



Quivers & Quarrels



A.S. 47 XLVII • Fall 2013 • Vol. I • Issue 3

THE WAY WE WERE: SCA Archery: Origins & Evolution

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SIR JON FITZ RAUF:

Profile of a Living Legend

How it Began: Inga's Tale of
SCA Target & Combat Archery

The First SCA Combat Arrow

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Yumi and Ya: A brief survey of
Japanese Archery

Thumb Rings

Fire Across the River: Tactics
for Combat Archers from the
Senryaku

A Study of Medieval and
Renaissance Arrow Shaft Sizes

The Medieval Archer's Reading
List

Photo by Henry Jakl

Thorunn Smallwolf (Breanne Crane) of Avacal, An Tir
Winner of the Quad War Bow Competition





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In this Fall Edition (2013) of *Quivers & Quarrels*, we explore the origins and evolution of target and combat archery in the SCA.

New in this edition: Meet the Archers, featuring photos and bios of local archery stars of all ages. Also, be sure to read about **Sir Jon Fitz Rauf**, the **godfather** of SCA archery, and a regular contributor to this publication.

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About Membership in the SCA

With a few clicks and a credit card, you can become a member of the Society for Creative Anachronism or renew your existing membership online. <https://membership.sca.org/>

Membership in the SCA has numerous benefits, including:

- The ability to hold office
- The ability to compete in Crown / Coronet Tournaments
- Discounted entry fees at events
- Sustaining and International members receive their kingdom's newsletter, and can subscribe to additional publications.

Additionally, your fees help support the SCA infrastructure, including worldwide liability coverage for our chapters, and the ability to maintain consistent rules and standards throughout the Society.



MEET THE ARCHERS

Thorunn Smallwolf:
She's beautiful *and* deadly



Thorunn Smallwolf at Harvest Feast 2013 in Bitter End
Photos by Jim Martin

Known mundanely as Breanne Crane, this fall's *cover girl* has been shooting for just over a year, and already she's a winner.

Barely 5-feet tall, this small but mighty archer pulled a **55-lb bow** to win the Women's Division An Tir Quad War Bow Competition this past summer. She is Champion of Arrows for the Shire of Windegate, Artemisia; and also this year won the Red Deer harvest feast tournament.

Thorunn, who is based in the northeastern Principality of Avacal in Montengarde, says she's always loved archery.

"But what got me started with a bow in my hands was hearing about our weekly SCA shoot night at the Calgary Archery Centre. I decided to attend one night and was hooked!"



Thorunn wasted no time getting into combat archery. "My armor and crossbow are never far from me at war events."



MEET THE [youngest] CHAMPION: Future Olympics Star Miranda Macandrew, Shire of Hartwood

By Master John Macandrew, OGGS
and Ouregan filia Flaviani

On the archery range since early infancy, **Miranda Macandrew** first shot a bow at the age of 4.

Lucky girl: both parents are grandmaster archers based in the Shire of Hartwood (Vancouver, B.C.). Her father is a long time provincially certified archery coach who has worked with both mundane and SCA archery groups.



Her archery practices began in earnest at the age of 8.

Now 10 years old, this year Miranda has shot:

- A perfect 30 at 10 yards
- 34 points on 7 arrows in a speed round
- Grandmaster archer with a 103.5 average
- Children's IKAC 289
- Youth IKAC 203
- Yeoman's IKAC 98

Shooting against adults at 20 yards, she advanced to the quarter finals in Seagirt's Summer Archery Tournament.



Shooting against adults at 20 yards at Fowl War in Hartwood she defeated eight adult archers, **including her father**, to take the win for the final.

No surprise: this girl is also participating in the local Junior Olympic Program for archery.

We expect to hear more from this young lady.

Without a doubt. **Miranda Macandrew** is already a winner.

SIR JON FITZ RAUF Profile of a Living Legend



by Ouregan filia Flaviani

Sir Jon Fitz Rauf of West Kingdom (now 71) was not at first very interested in archery.

As a small child, he says, “my parents gave me a simple wood bow and some arrows. But I was unable to hit anything and soon gave up.” *Probably it was a bad bow...*

He briefly attempted archery again in college. But “since the range was so far from my next class that I had to run all the way to reach it in time, I soon dropped that class and took up fencing instead.” He was a student at UC San Diego, studying Theatre and TV at the time.

But when he discovered the SCA at a Twelfth Night celebration, all of that changed.



The Flip-Visor Freon Helm – with Tassels

“The very next event I went to, I put on a helmet and gave it a try.”

It was Year 2 of the Society for Creative Anachronism.

In the first years of the SCA, it was customary to do tourneys every three months, alternating Crown and Coronation Tournaments. From the second of these tourneys, archery had been a part of the SCA.

The helms at that time were nothing like the beautifully crafted and expensive cranium protectors in use today. Only a handful of fighters even owned their own helmets. These were great helms, made by Sir Robert of Dunharrow. They were flat on top.

Sir Jon recalls the experience. “It was one size fits all. Squeeze it on over your head, and ignore the soaking wet sweat from the last guy who wore it.”

That year, he made himself a set of armour. In those days, armor was made from pieces of carpeting. Always the innovator, Sir Jon found that if he painted fiberglass resin on the back side of the carpeting (the flat side, without fiber), it was almost as good as plate. This method quickly caught on with others.

Invention of the Freon Helm

At the time, Sir Jon was working in a refrigeration shop. He recalls, “We had these Freon drums around, made of 10 gauge steel.” Sir Jon realized, “if I cut the bottom off the metal drum, cut a visor opening into it, welded some bars into it, painted it bright red, put some streamers and scarves off the hole in the top of it...” *voila!* a helmet.

In 1968, Sir Jon bought an 80-lb Whamo crossbow from a friend, which he began shooting at events.

There were maybe a dozen knights in the SCA in 1970,” Sir Jon recalls.

“Atenveldt was just switching over from a principality. The crowned king and prince [of the West] and I drove down to Arizona for their coronation tourney.”

Sir Jon (next page)



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Sir Jon (continued)



Sir Jon in 1971 with his 80-pound Whamo x-bow.

In that tourney, Sir Jon fought several people, including Duke Henrik of Havn (Kingdom of the West).

“I had a long fight with him, he had a great sword, I had a pole arm. We got down to one armed fighting, and he killed me, but the next thing I knew, I was getting knighted.”



Moments before the surprise knighting, 1970
Sir Jon on left; Duke Henrik on right



Sir Jon in chainmail, 1972.

Year 3 was the first year of combat archery. The earliest arrows were bamboo planter stakes topped with foam rubber and wrapped with medical tape.

“Then we experimented with other things, like plastic wine corks, and an arrow shaft on it; but they didn’t hold up too well,” he says.

Other efforts involved golf tube-shafted arrows with tennis balls strapped to the tips. But the flight of those arrows was less than desirable.

When a pair of hunters was observed shooting at each other with sanders blunts, it occurred to Sir Jon and friends to use similar blunts to create safe arrows for SCA combat.

In his 45 years of participation in the SCA, Sir Jon has continued to innovate and inspire better equipment and procedure. He has written exhaustively on all things related to the art of the bow.

(more about Sir Jon, next page)



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Sir Jon (continued)

Among his numerous accomplishments:

- Met the love of his life – Morigan Fitz Rauf at a Ren Faire in Novato, CA. They married in 1971.
- Granted the Laurel in 1974 for armoring.
- Admitted to the Pelican in 1979 for service as the first Master of Sciences for the West.
- Royal Archer (Kingdom archery officer) from 1975 - 1983.
- Developed the Royal Round and the Inter-kingdom Archery Competition and the Inter-Kingdom Combat Archery Competition.
- Ran the IKAC and IKCAC for twenty years.
- Became the first Society Deputy Earl Marshal for missile combat in 1999, which included at that time target archery, combat archery, Siege, and thrown weapons.
- Became West's first Archery Champion in 2007.
- Made a court baron for service to archery in the West in 2009.
- Currently a member of the Royal Missile Company, the West's Grant level archery order.

And what's Sir Jon doing currently?

“Currently I'm building target and combat crossbows and looking into the construction of period style bows made from PVC water pipe. I just set up an SCA wide online group that will try to organize a “guild” to encourage more period archery.”

Also, since 2000 Sir Jon has been working to gain peerage level recognition for Non-Rattan Martial Arts (NRMA) including Rapier, Target Archery, Combat Archery, Equestrian, Siege and Thrown weapons. After many years of effort, a committee was formed to look into peerage recognition for rapier, but not the other martial art forms, as yet. But he hasn't given up.

* * * * *

Still on Sir Jon's wishlist: “I'd like to see my son become king.” We're keeping a watchful eye on Viscount Sir Miles Fitz Rauf, aged 32.



Sir Jon with Longbow, 2007
This photo was turned into a painting as his prize for winning the archery competition



Sir Jon Fitz Rauf (left) and son Viscount Sir Miles Fitz Rauf Great Western War, 2009



Yumi and Ya: A Brief Survey of Japanese Archery

By Godai Katsunaga

Lord Godai Katsunaga resides in the Barony of Bright Hills in Atlantia, and is mka: Gordon Kinnie

Throughout history, the inhabitants of Japan have used many different types of bows. Small crossbows, repeating crossbows, short bows and longbows all have a place in the history of the archipelago. But of all the bows used, one—the *yumi*—is uniquely Japanese and is still in use today.

Early evidence from archeological finds show that the earliest inhabitants of Japan, the Jomon, (12,500-50 BC) relied heavily on a stave bow, a bow made from one single piece of wood that was similar to northern Asian short bows. The next major culture, Yayoi (400BC- 250 C.E.), introduced the longbow from the southern Asian forest regions to Japan. The longbow and short bow coexisted for some time in Japan. The Wa people had contact with the Wei Kingdom of China; the following description is from the Sanguozhi, a Chinese history book of the 3rd Century: “Soldiers use spears, shields, and wooden bows. The wooden bows are short on the lower part and long on the upper part. Bamboo arrows have iron heads or bone heads.” (Translation from *Decipher of "Wa Language" in Gishi-Wajinden—Location of each Wa Country and Structure of Yamatai Country* by Koji Nakayama, Shinjinbutsu-Oraisha Co., 1991.)

During the 4th to 9th centuries C.E., Chinese influence on the Japanese court was at its height. The bow was the mainstay of many court ceremonies and Shinto religious rituals. A scholar of the time wrote that civilized man should never fight to settle differences, but should resolve them through a test of shooting skills.

During early feudal times, specifically the Heian (794-1185) and Kamakura periods (1185-1330), the *bushi* warriors, a Japanese name for samurai, were primarily mounted knights whose weapon of choice was the bow. Armies during this time were

made up of Samurai horse archers and farmers using spears, and normally numbered only in the high hundreds and low thousands. The fighting style was primarily one-on-one combat. Often, the samurai would call out his heritage to find a worthy opponent to engage. Usually, arrows were marked with names so all would know who had fired them.

During this time archery was regarded as the best way to ascertain a warrior's ability. Battles were occasionally settled not by armies but by the commanders in an archery duel. After making several passes at each other on horseback and shooting arrows, the victor was decided. Unfortunately we have no record of the specific criteria for victory in these contests. Normally these duels did not result in death of either party, not because of the archer's inability to hit his mark, but because of the protection samurai armor provided. The major drawback to this form of battle was the expense of owning and maintaining a horse and the amount of practice required to become proficient at shooting from a galloping animal. The cost and time invested in mounted warfare meant that it was limited to local nobles and members of the warrior elite.

In 1274, the Mongol invasion made significant initial progress against the samurai defenders. Kublai Khan's army used unit tactics and massed arrow fire against a samurai army that was accustomed to fighting individual, man-to-man duels. The Japanese generals were inexperienced at managing large forces and coordinating units during warfare. After the fortunate arrival of the “divine wind” that destroyed the Mongol fleet, Japanese battle tactics shifted. The emphasis moved from individual combat to fighting as a unit. Individual glory was still important, but the practice of one-on-one combat had for the most part been replaced with large-scale battle



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formations and more centralized command and control of units.

During the 15th and 16th Centuries, the use of the bow reached its zenith. Armies were now made up of trained warriors, *ashigaru* or light foot soldiers, and mounted samurai. Formations now were in the thousands, made up of massed foot and mounted archers and spearmen. The mounted samurai were bowmen or lancers designed to exploit weaknesses in the enemy's formations.

Although there was a decline in the use of the bow after the introduction of the matchlock gun in 1543, archers were never completely replaced. Archer formations were replaced with gunners who were easier to train because they required less skill development than archers. But these units took more time to reload, and effective armies used both archers and gunners in supporting roles. Two examples of effective use of archers and gunners together occurred in 1575 at Nagashino and in 1584 at Okita Nawate. At Nagashino, Oda Nobunaga deployed an army of 38,000 troops with a reported strength of 3,000 gunners, and an estimated strength of 5,000 archers. The gunners fired in a volley rotating with archer support from behind barricades against the famed cavalry of the Takeda clan. This battle led to the complete destruction of the Takeda cavalry and led to the end of the clan.

At Okita Nawate, an army from the Shimazu clan and Arima Harunobu in the Hizen area fought against Ryuzoji Takanobu. The combined army of about 10,000 samurai and ashigaru faced an army estimated at fifty thousand. Deploying on a road through a swampy area, the Shimazu enticed the larger army to engage them on a limited front by building a gate across the road. After making no real progress, Ryuzoji ordered his army to deploy into the swamp along the road, this effectively limited their ability to maneuver and set them up for gunners and archer teams deployed to either side of the road. Archers harassed the enemy while the gunners reloaded. When added to a frontal assault by the Shimazu, this combined-arms tactic resulted in massive casualties and led

to the total defeat for Ryuzoji, including the loss of his head to a Shimazu samurai.

Construction of the Yumi

Originally a staff bow—a bow made from one piece of wood—the yumi became a powerful longbow when lamination was introduced from China in the 9th Century. Lamination is adhering different woods together with glue, often along with some form of strengthening material for endurance.

A typical yumi is between 7- and 9-feet tall. Though normally classified as longbows, they do not look or act like their European counterparts. The yumi bow construction was developed over a few centuries, during which time its design progressed from a staff bow to one constructed with multiple laminates. The wood used for the core of the bow was often *azusa* (related to catalpa) or *keyaki* (related to elm) and the laminate was bamboo hardened by fire. The laminates were glued together with natural glue made from fish scales. The yumi was then strengthened in critical areas by adding horn to the tips and by wrapping selected areas with rattan.

Lamination progressed from two pieces of material, one of wood and the other of bamboo around the 9th Century, to more elaborate designs of three pieces of bamboo laminated for the core then surrounded by wood on each side and more bamboo on the front and back of the bow by the mid 16th century (Figure 1, below).

