Newsletter of the
# Iowa Archeological Society
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## Photographs from the Spring Meeting in Council Bluffs

The Keyes-Orr Award was given posthumously to Doug Jones. Mike Perry presented the award to Doug's sister Ellen and mother Caroline.

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IAS members are encouraged to mark their calendars to attend the Preserve Iowa Summit. This year's Summit will be held in Fort Dodge on **June 8-10, 2017**. Because the IAS sponsored the Summit, members will receive discounted registration. The Summit is an opportunity for IAS members to connect with other individuals interested in historic preservation across the state. The Preservation Summit is also an opportunity for IAS members to connect with people and help them understand the need to consider archaeology as a resource type worthy of preservation, alongside Iowa's built environment. Summit attendees include historical society members, historic preservation commission members, architectural historians, architects, and many others. The State Historical Society of Iowa (SHSI) annually hosts the Summit by partnering with a new city each year, and this event has become one of their marquee efforts to connect with Iowans and Iowa history. Over the last few years SHSI has worked to incorporate more archaeology into the Summit, and this year attendees can look forward to an entire archaeology track on Friday (06/09/17). Presentations include:

**Sacred Places: Whither Northeast Iowa's Native American Rock Art Legacy?**
Russell Baldner
**From Known to Unknown: Unmarked Burials in Iowa**
Lara Noldner, Brennan Dolan, Megan Stroh
**Iowa's Frontier Forts**
Kathy Gourley
**The Archaeology of Fort Dodge**
Bill Whittaker
**Dixon Site**
Mark Anderson
**The Kimball Village Site (A.D. 1100-1250): Iowa's Newest National Historic Landmark**
Lynn M. Alex

IAS members who would like more information can visit:
https://iowaculture.gov/history/preservation/education-and-outreach/preserve-iowa-summit

Questions can be directed to
Brennan Dolan brennandolan@yahoo.com or Paula Mohr: paula.mohr@iowa.gov.

Please consider joining us in Fort Dodge.

# *Cèdre Blanc* and *La Morette*: Reconstructing an Illini Fire-Making Kit

Colin Betts
Luther College

Pierre-Charles Deliette's account of his time spent among the Illini tribe, known as the De Gannes memoir, is one of the richest sources of early contact period lifeways in the Upper Midwest. While serving at Fort St. Louis near Starved Rock, Illinois from 1687-1692, Deliette learned the Illini language and became an astute amateur anthropologist. The wealth of detail that this account provides on both the natural landscape and cultural practices, written some 10-20 years after his experiences, makes it essential reading for anyone interested in this subject. As Pease and Werner (1934:x) note in their translation of the memoir "[i]t affords the very best of the early accounts of the Illinois country and of its Indians."

Occurring as a footnote to Deliette's fascinating account of an Illini bison hunt is a brief, but informative description of fire making:

> They drew from their quivers two bits of wood which serve them for striking a flame, and in less than half a Miserere, they had a fire.... One of the pieces of wood which they use to make a fire is of white cedar, which is the most combustible, a foot long more or less, according as they choose to make it, and as thick as two fingers. On one side, on the very edge, they make little holes, in which they make a notch. They put this bit of wood on some rotten wood or on some grass, dry and very fine, after taking care to crush it thoroughly in their hands. The other piece of wood is as thick as the little finger; it is a bit of a wood that has a black berry, which we call *morette.* When this wood is green it is very soft, and it is proportionately hard when it is dry. They shape the end to the size of the holes in the other piece of wood, into one of which they insert it, and by turning it in their hands without ceasing, they produce a sort of powder from which, after a very short time, one sees smoke issue, which shortly is converted into flame. This coming through the notch of which I have just spoken, falls on the rotten wood or dry grass, which is ignited. [Pease and Werner 1934:316-318]

Inspired by this account as well as a general interest in both ethnohistory and experimental archaeology, I decided to reconstruct the fire making set described above. The detail provided by Deliette seemed sufficient to identify both the technique and materials employed. What should have been a relatively simple process of reconstructing this fire kit ended up turning into a much more complicated investigation that required me to delve into seventeenth century French terminology, ethnobotany, and the broader process of making fire by friction. As a whole it ended up being a rewarding journey that provided me with important insights into the process, materials, mindset, and also challenges involved in this topic.

