EXARC JOURNAL 2013/3
19 Articles | Open Access

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Reviewed Article:

Hunting with Cane: Traditional Cherokee Blowguns and Darts

Persistent Identifier: https://exarc.net/ark:/88735/10136

EXARC Journal Issue 2013/3 | **Publication Date:** 2013-11-15

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The Cherokee Indians were a large Southeastern tribe who occupied land in North Carolina, South Carolina, Georgia, Alabama, Tennessee and Virginia. During the Historic Period, the Cherokee were one of the Five Civilized Tribes and even had their own writing system developed by Sequoyah. When gold was discovered in Cherokee occupied lands, the Cherokee were forced to relocate to a reservation in Oklahoma. A group of 'renegade' Cherokee under Tsali hid in the mountains of North Carolina and refused to go on the Trail of Tears to Oklahoma. Tsali's death paved the way for the Qualla Boundary or Eastern Cherokee Reservation to be formed in the North Carolina Mountains. The surviving Cherokee from the

Trail of Tears set up the Western Cherokee Reservation in Oklahoma. Although I have visited the reservation in Oklahoma, I have spent more time with the Cherokees on the Qualla Boundary in North Carolina (Woodward 1963).

> Every time I do programs, someone always asks, "What did Native Americans use for poisons on their blowgun darts?" As of this writing, I have found no ethnographic or archaeological source for the use of poisons on blowgun darts in the Southeast. Poisoned darts are a combination of truth and fancy.

One of the most misrepresented hunting tools of the Southeastern United States is the blowgun. Most people do not realize that virtually every tribe in the Southeast used the blowgun for hunting small game. No on really knows the origin of the blowgun in the Southeast. Archaeologists to date have not recovered evidence of the blowgun and ethnographers did not start recording information until the early 1900s (Harrington 1922; Speck 1938; Swanton 1946). The blowgun could have been an independent invention in the Southeast or the blowgun could have migrated up from South America or Mexico (Riley 1952). The Cherokees have the most information written about blowguns and the longest recorded use in the Southeast.

The Cherokee have a long history with the blowgun and some Cherokee blowgun makers claim that their ancestors drilled out blowguns with flint tipped drills (Phillips, Owens and Collins 2012) or dropped hot coals down the blowgun barrel to burn out the joints (Hamel and Chiltoskey 1975) prior to the introduction of metal from the white man. To this date, archaeologists have not recovered a prehistoric blowgun. Rivercane does not preserve well in the Southeast due to poor soil preservation, lack of dry cave sites and lack of bog sites. The earliest explorer in Cherokee country, Hernado De Soto, did not mention blowgun used among the Cherokee in 1540. De Soto did record the use of rivercane for burden baskets and in the webbing between the wooden supports of their dwellings (Vega 1951).

The earliest mention of the blowgun among the Cherokee was by Lieutenant Henry Timberlake in 1754 describing Cherokee children using the blowgun to hunt small game (Timberlake 1765). CT Foreman in his *Journal of a Tour in Indian Territory* (Foreman 1932) mentioned Oklahoma Cherokee children playing with a blowgun. This documentation implies that the blowgun, along with the Cherokee, travelled the Trail of Tears in 1838-1839. The ethnographer Mark Harrington wrote a few sentences about the use of the blowgun among the Cherokee in 1922 (Harrington 1932). Other ethnographers such as James Mooney and John Swanton also mentioned the use of the blowgun by the Cherokee (Mooney 1885;1897; Swanton 1946).

The Cherokee called their blowgun "tu-gwe-sdi" (Worsham 1997) and used the blowgun to hunt small game such as rabbits, squirrels and birds (White 1987). Other sources stated that

the Cherokee also killed large birds such as geese and turkeys. The techniques used to kill these large birds included hitting them in the eye (Timberlake,1765). This technique not only included amazing blowgun skills but also excellent camouflage and stalking skills.

Gathering cane

To make a Cherokee blowgun, you will first have to locate a source for rivercane *Arundinari gigantea*. The bad news is that this will take persistence and caution. In many areas habitats where cane grows support agriculture, many river bottoms where cane used to grow are now cultivated by farmers.

Another problem is that non-native bamboos are taking over rivercane habitats. You will also find hybrids of bamboo and rivercane in your search. Although these will work, rivercane works best. Most bamboo has two leaf shoots coming out of their joints. Rivercane has one leaf shoot coming out of the joints and these alternate coming up the plant. The angle that the leaves are coming out of the plant is also a clue. The leaves of cane come out of the stalk at about a 15 degree angle and bamboo leaves come out at about a 45 to 90 degree angle.

When you enter a cane break, watch out for ever present snakes. Wear boots and gloves. You must be able to identify first year cane growth. Cane, like bamboo, grows its entire height in one growing season. The following seasons, the cane gets stronger and thicker. You are searching for later growth years. First year growth cane has leaf sheaths around the leaves growing out of the joints. Avoid these because they tend to warp and crack since they have thin walls. Just remember the first year growth cane will be ready next year. Winter is the best time to gather cane.

When gathering cane, look for the straighter pieces. It is amazing how straight something looks until you get it home. For most Cherokee blowguns, you want an interior diameter of three fourths of an inch (19 mm) or larger. Some days, I am happy to find a half-inch (13 mm) diameter piece. Size is relative because you can make your darts match the bore of your blowgun. The length of cane is determined by the length of blowgun you want to make. I cut my cane in lengths of 8 to 12 feet (2.4 to 3.7 m) for Cherokee type blowguns.

To cut cane prehistorically, aboriginal Southeastern blowgun makers would have probably used a stone flake or stone knives. If you score rivercane all the way around, it tends to snap off. Cut as close to the ground as you can and below a joint. I have cut many cane stalks with aboriginal tools and find them as effective as modern tools. If you are using modern tools, the machete works well unless you are in a thick cane break. When you cannot use your machete safely, use a hacksaw or sierra saw. These saws will cut the cane close to the ground and gives a blunt cut. I have cut myself with the sharp ends left over from a machete cut piece of cane

After the cane is harvested, I bind the cane tightly to prevent warping when it dries. I have read accounts of hanging weights or stones from the cane to reduce warping, but I have seen little advantage in this. If you bind the cane tightly, you should prevent most warping.

Finally, find a dry place and allow the cane to dry for six months to a year before making a blowgun. The cane will be green when it is freshly cut and will turn a golden brown as it dries out. To speed up the drying process punch out the cane while the cane is still green. You can knock out the joints with a small diameter piece of cane or with a metal rod while the cane is green. This allows air to circulate within the cane so that drying speeds up to three to six months.