To protect the bows from the rain and high humidity of Japan, the bows were often coated with multiple layers of lacquer. Then they were polished to enhance their beauty. Today the yumi core is five layers of laminated wood and bamboo with wood sides and bamboo belly and back.

The strings were made from natural fibers, often hemp, and also laminated for protection from the weather. Samurai always carried extra string into combat in a Tsurumaki, a type of round string basket, worn at the waist.

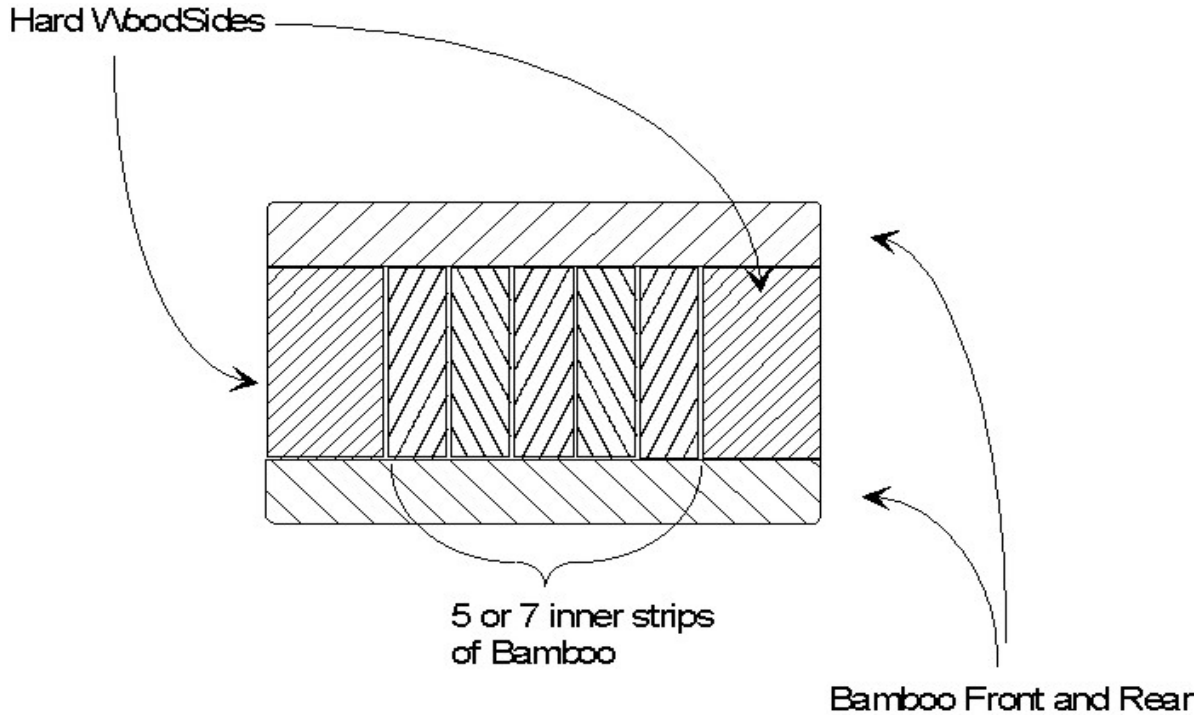


Figure 1. Cross-sectional View of Yumi Laminate Construction

Asymmetrical Shape

The asymmetrical shape and the graceful curves of the yumi have been influenced by several factors. When the yumi is gripped at about the lower one-third point and is between 7- and 9-feet tall, the reverse curves and shape allow the bow to be shot from this asymmetrical position with no impact on the flight of the arrow.

The shape and length allowed the makers to produce a more powerful bow within the limits of the materials available. The lower grip on a longer bow produces more tension on the string and less tension on the wood while still being usable from a kneeling position. This allowed hunters to use the bow from a crouched position without giving up power.

Mounted archery, the Samurai's primary means of attack in ancient Japan, helped to maintain the asymmetrical shape. The mounted archers could move the bow quickly from one side of the horse to the other without difficulty and still shoot a powerful longbow on horseback.

As archery became a martial art, the archer's hand position helped maintain the asymmetrical shape. While holding the bow the hand is at a natural 60 degree angle that lines up the bones in the wrist and arm for maximum strength and stability. This allowed stronger bows to be produced. Legend has it that Minamoto no Tameomo, a large and very powerful samurai, used a bow that took five men to string.

Shooting the Yumi

The draw of the Yumi is also unique to Japanese archery. The string is normally a little off center to the right of the bow, which allows the bow to be shot off the right side when held with the left hand. The string is drawn back with the thumb of the right hand while two fingers grip the thumb for support. A glove or a thumb ring of wood or bone is often used to protect the thumb from the string.

Today this type of pull is often called the Oriental or Mongolian draw. In modern *kyudo* (Japanese archery), on release, the bow is allowed to pivot in



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the left hand until the string touches the back of the left wrist; this is called *yugaeri*. This technique would not have been possible when the bow was used for combat, as it would have slowed down the archer's ability to fire quickly.

Effectiveness of the Yumi

The effective range, where an archer has a chance of hitting the target, is about 140 meters, with a maximum range of about 280 meters. From Miyamoto Musashi's, "Go Rin No Sho" written in approximately 1645:

The bow is appropriate when moving troops forward or back in the strategy of battles. It makes possible rapid fire in parallel with the use of lances and other arms. It is therefore particularly useful on battlefields in open terrain. But its effectiveness is insufficient for attacking fortresses or for combating enemies who are further than twenty ken away. [A ken is 1.8 meters, so 20 ken is 36 meters.]

The optimum range for using the yumi against an armored opponent is estimated to be about 30 meters. This allows for the archer to hit unarmored places, such as under the arms or the eyes, or for the arrow to penetrate the armor and cause a fatal wound.

Competition

Archery competitions have been held in Japan for thousands of years. Some of the more notable ones are held at temples like the Sanjusangendo Temple in Kyoto.

Competitions at this temple were of four different types: the 24 hour shoot, the 12 hour shoot, the 1,000 arrow shoot, and the 100 arrow shoot. The shoots were conducted in an open veranda or hall. The ceiling rafters are 18 feet from the floor and still have the scars from arrows that have hit them.

The distance of the hall shoots were either full hall or 66 ken (130.68 yards) and half hall or 33 ken (65.34 yards). In 1686, Wasa Daihachiro, shot 13,053 arrows in a 24 hour period. Due to the height of the ceiling, he had to shoot from a seated position. He reportedly shot every 6.6 seconds but taking some rest time into account the average time might be slightly quicker. By the way he hit the target 8,133 times, still a current record. Other impressive records include Katsuranishi Sonouemon, who scored 960 out of 1000 arrows at full distance in 1667 and Chikurin Kichimen, who shot 6,110 arrows in 12 hours and scored 4,500 times at full distance in 1821.

The Ya

The ya, or arrow was between 34 and 38 inches in length and had a hardened steel arrowhead, made by a process similar to the steel used in swords. During the periods of samurai history, the arrows were often marked to identify the shooter; this allowed samurai to get proper credit for killing an opponent.

The bamboo arrow shafts were harvested in the early winter when the plant's saps were down. Each shaft was prepared by having the nodes shaved off. Then placing it in hot sand softened the bamboo, and next it was straightened by hand while hot. After being straightened, the shafts were hardened with fire.

Fletching was done with hawk, eagle, crane or pheasant tail feathers and could be either three or four flights depending on the arrowhead. The fletching was glued on the bamboo shafts with a fish-based glue and tied front and back with silk threads, then lacquered.

The nocks were made of bone, horn or a self-nock above a node in the bamboo. Bindings of silk thread covered with lacquer provided strength to the nock area.



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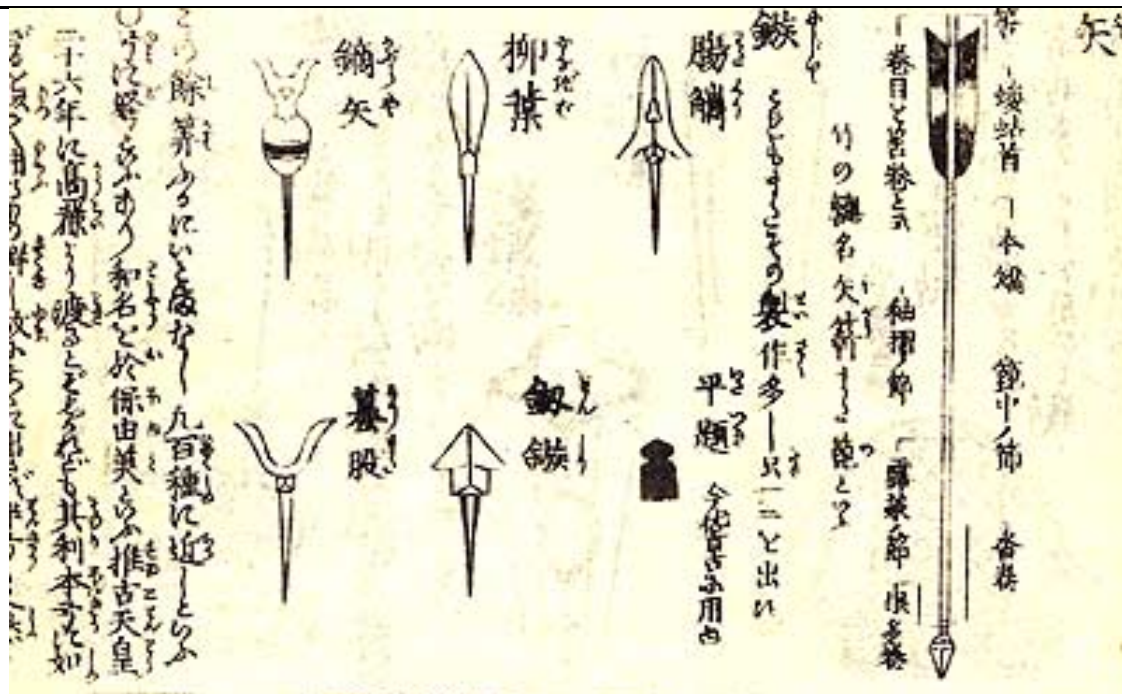


Figure 2. Ink drawing showing arrowheads and arrow from the article *Kyudo—The way of the Bow*.

Japanese arrowheads (*yajiri*) were often elaborate and came in hundreds of different styles. Simple designs were used for combat while very elaborate designs were used for ceremonial functions. The arrowhead is attached to a 4- to 6-inch shaft that was heated and inserted into the bamboo arrow. Some of the most common types of *yajiri* are:

- *hiniki*: a whistling arrows carved from wood
- *hira-ne*: a flat shape with sharp edges, sometimes with an extended shaft
- *karimata*: a two pronged fork
- *muto*: a target point
- *sankaku*: triangular or diamond armor piercing
- *tsubeki-ne*: chisel shape
- *yanagi-ba*: a willow leaf shape
- *watakushi*: barbed

Kyudo

Kyujutsu, the art of the bow, differs from modern *kyudo*, the way of the bow. Both require the understanding of techniques for the use of the *yumi* and *ya* and both require similar levels of training for the archer. The levels of Japanese

archery, *kyudo*, are often described as: *toteki*, *kenteki*, and *zaiteki*.

The first level, *toteki*, is found in all archery forms and styles. It is the basics of all archery—accuracy and being able to hit the target. Many of the past and current archers achieve this level and become



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very skilled. In modern kyudo, it is described as recreational shooting.

The second level, kenteki, is where the arrow does not just hit the target, but pierces it. This is the essence of kyujutsu used by the warrior archers. It is the focus of the mind and body to achieve a smooth and rigorous shooting style with the goal of killing an adversary. It is often describe as Hekei Danjo's technique from the 1400's called "hi, ken, chu" or "fly, pierce, center". This is the level that kyujutsu strives to achieve.

The third level is the zaiteki, which encompasses the true meaning of kyudo. The target is neither a goal nor an opponent. The mind, body and the bow come together and hitting the target is no longer the ultimate goal; the art of shooting becomes a window on the archer.

Kyudo is possibly the purest of all the martial ways. It is practiced to improve physical, moral and spiritual development and is often practiced with Zen. In kyudo, the goal is to awake the inner self (the spirit) and find a balance between the mind, the body and the bow.

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Letters to the Editor

Talk to us. We want to hear from you. Send us your stories, comments, contributions, photos, nominations for the next Super Star Archer.

Contact us at QuiversQuarrels@gmail.com.



WARBOWS HAVE COME TO AVACAL!

By Laudie McKnight



Magnificent Long Distance Shooting this year at Quad War in An Tir
Archers: Adam of the Wood, Archery Champion of the Barony of Myrgan Wood,
and at left, Riddell, from the Shire of Vinjar, Avacal

Replicating authentic medieval archery tournaments, the event at this year's *Quad War/Investiture* (Aug. 1-5th), at Avacal, in the Kingdom of An Tir, tested strength, skill and accuracy. Both arrows and bows were much heavier than the usual SCA archery tournament. Minimum draw weight for bows was 70# at 30" draw for men, and 50# at 30" draw for women.

(*War Bows*: continued next page)

(*War Bows*: continued)

Results:

MEN	Group	Draw weight	Total Score	WOMEN	Group	Draw Weight	Total Score (corrected to 100 yards)
Ridil	Vinjar	120#	429.5	Thorunn	Montengarde	55#	187.0
Adam	Myrgan Wood	90#	317.5	Coriander	Vinjar	55#	162.0
Allister	Montengarde	100#	309.0				
McDuff	Montengarde	100#	255.0				
Escalius	Bordergate	110#	232.0				
Aonghus	Vinjar	75#	122.0				



**Thorunn Montengarde:
Winner in the Women's Division**

A mark was set at 200 yards and competitors shot a total of 12 arrows in 2 separate rounds, 6 in each

arrow class. The two classes were light arrow (60+ grams), and heavy arrow (75+ grams).

The first round was for distance and the second for closest to the mark. The total score was calculated by subtracting the distance wide of the mark from the longest cast.

There were 8 competitors in the tournament, 6 men and 2 women. Many good lords and ladies braved the August heat to watch this exciting tournament, as it is something truly magnificent and rare to watch an arrow being launched with such force, rotating in the air, and hanging for up to 4-5 seconds before plummeting to earth. Ridil was closest to the mark at 2.5 yards, and hit the mark twice during practice.

Sponsor of the event was bowyer Adam of the Wood (mka: Adam Beck), who not only brought long distance war bow shooting to Quad War, but also provided the bows. See Adam's webpage www.lostarrowarchery.ca

Laudie McKnight resides in Avancal in An Tir, and is mka: Linda Cimpric.



