma Turnpike Authority selected two new sites for 2013 seeding and added to the site at the Stillwater spur of the

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Cimarron Turnpike. The new sites are at the major service centers on the Turner and H.E. Bailey turnpikes.

The number of species planted increased from two in previous years to five. Sown were Gaillardia pulchella, Indian Blanket; Rudbeckia hirta, Brown-eyed Susan; Oenothera speciosa, showy primrose; Coreopsis lanceolata, lance-leaf tickseed; and Coreopsis tinctoria, plains tickseed.

Also look for new larger Color Oklahoma signs at planting sites next year.

ALICIA NELSON RECEIVES 2013 ONPS SERVICE AWARD

Sue Amstuz

The 2013 Oklahoma Native Plant Society Service Award was presented to Alicia Nelson during the Annual Meeting of the Society which was held on September 28, 2013, at the Arcadia Conservation Education Center near Edmond, Oklahoma.

Alicia was cited for outstanding contributions to ONPS as chairman of Northeast Chapter for the past four years, state Publicity chairman, and driving force in the highly successful Indoor Outing held in Tulsa in February. Alicia also serves on the Color Oklahoma committee. She designed and had manufactured the beautiful insignia-embossed table coverings which have been supplied to each chapter for use when ONPS is represented at public gatherings such as informational fairs, conservation meetings, and gardening events.

Her emphasis on making ONPS more evident to the public at large was cited as Alicia's most important contribution to the ongoing work of the Society. She received the traditional gaillardiacentered plaque from Service Awards chairman Sue Amstutz, with approval from Service Awards committee members Clare Miller and Irene McKee and ONPS General Chairman of Awards Gloria Caddell.



2013 ONPS ANNUAL MEETING

Adam Ryburn

The 2013 ONPS Annual Meeting was recently held on September 28 at the Arcadia Conservation Education Area located east of Edmond. What started out as a soggy Saturday morning turned into a beautiful day for botanizing. While the weather likely contributed to the low attendance, those that showed were presented with a full day of plant related activities.

While waiting for the rain to pass through, I delivered one of my favorite lectures describing how field botanists go about identifying plants. We applied some of this knowledge by looking at some dripping specimens we brought in from outside. We did brave the weather one time in the morning, but lunch soon brought us back in.

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Following lunch, the annual business meeting commenced with updates from the different chapters and announcement of ONPS award recipients. Dr. Clark Ovrebo of the University of Central Oklahoma was awarded the Anne Long Award for Promotion of Native Plants, while Alicia Nelson was awarded the ONPS Service Award. The following were elected to officer and board member positions: Adam Ryburn, President; Joe Roberts, Vice President; Sandy Graue, Secretary; Mary Korthase, Treasurer; Lara Souza and Mike Dunn as Class of 2016 Directors.

"Good things come to those who wait" was our motto in the afternoon. Botanizing was excellent once the weather cleared away. Native grasses and composites were in abundance. We were also treated to a taste of what the evening presentation would hold when Dr. Chad King of the University of Central Oklahoma extracted a tree core to demonstrate dendrology techniques. Dr. King later provided the evening entertainment by giving a talk about his research in dendrology.



Thanks go out to those that made this a very successful and memorable event. The facilities that housed the Annual Meeting were spectacular. I wish to thank the Oklahoma Department of Wildlife Conservation for donating the use of their fine facilities and all their help in planning the event. Additionally I wish to thank Belle Isle Restaurant and Brewery of Oklahoma City for providing lunch and dinner for the 2013 ONPS Annual Meeting.

CHAPTER ACTIVITIES

Cross-Timbers Chapter Mark Fishbein

The chapter had two events this fall, a plant survey and potluck with guest speaker. On October 19 the Cross Timbers chapter again surveyed the streamside revegetation project at Cow Creek, at the OSU Botanical Garden. This is the third survey conducted to assess how vegetation is establishing and changing in a riparian area that was re-engineered to reduce erosion. The small, but stalwart, team recorded 127 species, most of which had been documented in previous visits last fall and this past summer. Many of the additions include wildflowers that

were seeded onto the pond slope to support native pollinators and perennial herbs and shrubs planted to stabilize the vegetation and add diversity. Some of these nice additions include Liatris aspera (rough gayfeather), purple prairie clover (Dalea purpurea), and Solidago rigida (stiffleaved goldenrod). We also found newly colonized vines of Cocculus carolinus (Carolina snailseed). Sadly, we found that the highly invasive Cyperus difformis (variable flatsedge) was still present. This is one of the worst invasive plants in the tropics. We found it last fall, documenting the first occurrence in Oklahoma. Hopefully, our not-so-tropical climate will not favor persistence and spread of this species.