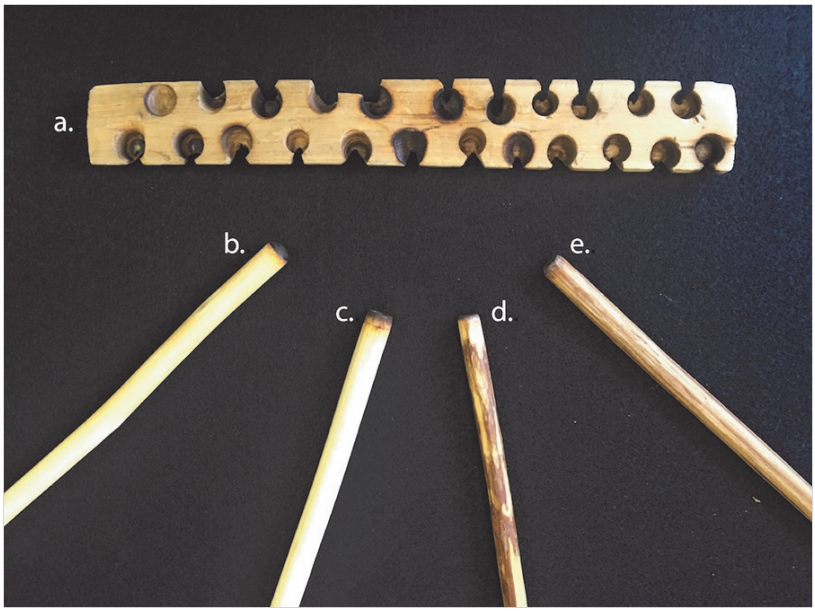


Figure 1. Example of white cedar hearth board (a.) and fire drills made of mulberry (b.), elderberry (c.), black raspberry (d.) , and blackberry (e.)

The technique described by Deliette, known as the fire drill, was the most common method of pre-industrial fire-making in North America. The fire kits include a flat piece of wood into which a circular hole and associated notch are carved, known as the hearth board (Figure 1a), and a long drill or spindle (Figure 1 b-e). Walter Hough's (1890a:363) description of fire making techniques adds details lacking in Deliette's account, noting that the drill "is held between the palms of the outstretched hands, which are drawn back and forward past each other almost to the finger tips, giving the drill motion, and at the same time a strong down-

Figure 2. Demonstration of the fire drill technique.

ward pressure is given. The hands, of necessity, move down the spindle; when they nearly reach the lower end they are quickly shifted to the top without moving the drill from the hole, and rotation is repeated as rapidly as possible." The basic technique used in rotating the drill can be seen in Figure 2.. As described by Deliette, the rotational friction generates heated wood dust that gathers in the notch and eventually turns into a glowing ember (Figure 3). When added to dry tinder, such as grass or finely shredded bark, the ember can be coaxed into a flame. Hough's (1890b) examination of fire drill kits in the Smithsonian indicates that although there is some variability in the size and shape of the hearth boards and drills, the form of many of the essential elements, such as the holes and notches, are quite uniform. Deliette's description of Illini hearth boards and fire drills correspond well with those documented by Hough.

Whereas the forms of the hearth boards and drills are relatively uniform, the selection of materials used to construct them is more varied. A search of the electronic Human Relations Area Files database (eHRAF) identified at least 49 different types of plants used by Native American groups to make drills and/or hearth boards. The density of the wood seems to be one of the primary considerations in the selection of materials. One experiment on the effect of drill and hearth wood density suggested that "it is more advantageous to use a softer wood for your spindle, regardless of the density of your hearth-board" (Storm 2003:23). Similarly, in his overview of fire making kits, Hough (1890b:532) noted that a soft hearth board wood is "not only easier of ignition, but it is ground off more easily and retains the heat generated until enough is accumulated to ignite the powder." Beyond issues of density, an additional consideration in selecting materials is the need to produce a long, relatively straight spindle. As a result, many of the wood types commonly used were selected both for the relative density, as well as for the fact that they occurred as long straight shoots that required a minimum of straightening.