THUMB RINGS AND SCA ARCHERY

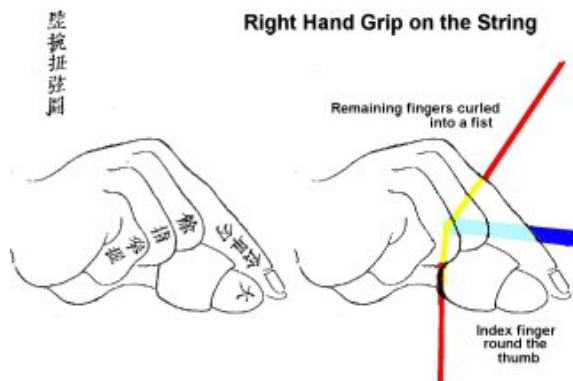
By: Naran Numuchi

For any SCA personae of the Eastern (except Nipponese) persuasion such as Turks, Mongols, Chinese, Kipchaks etc, using a thumb-ring for Archery should almost be required. As should the use of period hand-bow, without arrow-shelf or pistol grip, both of which are very late period innovations, dating to the 1940's. (And as one usually lays the arrow on the thumb side of the bow-hand, a cut-out shelf is pretty useless.)

Thumb-rings come in two main styles: the lipped/tear-drop shapes, and the cylindrical ones. Lipped/tear-drop rings were used by many different cultures including Turks, Koreans, Byzantines, and Indians, while the cylindrical ring seems to be limited to the Chinese. The thumb joint is stronger than the fingers and used properly, can pull as much weight as the 3 fingers used in the Mediterranean draw. Also, being shorter, it allows a longer draw, for which the static eared recurve bows are generally suitable. I draw Mongol/Manchu style, to the shoulder, with 34-35" of draw, requiring a 36-37" arrow. With a longer draw, you will find you need a heavier spine for the shafts. My bow at 34" pulls 44#, and I use an 80-85# spined bamboo shaft. Anything weaker, and my arrows will nock to the right when they hit the target.

The lipped ring has an ovalized hole for the thumb, (which fits the oval cross-section of the DIP (Distal Inter Phalangeal) joint and it is turned sideways for sliding over the joint, then aligned with the thumb. it should be a snug fit to get over the thumb. Regular shooting with a ring will cause the thumb to swell a bit initially, and eventually the joint will enlarge/get a callus. I have never heard of anyone developing arthritis from long term use. I have been shooting with a ring for 12 years, with no problem. There are various online tutorials for use of thumb-rings, and several books. "Kay's Thumb-ring Book" by Kay Koppedrayer, is a good place to start. Lipped rings, when properly sized, are fairly easy to learn to use, although 'mastery' may take long hours of training. A little medial pressure from the index finger holds the arrow against the bow, but too much flexes the shaft. a slight pronation/rotation of the wrist will give a positive lock, and keep the tip of the index finger from being hit by the string on release.

Chinese cylindrical rings require a different position and technique for loosing. Their advantage is a very crisp release, as there is even less surface area for the bowstring to slip from, but fit and technique are much more critical than with the lipped styles. Incorrect fit and technique can cause significant bruising to the thumb. When starting thumb-ring practice it is best to use a light draw-weight, and focus on technique. I find that a thumb-ring draw is less stressful on my wrist and shoulders, as the draw hand is held in neutral, which also affects the alignment of the shoulders. I broke the hook of the hamate bone in the wrist several winters ago, after a fall on the ice and had to work with a wrist brace, but as all the strain of shooting was on the radial side and the fracture was on the ulnar side, I continued to shoot without any problems. (I did not, however, bother to inform my workers comp MD, as he would not have understood...)



Mongolian Draw: www.atarn.org
<http://www.atarn.org/FAQ/thumbbring.htm>



The other possible advantage to cylindrical rings is that while position (distal/proximal) on the thumb is important, the ring is uniform, so it doesn't matter if it revolves on the thumb, while the lipped rings do shift out of position covering the pad of the thumb tip. which for speed shooting can be an issue if it needs re-orienting. I don't practice as much as I ought to on speed shooting, if everything goes well, I can loose 6 shafts in 30 seconds with a lipped ring. Possibly one could manage more with cylindrical.

Quivers- while earlier period nomad quivers were often full coverage wood and leather tubes, I prefer the shorter hip/side quivers that angle the shafts backward. I reach to the side, pull an arrow out grasping it about halfway down, slap it up against the handle slide it forward so the nock

passes the string, then pull back till it nocks. Unlike Mediterranean style, one need not cant the bow and lay the arrow over the top.

Bracers, bow-gloves - I often shoot without a bracer, as the technique avoids string slap on the forearm. I do generally use a jersey gardening glove with a bit of leather glued over the thumb area for the place to rest the arrow. A properly tuned arrow/bow combo with proper technique will usually not even have the fletches touch the hand.,I recommend wrapping the leading ends of the fletches with silk thread and saturating them with super-glue to diminish the possibility of the leading ends of the fletch scoring one's hand upon release.



Inga's Brief History of SCA Combat Archery and the Evolution of Combat Arrows

By: Ingilborg Sigmundardottir

In the interest of preserving the noble and battle-scarred history of combat archery in the SCA, our notorious arms trader, mead brewer and Lady of the Wolves penned the following:

If I were to tell you that combat archery in the kingdom of Caid and elsewhere as we know and practice it today originated pretty much entirely within the Kingdom of Atenveldt, would you have known that, or believed me? I thought not.

Listen well, then.

We all know that the Society for Creative Anachronism was begun in 1966 in Berkeley, California, at a party. It has grown widely ever since that time and now encompasses the world. Archery has long been accepted as a medieval martial art form and was quickly embraced by the

SCA. But where did combat archery come from and how was it introduced? Did spears come before combat archery? (No.) Did combat archers really use wood shafts? (Yes.) Has anybody ever been seriously hurt by combat archery? (Depends on whom you ask.) Does combat archery even belong in the context of SCA battles, after all, is what we do a "War" or a "Grand Melee"? (Keep reading).

Part One: Shrouded in the Mists: Where it All Began.

The first target archery event was held on June 25th, 1966, at the Second Tournament in the Kingdom of the West. This was not a competition. It was simply two hay bales with a target face upon it that had been set up for practice.

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Duke Henrik of Havn (Henrik Olsgaard) conceived and ran the first SCA War, called “Islands War”, in AS II. He and Count Steven Blackeagle (mka) had traveled to Arizona where they observed archers wearing light rapier-type armor and fencing masks shooting wooden arrows with rubber rabbit blunts at each other.

Duke Henrik writes: “The idea for the first Islands War came from the small melees we had at Cragmont Park. I really liked the group combat format and thought it needed a venue devoted to itself, just as single combat had the Tournament format to develop within. Plus, a War format would allow new elements to be introduced, like the use of terrain features, distance combat elements such as projectiles, long-distance communications, group tactics over a distance, multiple combatants of unlimited dimensions and numbers, and so on. At this date, tournaments were held both indoors and outdoors and did not require a change in the tournament format per se, with the exception of the way one fell if they were wounded or killed. Wars, on the other hand, could develop into terrain specific activities that usually couldn't be accommodated indoors.”

“The idea of combining combat archery with sword fighting on a somewhat even footing also was very important, because we could increase the number of combatants significantly if archers were added from the ranks of non fighters. It would also allow us fighters to trade off hot and sometimes very heavy armor for lightweight archery gear if we were tired or mildly injured” but still engage in armored combat.

“The wars were not intended to be melees but rather battles between large groups, using available resources of terrain and construct. If a castle had been available it would have been in the middle of combat in one manner or another. In later years when construction materials such as hay bales became available they were quickly incorporated into the activity, but on the Island we never had such resources available and so had to make do with the terrain features as they were, instead.

“The Rock made a great castle and was quite successful at keeping many combatants from assaulting us over its top. The Island's forested top was a good cover to hide in and its rolling hilly grass lands with large brush clumps and rocky outcroppings were great cover for small group maneuvers over large areas. I had hoped that we could attain some measure of realism in our wars, yet still stay safe and uninjured. I really thought we were still trying to turn that fantasy of re-creating a child's game of ‘Knights in Armor’ into an adult game of ‘Fair Playing -- Knights in Armor’ with no cheating allowed. Some of the ‘trimmings’ of Knights in Armor include ‘Great Battles Between Great Armies,’ which have now been realized to a great extent.”

The first event that included combat archery took place in 1967 in Marin, California (Island War, AS II). The arrows used were made of 18 inch bamboo garden stakes of 5/16 inch diameter. They were padded with polyurethane foam rubber and taped over with bandage tape, then tied with a small piece of string. They had no fletches and only a tiny nock consisting of a V shape in the base of the bamboo. At this War there was no limit on bow poundage and no special face protection was required.



Old bamboo garden stake arrow, circa 1968. Photo by Sir Jon Fitz Rauf.

The first combat archery blunts that began to have widespread use in the West by 1970 (AS V) were the same as those used by the mundane Arizona archers -- “Bludgeon Tips” by Saunders Archery. This was a small game blunt consisting of a cone of red plastic that was 7/8” diameter at the face,



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3/8" at the base and 1.25" long. On the outer surface of the blunt there was a circle of small points that had to be removed. They were used with a maximum 30 lbs draw on handbows and crossbows, and due to the small size of the blunt, face screening or fencing masks had to be required.

At first, only the small points on the Saunders blunts had to be cut off, and, after the target point had been sawn off a wooden arrow the blunt was simply taped to the remaining arrow shaft with electrical tape to make these legal for use. However, since the face was now hollow it was possible for dirt and debris to become lodged in the space and fly out upon impact. To correct this problem, the hollow space was then required to be taped over, or filled with silicon sealer. Unfortunately, the addition of tape and/or sealer prevented easy examination of the blunts for shaft punch-through. A compromise was then reached:

a small 1/8" hole was drilled in the side of the blunt all the way through about 3/8" from the face. If you could see through the hole the blunt was safe. If you could not, then the shaft was starting to punch through.

These arrows were used with 5/16 or 11/32 fletched wooden shafts covered in electrical tape. When they were shot from a good-quality 30 lb laminated recurve bow they had a maximum range at a 45 degree angle of about 90 yards and a degree of accuracy very close to that of a target arrow.



Old combat archery photo circa AS IV (1970). Note the fencing screens on the helmets, the rubber rabbit blunts on the wooden arrows, and the minimal armor. Photo by Sir Jon Fitz Rauf.

In order to increase the range of the Saunders blunt, Lord Wolf Peacemaker added an additional $\frac{1}{2}$ " to $\frac{3}{4}$ " cone of soft foam to the face of the silicon filled blunt. This was then dipped in "Tool Dip" to secure and protect it. This blunt, known as the "Peacemaker Blunt", increased the maximum range to about 120 yards with no particular noticeable decrease in accuracy. As an added bonus the soft cone of foam would compress upon striking and slightly lessen the sting of impact.

As the SCA continued to grow and spread, Wars grew and spread with them. Combat archery, spears, and other weapons were brought into local Kingdoms to add more realism to an authentic

medieval battle. For a very long time, wooden shafts, helmet screens, and Saunders blunts were the accepted norm; and if one goes to the Kingdom of Lochac today, they will still see them. Also, at the same time on the East Coast, as the idea spread the Markland Military Militia developed a wood shafted combat archery arrow design using a 1.25 inch wide wooden core with padding. Again, the target point was cut off of a wooden arrow, and a piece of wood dowel 1.25 inches in diameter was drilled and fitted over the remainder of the arrow and then padded and taped in place. These flew as well as the Saunders and Peacemaker blunts, very close to a real target arrow. What happened to all of those things here?



Saunders blunt with points removed (left) and silicon filled Saunders blunt with inspection hole (right). Photos by Sir Jon Fitz Rauf.

Part Two: The End of Wooden Shafts And Helm Screens, and the Beginnings of Modern Combat Archery.

For many years, wooden shafts were the norm. Meanwhile, participation in combat archery

continued to grow. Then in the Western kingdoms (Caid/Atenveldt/West) things began to change.

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At a barons War in the 90's, during a castle battle, fighters reported hearing an odd sound. They discovered a wooden target arrow with a field point sticking in the wooden castle. The archer was identified. He had mistakenly placed a target arrow in his combat archery quiver.

At Burro Creek War, a broken wooden target arrow with a field tip was found on the ground in the active battlefield. No combat archer was identified who could have shot it. The marshal in charge of the event determined that this arrow came to be on the battlefield as an overshoot from the nearby target archery range.

Soon after Saunders Archery discontinued the red rubber blunts, wooden arrow shafts began to go out of use. Although until recently they were still legal at the Society level, now all Kingdoms in the SCA, with the exception of the Kingdom of Lochac, ban their use on the combat battlefield.

Also in the 90's, a grass roots movement towards greater safety began. The use of face screening was discontinued in favor of bars -- placed at a maximum distance of 15/16th of an inch. Saunders blunts, Peacemaker blunts and Markland blunts

could no longer be used. Plus, in order to prevent eye injury from arrow nocks, devices needed to be invented to prevent an arrow nock from going through helm bars.

A combat archery blunt made of ultra high molecular weight plastic (UHMW) for use on fiberglass shafting was invented, tested, and Society approved in the year 2000 by Sir Jon Fitz Rauf (John Edgerton). These were required to have at least one half inch of padding and were limited to handbows with a maximum draw weight of 30 lbs or crossbows with a maximum draw weight of 600 inch pounds (about 70 lbs).

Meanwhile, on the opposite side of the Knowne Worlde, Duke Baldar Longstrider (Alex Cooley) developed, tested and obtained Society approval in 1999 for the Baldar Blunt. The Baldar Blunt is a two piece uniformly manufactured combat archery blunt made from a Nylon core and a Sandoprene rubber face, eliminating the need for padding. The Baldar Blunt has become wildly popular in many areas, especially in Eastern Kingdoms, but has never caught on in Caid or Atenveldt due to purported production and performance problems.



Fiberglass shafted, UHMW blunted combat archery arrow with Asgard APD. Photo by the author.

With helm screenings no longer in use, arrow and bolt bounce back on impact became a worrisome phenomenon. Many devices known as anti-penetration devices (APDs) or anti-bounceback devices (ABDs) were developed and Society approved to prevent helm penetration and possible eye injury by an arrow or bolt that bounces backwards when it hits something. The most common one in use today is the Asgard APD, developed by Duke Baldar Longstrider (Alex Cooley). The Asgard is inexpensive, easy to install and use, and its airfoil shape eliminates the

need for fletchings! It will only work with a right handed archer due to its shape. It works on crossbow bolts by simply snipping off the nock. Other devices in common use include UHMW disks and routed channeled pieces of polyethylene water pipe (commonly called Siloflex). Routed channeled pieces of pipe can be mounted on either side of the nock to allow for either a right handed or left handed archer.



