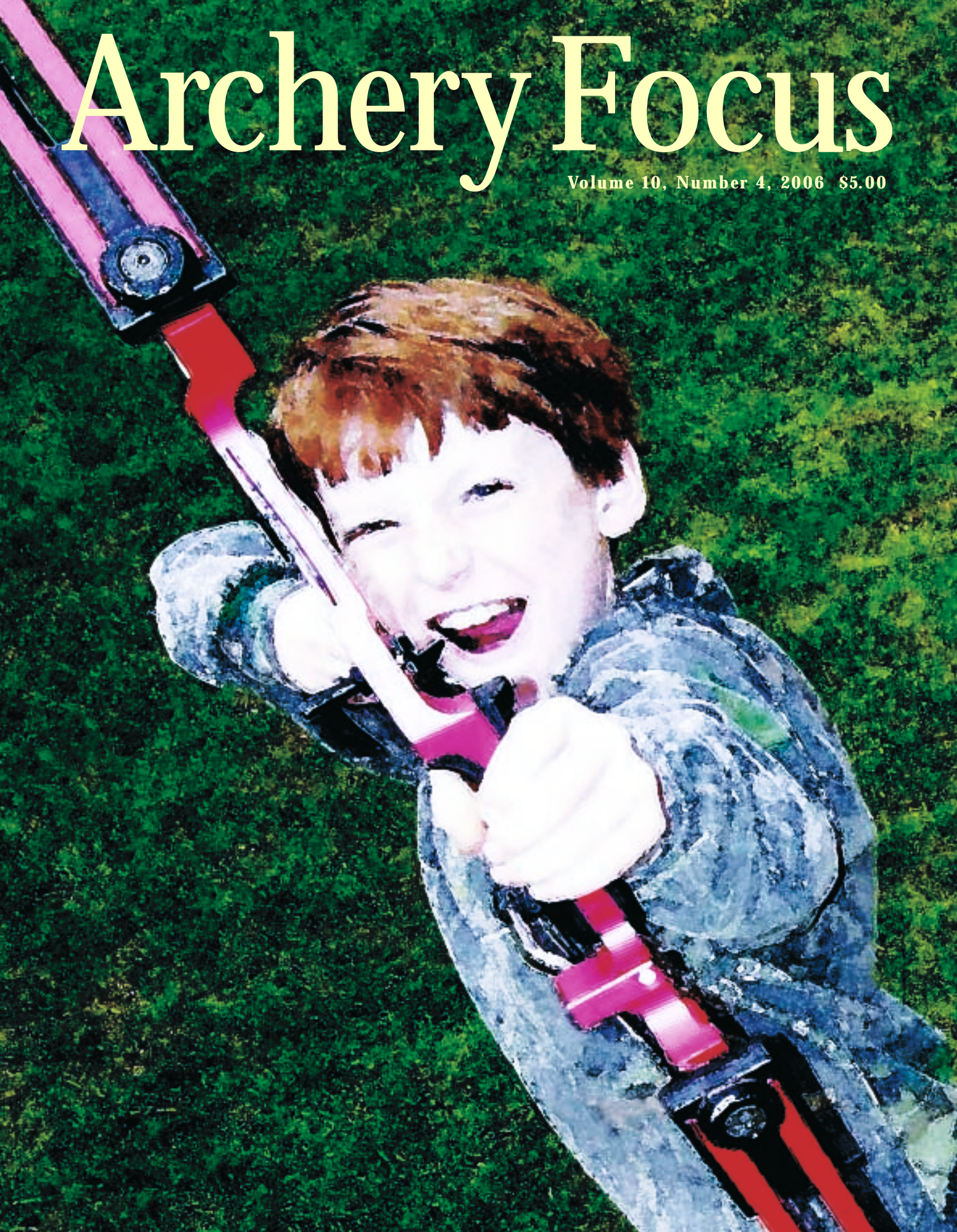


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EDITORIAL

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ISSN 1541-7506

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ARCHERY FOCUS is published bi-monthly by *Satchmo Productions*, 12890 Greenhorn Road, Grass Valley, CA 95945. Postage paid at Amherst Junction, WI and additional mailing offices.

Subscriptions

One year (6 issues) subscription rate is US\$26, 12890 Greenhorn Road, Grass Valley, CA 95945. International prices upon request. Please telephone 800.671.1140 or send a fax to 530.477.8384 for subscription rates.

Editorial Submissions

Please submit editorial materials to: *Archery Focus* magazine, 12890 Greenhorn Road, Grass Valley, CA 95945 or email us at claudia@archery-focus.com or fax us at 530.477.8384

The views published within this publication are those of the contributing writers and do not necessarily represent the opinion of *Archery Focus* magazine.

Pre-Press and Printing by *Signature Press, Inc.* of Amherst Junction, WI.

Just Bring It!

I played basketball when I was in school and I was somewhat of a “gym rat.” For those of you unfamiliar with the term, gym rats spent all their time in the gym working on their game. Now that I am an archery editor I find myself somewhat of a similar kind of character. I spend a lot of time trying to find out what anyone knows about archery. I am also a scientist and I know that archery has been studied scientifically. My frustration is that scientific information about archery is incredibly difficult to find.

In a conversation with Rick McKinney, he mentioned that he had quite a few articles in his possession. I pounced! Rick is going to backfill us all on the research into archery and what it means for us. We know you don't want a magazine full of charts and graphs, but in certain circumstances the details are necessary. And we will always translate the findings into plain English.

And while we are trying to identify the scientific heritage of archery, we will still be giving you articles on how to measure up your compound bow for custom strings (*see p. 7*), instructions on building inexpensive target butts (*see p. 27*), book reviews (audio—*see p. 36*—and video), articles on coaching and judging (*see pages 18 & 30*) technique tips, . . . the whole gamut of topics you are used to getting from *Archery Focus* magazine. Plus, I don't think anyone else will show you how to hot-rod a Genesis bow (*see p. 14*)!