Tools needed

Once the cane is dry, it is ready to make a blowgun. With proper tools, a blowgun is fairly easy to construct. By the time Frank Speck and other ethnologists began recording blowgun manufacturing techniques; metal tools had replaced aboriginal construction techniques.

Several early ethnologists suggested that a river cane blowgun could not be made without the use of metal tools (Speck 1938). In 2010, after making blowguns for over twenty years, I decided to experiment and see if I could make a blowgun with all stone tools. First I spent time and carefully selected the straightest piece of cane available and cut the cane with a stone biface. If you score cane and completely cut the outer sheath then the cane will snap off with little effort. By pulling the branches away from the stalk and down you can snap them off by hand. To remove the nodes I made a punch out of a smaller diameter piece of cane. I cut a forty-five degree angle on my punch slightly above the node so my punch would have strength. When green the nodes punched out easily. After the nodes were punched I used the punch as a sanding tool by moving the punch back in fourth inside my blowgun with a slurry of sand and water. The green cane could be flexed straightened across my knee or chest by applying slight pressure. For this experiment I made five blowguns and each blowgun took thirty minutes to make. I believe that someone more experienced than me could cut that time in half (Meyer 2011).

The first tool you need to make a blowgun with the contact method is a metal burning rod to burn out the joints. This rod must be made of metal that will take a great amount of heat and not warp. My first metal blowgun rods came from box springs of beds and couches. I would go to a junkyard or find a house that had burned down and find the box springs left over. If the bed or couch had burned and the metal had not warped, I knew this was good-tempered steel. I would use wire cutters to cut the long straight sections to use as burning rods. Once I have this home, I would hammer one end flat and use a file to sharpen the flat end into a bevelled point. I still occasionally use these rods, but you are limited to usually one diameter.

Today I get my rods from a machine shop. My improved rods come in several sizes from one fourth of an inch to three fourths of an inch. The rods are made of stainless steel and have a T-handle on the back to grip. The stainless steel does not warp and takes heat well. These can be expensive though. I have also had rods made by blacksmiths that will work as well.

The next tool you need is a rasp to clean out the joint area of the blowgun and to make the interior smooth. An easy aboriginal way of doing this is to use a hard wood stick or piece of cane moving back and forth with a mixture of coarse sand and water. Cane works well because the rough joint areas really help clean the interior. After you have this complete, you will spend lots of time pouring water into the gun to clean out the excess sand. This method adds on time for drying out your blowgun.

The Cherokee make rasps of tin or aluminium cans. The best metal for these rasps comes from tobacco tins. They cut out a rectangle piece, lay it on a piece of wood and use a pointed awl to poke holes into it. This creates a cheese grater pattern on the metal. Attach this to a hardwood dowel and use this to rasp out the interior of your blowgun. Usually, on a dry method of rasping, you can blow the 'saw' dust out of the blowgun. The first few darts will clean this dust out of your gun (Metcalf 1974).

Heavy grit sandpaper can also be tacked or glued to wooden dowels to make a homemade rasp. Recently I have found 4 inch (10 cm) sanding disc tubes in 1/2 inch (13 mm) diameters. These can be glued to dowel and make really good homemade rasps. Another option is to use belt sandpaper cut into strips and attached to pieces of cane with two sided upholstery tape. By using tapered small diameter pieces of cane you can usually sand out a blowgun quickly.

The best rasp I used was also made in a machine shop. I have round files welded to stainless steel rods to rasp out the blowgun. A T-handle makes the rasping work quickly. I can either grip the handle with my hand or stand on the T-handle and use both hands to move the blowgun up and down over the rasp.

The only other tools needed to make a blowgun are leather gloves, a sharp knife to clean the leaf stalks off the joints and sandpaper to smooth the joints and the mouthpiece so your lips do not encounter any burrs.

Blowgun construction

The first step of blowgun manufacturing is to straighten your piece of cane. Select a piece of cane larger than your intended blowgun so you can trim off one of the ends if you encounter a problem area. Make sure you wear gloves because the straightening process can get hot. You should straighten your blowgun over hot coals. If you try to straighten over flames you will scorch your blowgun. Hold the cane over the hot coals and slowly rotate the area you want to straighten. The cane will begin to sweat and look moist. The cane will give and

straighten with persistence when enough heat is applied. If you seem to be putting a lot of pressure on the cane, then add more heat before you crack or kink the cane. This process takes time and you sometimes end up re-bending areas you have already straightened.

I use two straightening techniques. The first technique is to bend the cane over my knee. From a sitting position, I can use both hands to put slight pressure on the cane. This works well for specific areas. For general areas, I stand up and grasp the cane at the top and place the bottom on the ground. I push with my other hand to get general overall bends out. I have seen Cherokee blowgun makers intentionally kink the cane to straighten it.

Cane can be crooked at the joints, in the sections between the joints, or, in some cases, both. I have heard some people say they straighten the joints and then the sections between, but I rarely have luck with this method. I start with the worst problem areas and save the easy areas for last. If your cane is going to break during straightening it will happen on one of these harder areas so if you start there you will not have wasted time prior to breaking the cane. If you spent thirty minutes straightening all of the easy areas and broke the cane on the last hard area you would be upset to say the least. To keep one area straight while you move to another area, you must let it cool down. You can dip the cane in water to cool the cane. I try to get the cane as straight as possible. If I encounter a problem with the cane, I will do the best I can. Your problems usually occur at joints. After the cane joint is hollowed out, cane tends to straighten easier.

Some Cherokee do not burn out the joints of the blowgun. They use a metal tool to punch out the joints. A pointed tool is needed for this. The greener the cane, the easier this is to do. Green cane can be punched out with a smaller diameter piece of cane or a hardwood stick. If the cane is really dry, you can crack the joints, so be careful (Nash 1963).

After the cane is straightened, I begin burning out the joints. I start with a small diameter rod of about one fourth of an inch. The rods are heated in the fire until they are glowing red hot. The rod will burn through the joint quickly so if you are not careful, you will burn through the side of the blowgun. When you get to a problem joint, try to straighten it after you have burned out the joint. The hot rod will heat the cane up enough to bend the joint straight. After I have my small pilot hole, I will keep using different size rods to make my hole larger. Stop to straighten as needed. The more you burn out, the less you will have to rasp or sand out.

After you have burned the gun bore as large as you can, begin to rasp or sand the inside of the blowgun. The first joint or so can be done with a round file fairly quickly. The rest of the joints will need one of the rasps previously mentioned. Concentrate on each joint and this will go fairly quickly. You might have to end up with minor straightening.