Baldar blunt. Photo by Sir Erika Bjornsdottir.

Part 3: Golf Tubes, Tennis Balls, Rubber Stoppers and Siloflex Oh My!

As combat archery grew and spread many archers began to demand heavier equipment. Fighters also complained that 30 lb handbows and 600 ip crossbows simply didn't hit them hard enough to

be noticed. The first heavier missiles to come into use were golf tubes, widely available in any sporting goods store and used to keep golf clubs separated in a carry bag. Tennis balls were laced to the front of these and a stiffener, usually pipe insulation, was placed inside. Nocks were usually made by wedging a soda pop bottle cap inside, gluing it in place and cutting string notches in it or in the case of a crossbow bolt, nothing at all. These were very safe projectiles and hit very solidly, but they had some serious drawbacks. They were slow and cumbersome, heavy, awkward to use, horribly inaccurate, not realistic at all (their range was only about 30 feet) and not period looking. Worse, the tubes were very fragile and did not survive being stepped on. They also deformed in hot weather.



Golf tube arrow with tennis ball blunt and soda pop bottle cap nock. Photo by the author.

In the late 1990s polyethylene water pipe, trade name Siloflex, began to appear. In 1998 Sir Omarad the Wary (Paul Newton) developed, tested and gained Society approval for the Omarad blunt, which consisted of a size 6.5 rubber stopper secured to the end of 100 psi polyethylene water pipe. Padding was added later. Other psi weights were tested but discerned to hit too hard and pose a hazard to fighters. The Omarad blunt (rubber stopper foam) has virtually replaced tennis balls in most Kingdoms today and polyethylene water pipe has made golf tubes obsolete. The limiting factor of polyethylene water pipe is straightening it properly. It is sold in coils for use in agricultural irrigation and no reliable way has ever been found to straighten the lengths of pipe effectively to make arrows. SCA merchants have had to special order them from the manufacturer in straight sticks for combat archery use.



Rubber stopper foam (Omarad) arrow with foam fletch and Siloflex nock. Photo by the author.

Again, the largest complaint of these pipe arrows and bolts is that they are heavy, cumbersome, slow, have limited range and are not at all realistic. Fighters quickly can learn to swat them right out of the air.

Part 4: The Fellwalker Bolt

In 2000, Morgan the Fellwalker (Max Fellwalker) designed and Society approved the Fellwalker bolt for use in heavy crossbows instead of pipe bolts. The Fellwalker bolt is made of much heavier UHMW plastic than the Fitz-Rauf arrow design is. It uses an inch of padding and a side wrap to prevent pad fold over, weighs about 2 ounces and flies very realistically.



Fellwalker bolt. Photo by the author.

We're counting on Inga to keep us well apprised of new developments in combat archery bolts and arrows...

The Fire Across the River: Tactics for Combat Archers from the Senryaku

By Morien MacBain

THL Morien MacBain, esq. is a 15th-Century Scottish man-at-arms fighting on the French side in the Hundred Year's War, and also the leader of the mixed force of men-at-arms and combat archers known as The White Company. THL MacBain was first Queen's Combat Archery Champion of Aethelmearc, and Order Principal of the Scarlet Battery. [Mka: Stephen Vandevander is a teacher and bibliophile.]

Although the origins and primary authorship of the thirty-six strategies of the *Senryaku* are lost in the mists of classical antiquity, their message of efficient, bloodthirsty, and cunning carnage are every bit as relevant today. They encapsulate in three dozen short sentences aphorisms for utilizing “The Art of the Advantage” in all types of conflict, in language reminiscent of both the sacred texts of Taoism, and of a Mr. Miyagi raised by Mongols. I offer the following reflections on the doctrines that appear relevant to the practice of combat archery in SCA battles:

Stratagem 3- Kill with a borrowed sword. For our purposes, this rule has multiple applications, and one involves the establishment of a combined ammo supply point in the rear area. When one member of the team dies, his or her unfired ammo should be deposited at this point for the benefit of remaining members. This ammo can be carried forward to the firing positions by a bodyguard in order to keep the archers on the line firing constantly. If ammunition is standardized across the team, then dead archers might also drop their arrow bags with all unfired ammo at this point on the way off the field as well. Remember that in the case of fiberglass-shafted arrows that each shaft must be reinspected by a marshal after each firing, or even if they have simply fallen out of the bag onto the ground! Also, you should remember that in a large missile-heavy static battle like a castle, there may very well be lots of gleanable tubular arrows lying around by the time your quiver is empty, and that you can return to their owners after you quickly but thoroughly inspect them!

Stratagem 4- Face the weary in a condition of ease. This chestnut is also translated “relax while the enemy exhausts himself.” It is applicable to hand-to-hand combat (witness Ali vs. Foreman in Zaire), and to our practice of combat archery as well. In any timed battle that is likely to run to its full length, and therefore any resurrection battle in which victory goes to the control of a few key pieces of terrain, banners, etc., it is advisable to save a supply of arrows for the final three or four minutes of the battle. If resurrection is not a factor, then perhaps one dozen arrows for every three archers on the team will be enough, as all will probably not live to utilize these “final defensive fires.” These will be cached at the resupply point in the rear for the survivor to collect. Please note that in straight battles of attrition, this precaution is counterproductive. Unless a final push to seize or defend a key point is likely, the only reasonable place to store your arrows is in the body of the enemy!

In addition, use common sense in terms of conditioning, rest, hydration, utilization of shade, etc. Save a bit of yourself for the final minutes, when you will be needed, whether you will be wielding arrows or rattan by that point. Too many of your kingdom's fighters will use everything they have by the midway point of the battle and be on their way to the showers before the end. After the final gun is the time for exhaustion, not before! Last year at Pennsic, I was delighted to see that the second half of the Woods battle would include archery! I took my bow out first with forty-two arrows, and dropped a solid number of targets in roughly thirty minutes, and then grabbed my polearm at the res point, and kept going. HUGE MISTAKE! By the end of the battle, every single one of my kills was back in action, and rolled over us. In retrospect, the thing to do would have been to have gone pole until thirty minutes or so into the hour, and then started shooting every enemy with a spear I could find. Taking out ten or fifteen spears in the last ten



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minutes around the contested banner could have made a real difference. Don't make my mistake! (Author's note: I walked out of the woods with nine fewer arrows than I went in with. So it goes. Archery is like falconry; you have to be able to say goodbye to your bird or arrow every time you use it, or you can't play!)

Stratagem 5- Rob a burning house. This tactic involves firing into lines of fighters that are engaged. Our arrows don't move very fast due to their construction, so they are relatively easy to block or dodge if the target is prepared. The fighters opposite you will be focused on the shields and spear points of your team mates. Their spearmen will be deep in their stances, which is very stable and planted, and exactly what you want. They are your primary targets, but you must wait for them to stop marching. Arcing shots into an advancing wall of shields is a sucker's game. Unlike a spearman or swordsman, you have a finite number of shots to employ with your bow. You must husband them carefully! In a bridge battle, consider taking position off the bridge to your left. This will put you in a position to aim oblique fire on the non-shield side of the enemy.

Stratagem 6- Feint east, strike west. Although feints are usually associated with hand-to-hand combat, there is no reason why archers cannot employ them as well. It is a simple matter to train for a technique I call the "Chow Yun Fat," in which the archer allows himself to be seen aiming at one target, only to suddenly pivot at the last second and release at another target farther down the line. This is a corollary of stratagem 5, above. If the enemy begins to see you picking off their buddies, they will become concerned, and at least one of them will divide their attention between the opposing line and you. This worthy person will typically yell a warning to his comrades when he sees you draw down on his section of the line. This will often cause his buddies to take on a defensive posture or direct their attention towards you. This will lower their ability to attack or defend against your teammates you are directly engaged with them. (This is also related to **Stratagem 33-Let the enemy's own spy sow discord in his camp.**) It does, however, minimize the effect of your shot if you then place

it into any of the fighters who are looking for it. Acquire a second non-shield-bearing target in your peripheral vision ten or twenty feet down the line, and pivot at full draw. Fire the instant your shaft comes on line, so that your target will have no time to react. The method to train for this shot involves two or more plastic garbage cans in your back yard. Practice firing while wearing your hand protection and helm, to make sure your peripheral vision will be there.

Stratagem 7- Make something from nothing. There will be many times when you begin an engagement as an archer, but you will not be able to finish it as one. You may exhaust your ammo supply, your bow may be struck and need to be reinspected before it can be fired again, or you may be wounded in the arm, and so be unable to shoot anymore. This is not the time to stop! Remember, you are a HEAVY fighter! If you have combat archery as your first and only authorization, I encourage you to gain another one quickly. May I suggest sword and shield? You can carry a sword and a small buckler attached to your belt with little extra weight, or leave them in the rear area or res. point. A basket-hilted sword will work with most archers' draw-hand gauntlets. Make sure your hand protection will be legal with your new weapon configuration! It is important that you are prepared to fight your best fight with heart, honor and whatever weapons are to hand, whatever the circumstances.

Stratagem 9- Watch the fire from across the river. Archers by their nature are not shock troops. Let the heavies lead the charge; it's their job. Hang back for a few seconds, and let the lines stabilize. Then insert your self into the line so that you are not deep in the rear (you need someone to cover you from flankers). Find a comfortable engagement range. (To determine this, practice shooting at a target the size of the torso of an average fighter. Start about twenty feet from the target and begin to fire. Every time you hit twice in a row, take a step back. Every time you miss twice in a row, take a step forward. Where you are when your quiver runs out is a good basic engagement range for you.) Now look around for a few seconds before firing. Where are the clumps of enemy spears and poles? Are there any enemy



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archers to worry about? See a white belt? See someone shouting orders? If a pulse charge in your area looks imminent, move. You will empty your quiver quickly enough. Don't forget to use your eyes and brain!

DO NOT hang back too far. Any feeling of safety that this provides is an illusion. Safety lies in victory for your side, and to that end you must close with the enemy, and engage them with accurate fire. The second or third rank of fighters is the best place for you to work. Remember, in Aethelmearc the minimum engagement range for self bows is ten feet (at full draw); in Atlantia is fifteen feet with NO half-draw rule, so be careful not to violate it. Make accurately judging minimum legal and maximum effective ranges part of your training.

Stratagem 11- One tree falls for another. This brings us to the composition of the team. Archers, correctly employed, can kill a very high number of the enemy indeed. It is important that they be kept alive and operating under conditions that will facilitate this. In addition to the archers themselves, the team may be accompanied by a bodyguard fighter with a good-sized shield. This worthy can carry the team's pavise and spare ammo, provide a bit of fire support with javelins and so on. A less-seasoned fighter who will likely not last long in the meat grinder works well in this role. He or she can spot targets, give the archers something to stand behind while reloading, duck out of the line of fire when signaled to do so, and keep an eye out for enemy missile troops. The primary mission for this fighter, however, is to prevent enemy flankers or pulse charges from getting a shot in on the archers. He or she must interpose their body in the path of attackers in order to allow the archers to withdraw

Stratagem 12- Steal a sheep in passing. This one does not work for us so well. In essence, it is tempting to wander around the field shooting one perfect target here and there, and then moving on. This "shoot and move" technique is the approved method of rifle-armed snipers, but is of limited utility in SCAdian battles. You will spend all your time walking and looking for shots, and spreading yourself too thin. Instead, think of yourself as a

machine gun nest, concentrating all your kill power on one section of line in a confined space and time. You and your partners must strip away all the long weapons in your area of operations, so that your sword-wielding companions can roll over the enemy line to victory (never forget that they and not you are the maneuver element and arm of decision, even if you can kill more bad guys than they can). Some lateral movement in your line is great, especially moving past the center of gravity of the engagement, so that people lose track of you. Just don't waste time hunting only crowns and coronets! That being said, another interpretation of this axiom can be summed up as "readiness is all." Sometimes a shot you didn't expect will suddenly appear (like when a shieldman's muscle memory from all his tournament training kicks in, and he goes to an open stance, showing you a flash of his chest and abdomen). You need to be aware and flexible enough to exploit that momentary opportunity. Training for this is accomplished by having a large number of targets at different ranges in front of you, or off to the sides, and a partner standing behind you who will occasionally bellow "BLUE/BLUE/THREE/TWO/ONE!" or something similar, giving you a nasty shock and a very short window to get an unplanned shot off. This really pays off.

Stratagem 13- Beat the grass to startle the snakes. For us, this maxim involves firing into masses of enemy targets who are either in a strong defensive formation behind shields, a position under cover (as defiladed behind embrasures in a fortification), or have their backs turned. Remember that even though we archers do not need to get acknowledgement from a fighter before shooting them, this practice is not always productive of kills. The fighter may assume he has been jostled, struck by light friendly fire, or hit by an enemy heavy who did not get acknowledgment first, or he may simply take refuge in "plausible deniability" and feel free to ignore you. What to do? Although it may be counterintuitive (and counter to stratagems 5 and 6), there are sometimes situations when you want the target to turn and face what's coming to him. In these instances, I often find a loud call of "behind you!"



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or “Hey! You in the helm!” is almost always effective. Somebody turns and looks, and you can engage him. This is especially effective if you know the name of the target you wish to service. (I have gotten good results with “Hey! Von Bek!” Happy times...) In the case of tight shield walls (and as combat archery becomes more prevalent and effective, heavy tactics will probably become tighter and more focused on big shields to counter it; forcing a return to the *testudo* to Scadian battles is one of my fondest wishes.) and forces “hull down” behind cover, a variation of this tactic is needed. This brings us to:

Stratagem 17- “Exchange a brick for a jade.”

Your buddy the bodyguard (the brick) is about to take one for the team by making as many of the enemy as possible (the jade) expose themselves to your fire. This may involve a suicidal charge against the shieldwall, or bizarre, annoying, and above all noisy antics at the base of the fortification. (Pounding on things with a weapon is good for this.) The object is for Bubba to sell his life in a loud, grotesque, and military manner, luring the enemy out of their good position (which they will probably not have the discipline, leadership, or presence of mind to resume), and walk off the field covered in glory and welts.

Stratagem 18- Catch the chief to catch the bandits.

Anyone shouting orders needs to be shot, if you can get a clean one in. Fighters, belted or not, who seems to have great presence on the field (you will quickly learn to recognize this) is a focus of a line’s morale and cohesion, and should be a priority. This being said, you should ALWAYS take any opportunity to neutralize an enemy archer. You know better than anyone how dangerous they can be, and you have the best tool to quickly remove them. However, this task is difficult. Archers keep their perception large out of habit, unlike swordsmen and spearmen, who tend to keep their focus in their immediate engagement range. The enemy archer will be expecting your shots, unlike them, and will probably be working at his or her best range, and/or behind cover. Still, if the opportunity to fire on them with a reasonable chance of success presents itself, you must take it *without a moment’s hesitation*. If you miss, either get behind cover or

change your position, because they will certainly try to return the favor! Here’s a tip: Archers tend to let their attention contract while they reload. This will only last for a couple seconds, and then their vision will expand, and they will go back to being alert and watchful, but while they are pulling out their next arrow is probably your best chance to fire on them. Take it!