On November 13, the chapter joined forces with OSU Botanical society to host a potluck Italian dinner. The guest speaker was Dr. Donovan **Bailey from the Biology Department at New** Mexico State University. Dr. Bailey presented a talk entitled "Heinrich, I have a feeling we are not in plant pathology anymore!". This intriguing talk consisted of several examples, some very surprising, of cases in which the microbes living in plants ("endophytes") actually help, rather than harm, the host plants. One example is the case of the anti-cancer drug taxol that is obtained from the Pacific yew (Taxus brevifolia). This important medicine is produced by the plant with the aid of an endophytic fungus. Chapter members also elected officers, with Mark Fishbein and Elaine Lynch holding back all comers for the positions of Chair and Secretary. Plans were discussed for the upcoming Indoor Outing. Stay tuned for news of this event!

Central Chapter
Joe Roberts

Hope this finds all of you happy and healthy. The weather has turned chilly as I am writing this. We have been fortunate with mild weather for most of the fall, but I think I can safely put away the shorts and thin clothes now.

In September, we set up a booth at the Monarch Migration and Butterfly Festival in Washington, OK. This year we were invited to set up in the town hall building itself, at the center of the action. There was good traffic all day long, as usual at this festival. Lots of people bought books and other merchandise, just another sign that interest in native plants is booming! Plan on attending next year if you can. This is a great, family-friendly event with lots of like-minded folks.

The Central Chapter hosted the 2013 ONPS Annual meeting on September 28th at the Arcadia Conservation Education Center. Adam Ryburn has written a more detailed account of the meeting, so I'll just briefly touch on it. We had a good turnout, especially considering the threatening rain that may have kept some away. The Arcadia Conservation Education Center was a real gem of a place to have a meeting, and we may look at doing more things there in the future. It was good to see familiar faces and some new ones, too. Even a few of the new members we signed up at the Butterfly Festival attended. Hope to see you all again!

A group of Central Chapter members also made the journey to Pawhuska to join the NW Chapter field trip to the Tallgrass Prairie Preserve in October. The weather cooperated and there were still plenty of flowers and fruits to be studied. The grasses were in peak form, and for a grass geek it was an ideal time to visit. Thanks to the NW Chapter for the event.

Ever wonder where plants came from? Then you've got to be at our next meeting will be January 13th at OCU in Oklahoma City. Our speaker will be Dr. Steven J. Karpowicz, an assistant professor of biology from the University of Central Oklahoma. Dr. Karpowicz will enlighten us on the molecular biology and evolution of plants. For those who may have slept a few times since their last molecular biology or evolutionary botany class, Dr. Karpowicz promises to keep it light, or at least provide simultaneous interpretation headphones like those people at the U.N. get to wear. Here's a link to his webpage if you'd like to learn more beforehand. Biology.eco.edu/personalpages/karpowicz. We may also have a potluck meal at the meeting. More details on that to come out via the listserve and Facebook, but if you are interested in bringing some finger-type or other light food please let Joe know at joeroberts13@cox.net.

Lastly, nominations are still being accepted for officers for the next term (Chair, vice-chair, and secretary). If you would like to nominate someone, including yourself, please send me an email. You don't need any special skill or knowledge to do any position other than a desire to help. We will choose our new officers at the January meeting. See you there, and bring a friend!

Northeast Chapter Alicia Nelson

Members and friends, I would like to extend my sincere appreciation for all your support during my tenure as NE Chapter Chairman. With your time and talents, we have been able to represent ONPS to many people in our area in a positive and educational way. It truly has been a rewarding experience for me. In December, the nominating committee will present the new leaders for next year. Please be present to offer your support to the new leadership.

Monica Macklin, will be our guest speaker on December 2, at 7:00 pm at the Tulsa Garden Center. She is well respected for her academic teaching career at Northeastern State University and work in science education research. She has served on the executive state boards of Urban and Community Forestry and ONPS. Her topic, *How Trees Pay Us Back: The Value of Native Trees* will discuss the environmental impact and monetary value of a tree by using the I-Tree calculation. She states, "Trees are viewed as worthy components of any landscape," and "studies have shown that every dollar invested in a tree returns three dollars in environmental savings."