After you have burned and rasped your blowgun, you should blow through it and get out the excess dust inside. By shooting a couple of darts through the blowgun, you will clean the interior of the gun. Hold the blowgun up to the light and check the bore. You will see any imperfections left at the joint. These imperfections must be rasped out to guarantee a great shooting blowgun.

Once you have rasped out the blowgun's imperfections, look into the light while you rotate the blowgun looking for the best circle. Shoot a dart and see how it flies. Rotate the gun and keep shooting until you find where the dart shoots the best for you. Mark this spot on the top of the blowgun. I usually mark a 'V' notch with a file that I can feel on my top lip when I put the blowgun to my lips. I can feel this notch before I shoot and know my gun will perform its best.

To finish the blowgun, you cut it to length. I always leave a joint for my mouth piece and usually leave a joint on the muzzle end too. If you cut the joint off of the muzzle end you will not make a mistake and put a dart in the wrong end of your blowgun, but the joint on both ends of your blowgun makes your blowgun stronger.

I sand the joints after I use a sharp knife to cut the area where the leaves grew out of the joint. I sand the mouthpiece to finish my gun. The Cherokee polished and burnished the outside of their blowguns. After I have the outside the way I want it, I will put a coat of light oil to protect the gun from moisture. You can use any of the rub-on type wood oils. Do this whenever you feel the need for the life of the blowgun. The patina on an old blowgun gives the blowgun character.

After you have made your blowgun, remember to store it properly for its long use. Store them flat. If you prop your blowgun up in a corner, gravity will cause it to warp. Blowguns can be straightened at any time, but this is just more work.

One consideration of a blowgun is its length. Although a ten-foot blowgun is nice, if it will not fit in your vehicle you will not be able to travel with it easily. Your mode of transportation might be a consideration in determine the size of your blowgun. I do not know how many people have ordered a long blowgun from me and not be able to get the blowgun inside their car when they come to pick the blowgun up from me.

Cherokee darts

The Cherokee called their darts "tsi tsi" which means thistle (Worsham 1997). Thistle is the modern and traditional dart fletching used by the Cherokee. Traditional Cherokee darts were up to 22 inches (56 cm) in length, but the average length was 8 to 15 inches (20 to 38 cm). Traditional Cherokee dart shafts were made of locust, mulberry and white oak (Harrington 1922; Speck 1938). Today, many Cherokee dart makers use hardwood dowels instead of

splitting out wooden shafts. The Cherokee darts were fletched with approximately 4 or 5 inches (10 to 13 cm) of thistle, requiring several thistle heads per darts (Laubin 1980).

Dart shafts

Traditional Southeastern type blowgun darts were made of various types of wood or cane depending on the different tribes making the darts. Since no darts have been recovered archaeologically, we can only guess what was used prehistorically. We only have the early works of Frank Speck who reported on the Catawba and V. J. Fewkes to record early methods of dart construction (Speck 1938).

The Cherokee used long, sometimes up to 22 inches (56 cm), hardwood shafts of locust, mulberry and white oak according to V. J. Fewkes. The Cherokee darts are round in cross section. Cherokees put approximately 4 inches (10 cm) of thick thistle down on their blowgun shafts for fletching. There is no record of Cherokee using darts fletched with animal fur or feathers. Today most Cherokee darts bought in shops on the Qualla Boundary are made of wooden dowels or bamboo skewers and fletched with thistle (Speck 1938).

Handmade hardwood shafts are a dying work of art. To make these, I get a quartered log of appropriate hardwood (oak, locust, mulberry, et cetera) and use an axe to split it down to acceptable blanks. You should follow the grain of the wood because it will split easier and because the dart tends to break on impact if the grain is violated. After I have a square of wood, I use a knife or flake to take off the corners making the square an octagon in cross section. Next you can use a sharp flake or heavy grit sandpaper to round off the dart. I like to taper the dart in the area that is to be fletched and leave more wood at the point. These tend to fly better for me. It will easily take an hour to get a dozen matching shafts to fletch.

When learning to fletch darts, I would use bamboo skewers from the grocery store or wooden dowels. Bamboo skewers usually come in one hundred count packages and are either 10 or 12 inches (25 or 30 cm) in length. With wooden dowels, you can usually get oak and cut them to length. I recommend this for ease in learning because of fairly consistent sizes. From an economic stand point these are also cheaper. For target shooting, skewers and dowels are fine, but hunting requires hardwood shafts.

To prepare a shaft to be fletched just split the back of the shaft with a knife or stone flake. The split should be about one fourth of an inch in length. Insert a string in the split and wrap the string around the shaft tightly to prevent further splitting. Finally, put the string back in the split to lock the string in the shaft.

I usually use between 24 (61 cm) and 30 inches (76 cm) of string per dart. I use cotton string of various colours, but the Cherokee tend to use just white. I use various colours so people can tell their dart from someone else's. Any type of string will do. I have used sinew, dog

bane and milkweed fibres. Cotton string is easier and more consistent to use. Be careful using some plants such as dogbane because it is poisonous. The string is later stuck in your mouth so do not use anything you would not stick in your mouth. Since there are no archaeological examples to date, we do not know what traditional Native Americans used to tie their darts. We can assume they used sinew or strong plant fibres to tie their darts. Cordage would be too bulky and heavy to tie darts with.

To make my dart tying go easier, I usually make up shafts with strings to speed up production. You can split shafts and put in strings while watching TV and get a hundred or so made up in an evening. This will help you later.

Thistle gathering and drying

To make thistle darts, you first have to prepare and dry the thistle. The first step of thistle preparation is to gather your materials. In the North Carolina Piedmont where I live, thistles begin to bloom around late April and early May. The most critical factor that affects this is, of course, the weather. An early spring can cause them to bloom earlier. There are four usable varieties of thistle in my area. From largest to smallest, these are: bull thistle *Cirsium pumilus*, yellow thistle *Cirsium spinosissimus*, Canadian thistle *Cirsium arvense* and Scottish thistle *Onopordum acanthiu.* Yellow and bull thistle bloom around the same time and Canadian thistle blooms later. All of these will work, but Canadian thistle is small and sometimes requires two thistle heads to fletch a dart. Most dart makers prefer the medium sized yellow thistle, which usually contains enough material to fletch between 4 (10 cm) and 6 inches (15 cm) on a dart. Many people argue that the Cherokee only used one certain type of thistle because that is what grows around Cherokee today. The Cherokee range prior to contact would have allowed the Cherokee to utilize other thistle types.