Stratagem 30- The guest becomes the host.

This aphorism is often interpreted as capitalizing on the non-fluid nature of forces committed to a defense or ambush, and their very determination to making the trap work. Take, for example, your basic killing pocket in a castle or town battle. The defenders (hosts) set up in a concave line, its inner surface bristling with spears and pole arms, so that the attackers (guests) who set foot into the pocket will face blows raining on them from a large number of defenders in front of them and enfilading them on both flanks. The pocket provides a defending force with the ability to achieve concentration of massed fires on a choke point that the enemy has no choice but to take. Neat, yes? The Spartans at Thermopylae thought so. What to do? Note the pocket. Note the huge number of defenders jammed shoulder-to-shoulder and belly-to-back. Note that nobody can move laterally or backwards in there. Note the noise that keeps commands from being heard. Note the fact that the spear guys are clustered in a non-moving line about ten paces from your line facing you but totally unable to dodge. Thank St. Sebastian and pass the ammunition, it’s a buffet! The trick here is to convince the commander of your column to let your team have a few minutes to work before he rushes into that meat grinder. Break your team up in order to create a crossfire into the pocket, and pour your highest volume of fire into the packed targets. They’ll see it coming, and the fact that they know for sure that a hundred guys just saw them get drilled will make them even more likely to take it! Empty your quivers. One of three things will happen, either the enemy will stay committed to their pocket, in which case you will kill a lot of their first-rate spears and poles; they will work more shields up into the front line, making it less lethal when your force enters it since the spears will be trying to



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shoot around the shields from a crush of bodies; or they will get tired of getting shot at and charge! If you stand in the front rank and shoot, this is even more likely to happen, and then the enemy can rush into YOUR side's pocket and get clubbed. You (the brick) will most likely die painfully in this case, but you will have beaten the enemy's trap with superior strategy and won glory (major jade!). This outcome is also related to Stratagem 15-**Lure the tiger from the mountain.**

Stratagem 32- Scheme with an empty castle.

(also translated as: **Fling open the gates to the empty city**) This one took me a long time to figure out, but enough bad experiences at Blackstone finally got it through my head. When defending a castle, often the last place you want to be is up in the embrasures firing down on the enemy outside, especially since those guys can often just saunter over to the resurrection point and be back on line in a minute or less. Sure, you can bounce up and down like a crazy person and try to be elusive, but the enemy archers are going to have a ball waiting for you to pop up, and will put two or three shafts in the air every time you do. You will quickly catch one; trust me. Let your castle's defenses appear empty. Sit or kneel on the platform with your back away from the outer wall and fire into the kill pocket at the gate from above and/or to one side. There will be plenty of targets who will fall and gum up their own side's advance, or will turn and have to struggle out of the meat grinder to resurrect, which will take a while, and will be far more tiring than the stroll unengaged fighters outside will have. Their walk out will also be counter to the pressure of troops moving into the pocket, and may help to disrupt its momentum. Plus, few of the opposing missile troops will be able to work effectively in that press, so you won't have much return fire to worry about for a while. Watch your back if the wall behind you is low enough to allow tall fighters to get up against it and throw shots over the embrasure at you, or even to raise up a crossbow and fire at your back! (Thanks, Random!) Splitting up the team in order to achieve a crossfire into the cup is desirable here. In short, any sort of elevated firing position into a kill pocket is the best position you can find. Last

Pennsic at the "Aethelmearc versus Everybody" Castle battle, I took a position inside the redoubt just inside the sally port to the far right of the gate. It was a perfect spot. I was firing down into engaged troops in a stable kill pocket at short range (with occasional mid-range shots into the enemy's rear to hit commanders, archers, or Really Big Guys), in a position in which I could not be flanked, and in which I had cover and concealment. If you can ever find a location like this to work from, get in there at once, and get your ammo in the air!

Stratagem 35- Chain the enemy's ships together.

This pearl involves turning the enemy's force and numbers against themselves, until their strengths become encumbrances. One way this is done is to create so many small threats that the enemy becomes confused, overwhelmed and unable to respond to them. This is a fundamental tenet of guerilla warfare, and applies to our combat as well. A unified chain of command is a wonderful thing, and can deal with an enemy using this sort of strategy with some success. In the SCA, we don't have one. We tend to have bunches of guys yelling at fighters they don't know, and people basically doing what they were going to do anyway. There are a few worthy gentles who have attempted to hone their skills as battlefield commanders and actually build units that fight in a coordinated fashion, and some do so very well. Then there's the other ninety-five percent of the host out there. This is regrettable, but provides an opportunity that archers can seize. One of the most beautiful applications of this principle in action I've ever seen happened on the north bridge at Pennsic five years ago. Picture it: An enemy column pushing down the bridge with spears out, shields front. No missile troops. On the Aethelmearc side we had two archers on the bridge itself, right in amongst the spears (myself included), two crossbowmen off the bridge and to the left, two more off the bridge to the right, and a few Confed guys with "Chukit" slings back there somewhere. (Author's note: Chukit slings have since been prohibited in Aethelmearc. Check your local rules.)

Our commander knew his business, and planted our line about twenty to thirty feet onto the



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bridge. That put the enemy in a position to receive accurate fire from the front and enfilading fire from the oblique flanks as well, not to mention the occasional sling-ball coming in from above somewhere! It was amazing. The enemy troopers had no way of dealing with the threats coming from pretty much every direction. They tried shifting shields around, but the area to defend was too large, and most were needed in front to keep our spears busy. Soon soldiers were attempting to look in every direction at once, take cover behind other spearmen, and so on. The commander over there kept replacing his spear losses by bringing up targets for us, which we serviced. The soldiers quite correctly continued to dress their lines, but as the soldiers behind them were hesitant to step forward into the kill zone, the front ranks soldiers dressed by stepping into gaps to their *rear*. A column of fighters was being driven back by missile fire! (At this point, our shields/spear line had not moved from its pocket). Eventually, our column easily rolled forward over the practically spear-free opposition, and the bridge was won. The non-missile fighters then broke into the rear area, and won the battle.

In retrospect, several conclusions may be drawn:

- It is important to remember that even though the six archers in the engagement neutralized the enemy's front rank and reserve spears and poles in the space of a few minutes, the hand-to-hand troops were the force of decision that won the bridge after the missiles had paved the way.
- Quick fire doesn't help win melees. Quick and accurate fire that doesn't hit a shield does.
- In this engagement the rate of fire was probably around five rounds per minute per archer or less. It was the volume of fire from multiple archers firing on different angles that made the difference. Volley fire by the six of us in a line somewhere to one side or the other would not have been as effective.

Stratagem 36- Run away. If your position crumbles, leave it! Forget the pavise. If there's time to lay down your bow, then perhaps it's time to draw your backup weapon and fight your best fight, IF there is nowhere to withdraw to and continue the battle. You owe it to your side to kill as many of the enemy as possible, after all. If there is no way to win or to die for a good purpose where you are, then you should move back, wait for the lines to restabilize, and continue plying your skills. There is no dishonor in this. Remember that you are a HEAVY fighter. No one can call you dead like a scout. If someone catches up to you fairly and kills you, or taps you to let you know they are back there, then turn and die. There is no dishonor in this, either.

That being said, strive to learn to reload and fire an accurate short-range "Parthian shot" backwards while running forward. (Practice this by running past (not into) your pell. Make sure you turn your head far enough to see just where your shot is going! When you have developed some facility doing this, go to an outdoor fighter practice with plenty of room and try this: ask another fighter to stand twenty to forty feet from you in a good stance. Your beginning stance should be upright facing him with your empty bow extended, like you just shot at him and missed. At the "lay on," his mission is to charge up and kill you. Yours is to run away and (hopefully) reload and get off your backwards shot at him. If he catches up enough to tap your with his weapon to get acknowledgement, you're dead. Alternately, (especially if you're a crossbowman, who have more of a problem reloading on the run) you can discard your bow in a safe manner (placing it on the ground, *not* throwing it.) and then attempt to draw your secondary weapon while backing up. If you can keep him from killing you for ten seconds (longer than it sounds under the circumstances, believe me!) then you reset and try again. Please note, if you do this in a melee, you *cannot* then go back to using your bow. It will need to be reinspected between scenarios. This training is difficult, but it will serve you well. Some persons labor under the misapprehension that there are separate fighting and combat archery "communities," but this is an error. With

appropriate mental and physical preparation, combat archers can fight our best fight using whatever weapons and tactics fit the situation; this spirit, more than anything, is at the heart of the Thirty-Six Strategies of the Senryaku.

Author's note: Unlike *The Art of War* (*Sun Zi Bingfa*) or *The Book of Five Rings* (*Go Rin No Sho*) the *Senryaku* have no clearly definable origin, and probably were a collection of "folk" military memes that have been reiterated, refined, and even reinvented throughout Chinese history. The first literary reference to the thirty-six strategies dates from the sixth century C.E., and is found in the seventh volume of *The Book of Qi*, entitled *The Biography of Wang Jingze*.

(For those who wish to explore the *Senryaku* further, I suggest: [Lure the Tiger Out of the Mountains: The 36 Stratagems of Ancient China](#) by Gao Yuan.)

I also suggest the following websites:

<http://afpc.asso.fr/wengu/wg/wengu.php?l=36ji>
http://en.wikipedia.org/wiki/36_Strategies
<http://www.chinastrategies.com/home36.htm>
<http://www.chinastrategies.com/home36.htm>
<http://www.youtube.com/watch?v=1e46hizXDd0>

Fight well, and good hunting!

A Study of Medieval and Renaissance Arrow Shaft Sizes: Massaging Data from the Museum Of London and the British Museum

By Lord Mungo Napier, The Archer of Mallard Lodge
(aka Garth G. Groff)

[Editor's Note: The spine, or stiffness, of an arrow shaft is influenced by a variety of factors that include the shaft's diameter, mass, and the type of wood; spine may vary widely even within shafts of the same wood type and diameter. This article focuses on the likely visual appearance of period arrow shafts, rather than these other physical properties.]

I have long wondered about arrow shaft sizes used during the Middle Ages, and how they relate to the arrow shafts we use as re-enactors. Most of our modern shafts are 5/16" (7.8 mm), 11/32" (8.58 mm) or occasionally 23/64" (8.97 mm), appropriate for the light sporting bows most of us shoot. But did arrows of this size exist in the Middle Ages and Renaissance in England?

Nearly all the information about period English arrows comes from the artifacts found with the Mary Rose shipwreck. This early ship-of-the-line was sunk during a 1545 French invasion of England. Salvaged and raised in the 1970s and 1980s, the vessel held a treasure trove of yew bows and arrow shafts (nearly all the arrowheads, fletches and cow horn nock reinforcements were destroyed by over 400 years of salt

water immersion). Mary Rose arrow shafts came in two basic types: tapered "flight" arrows approximately 13 mm (1/2") in diameter at their thickest and slimming down to 9.5 mm (3/8") at the nock, and parallel-sided "livery" arrows with a constant diameter of about 11 mm (7/16"). [1] The Mary Rose finds actually represent the peak of military archery development in England, and care must be taken in relying upon these artifacts as evidence of equipment from earlier periods.

Two other nearly complete arrows also exist, both comparable in size to the Mary Rose arrows. The Westminster arrow, found in the ceiling of Henry V's chantry at Westminster Abbey, is a tapered "flight" arrow mounting a barbed war point (Museum of London type 16), though all the fletches and its nock reinforcement strip are long gone. The arrow has been



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tentatively dated to the first half of the 15th century, based on the chantry's construction date. [2] The second arrow has recently surfaced; it currently is in private hands, and little is known about it. A

photograph reveals a tapered "flight" arrow with a type-16 barbed war point, vestigial fletch, and a cow horn nock reinforcement strip, all very similar to the Westminster arrow. [3]



Figure 1: A modern replica of a type-16 barbed war point (Museum of London typology). This is generally believed to be the most common war point used during the late Middle Ages and Renaissance. (Author's collection)

Given that except for fragments no other period arrow shafts survive, a possible answer to my question about period arrow shaft sizes might be found by measuring the outer diameter of sockets on surviving arrowheads in British museum collections. However, when I initially viewed online descriptions of arrowheads from several museums, I noted the complete lack of this dimension.

Being on the wrong side of the Atlantic, I was not able to examine any of these arrowheads in person. This means I could not determine how much socket diameter may have been lost to rust or breakage. Even if I were able to actually see the arrowheads, I lack the specialized training to make a scholarly evaluation of any such damage. I chose to assume that most arrowheads have minimal metal loss due to rust and are close to their original diameter. This is likely true in some cases, and in error with others.

Additionally, there is no way to determine today whether the arrowhead sockets were the same diameter as their shafts, which is how a modern arrow usually is built. Close examination of photos of the Westminster arrow [4], and the recently discovered arrow, shows that both arrowheads are slightly larger than their shafts. The amount is difficult to judge in photos, but it appears to be between .5 and 1 millimeter, meaning

that the socket diameter is between one and two millimeters larger than the shaft diameter.

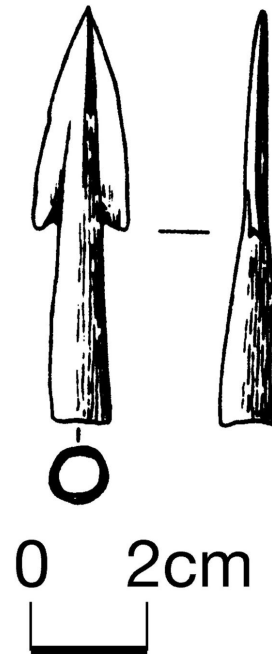


Figure 2: This illustration is typical of the Faccombe Netherton arrowheads, as seen on the British Museum web site. (British Museum, used by permission)

I also examined an online photo of the famous arrow decoration in Prince Arthur's chantry at Worcester Cathedral. [5] These finely detailed arrows also show arrowheads (so-called "Tudor bodkins") with sockets slightly larger than their shafts.

I began my study with the Museum of London collection; however, I have concluded that a clearer presentation can be made by beginning with the British Museum arrowheads. Their more precise dating gives a better understanding of the data, and provided a cross check against the Museum of London material.

The British Museum Collection

Later when I looked again at the arrowheads shown on the British Museum web site, I found there was more information than I had first thought. The British Museum collection holds many arrowheads, but few are actually shown in images online. Some in photographs have their socket sizes indicated, or some other dimensions given, but most are represented by scaled drawings. Once I scanned these images and printed them at 100%, it was easy to take dimensions of their sockets.