Deciphering the specific woods used by the Illini required using the inherent linguistic and contextual clues provided by Deliette, correlating them with the types of native plants available in Illinois, and comparing them to the materials known have been employed by other indigenous groups. The material used for the hearth board was easy to reconstruct: Deliette describes it as white cedar (*cèdre blanc*), one of the common names for *Thuja occidentalis,* also known as arborvitae. This wood was widely used throughout the Great Lakes region for friction fire making. Although not a widely distributed species in Illinois, there are several native stands in the immediate vicinity of Fort St. Louis (John White personal communication 2016). This

Figure 3. Photo of smoking wood dust and ember (inset) produced with an elderberry drill and white cedar hearth board.

wood is ideally suited for making fire as it is easy to work, relatively soft, and readily generates finely powdered wood dust.

Identifying the fire drill wood described by Deliette proved to be more of a challenge. Pease and Werner provide no translation for the term he used (*la morette*) nor can it be found in the compendium of contemporary French words and definitions provided by the Anglo-Norman dictionary (http://www.anglo-norman.net/gate/). As a result, I had to search for other linguistic approximations that matched his description of a plant native to Illinois that produces a black berry and is soft when green and relatively hard when dry. An additional passage in the manuscript refers to berries and associated plants as *les mûres* and *des mûriers,* respectively, translated by Pease and Werner (1934:348) as blackberries. Both of these terms appear in the Anglo-Norman dictionary, along with several synonyms and alternate spellings, including *morrer* and *morere,* and were used by Deliette's contemporaries to refer to both blackberries and mulberries. Further, a very similar word, *moret*, is a synonym for *muré* –a color term used to refer to the dark red or reddish purple color of mulberries. As a whole there is clearly both a semantic and linguistic association between all of these terms. It is important to recognize that they did not represent botanical terms specific to an individual species of plant, rather, they were folk taxonomies applied to any plants that produced similar dark red or purple berries, regardless of whether they were found on trees or canes. The use of *la morette* may then either simply reflect Deliette's use of one of these synonyms or could also be a mis-transcription of the original term used by Deliette, potentially *moret*, *muré*, *mûres*, that occurred when the manuscript that we have available to us today was copied from Deliette's original (Pease and Werner 1934:ix).

Based on these linguistic and botanical clues, mulberry (*Morus rubra*) and blackberry (*Rubus allegheniensis*) appear to be the obvious candidates for the Illini fire drill wood. In addition both black raspberry (*Rubus occidentalis*) and elderberry (*Sambucus canadensis*) are also possible candidates for *la morette.* Black raspberries are native to Illinois and are very similar to blackberries in all aspects of their appearance. Elderberries are the only one of the four plants used ethnographically as fire drills, are locally available, and also are quite soft when green and are noticeably harder when dry. However, they also have the most tenuous connection to the linguistic clues in the manuscript, and were often referred to by a distinct word, *sueau*. Elderberry plants also produce discrete clusters of individual dark purple fruits and not the multiple or aggregate berry like the others (Figure 4). However, these inconsistencies do not completely rule them out. First, it is unknown if Deliette directly observed the Illini collecting the wood or was relying on their second-hand descriptions. In the latter case, Deliette may have misunderstood the specific plant to which his Illini sources were referring. Second, his account was written well after the original events occurred and this relatively small detail may not have been correctly recalled. Finally, we cannot discount the possibility that given the generally loose semantic use of the terms in question, Deliette may have used *la morette* to describe elderberries based primarily on the dark red/purple color of the fruit.

Figure 4. Comparison of blackberries (l) and elderberries (r).