Native Americans probably would have used stone knives or sickles to cut the entire plant down. The stalk can be eaten and cordage can be made from the fibres of the stalk. Thistles contain thorns all around the thistle heads and on the stalk so gloves can help save your hands. I usually carry a bucket and use garden shears to clip the thistle heads off into the bucket. If your aim is good, this will limit the amount of time you have to handle the thistle. Thistle should be gathered when the purple or yellow heads begin to turn brown. At this point, the heads are drying out and preparing to open up and transport their seeds airborne like milkweed seeds. You have a very small window of opportunity to gather thistle because once they begin to brown you are racing to collect what you can before they bloom.

I always get questions about where to find thistle. I find it everywhere. Thistle is an item I am looking for and easily recognize. I find it growing along roads and highways, in pastures (cows and horse avoid the thorns), at the edge of crop fields and in vacant lots. I have never had anyone tell me I couldn't pick thistle out of his or her fields. I have gotten some weird looks

though. Of course, ask permission before gathering in a field, wear long pants and gloves and watch out for snakes.

When you get your bucket of thistle home, you will make a great discovery. The bucket is full of insects! I have found June bugs, stink bugs, ants and spiders on my thistle heads. Do not bring these into your house because your spouse will not be happy. I bring them to my deck and take an old pair of scissors and cut off the outer leaves. These are full of thorns that only get worse when they dry out. After the heads are free of bugs and thorns, I tie each head individually below the brownish purple on the head.

The Cherokee take the thistle heads and put them into split cane sections to dry. These cane holders were tied at intervals to stop the heads from opening (Arneach 2012). Recently I have seen Cherokees just using strips of plywood to put the thistle heads between instead of cane. These strips can be hung up and stored to dry. I find my method easier for me and my system of making darts.

You can make darts straight from the field, but since you have a small window of opportunity to gather thistle I usually just wait on dart making until I am finished gathering thistle.

I put my tied thistle heads on drying racks so they do not touch each other and can get air above and below so they will dry faster. I put them in sunlight during the day and cover them at night so dew does not get them wet again. Dew will cause them to mould. You can tell when the thistle is dry because the leaves dry out and move to the bottom of the head. If you get good sunny days, your thistle will be dry in about three to five days.

After I dry out my thistle, I place it in five-gallon buckets to be stored. If you do not have them completely dry, you will have a mouldy mess later. Sometimes, as thistle heads dry, the bottom cap pops off by itself and opens up. They can still be tied into darts; if they are used immediately then they can be salvaged. Watch out for these because when the thistle heads open the thistle fibres can end up getting everywhere.

Thistle preparation

I consider thistle preparation to be the key element in successfully rolling darts. One of my key reasons for writing this was that during my research I could not find a good example of how to do this anywhere. This is the key because if the thistle is not properly prepared or controlled by the dart maker than the dart will not be properly made. The more this is practiced, the easier it will be to roll a dart. By properly preparing your thistle, you can roll beautiful and effective darts.

The first step in preparing your thistle for dart rolling is to hold the dried thistle head in your left hand and begin pulling out the anther. On a dried thistle head, these will be brownish purple or yellow and come out easily. If the anther does not come out easily then you usually

have an insect larva in your thistle cap. The insect larvae are usually dead and have mildewed inside the cap causing the anther to stick. If the anther does not come out easily, I leave it in and either pick it out after the dart is rolled or leave the fibres in for a dart decoration.

The anther should be pulled out carefully because the anther is intermixed with the filament. The filament is the part of the thistle you will fletch your dart with. The filament is an off-white colour and will be exposed when you have the entire anther removed. If you do not pull out the anther carefully, you will lose your filament and have less material left to fletch your dart with. Any anther left can be picked out when the dart is finished.

The next step is to remove the cap of the thistle head. To do this, flip the thistle over and grab the cap with your right hand. The cap is located under the outer leaves (sepal). You can usually insert your right thumb where the cap and the sepal meet and pinch the cap off. Sometimes you have to twist the cap off. The thistle seeds are located under the cap and can be collected for birdseed or replanting for the next year. The seeds will easily shake out when they are loosened by a finger.

After the cap is removed you can see the filament circles and the remaining parts of the thistle. Remember you should still be holding the thistle head in your left hand. The sepal (outer leaves) is clearly visible. The sepal is the next item to be removed. Also notice the circles where the seeds are connected. These circles are called the stamen. The stamen of the thistle is similar to milkweed with several filament strands attached to the seeds to transport the seeds through the air when the thistle blooms. These circles should be broken up so you are dealing with individual filament fibres instead of several fibres when you are rolling your dart.

As I prepare to remove the sepal, I used my thumb to push the filament circles down to expose the sepal better. I pinch the sepal leaves between my thumb and index finger and carefully pull out one or two at a time. Be careful to barely release pressure with the hand holding the thistle head or you will pull out useable filament. This is the stage where most beginners start to lose control of their thistle head. Remember, if you leave some sepal on the outside you can pick it out easily from the finished rolled dart.

Now take your thumb or index finger and briskly rub it across the stamen circles to break them up and release the filament. This rubbing crushes the stamen circles and separates the filament to be used for rolling the dart. I usually squeeze the filament hard so my hand generates sweat. This moisture and compression briefly keeps the filament together so you can turn the filament around in your hand. You want the seed side of the filament facing your left palm so that it lies against the shaft when you are rolling the dart.

After you have flipped the filament, spread the filament evenly along your thumb and index finger. I leave about one eighth of an inch sticking out on the palm side of my hand so the

string has something to catch when I am rolling the dart. If you are using a large thistle head and have too much filament for a single dart, do not waste it. I divide it into two equal piles and use whatever is handy, such as a rock, to put on one pile while I use the other. By using this method, you can get two darts fletched with one thistle head.

Although most Cherokee darts have 4 or more inches (10 cm) of fletching, you can get by with less. I would say in most cases for a 12-inch (30 cm) dart, 3 inches (8 cm) of fletching would work. You just need enough fletching to fill the bore of your blowgun to create the piston that will be pushed out of your blowgun with a concentrated breath. The fletching also keeps your shaft in the centre of your blowgun so the shaft point does not drag along the side of the blowgun. Finally, the fletching keeps the butt end of your dart from coming past the point once the dart comes out of the blowgun. The fletching stabilizes the dart so the dart will fly straight.

Dart rolling

Dart rolling by a master happens quickly and looks very easy to do. Realize when you are watching someone do this that lots of practice caused this to happen. Although dart rolling is harder than it looks, with practice most people can become proficient at dart rolling. In the Southeast, thistle is literally everywhere and if someone takes the time to gather a few hundred heads, you can easily become good at this skill in a few weeks. Not only can a master dartmaker match the dart to the bore of the blowgun, but can also make the thistle length the same on every dart. I can easily produce a dart in about a minute and have seen some Cherokee dart makers produce a dart in about the same time. Realize that this comes with rolling thousands of darts.