The British Museum's arrowheads include 33 from the Faccome Netherton site. [6] This manor in Hampshire was occupied from around 800 through the 16th century and beyond. Carefully documented excavations give fairly precise dating for the successive occupations

at the site. Scaled drawings depict complete or near-complete sockets for 25 of the arrowheads, with a top (or bottom) view, a profile of one side, and a section view, though not always at the end of the socket. Some of the sockets are flattened, so I chose to take an average of the height and width as close to the socket end as possible. In addition, there are a number of arrowheads shown in photographs or drawings from various other sites that came to the British Museum through purchase or donation, and which have less precise dating. I was able to use 13 of these arrowheads in my study. In the end I had a total of 38 points from the British Museum collections (Table 1), which is not a very large population.

Most of the arrowhead drawings from the British Museum include a cross section view with approximately 1 mm thick walls. For period arrows possibly having shafts similar in size to our modern ammunition, I have concluded that a flush fit would be most common. Otherwise, these heavy arrowheads would make the arrows fly poorly—reproduction points in my collection weigh between 200 and 250 grains, whereas modern target arrows balance properly with 100 or 125 grain arrowheads. These larger and heavier arrowheads would not have been a problem when shooting heavy arrows in the 11 to 13 mm range of shaft diameter from the very powerful English yew war bows.

Table 1: *Selected Arrowheads from the British Museum Collection*

SOCKET METRIC	SHAFT ENGLISH	UNKNOWN DATE	940-980	980-1280	1070-1180	1180-1280	1280-1356	13 TH -16 TH CENT.	14 TH -16 TH CENT.	15 TH CENT.	UNDATED TYPE 16
9 MM	23/64" 8.98 MM	1		1			2				1
9.5 MM	3/8" 9.36 MM	1	1				1				
10 MM	13/32" 10.14 MM	3		1		1	7	1		1	
11 MM	7/16" 10.92 MM	2				1	6				1
12 MM	15/32" 11.70 MM	1			1		3				
13 MM	1/2" 12.5 MM						1				

The Museum of London Collection

I turned to the Museum of London, known to have an extensive collection of arrowheads, in the hope that there might be some previous scholarly paper discussing socket sizes. Imagine my surprise when one of their historians, Ms. Meriel Jeater, offered to have their iron arrowhead collection measured by a volunteer. Three weeks later Ms. Jeater sent me a complete inventory of the arrowhead collection, with all the sockets measured.

The Museum of London's data are divided into somewhat vague and overlapping periods (i.e., early medieval, 13th century, 13th-14th century, etc.). According to Oliver Jessop's 1996 critique of the collection, many of the arrowheads were excavated before 1915 when recording and interpretation of artifacts had rather low standards. [7] Now removed from their original context, much opportunity has been

Table 2: *Selected Arrowheads from the Museum of London Collection*

METRIC SOCKET	ENGLISH SOCKET	SAXON-12 TH C.	EARLY MEDIEVAL	13 TH C.	13 TH -14 TH C.	14 TH C.	14 TH -15 TH C.	15 TH C.	TUDOR	POST MEDIEVAL	MEDIEVAL	UNK. DATE
8 MM	5/16"	1			4		4			1		
9 MM	23/64"	3	2		6		12					
10 MM	13/32"	1	3		2	2	10	1	1		1	1
11 MM	7/16"	1	2		2	1	4		1			
12 MM	15/32"	1	2		1		2		2			
13 MM	1/2"		1	1	1		1	1	2			

Summary of Historical Shaft Diameters

British Museum. Only five arrowheads among the 38 from the British Museum had shafts that roughly correspond to modern target shaft sizes. These include a pair of Faccombe Netherton 1280-1356 arrowheads with 9 mm (23/64") sockets, the largest target arrow size commonly used today. These are both small barbed arrowheads, possibly dual-purpose hunting/war points. Also from Faccombe Netherton is a long bodkin with four faces--a war point for use against mail armor. The two remaining arrowheads in the 9 mm group are not identified by date or find location. One is a type 16-barbed war point, and the other appears to be a simple target bullet point with a long taper.

Of particular significance is a cluster of 7 arrowheads dating from 1280-1356 at 10 mm (13/32"); if fitted flush. This is a size much larger than our modern target shafting. Examination of the drawings shows that two of these arrowheads are hunting points, while two more are likely dual-purpose hunting/war points,

lost for modern researchers to provide a better dating on these arrowheads. While this is less than ideal, the collection still provided a considerable number of arrowheads that were of interest to this study.

There are 133 arrowheads in the Museum of London collection. I eliminated 22 tanged arrowheads and one modern reproduction, dropping the total population to 110. Photographs or drawings were not available, and some of the points measure an impossibly small 5 to 7 mm, suggesting that they are broken off or heavily corroded. I was forced to eliminate these from consideration. I also eliminated any arrowheads above 13 mm, which are likely to be crossbow or ballista bolts. Some 12 mm arrowheads are identified as crossbow bolts, but I retained them that on the chance they might be misidentified, since 12 and 13 mm arrow shafts certainly did exist. I ended up with 81 arrowheads in this population (Table 2).

having small barbs. One appears to be a type-16 barbed war point. The remaining two are large bullet-shaped target points. If any of these arrowheads were fitted to a smaller shaft, it would likely have been about 9 mm (23/64"), as 8 mm (5/16") seems too small and would have led to balance problems.

Another cluster of 6 arrowheads dating from 1280-1356 are at 11 mm (7/16") if fitted flush, or 9-10 mm (23/64-13/32") if fitted to a smaller shaft. Of this group, four appear to be dual-purpose hunting/war points, one is a hunting broadhead, and one is a target bullet.

There were no arrowheads measuring 8 mm in this group.

Museum of London. I was particularly pleased to find a significant number of 8 mm (5/16") sockets here. The earliest is a Saxon "leaf-shaped" arrowhead. In the 13th-14th century block, there are two small hunting broadheads, and two needle bodkin war points.

The 14th-15th century group includes two hunting broadheads, a small armor-piercing bodkin, and a type-16 barbed war point. The final 8 mm arrowhead, in the post-medieval date group, is not identified by type in the Museum of London list.

Turning to the 9 mm (23/64") arrowheads, we begin with three Saxon leaf-shaped points, and two similar arrowheads dated as "early medieval". In the 13th-14th century group we find six arrowheads: a target bullet, four needle bodkins, and a small hunting broadhead. There are twelve points of this size in the 14th-15th century group. Two are long-finned broadhead hunting points, while the others are an astounding ten type-16 barbed war points. I find this among the most interesting surprises of this whole exercise. Arrowheads of this type are found on the two surviving (nearly) complete war arrows mentioned at the beginning of this study, both on more robust shafts. To find them with 9 mm sockets suggests that smaller shafts were used in combat in the 14th or 15th centuries. Alternatively, these arrowheads might have been fitted to "barrel" tapered shafts, where the wood was small near the arrowhead, ballooned out to 12 or 13 mm along the mid-portion, and then returned to a smaller diameter before reaching the fletch and nock. [8]

The 10 mm (13/32") sockets make up the largest group of 22 arrowheads. Only one is in the Saxon column, again a leaf-shaped arrowhead. The next arrowhead is simply identified as "medieval" with a modest broad triangle point. In the "early medieval" group there are three arrowheads: a typical Saxon arrowhead, one similar to the Saxon point though the blade is lozenge-shaped, and the last with a triangular blade. There are two needle bodkins of this size in the 13th-14th century section. The 14th century date group also contains two arrowheads: a large-headed armor-piercing bodkin, and a large finned hunting broadhead. The largest block of

10 mm arrowheads falls in the 14th-15th century column and shows considerable variety. The group includes a type-16 barbed war point, an arrowhead with a small triangular blade, two small triangular heads mounted on long sockets, a bodkin with a lozenge-shaped blade, and a target bullet. The other four points were bolts or other unusual types outside the categories of my analysis. The 15th century column has but one arrowhead, a hunting broadhead. In the Tudor column is a single arrowhead, a target bullet. If any of these arrowheads were mounted on smaller shafts, they likely would have been 9 mm (23/64").

In the 11 mm size (7/16"), there are eleven arrow points, though widely scattered over the time studied and of many types. Of particular interest to us are five arrowheads dated to the 14th -15th centuries. These include a long-finned hunting point, a triangular point on a long socket, two triangular points on shorter sockets (one identified as a bolt head), and a type-16 barbed war point. Any of these also might have been mounted on smaller shafts of 9 or 10 mm (23/64-13/32").

Limitations

This is an imperfect study due to my inability to actually examine the arrowheads in person, and the small size of the population studied. However, the data certainly show arrowheads that would have been mounted on shafts in the 8 and 9 mm range (5/16-23/64") being used up into the 14th or 15th centuries. These arrowheads include types used for hunting, target practice and warfare. In addition, the data allow the possibility of 11 mm (7/16") arrowheads, and possibly 10 mm (13/32"), being mounted on smaller shafts, although this cannot be proven without actual physical evidence. The recent find of another medieval arrow hints at the possibility of more exciting data becoming available in the future.

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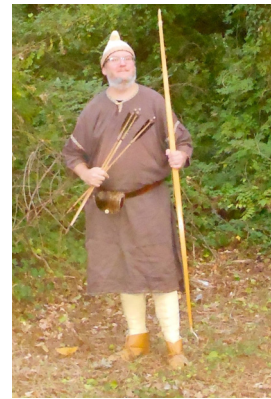
Meet The Editors

Eirik Grálokkr is a farmer and craftsman from somewhere in the southern forests of Scandinavia. Having lived for several years in the Middle Kingdom in what is now Northshield, he appreciates wool during the rare times in his part of southern Atlantia when it is cold enough to wear it. He currently resides in the Canton of Charlesbury Crossing, within the Barony of Sacred Stone in Atlantia.

Eirik knows how to make things from wood, linen, and iron just well enough to keep the homestead running. He particularly likes making archery tackle and then shooting with it. In addition to blacksmithing he also enjoys sewing, cooking, and brewing mead, though he has decided that mead and objects that are sharp or hot probably should not be mixed.

Though he has traveled far and wide on trading voyages, and may occasionally have helped redistribute some wealth along the way, these days Eirik prefers to remain near home. He spends his time making things, growing things, and teaching

what he has learned to his children and anyone else who will listen.



***Aka: Michael Matthews** is a university professor who teaches and writes in the area of gifted and creative education. He holds graduate degrees from the University of Wisconsin and the University of Georgia. He enjoys the same hobbies that Eirik does, but is happy that no one actually starves these days when a garden crop fails or when his arrow misses its target.*

Scores-SCA.org!

The SCA Scores Site was created to help archers and marshals get their scores reported and recorded in a more timely fashion. In 2012 it was approved by the Board of Directors and is now a part of the SCA.org system. (<http://scores.sca.org>) It is currently in use by 15 Kingdoms in the



Knowne World and is open to all! It hosts both Archery and Thrown Weapons scores. It is also the one stop submissions site for the Inter Kingdom Archery Competitions (IKAC and IKCAC), the Thrown Weapons Inter-Kingdom Competition (TWIC), the Society Seasonal Archery Competition (SSAC), the new Grand Archery Tournament(GAT) and Quivers and Quarrels, this Archery Newsletter!

Archers and Throwers of Weapons can check the site to track their own scores from around the Knowne World, see those of a friend, or even compare against a rival! Marshals can submit scores online by inputting data from traditional score sheets, or to really speed things up, they can use the Mobile Scoresheet on the range via a mobile device (if it's smart enough!). Kingdoms can post their practice times and locations, promote local merchants, create their own shoots and share them with

other Kingdoms. They can even keep track of badges to be awarded and maintain a roster of active marshals.

A short introductory guide is available on the homepage (<http://scores.sca.org>) which displays basic features of the site and illustrates how to access the information that the SCA Scores Site makes available to the entire Knowne World. Since marshals have access to more tools, a more thorough guide is available for them.

HOW TO FIND YOUR WAY AROUND.....

On arrival you will find a column on the left of your screen which gives you options. Go to your Kingdom, search for a Name or Local Practice, see the results of Seasonal and Inter-Kingdom Challenges or check out merchants sponsored by marshals.

FINDING SOMEONE...

The Name Search option in the left column takes you into the details of one archer's experience displayed by scores-SCA.org. Search for yourself or friends!

Creator of the SCA Scores Site, Meister Jonathas Reinisch of Atlantia continually improves the site to meet each Realm's specific needs. His mailbox is always open. (Jonathas@RedFoxDen.org). In future articles, the Scores Site will explain new updates and detail specific tools. Let us know which aspects you are most interested in hearing about first! (Contact for guided tours and future 'schpiel': johannatrueshot@gmail.com)

Local Archery Practices

[Editor's Note: Please send updates on your local practices to us at QuiversQuarrels@gmail.com]

Ansteorra

Northkeep

Missile practice scheduled every Sunday from noon till whenever people go home.

9737 W. 61st Street S. Sapulpa, ok.74066 918-200-5584. Calling 1st is a good idea, as I may be gone to an event.

Random cook out / pot lucks. Thrown weapons practice from noon till 2pm. Children's archery practice from 1pm till 2:15pm. Adult archery practice from 2:30pm till people go home. Submitted by Arthur Blackmoon, Baronial Missile Marshal - Barony of NorthKeep.

Cancellations: For major regional archery events and if the temperature is below 40 degrees.

Atenveldt

Barony of Sundragon and the Barony of Atenveldt

The baronies practice together on Sundays at El Oso Park This is for Royal Rounds and Tournaments only at this time for Target Archery. October thru April 9 AM and May thru September 7 AM



Quivers & Quarrels



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Kingdom of CAID

Altavia: 1st, 3rd, and 5th Sunday of every month at Woodley Park 11:30am-3:30pm

Angels: See webpage at <http://www.sca-angels.org/> or contact Lady Rayne Archer of Annan at raynearcherofannan@gmail.com.

Calafia: Sundays from 10:00 am to noon, and on Tuesdays and Thursdays at UCSD Thornton Hospital from 5:30pm to 7:00pm

Dreiburgen: 1st and 3rd Sundays, 10am at House Montrose in Pedley, 2nd and 4th Sunday at Paganus and Rekon's

Dun Or: Unofficial Practices Mondays, 6:30-8:00pm at H&W Archery on Trevor St. in Lancaster and Last Sunday of the month at 2:00 in Littlerock

Gyldenholt: every Sunday at 10:30am in Mile Square Park Archery Range in Fountain Valley.

Lyondemere: El Dorado Park (north of Spring Street), Long Beach 7550 E Spring St, Long Beach, CA, 90815

- Sundays from 1-5; and Thursday nights from 7-9 PM at Rancho park in Cheviot Hills.