Evaluating which of these was the most likely source of Illini spindle wood required collecting and testing examples of each and evaluating their suitability for serving as fire drills – both in construction and ease of making fire. Four drills were constructed of each of the woods and used on a hearth board constructed of *Thuja occidentalis* (Figure 1). Mulberry was difficult to find in straight shoots or branches and as a result was the most difficult to fashion into a straight spindle. Further, because of its relatively high density it resisted my admittedly amateur efforts to successfully generate an ember. Further, in contrast to the other types of plants, mulberry wood is not noticeably soft when green. In contrast, blackberry stems are relatively easily fashioned into a functional spindle, at least once the vicious thorns are removed, and successfully created an ember, albeit with considerable effort. Black raspberry stems have many of the same properties as blackberries, but tend to be smaller and are difficult to find in the size required for a spindle, making them less suitable candidates. Elderberry stems were the easiest to fashion into a straight spindle and were far and away the most effective at generating an ember. Accordingly, of the four possible plants blackberry and elderberry are the most likely to have been used by the Illini to construct their fire drills. Ultimately, it is not possible to definitively discriminate between the two: elderberry drills are functionally superior and were used ethnographically while blackberry is a closer linguistic match and is certainly capable of generating fire, particularly in skilled hands. Although elderberry is far and away my personal preference for making fire drills, which of these two the Illini actually utilized will remain lost to history.

The final interesting clue embedded in Deliette's account is his description of the Illini proficiency in making fire. Specifically, he notes that they could produce fire "in less than half a Miserere" (Pease and Werner 1934:316). Deciphering this passage took a little bit of sleuthing. Miserere is a Biblical reference, and is the Latin name for Psalm 51 which begins "*Miserere mei, Deus"* (Have mercy upon me, O God). The relevance for this account is that it was commonly assigned as a form of penance during confession – making it a widely-understood estimate of time for Deliette's contemporaries in an age before personal time keeping devices. Reciting the Psalm in its entirely takes around two and a half minutes – meaning the Illini could make fire in just over a minute. While far surpassing my own meager efforts, it corresponds well with more experienced practitioners and ethnographic accounts that indicate ember generation times of between 20 seconds and several minutes (Hough 1890:537; Storm 2003:24).

As a whole this research project provided me both with insights into the general use of ethnohistory as well as this one aspect of indigenous technology. Above all else it represented an important reminder of both the great potential and inevitable frustrations of using the ethnohistoric record to understand the past. We are fortunate to have a record like that of Deliette and the indispensable information it provides, yet at the same time it can be so maddening in the details that are left unsaid. Beyond the purely academic elements of my investigation it also highlighted the value of experiential research activities. Minimally it gave me an excuse to flee the confines of my office and tramp around the woods while providing me with the delusion that the wounds inflicted by blackberry thorns and the spindle-induced blisters were sacrifices required by my selfless pursuit of scientific knowledge. I am always struck by the way that this type of experience requires me to learn in new and unfamiliar ways that ultimately serve to change my perspective in ways that purely conceptual research cannot. The need to identify the habitat, characteristics and specific uses the various plants (and to actually find the dang things) provided me with a different awareness of and appreciation for the landscape around me. Making fire by friction allowed me to (re)discover the primal joy of making fire and provided insights into the technical dimensions of a process not available from simply reading about it. Walter Hough (1890:531) covered this same ground over a century before me; I will allow him to have the final word as he noted with considerable understatement that "all these descriptions omit details that are essential to the comprehension of the reader. There is a great knack in twirling the vertical stick."

References Cited

Hough, Walter
1890a Aboriginal Fire-Making. *American Anthropologist* 3(4):359-372.

1890b Fire making apparatus in the U.S. National Museum. Report of the United States National Museum: Under the Direction of the Smithsonian Institution, for the Year Ending June 30, 1888. Washington, D.C.: Government Printing Office.

Pease, Theodore Calvin, and Raymond C Werner.
1934 *The French Foundations, 1680-1693*. Collections of the Illinois State Historical Library; French Series, 23. V. 1. Springfield, Illinois: Trustees of the Illinois State Historical Library.