To roll a dart, keep hold of the thistle filament between your thumb and index finger and keep your other fingers flat. Pick up the shaft with the prepared string, wet the string and put the string in your mouth. For a right-handed person, you will hold the thistle in your left hand, the shaft in your right hand and the string in your mouth. I start the string about one eighth of an inch behind the end of the thistle at my thumb and twist the shaft clockwise. Your string should catch the thistle filament and hold it to the shaft. Slowly move the shaft to the left while the string attaches thistle filament to the shaft. The thistle will be placed on the shaft from the back toward the centre. You should keep tension on the string with your mouth.

Over the years, I have learned that the actual rolling is a hard concept for some people to grasp. You are attempting to make a continuous spiral of thistle down and string along a three to five inch length of a dart shaft. People either move the shaft too fast or do not catch enough thistle filament on the dart. These darts either end up looking like plucked chickens or the filament is tightly packed in about an inch and one half of the back of the dart. Practice

is the key. Once you realize the balance between shaft and material, you can tie darts using inferior materials.

To finish the dart, you can do several things. First I put about an inch or so of string past the point where my thistle ends on the shaft. This will make your darts look consistent and neat and add a little weight to your dart. I finish tying the string with two half hitch knots illustrated in one of the photos.

After the dart has been tied, you want to shake off the excess material. To do this, spin the shaft between your palms quickly and any excess material should spin away. Do this outside because it can cause a mess if you did not get your material on your shaft.

Now take your dart and stick it in your blowgun to shoot. You will notice that there is some thistle sticking out of your gun. To avoid getting thistle in your mouth, you must burn off this excess material. I make burning tubes out of small pieces of cane 8 to 12 inches (20 to 30 cm) in length. I stick the dart in the tube and burn off the thistle sticking out of the tube. If you cover the end of the tube with your hand, you will deprive the fire of oxygen and it will go out. Check to make sure the fire is out before putting the dart in your pile of finished ones because the thistle filament is very flammable and can turn a pile of darts into a pile of shafts very quickly.

I finish my darts with a dab of glue on the string around the knot so it does not slip. This is not really necessary because most darts will only last between fifty and seventy-five shots. The shelf life on a dart does not require the glue, but I like to know my string is going to stay on the shaft. You now have a blowgun and darts, so the next step is learning how to shoot a blowgun.

Shooting techniques

When shooting a blowgun, I have noticed two holding techniques. The first more common technique is to put both hands near the mouth and create a seal at the mouth to shoot the blowgun. The Cherokee and most worldwide tribes use this method. The second method was used by the Catawba and is a modified form of how you would hold a rifle. One hand creates a seat at the mouth while the other hand is extended to steady the blowgun. I have used both of these methods and do not have a preference, although the two-hand seal method seems to be more traditional (Speck 1938).

When blowing through your blowgun, keep your lips sealed around the blowgun and tighten this seal with your hands. Do not suck in because you will be sucking in thistle fibres. It would be almost impossible to suck a dart like this out of a blowgun. After you have established an airtight seal, blow forcefully like you are sneezing. Most mistakes that are made by beginners

are not blowing hard enough and not having an airtight seal. Remember that you cannot blow too hard. If you think you can blow harder, you did not blow hard enough.

When aiming a blowgun, you just need practice. I take one eye and close it, look at the target and then do the same with the other eye to gauge my target. There has been no record of sights used on Native American blowguns, but I have a blowgun from Southeast Asia that has a sight. The maker took a straight section of bamboo and used some type of natural resin glue to centre it on the end of the blowgun. The gun shoots well so this will work, but would not be traditional to the Southeastern United States.

Length is the next factor in determining how your blowgun shoots. The longer the blowgun, the more accurate it will be, but it will shoot slower because it has more drag inside the tube. Thus a shorter blowgun shoots faster but is less accurate. A blowgun size that works well for me is between 5 (1.5 m) and 6 feet (1.8 m) long. I find this size of blowgun to be accurate and fast and would be an appropriate size for hunting. If I were shooting an accuracy match, I would use an eight-foot or longer blowgun.

Realize that distance also affects your shooting technique. The dart is like a bullet and the farther that it travels from the blowgun, the more gravity makes it drop. To test this in your blowgun, mark off an appropriate length from the target, approximately 10 feet (3 m), and shoot. At this distance, you should have little to no drop. When you can consistently hit this target, move back further to determine when your dart will drop. I find that darts begin to show drop between 25 (7.6 m) and 35 feet (10.7 m) depending on breath strength and dart weight. Realize that after you have determined your drop length, you must aim higher to compensate for the drop.

Windage is a final concern for shooting. This can be compensated by attaching a feather to the end of the blowgun to show when and how hard the wind is blowing before you shoot. You can adjust accordingly or just wait until the wind dies down.

The key to becoming accurate with a blowgun is practice. If you put in the time with this weapon, your accuracy will improve.

The Cherokee have a blowgun range of approximately 100 feet (30.5 m), but effective hunting range was between 40 (12 m) and 60 feet (18 m). The length of the Cherokee blowgun increased the accuracy at these ranges (Speck 1938).

Most Cherokee hunting took place in the fall because the thistle blooms in late August into the fall in the mountains where the Cherokee live. This could imply that the blowgun was used seasonally. In August squirrels began gathering nuts and Cherokee hunted the squirrels in pairs. One hunter camouflaged himself near a hickory tree and another hunter would make himself obvious and herd the squirrel to the camouflaged hunter. Birds were hunted in

the fall feeding on dogwood and black gum berries. A hunter camouflaged himself near one of these trees and picked off the feeding birds at his leisure. As red winged blackbirds migrated in large flocks, Cherokee hunters found their roosting spot and hunt the birds by torchlight. By camouflaging himself and imitating female quail calls, a Cherokee hunter could lure male quails into firing range. Finally, turkeys were killed by Cherokee hunters by shooting the turkeys in the eye (White 1987).

Poisons

Every time I do programs, someone always asks, "What did Native Americans use for poisons on their blowgun darts?" As of this writing, I have found no ethnographic or archaeological source for the use of poisons on blowgun darts in the Southeast. Poisoned darts are a combination of truth and fancy. Many worldwide tribes used poisons such as curare and the poison dart frogs. Hollywood and literature always portray the darts shot from blowguns as being poisonous. In South America poisons were used to hunt prey, such as monkeys or sloths, or for defence against enemies. Monkeys and sloths are both large prey that have hands that can be used to pull out a dart that has been shot into them. If you shoot a monkey and do not hit a vital organ then the monkey is going to pull out the dart and climb away. The truth of the matter in the Southeast is that blowgun darts were probably not poisoned.