Naevehjem: At Baldwin's keep, a private residence. For more info contact jotl2008@wildblue.net

Nordwache: No Info

Starkhafn: Clark County Archery Range (6800 E. Russell, Las Vegas, NV 89112) located behind Sam Boyd Stadium/Old Silver Bowl Park. Tuesday: 6:00pm till 7:30pm (or dark) Saturday: 10:00am till noon.

Western Seas: no info

Shires:

Al-Sahid: same as Dreiburgen

Carrweg Wen: On Hold

Darach: No Archery Practice

Kingdom of Lochac

Barony of Southron Gaard: conducts weekly practices from 2pm to 4pm every Sunday, weather permitting. on the back field of Kirkwood Intermediate. We also have our Baronial Anniversary happening on the 23rd of March to be held at Cust.

At our Baronial anniversary we will be deciding the champions for the next year, including archery and crossbow. Submitted by Darayavaush Ah.r'r. Captain of Archer for Southron Gaard and current Baronial Archery Champion, MKA Damon Daines

Kingdom of Meridies

Barony of Thor's Mountain, Knoxville, TN

The Barony of Thor's Mountain holds its practices on the 2nd and 4th Sundays, 3:30pm to 5:30pm, with reservations (no practices on weekends with Kingdom-Level Events or TM events. We post updates on our website calendar.

Midrealm

Barony of Ayreton (Chicago Area)

Wednesdays: 6:30PM, 7240 Madison Street, Forest Park, (708) 366-4864

Confirm with: Forester Lukas Mesmer [Stoutmaker at hotmail dot com](mailto:Stoutmaker@hotmail.com)

Barony of Cynnabar Ann Arbor, Michigan

"Official Archery Practice in the Barony of Cynnabar is held Sundays from 2-4pm, weather permitting, at the archery range of The Honorable Lord Forester Dillon ap Dillon. **Regular practices for 2013 will begin around Sunday, April 14.** More information regarding archery in the Barony of Cynnabar can be found at our Website: <http://www.cynnabar.org/archery> .

For all questions regarding practice dates, times, and the location of the official Baronial archery range, please contact Lady Godaeth se Wisfaest, GM, archery@cynnabar.org ."

Barony of Flaming Gryphon

Archery practice at Wildlife District 5 at 1076 Old Springfield Pike in Xenia, OH. As of November, indoors.

Madame Bertrande Fresneau, CDB, AOA Order of the Flaming Brand June 2007

Flaming Gryphon Deputy Archery Captain mka Kristen Allen-Vogel

The Shire of Eastwatch (Cleveland Ohio area)

The Shire of Eastwatch has archery practice every Sunday from 4:00 to 7:00 p.m. at Free Spirit Farm located at 13987 Watt Road, Novelty, Ohio 44072.

If people would like to contact us about attending, they can email me at whgkingstone@ameritech.net or they can call me at (216) 246-0085.

Our practices sessions are announced on the Facebook Pages for Eastwatch, Barony of the Cleftlands, March of Gwyntarian, Northern Oaken Archery, as well as the Eastwatch Yahoo group page.

Besides archery, horseback riding is also available at Free Spirit Farm .

Shire of Mnynydd Seren (Bloomington, IN):

When: 2:00 P.M. every Saturday

Where: Shire of Mnynydd Seren (Bloomington, IN) 5501 South Rogers St, Bloomington Indiana

Contact: Eogan - Baiaorofred@gmail.com

Cancellations: For major regional archery events and if the temperature is below 40 degrees.

Barony of Sternfeld (Indianapolis Indiana)

(Constellation Region, Middle Kingdom) has practice Wednesday evening 7:00 to 9:00 PM at Yurts of America, 4375 Sellers Street, Indianapolis, IN 46226.

Outdoor practices will be announced on the Sternfeld Facebook page and on the Yahoo group page. Come have some fun!



Greek Archer – New York Public Library



How To Cut Feathers for Fletching Arrows

By Margarita Carpintero

Fletching your own arrows is a great way to step up your medieval authenticity when it comes to the sport of archery. Not only does it look great, it's very satisfying knowing you did it yourself. There are plenty of guides on the actual fletching of the arrows, but not many on how to prepare the feathers. You can, of course, buy pre-cut veins, but if you plan on using real turkey or goose feathers, you'll have to start from scratch.

Materials List:

- Feathers
- Xacto Knife
- Scissors
- Ruler



Here, I'm using craft feathers. Craft feathers are great because they are inexpensive and come in a wide variety of colors. But please note, DO NOT use the floofy, flimsy ones! You need the ones with a nice strong stem, like a quill pen has.

The first step is to snip off the thick quill end. Using a strong pair of scissors, cut in between where the fuzzy feathers end and where the stiff ones begin.

On the back of the feather, you'll notice there's a ridge that runs down the entire spine. Very carefully, use your Xacto knife to cut along that ridge, splitting the feather in two. One side will most likely be thicker than the other. If the thick side is too thick for your liking, you can very carefully shave it a little thinner. However, if it is too thin, it will become too flimsy to use. Just use your best judgment.



Use your ruler to cut the feathers to the length you'd like to use for your arrows. I cut these ones to 3 3/4". If you plan on wrapping your feathers to your arrow like in medieval times, measure in 1/4" from each end. Take your Xacto knife and shave away the feathers so that there is only the stem left. This will leave a little shelf to better secure your feathers as you wrap them. If you are only gluing your feathers, you may omit this step.

Finally, to finish them off take your scissors and trim all the feathers to a consistent length. If you want, you can even shape them in different styles (pointed, rounded, ect.), but this is just a matter of personal preference.

"FUNDAMENTALLY, THE MARKSMAN AIMS AT HIMSELF." ~D. T. SUZUKI
(1870-1966)



The Medieval Archer's Reading List

Last Updated 26 February 2010

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By Manigarm the Scythian

We all love to learn about archery during the Middle Ages, but sorting through the thousands of books and articles out there can be daunting. Drawing on a background in medieval studies and archaeology, I've compiled the following Medieval Archer's Reading List, categorized by topic, to help get you started. I've included the title and author, as well as a brief description of the contents taken from each book's publication synopsis. Books in each category are listed in alphabetical order.

If you are particularly interested in old or hard to find archery texts, I encourage you to check out **The Archery Library Online**: <http://www.archerylibrary.com>. This website archives a variety of old archery books and articles from 1545 to 1936. These resources are available to give you an overview of the development of archery through the ages, from use in wartime to its development as a high society pastime to the beginnings of modern target archery.

For further reading about a wide variety of topics in medieval history, you can also check out my [Medievalist's Reading List](#).

(Note: It is my intent that this reading list be considered a living document. If you have read a book or article that you feel is an important contribution to learning about traditional archery or archery in the Middle Ages and I have not included it here, feel free to submit the title and author (and a short description, if you like) for inclusion in the reading list at prolegomenon@gmail.com).

History of Archery

History of Archery

Agincourt 1415: The Archers' Story, Anne Curry - This new history tells the story of the battle of Agincourt and Henry V's Normandy campaign from the perspective of the reputed commander of the English archers, Sir Thomas Erpingham. Anne Curry also addresses the role of the longbow and other battlefield tactics in the victory.

Arrowstorm: The World of the Archer in the Hundred Years War, Richard Wadge - This book chronicles the overwhelming importance of the military archer in the major battles of the late medieval period. The longbow played a central role in the English victory at the battles of Crecy and Agincourt, and dominated the less well-known Battle of the Herrings in 1429. Used with complete disregard for the chivalric code that governed war in the Middle Ages, the English longbow

completely undermined the supremacy of heavy cavalry on the battlefield, demanding a wholesale reassessment of the tactics that had gone before. Richard Wadge explains what made England's longbow archers so devastating on the battlefield and details the process by which their formidable armament was manufactured and the conditions that produced men capable of continually drawing a bow under a tension of 100 pounds. Wadge looks at the economics behind the supply of longbows to the English army and the social history of the military archer - what life was like in England in the fourteenth and fifteenth centuries and what were the advantages of joining the first professional standing army in England since the days of the Roman conquest.

Bowmen of England, Donald Featherstone - In the skilled hands of English and Welsh archers, the longbow revolutionized medieval concepts and traditions of war. From the 12th to the 15th centuries, it was the winning factor in every major battle from Morlaix in 1342 to Patay in 1429. Donald Featherstone's study of the English longbow from its early development until the Wars of the Roses is a notable reconstruction of the longbow's complicated history. Note his inclusion of an interesting footnote regarding the engagement in which the longbow was last used in France in 1940.

Bows & Arrows of the Native Americans: A Step-by-Step Guide to Wooden Bows, Sinew-backed Bows, Composite Bows, Strings, Arrows & Quivers, Jim Hamm – This book details the nearly lost art of handmade bows and arrows from a narrative interwoven with history.

Bows of the World, David Gray - This work surveys the multiple varieties and peak achievements of the art of archery from around the world, covering primitive, traditional and modern bows from the civilizations of North America, Europe, Asia, South America and Africa. Beginning with an account of how prehistoric human ingenuity developed the bow, the text examines why different societies produced different styles of archery, and gives particular emphasis to the distinction between bows for war and bows for hunting. Dimensions and construction materials are detailed for each bow examined, along with sidebars on arrows and quivers. This book also includes key shooting characteristics and performance facts, as well as an in-depth focus on the legends, folklore, and spiritual attributes that have developed around archery, from Native American myths to Zen meditative artistry.

Chinese Archery, Stephen Selby - Archer and Sinologist Stephen Selby collects and translates several views of traditional archery in China by historians, philosophers, poets, artists, novelists, and strategists beginning from 1500 BC to the 20th century. These translations primarily focus on bow building, archery, and crossbow technique over the centuries.

Crécy 1346: Triumph of the Longbow, David Nicolle - The Battle of Crecy was the first major land battle of the Hundred Years War. It pitted the French army, then considered the best in Europe, and their miscellaneous allies against the English under King Edward III and the 'Black Prince', who as yet had no great military reputation. The Genoese crossbowmen were outshot by the English longbows and the pattern was set for the rest of the day. The French cavalry were committed piecemeal in fruitless charges against strong English positions, losing perhaps 10,000 men in the course of the fighting. After almost a millennium in which cavalry had dominated the field of battle, the infantryman, and particularly the longbowmen, now ruled supreme.

Die Armbrust, Egon Harmuth, Originally published in German in 1975, this crossbow handbook served as a follow-up to Payne-Gallwey's 1903 The Crossbow. It covers the general history and culture of the crossbow.

Encyclopedia of Native American Bows, Arrows & Quivers: Volume 1: Northeast, Southeast, and Midwest, Steve Allely - Native Americans and their elegant weapons have provided an undeniable mystique for archers, history buffs, collectors, and anyone who appreciates traditional skills. Authors Allely and Hamm have brought together the most exceptional archery pieces from eastern tribes such as the Mohegan, Mohawk, Cherokee, Seminole, Chippewa, and Winnebago. Detailed pen-and-ink drawings give dimensions, decorations, and construction details on more than a hundred historic bows, scores of arrows, and two dozen quivers. The running commentary is drawn from research conducted in museums around the world, and gives insights into who used these instruments and how.

English Longbowman 1330-1515, Clive Bartlett – This book details the English military ascendancy from the mid-14th to the early 15th century and focuses primarily on the English longbow and its effectiveness as a weapon of the Late Middle Ages.

European Crossbows: A Survey by Josef Alm, Josef Alm - Alms's survey was originally published in Sweden in 1947. It provides a detailed survey of the development of the European crossbow.

Hunting the Hard Way, Howard Hill - Archery conjures up many images-Robin Hood, the American West, wild safaris in Africa, and the simplicity of nature on a brisk October morning. Howard Hill brings to life all of these images with exciting stories about the thrill of the hunt, oneness with nature, and the adventure of the great outdoors.

Hunting with the Bow and Arrow, Saxton Pope – This book details the glory and romance of archery culminated in England before the discovery of America. There no doubt the bow was used to its greatest perfection and it decided the fate of nations until the crossbow and the matchlock supplanted the longbow when Columbus sailed for the New World.

Korean Traditional Archery, Thomas A. Duvernay - A general history of traditional Korean archery including discussions of horn bows, thumb ring techniques, shooting postures, philosophy, and etiquette.

Kyudo: The Essence and Practice of Japanese Archery, Hideharu H. Onuma, Dan De Prospero, Jackie De Prospero – Kyudo, the Way of the Bow, is the oldest of Japan's traditional martial arts and the one most closely associated with bushido, the Way of the Warrior. After the Second World War, Eugen Herrigel introduced the concept of kyudo to the West in his classic Zen in the Art of Japanese Archery but until now, no Japanese kyudo master has published a book on his art in English. Written with both novices and advanced students in mind, the book is presented in simple, straightforward language and features hundreds of detailed illustrations, supplemented by rare photographs of Master Onuma, clearly demonstrating the fundamental techniques and daily practice of this form of "standing Zen."

Longbow: A Social and Military History, Robert Hardy - This revised and expanded edition chronicles the history of the longbow from the earliest known example used 8000 years ago, through its coming of age at the battles of Crecy, Poitiers and Agincourt, to its use as a hunting and sporting weapon, and its present-day status in Britain. This book contains the first authoritative account of the archery equipment found in Henry VIII's warship the Mary Rose; describes the archers themselves, their equipment, training, uniform and terms of service; examines the fact and fiction of the Robin Hood legend, the reasons why the French never took to the longbow and the devastating effect of longbow against longbow in the Wars of the Roses. This book also offers a detailed account of how to make a longbow from scratch, including all the tools and materials required.

Medieval Warfare: A History, Maurice Keen - A comprehensive anthology of essays by a number of British academics that survey military development in the Middle Ages including the history and use of the bow.

Mounted Archers of the Steppe 600 BC-AD 1300, Antony Karasulas - For more than 2,000 years hordes of mounted nomadic archers from the vastness of the steppe and from Central Asia poured into China, the Middle East, and Europe. Feared and reviled, they were a formidable threat to the lands they invaded. Their influence on military history is incalculable: the whole foundation of late Classical and Medieval Western and Middle Eastern military thought was based on the reality of a highly mobile, tough and unconventional foe, one which could strike almost anywhere at will and with highly effective long-range weapons.

North American Bows, Arrows, and Quivers: An Illustrated History, Otis Tufton Mason - Otis Tufton Mason, the founder of the Anthropologist Society of Washington, details the history of the archery tools used by the native peoples throughout the North American continent. Hundreds of line drawings showcase the many varieties of bows, arrows, and quivers they crafted, and numerous rendered images display tools and materials. Sketched diagrams demonstrate how the arrowpoints were mounted and the bows assembled. Nearly all the illustrations are accompanied by an explanatory page of authoritative information.