Storm
2003 A Friction Fire Inquiry: Hand-Drill. *Bulletin of Primitive Technology* 26:18-25.

For those interested in either the De Gannes memoir or making your own fire kit the following resources may be of interest:

The DeGannes Memoir is available on the website of Parkland Community College.
http://virtual.parkland.edu/lstelle1/len/center_for_social_research/inoca_ethnohistory_project/DEGANNES.HTM

Friction fire making tips are abundant on the internet. In print form two publications by the Society for Primitive Technology provide perhaps the best background information.
*Primitive Technology: A Book of Earth Skills* (1999) edited by David Wescott. Gibbs Smith: Salt Lake City
*Primitive Technology II : Ancestral Skills* (2001) edited by David Wescott. Gibbs Smith: Salt Lake City.

Hough's document on fire making equipment is available through the Smithsonian's digital repository https://repository.si.edu/handle/10088/15753

## Rare Find Donated to the Calkins Nature Center

Pictured is an antler adze handle found in a central Iowa gravel bar by IAS Member Jeff Ulch. The handle is nearly a foot long (19 cm) and contains a recessed area that held the adze blade. Grooves along the edges of this area were used to hold the lashings that affixed the adze blade to the handle.

Mr. Ulch had donated this handle and other artifacts to the Calkins Nature Center in Hardin County. This rarely preserved artifact and others that he collected are on display at the Calkins Nature Center Native American and Natural History Museum.

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Photographs by William Whittaker, Office of the State Archaeologist.

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# Iowa Archeological Society

**Financial Report for January 2016 to December 2016**

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|---|---|
| **Account Balances as of January 1, 2016:** | |
| Certificate of Deposit (matured 12/20/2016) | $1,235.65 |
| Checking | $2,411.78 |
| Savings | $1,977.94 |
| | $5,625.37 |
| **Account Balances as of December 31, 2016:** | |
| Certificate of Deposit (matures 7/20/2018) | $1,257.25 |
| Checking | $7,084.83 |
| Savings | $3,616.64 |
| | $11,958.72 |
| **Income - January 2016 to December 2016:** | |
| Certifications | $30.00 |
| Doug Jones Memorial Fund | $2,610.00 |
| Interest dividends | $25.30 |
| Memberships | $9,924.06 |
| Research and Education Fund Contribution | $2,330.00 |
| Sales (Journals, Patches, Pins, Royalties) | $1,088.66 |
| | $16,008.02 |
| **Expenses - January 2016 to December 2016:** | |
| Archaeology Outreach 2016 | $2,000.00 |
| Journal Volume 63 (2016) | $1,898.54 |
| Keyes-Orr Awards plaques | $14.84 |
| Midwest Archaeological Conference donation | $200.00 |
| Meeting (Annual Spring 2016) | $585.41 |
| Newsletters (Issues 233, 234, 235, 236) | $3,324.00 |
| Office Supplies | $175.93 |
| Postage | $725.04 |
| Preserve Iowa Summit | $100.00 |
| Printing | $650.91 |
| | $9,674.67 |
| Net Gain since January 1, 2016 | $6,333.35 |

Respectfully submitted by,

Alan Hawkins, IAS Membership Secretary/Treasurer

### Membership Information

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### Membership Dues

| | |
|---|---|
| Voting | |
| Active | $25 |
| Household | $30 |
| Sustaining | $35 |
| Non-Voting | |
| Student (under 18) | $15 |
| Institution | $35 |

### Newsletter Information

The Iowa Archeological Society is a nonprofit, scientific society legally organized under the corporate laws of Iowa. Members of the Society share a serious interest in the archaeology of Iowa and the Midwest. The Newsletter is published four times a year.

All materials for publication should be sent to the Newsletter Editor:
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When submitting articles, please provide text, captions, tables, and figures separately . All photographs should be at least 300 dpi. Graphics should be high-resolution tiff, jpg, or eps files or be scan-ready paper copies.

### IAS Website

http://archaeology.uiowa.edu/iowa-archeological-society