Native Americans knew of many poisonous plants that could have been used, but their dart designs do not support the use of poison. The Cherokee have used may-apple (mandrake) on their arrows (White, 1987).

Most poisoned darts are smaller and lighter, relying on scratching the victim and letting the poison do the work. Most poisoned darts are scored around the poisoned tip so that this tip will break off in the prey if the dart is pulled out. This tip will also break off in a tree if you miss your target so you do not have to worry about stepping on a poisoned dart as you are walking around the jungle in bare feet. Piranha Jaws are used in South America to score their poisoned darts. Most Southeastern darts are heavy, relying on the velocity and weight to cause penetration thus killing the animal.

Because blowguns have not been recovered from archaeological sites, we have no evidence of poisons being used. Many accounts of South American tribes mention poison and how effective it was against early Spanish explorers. Maybe poison is the key element missing from the Southeastern Native American blowguns that kept it from being mentioned in accounts prior to 1750. Since the weapon was not considered a threat to the explorers' accounts do not mention it.

Quivers

Once you have made a handful of blowgun darts, you quickly realize you need something in which to carry them. Since there are not early examples of quivers recovered archaeologically, we have to rely on speculation for our quivers. Darts could have been simply stuck in a belt around your waist or worn in your hair until needed. You can also put a piece of buckskin around your blowgun to secure your darts next to your blowgun until needed.

The most decorative quiver of the Cherokee would have to be a basket quiver. The Cherokee are famous for their oak splint and cane splint baskets in many shapes and sizes, so a blowgun quiver would not be hard to make. I have seen many modern Cherokee with quivers made out of basketry materials. Frank Speck, as well as others, has written books about Cherokee baskets that have beautiful examples of Cherokee baskets that could be used for quivers.

A common type of quiver could easily be made from a gourd. This would be east to make. You obtain the gourd, clean and cut the gourd to shape, and you have a quiver. I see many Cherokee and Catawba blowgun quivers made of gourds. Rocks can be tied on the bottom of the quiver to prevent your quiver from tipping over and losing your darts when you are running. Thomas Mails in his book *The Cherokee People*shows an interesting quiver made of two pieces. The first piece is a gourd with a hole in it containing thistle and it is fastened with buckskin thongs to a large diameter of cane containing shafts and finished darts. This quiver is very similar to South American quivers I have collected over the years and would probably not have been used in the Southeast. I find this quiver interesting for a long hunt, but for a day trip, I would rather just have a quiver containing enough darts for the day (Mails 1992).

Bark quivers could also be used I have made tulip poplar bark quivers. I usually use a long rectangle of bark, score the centre on the bark side, fold the quiver in half and tie it with buckskin thongs in drilled holes on the side. I then make a rim and lace the rim to the top. Then I place cedar bark strips inside the quiver so it retains the shape I want to be when it dries.

The last type of quiver would be made of buckskin or other animal hides. I have made several quivers like this, but they usually require a rawhide backing to make the quiver hold a proper shape.

Now you need to decide where to wear your quiver. Some people wear them on their side while other people wear them around their neck. I like my quiver around my neck hanging at my sternum. This way when I am shooting I know where my next dart is and I do not have to take my eye off the target. When your quiver is on your side, I find myself looking down when I grab my next dart. When I am not shooting and want to travel, I put the quiver over my head and arm and wear it on my side. By wearing the quiver under my arms I lose less darts and they do not become tangled in everything. A final option is to secure the quiver to your blowgun so that your darts are accessible as needed.

Today, one can easily find blowguns and darts for sale in the various gift shops in Cherokee, North Carolina. Almost daily, blowguns can be seen demonstrated at the Oconaluftee Indian Village near the Museum of the Cherokee Indian. Blowguns also have a long history of contest of skill at Cherokee. During the Fall Festival, you can watch fierce competition of blowgun shooters from the Cherokee tribe.

The sad note is that blowgun skills among the Cherokee are dying. In my lifetime, Hayes Lossiah and Walker Calhoun have both passed away. Luckily, Walker's son, Danny, has taken over for his father. Driver Pheasant, William Swimmer, Davy Arch and Stan Tooni are still making blowguns. Many of the older craftspeople are dying at an alarming rate, and many Native American children, like most children, do not care about culture and the past. Hopefully, this article will preserve these skills, as I understand them, for future generations (Phillips, Owens and Collins 2012; Arneach 2012; Pheasant 2009).

DEMONSTRATION OF A U.S. SOUTHEASTERN INDIAN BLOWGUN TECHNIQUE (DOUG MEYER)

Keywords weapon
hunting
ancient technology

Country USA

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FIG 1. CUTTING CANE WITH A STONE BIFACE.

FIG 2. REMOVING THE LEAVES BY BENDING THEM STRAIGHT DOWN.

FIG 3. CANE LAID OUT READY TO BECOME BLOWGUNS.

FIG 4. STRAIGHTENING THE CANE LIKE YOU WOULD TILLER A BOW.

FIG 5. AFTER SCORING CANE ALL THE WAY AROUND YOU CAN BREAK IT EASILY ON YOUR KNEE OR THIGH.

FIG 6. STRAIGHTENING THE CANE ACROSS MY KNEE.

FIG 7. USING A SMALLER DIAMETER PIECE OF CANE TO REAM OUT THE BLOWGUN. BY ADDING A SLURRY OF SAND AND WATER YOU CAN SAND THE INTERIOR OF THE BLOWGUN.

FIG 8. USING SANDSTONE TO SMOOTH THE MOUTHPIECE.