Secrets of the English War Bow, Hugh D. H. Soar - Dominating medieval battlefields for more than two centuries but requiring long and arduous practice to command, the English war bow and its battle shaft became the symbols of British power in Europe. Despite being crafted for hundreds of years and wielded by generations of archers, the sole surviving examples of these powerful weapons—the military version of the longbow—are those recovered from the Tudor warship Mary Rose. Now, expert craftsmen use all available evidence, including applied archaeology, to unlock the secrets of the English war bow. In addition, this book demonstrates the complete manufacture of a bow from tree selection to stringing and how specialized arrowheads were forged and attached to shafts. Secrets of the English War Bow provides information on the actual performance of the war bow, including the bow's effectiveness against various materials and, for the first time, its use against moving targets, since these bows were often drawn against mounted soldiers.

The Book of Archery: Being the Complete History and Practice of the Art, Ancient and Modern, George Agar Hansard - This book is produced from digital images created through the University of Michigan University Library's preservation reformatting program. It covers the history of archery from Europe to China and includes biographies of famous archers (including a chapter specific to famous female archers), as well as details of equipment, techniques, and regional archery practices (namely Greek, Roman, Welsh, and French).

The Book of the Crossbow, Ralph Payne-Gallwey – This work includes a facsimile reprint of The Crossbow published in 1903 by Longmans, Green, and Co. in London. Payne-Gallwey also includes surveys of the history of the crossbow with comparisons to the longbow, shortbow, and handgun as well as the construction and management of medieval and modern crossbows. In later chapters, he also discusses the ancient and medieval siege engines that stand in evolutionary relation to crossbows.

The Crooked Stick: A History of the Longbow, Hugh D. H. Soar - Although the longbow may best be known for its use during the Hundred Years' War, its origins lie with ancient Saxon seafighters and Welsh craftsmen. In this book, historian and leading expert on traditional archery, Hugh Soar presents

the history of the longbow. Starting with Neolithic bows and arrows, he describes the bow's use in medieval hunts and associated customs. Soar also follows the weapon's development and tactical deployment from the hand-bow of William the Conqueror's campaigns to the continental set-piece battles between England and France. In later chapters, Soar continues with the history of archery during the Regency and Victorian periods as well as the resurgence of traditional archery in the 20th century.

The Crossbow: Its Military and Sporting History, Construction and Use, Ralph Payne-Gallwey – This historical exploration of a weapon used for centuries will fascinate historians and enthusiasts alike. The crossbow, probably introduced to England by the Norman invaders in 1066, was once considered so barbarous that it was prohibited as a “weapon hateful to God and unfit for Christians.” Sir Ralph Payne-Gallwey, an accomplished engineer, describes military and sporting crossbows and their dimensions, components, and ranges; provides hard-to-find information on crossbow construction; gives details about modern crossbows such as bullet-shooting crossbows and bolt-shooting crossbows; and offers a peek at unusual crossbows like the Chinese repeating crossbow.

The Great Warbow: From Hastings to the Mary Rose, Matthew Strickland - The Great Warbow is an exploration of the bow and arrow as weapons of war. From before the Domesday Book, through Anglo-Saxon England, medieval Wales and Ireland, the Crusades, Bannockburn and the Wars of the Roses, until the time of the Tudors, this book follows a wide-ranging journey through history. Tactics, myths, origins, defense and armor are all discussed; as are the different types of bows; shortbow, longbow, composite bows and crossbow.

The History of Archery, Edmund H. Burke - Illustrated with photographs and old prints, Edmund H. Burke, the founder of the Society of Archer Antiquaries, authors this work on the 10,000 year history of archery. He includes everything from the factual history of the making of bows and the art of fletching as well as accounts of famous battles (such as Agincourt, Poitiers, Crecy) in which archers played decisive roles. Burke also addresses Native American archery and the character of Robin Hood.

The Medieval Archer, James Bradbury - This book traces the general history of archery in the medieval period, from the Norman Conquest to the Wars of the Roses. James Bradbury focuses primarily on the role of archery in both medieval society and military tactics until the invention of the rifle.

The Romance of Archery: A Social History of the Longbow, High D. H. Soar - In a tradition extending back for centuries, and eventually becoming part of English law, all boys were to be provided with a bow and two arrows at the age of six to begin archery training. When the longbow gave way to firearms in the 16th century, the ancient statute was relaxed. At that point, rather than disappear, the longbow began a new life as the centerpiece of recreational archery. Initially men-only, archery clubs in the 18th and 19th centuries began accepting women members. It was then, as Hugh Soar relates, that the longbow literally became an arm of cupid, with recreational archery providing a setting for prospective partners to meet in a socially acceptable environment, a ritual known from the time of Jane Austen to Edith Wharton. With the participation of women, the longbow opened up another phase in its centuries-old career, with women welcome to shoot in the Olympic Games.

The Witchery of Archery, Maurice Thompson – The Witchery of Archery, written in 1878, this was the first book in English about hunting with a bow ever published. Its full title is ***The Witchery of Archery: A Complete Manual of Archery. With Many Chapters of Adventures by Field and Flood, and an***

Appendix Containing Practical Directions for the Manufacture and Use of Archery Implements. Long considered the first important book about archery written in the English language.

Traditional Archery from Six Continents: The Charles E. Grayson Collection, Charles E. Grayson; Mary French; Michael J. O'Brien - As a major hunting tool and weapon, the bow changed human history around the world, and its diverse forms reflect the cultures that adopted it. This book presents color photographs and descriptions of some three hundred items, including quivers, thumb rings, and more, from the Charles E. Grayson Archery Collection. The artifacts are organized by region, taking in equipment from Asia, the Middle East, Africa, the Americas, and Europe used over the last five hundred years.

Toxophilus: The School of Shooting in Two Books, Roger Ascham - Originally published in 1544, The School Of Shooting comprises of two books combined together: The First Book of the School of Shooting and The Second Book of the School of Shooting. These books are written in the form of a dialogue between Toxophilus (A lover of the bow) and Philogus (A lover of learning). In the discussion, Toxophilus justifies his love of archery as a pastime, puts forward his reasons for retaining the bow as a weapon of war instead of the newly invented hand gun, and he gives practical instructions on the technique of shooting the bow.

Yahi Archery (1918), Saxton Pope – This article follows the story of how Ishi, the last Yana Indian, practiced archery, including descriptions of how he made his bow, his arrows, arrow points, and quiver. This short pamphlet details the history of the archery practices of one tribe.

Shooting Methods, Philosophies, and Techniques

Shooting Methods, Philosophies, and Techniques

Archery Anatomy: An Introduction to Techniques for Improved Performance, Ray Axford - Knowledge of the interrelationship between the anatomy of the human body and the anatomy of the bow is fundamental to improving archery skill and technique. The detailed drawings and clear, descriptive text in this book explain how the skeleton and muscles should be used to improve overall performance in a natural way without artificial or coached movements.

Archery: Steps to Success, Kathleen Haywood - Master the archery skills essential to shooting straight and true. This book provides progressive instruction with accompanying illustrations for each phase of the shot—sighting and aiming, shooting form, and anchoring—for all forms of archery.

Become the Arrow, Byron Ferguson and Glenn Helgeland – Part of the On Target archery technique and teaching series containing a variety of recommendations for improving basic shooting techniques.

Beginner's Guide to Traditional Archery, Brian J. Sorrells - Traditional bowhunters must be close to their quarry before they take a shot, and that nearness is what makes the hunt so thrilling and personally rewarding. This book is a good beginning for any new archer looking to understand the basics of traditional bow hunting.

Instinctive Archery Insights: Revised Edition, Jay Kidwell - Instinctive Archery Insights is an archery technique based on principles from applied psychology. Dr. Kidwell communicates many unique insights designed to accelerate learning and enhance performance, including discussion on consistency in both physical processes and mental processes. The new edition also details Dr. Kidwell's work on the development and treatment of target panic.

Kyudo: The Way of the Bow, Feliks F. Hoff – This book is a guide to the technique and philosophy of the ancient art of Japanese archery. Originally a samurai discipline, kyudo integrates technical skill with the development of a focused and disciplined mind. Influenced by Shintoism and Zen, kyudo is a path of self-development and meditation that requires the archer to cultivate precision, a clear mind, and freedom from fear.

Precision Archery, Steve Ruis and Claudia Stevenson - Written by top coaches and competitors, this instructive resource covers all archery disciplines, including recurve, compound, and barebow archery. Whether you're a target archer, field archer, or bow hunter, you'll find in-depth instruction to perfect your stance, body alignment, muscle use, and shot sequence.

Shooting the Stickbow, Anthony Camera – This book was the first comprehensive treatise on shooting modern recurves and longbows. Topics include equipment choices (bow, arrows, strings, shooting gloves and tabs, arm guards, arrow rests and sights), shooting form (proper anchoring, shoulder alignment, back tension, breathing and more), tuning (four methods are described and compared), aiming (five aiming methods are explained and contrasted), physical and mental aspects of becoming a proficient archer (functional anatomy for the archer and how it relates to shooting and the mental game of winning are discussed and exercises are provided to enhance both physical and mental performance).

Teaching Archery To Kids, Jim Fanjoy – This is an archery book specifically designed for teaching archery to kids. Whether you're a new camp counselor that's never held a bow, a parent wanting to teach your child about a new and exciting activity, or a learning archer looking for a concise reference about the sport, this book is for you.

Zen Bow, Zen Arrow: The Life and Teachings of Awa Kenzo, the Archery Master from "Zen in the Art of Archery", John Stevens – This book details the teachings of Awa Kenzo (1880–1939), the Zen and kyudo (archery) master who gained worldwide renown after the publication of Eugen Herrigel's cult classic Zen in the Art of Archery in 1953.

Zen in Motion: Lessons from a Master Archer on Breath, Posture, and the Path of Intuition, Neil Claremon - From basic breathing techniques to shooting from horseback, the author illustrates the Zen path of awareness.

Zen in the Art of Archery, Eugen Herrigel - Eugen Herrigel, a German philosopher who went to Japan and took up the practice of traditional Japanese archery, gives an illuminating account of his own experience.

Traditional Bowing and Fletching

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Billets to Bow, Glenn St. Charles - Share the experience of archery with bowyer Glenn St. Charles. From the 1920's to today, these chapters are packed with nostalgia, history, and a rare kind of knowledge that comes from years of hands-on experience. This book shows you how to make a hard-hitting yew bow and covers everything from cutting the tree to final testing and shooting of the bow.

Bow Accessories Book, Volkmar Hubschmann - Every dedicated traditional archer longs for equipment that completely matches his own concepts and needs. In this book, you will find everything from an entire range of personal equipment (finger guard to belt pouch), accessories from tension spring to string holder, ten different types of quivers, the making of bowstrings, traditional armguards, targets, and demonstrations of the most varied fittings and equipment.

This book also includes extensive features about arrows, including shafts, feathering, arrow making tools, and unique arrows. Learn how to make your own archery equipment from such natural materials as leather, wood, antler, and bone. Note that, although this book is thorough and covers a wide variety of subjects and skills of interest to the modern traditional archery, bow building is not covered.

Hunting the Osage Bow, Dean Torges - A triumph for bowyer Dean Torges. This book is full of useful information, from cutting your own wood to the final finish.

The Archer's Craft, Adrian Eliot Hodgkin – The author begins his history of the craft of bowmaking with a history of archery by quoting extracts from various historical sources on its rise and fall as a military weapon, its revival, survival, and dismissal under the various Kings and Queens of England. He describes the basic types of wood for used bows and arrows and gives detailed reasons for each choice. The second half of the book describes the simple methods of bow and arrow making at home. The last part of the book deals with hunting with the bow and the various techniques learned through listening and observing.

The Art of Making Primitive Bows and Arrows, D. C. Waldorf - Learn how to design and cast flatbows, recurves, self bows, and other primitive archery equipment. Includes great information on quivers, arrow making, and more.

The Bent Stick: Making and Using Wooden Hunting Bows, Paul Comstock - Paul Comstock is a self-bow expert and specializes in white-wood bows. While reading this bow building manual, you'll learn how to make simple and effective self bows from many of the more common woods available. This book is intense yet written in a style that anyone can understand and follow.

The Bow Builder's Book, Flemming Alrune, Wulf Hein, Jurgen Junkmanns, Boris Pantel, Holger Riesch, Achim Stegmeyer - Experienced bow builders and practical archaeologists describe the history, evolution, and construction of European style longbows. For the beginner, clear, uncomplicated instructions are offered, including descriptions of construction techniques, tools, materials, and shooting styles. For more advanced bowyers, there are tips on choosing wood and adhesive, and explanations of the evolution/adaptation of bow design, including precise dimensions for replicating special historic bow types, from Stone Age bows to modern laminated longbows. This book also offers

The Flat Bow, W. Ben Hunt – Originally published in 1936, this book covers the construction of a Native American flatbow, bowstring, and traditional arrows. Hunt also briefly discusses shooting techniques related to this type of bow.

The Traditional Archers Handbook: A Practical Guide, Hilary Greenland - This book is packed with information for all those interested in traditional archery, from the basics involved in taking up a traditional bow for the first time, to clear concise guidelines on making your own arrows, strings, and bows (specifically English and American longbows).

The Traditional Bowyers Bible Volumes 1-4, Jim Hamm - Many archers and bowhunters will be surprised to learn that a wooden bow, whose ancestry dates back thousands of years, will shoot an arrow as fast and as effectively as the most modern fiberglass-laminated bows. This book contains detailed instructions and information on how to make bows and arrows from natural materials. The authors thoroughly explain every facet of the process, from choosing wood to applying finishes, making construction easy even for the first-time bowyer.

Traditional Archery, Sam Fadala - The tools of traditional archery, the longbow and recurve bow, have remained virtually unchanged for tens of thousands of years. In this fully illustrated guide, archery expert Sam Fadala presents a detailed examination of this sport, including careful attention to bow and arrow selection, equipment tuning and maintenance, shooting techniques, accessories, safety, history, and traditional archery resources.

Traditional Bowyers Encyclopedia: 2nd Edition - Revised and Updated, Dan Bertalan - Bowhunter and archery traditionalist Dan Bertalan has compiled one of the most complete bow making texts available today. By traveling across the United States and consulting America's top bowmakers, he has gathered detailed information on how to build your own recurve longbow, improve your hunting skills, care properly for a bow, and more.

Traditional Bowyer, More Unnecessary Fun, Jack Harrison - In these pages you'll find the essence of bow building, traditional bowhunting, bow shooting, arrow building, and more. This book includes a discussion of bow theory with detailed descriptions of steps and numerous photos. It also contains charts and graphs of calculations to help everything make sense.