In October, our chapter visited the Nature Conservancy Tallgrass Prairie Preserve. Dwight Thomas, our host and guide led us on a two-mile hike through the woodlands, up the hillside and on to the open prairie. Our prized flowering species of the day is a member of the Orchidaceae family, *Spiranthes sp.* or Ladies' Tresses with small white flowers that spiral up the stalk. We enjoyed identifying the fall grasses, *Eragrostis spectabilis*, (with tufts of white hairs in the branch axils), and a member of the Lovegrass Tribe. *Chloris verticillata*, windmill grass, was blowing across the path. We also identified many species in the Panicgrass Tribe and as we descended down the hillside, Big Bluestem towered above.

Sue Amstutz is the Tulsa Garden Center affiliate liaison for ONPS. Our organization was invited as a member group to become an affiliate of the Tulsa Garden Center dating back to the early years of ONPS. We have continued with this longstanding relationship. The Tulsa Garden Center hosts a "Brown Bag" event every third Thursday of each month. Sue gave a presentation on "Colors of an Oklahoma Autumn" in October. She continues to highlight ONPS through education and representation.

Please join us, for a social gathering "Wildflower Friday's", the third Friday of each month at Panera Bread on 41st and Hudson in Tulsa around 5:30 pm.

WELCOME THESE NEW MEMBERS

Robyn Bondeson, Oklahoma City Karen Chapman, Norman Rachel Farrister, Oklahoma City Pauline Hale, Grove Amy Hilderbrand, Warr Acres Vonceil Harmon, Norman Donna Marsheck, Bartlesville Colin Walden, Perkins

Application form is available in previous issue or at www.oknativeplants.org

MORE GOOD NEWS ABOUT OUR JOURNAL, OKLAHOMA NATIVE PLANT RECORD

This year our historical article is "Ecology and Taxonomy of Water Canyon, Canadian County, Oklahoma." Written in 1961, it is the master's thesis of longtime ONPS member and retired Southeastern Oklahoma State University Professor, Connie Taylor. She is one of those botanists in Ron Tyrl's "Cavalcade of Field Botanists" (also in Volume 13, to be published in December) who has lead a life dedicated to the study of Oklahoma's native plants. Her work includes species lists for the various habitats within the Water Canyon complex and provides an excellent source of historic data for those wanting to study how the diversity of those protected canyons, with their relict populations of sugar maples has fared over the last 50-60 years of climate change.

Now, even more good news: Last year when Sandy Graue, our electronic production editor, finished uploading all back issues of the *Record* onto Oklahoma State University's e-journal website, it became possible to start collecting data on how often each volume and each article has been accessed online. These journal metrics have given us a delightfully positive view of how well we are doing, as well as being very useful for determining how and why readers use the *Record*. That data tells us that over the last 12 years Volume 8 has been the most accessed volume. Clark Ovrebo's "Common Spring Mushrooms of Oklahoma" and Bruce Smith's, "Fern Habitats and Rare Ferns in Oklahoma", are the most accessed articles in that volume. Altogether, journals volumes have been accessed online almost 10,000 times, just in the last 4 years!

Being globally accessible through the Directory of Open Access Journals website, and having our abstracts indexed in *Centre for Agricultural Bioscience International* has certainly increased our circulation. We hope it will encourage more authors to trust us to get their work out to whoever needs it, and we hope that will help us increase local hardcopy subscriptions.

While an online version is very effective for global accessibility, we all know that being able to have your hands on a printed version is most effective for local accessibility. When a student or researcher wants to know what's available in their local area, they are more likely to search in local libraries. Those libraries need to have a hardcopy on the shelf for them to browse and brainstorm. If we want more research to be done in Oklahoma, we need to have researchers in Oklahoma asking questions and using local references. Our city, college, and university libraries need to have annual subscriptions to the *Record* and ONPS members can help get them started. Show your own hardcopy to your local librarian and give them a copy of the order form. Point out the low institutional (& personal) subscription rate of ten dollars, and quote a few of our statistics. They'll be glad you did.

Sheila Strawn Managing Editor

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