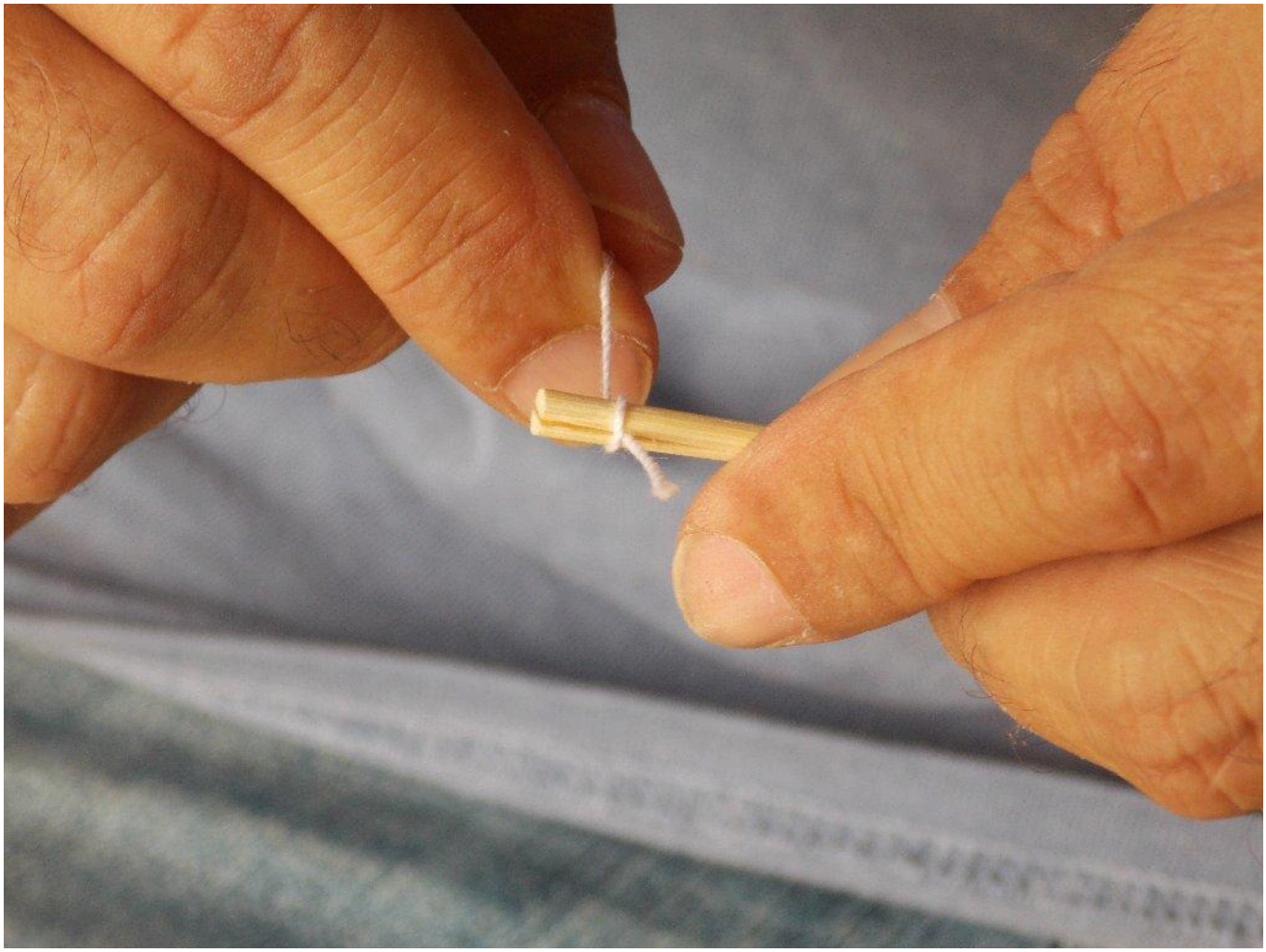

FIG 9. INSERTING THE STRING IN THE SPLIT, WRAPPING TO PREVENT FURTHER SPLITTING AND INSERTING THE STRING BACK IN THE SPLIT TO LOCK THE STRING IN.

FIG 10. REMOVING THE FLOWERING PART OF THE THISTLE.

FIG 11. REMOVING THE FLOWERING PART OF THE THISTLE.

FIG 12. FILAMENT IS PARTIALLY EXPOSED.

FIG 13. REMOVING THE BOTTOM OF THE FLOWER HEAD BY INSERTING THE THUMB AND PULLING OFF THE BACK TO EXPOSE THE SEEDS.

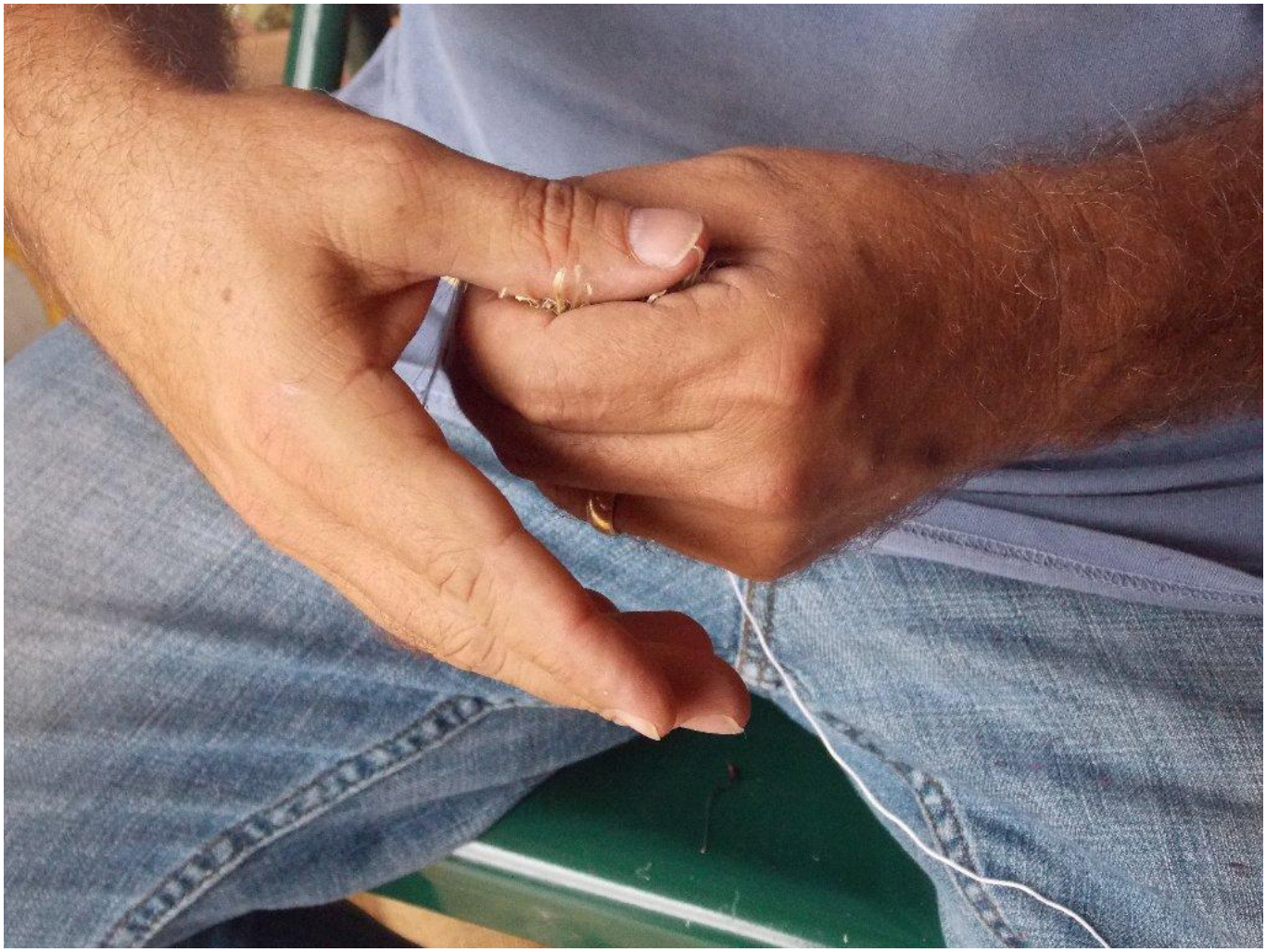

FIG 14. USING YOUR THUMB TO PUSH THE FILAMENT DOWN SO YOU CAN REMOVE THE OUTER LEAVES.

FIG 15. BREAKING UP THE BOTTOM OF THE FILAMENT WHERE THE SEEDS WERE ATTACHED.

FIG 16. FLIPPING THE FILAMENT SO THAT IT WILL LAY ON THE SHAFT RIGHT SIDE UP.

FIG 17. THE FILAMENT LAID BETWEEN MY INDEX FINGER AND THUMB WITH AN ARES SHOWN FOR MY STRING TO HAVE SOME MATERIAL TO GRAB AND HOLD.

FIG 18. THE STRING IS HELD IN THE MOUTH WITH CONSTANT TENSION.

FIG 19. BEGINNING TO ROLL THE DART. ROLL AWAY FROM YOU AND SLOWLY PUSH TO THE RIGHT OF THE PHOTO.

FIG 20. DART ALMOST FINISHED.

FIG 21. ROLLING THE STRING ABOUT AN INCH (ABOUT 3 CENTIMETERS) TO GIVE A LITTLE WEIGHT TO THE CENTER OF THE DART.

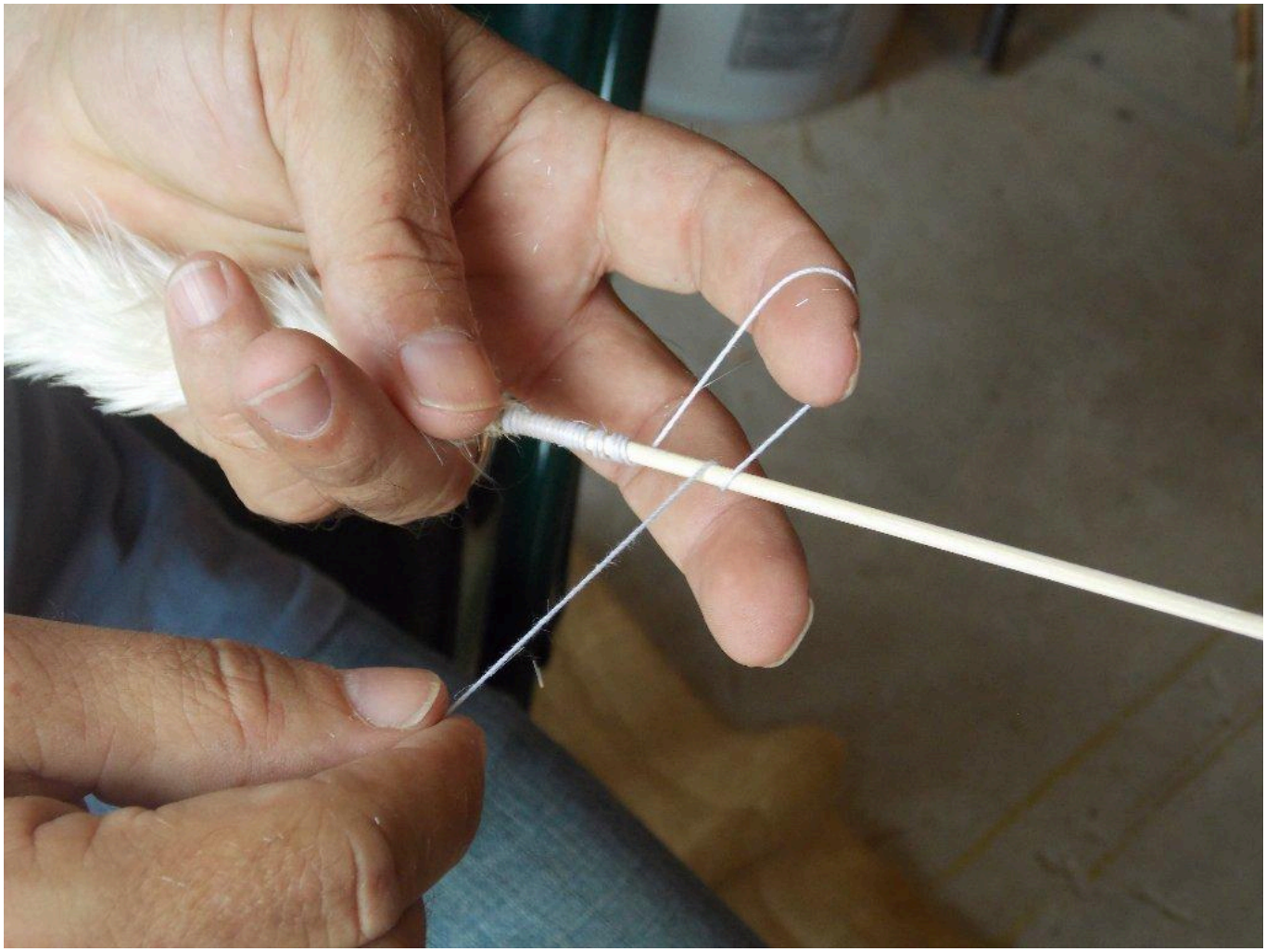

FIG 22. FINISH BY TYING A HALF HITCH.

FIG 23. SPIN THE DART TO REMOVE EXTRA FILAMENT THAT DID NOT GET CAUGHT UNDER THE STRING.

FIG 24. DART ALMOST DONE.

FIG 25. THIS WOULD GET IN YOUR MOUTH IF YOU DO NOT REMOVE IT.

FIG 26. BURNING THE EXCESS FIBERS IN A TUBE. BY PLACING YOUR HAND OVER THE TUBE YOU CUT OFF THE OXYGEN AND STOP THE WHOLE DART FROM BURNING.

FIG 27. THE DART BURNED FLUSH WITH A BLOWGUN.