As always, we want to hear from you on what you want to read in these pages. Drop us an email with your requests.



No, this isn't a rogue's gallery. Claudia and I just took our NAA Level 4 Coaching course and came away with a lot of great information as well as a large number of new friends! this was a great group to work with and we are still working together via email.



Rick McKinney

The United States Archery Team - The Beginning Years

Dear Reader,

I was reading an article entitled "The Downfall of Sports Science in the United States" in Volume 17, Issue No. 4 of Olympic Coach (available free from the USOC) and there on the article's first page was Chris Shull shooting his bow in a laboratory (right). The photo recalled another photo I saw in Rick McKinney's book "The Simple Art of Winning" (see the then rather hirsute McKinney at the right). There were about 25 years between the two pictures and what disturbed me was that I didn't have access to the findings of either of those two studies or any of those that had occurred in between. As Mark Twain said, "It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so." As a coach, I want to know what such studies showed and yet none of them were anywhere I could find. I asked a medical researcher to search collegiate data bases using appropriate keywords and he came up with very little information. So, I asked Rick McKinney if he could get us started reconstructing the attempts to study scientifically the art of shooting a bow. Here's the first of what we hope are many articles on this topic.

Editor

Some time ago, I was approached by *Archery Focus* magazine to give some history of the United States Archery Team (USAT) and their scientific research efforts made in the 1980s. Although the USAT is not what it used to be, it can still be a strong force if guided correctly.

In 1980, I was voted onto the National Archery Association's Board of Governors as the Active Athlete Representative. This was a new position and it carried a two year term while the



Photo of Chris Shull "The Downfall of Sports Science in the United States" in Volume 17, Issue No. 4 of Olympic Coach (available free from the USOC).

rest of the Board members had four year terms. During this time the Board was working on creating the United States Archery Team. It was the brain child of Bob Ryder and Steve Lieberman. One part of the Board wanted the USAT to be a fund raising arm while the other wanted the USAT to be a training program that helped develop our archers to greater heights than before.

At my first Board meeting I was chosen to work with Mr. Ryder on setting up the first NAA U.S. Testing Group training camp. It was an honor and I was more than enthusiastic to be a part of that effort. Here was a chance to make our teams stronger than ever before with the help of the United States Olympic Committee and the NAA. When I got home I started sending ideas and suggestions to Mr. Ryder who appeared to be very busy with many other Board items, family, work, etc. After continuing to "badger" Mr. Ryder into doing something, he suggested that since I had so much motivation why didn't I just manage the program and he would just observe. I jumped at the chance.

I contacted the USOC and asked for guidance as to what we could do at the Colorado

The Elite Archer

Springs Olympic Training Center. They gave me information on the Sport Science Program and all that it entailed. Since I was going to Arizona State University at the time and studying physical education I was learning about biomechanics, physiology, psychology, and psychophysiology. I was able to blend the two programs together to enhance the USAT testing group training camp.

I met with Dr. Charles Dillman who at that time was head of the Biomechanics Department at the United States Olympic Training Center (USOTC) in Colorado Springs. He was very enthused to help guide us in our studies of biomechanics and archery. We discussed force platforms, high speed filming, Selspot analysis, and electromyography. He suggested that I get in touch with Dr. Dan Landers at Arizona State University (ASU) since he was in my local area.

I met with Dr. Landers who was one of the leading sport scientists in the nation. He was also very interested in being a part of our program. You may be wondering why he was so interested. Well, at that time, it appeared that universities were trying to find ways to fund studies for graduate student earning either Master's or Doctorate degrees. Combining resources with the United States Olympic Committee was an excellent opportunity to help their students find a quality study and was also networking for the university. It wasn't too bad for archery as well.

Next, I visited Dr. Topper Haggerman who was the head of the Physiology Department at the USOTC. We discussed items that would enhance athlete's performances and ways to test various parts of human anatomy that would give us good indicators as to what makes a top archer different from an average one. The tests recommended were cardiovascular fitness, heart rate, percent body fat, and strength. Although rather basic tests were used, these items provided quite interesting and educational results. Some were significantly advantageous to elite archers.



The Author wired up in 1981 at Hokkaido University in Japan. (from p. 60 in The Simple Art of Winning).

Dr. Landers helped establish mental testing to identify the differences between top archers and average archers. Many of these tests were general tests but, again, proved to be very important to our archers in increasing their performances.

Our first training camp was in the late fall of 1981. The top 10 male and top 10 female archers were there to find out what this program was all about. We brought in Al Henderson, the 1976 Olympic Coach and Bud Fowkes, the 1972 Olympic Coach. All of the sport scientists were at this event running their tests. While some archers were being tested the

rest of us were having round table discussions about form, attitude, training, nutrition, equipment, coaching, archers from other countries and their methods of shooting, and just about everything and anything you can imagine. The enthusiasm was so tremendous that the archers just could not get enough. By mid-week we realized that we were running out of time so we rescheduled our meetings to start at 6 AM. They often went late into the evenings.

Although the tests were slow to provide results, the group sessions, discussions and just frank talking were so successful that everyone left the camp feeling motivated to get ready for the next season of competition. At the end of the camp, we listed all of the coaches we knew about within NAA circles and asked the archers to list others they feel that have helped them. They then were asked to choose three coaches they would like to see at the next camp. Thus, with a democratic process the archers started warming up to coaches and the coaches started getting an opportunity to show what they could do for the archers. I doubt that many realized how much animosity there was between coaches and elite archers of this era. Of the 20 archers at the first camp, there was only one archer who claimed to have a personal coach. Just a couple of camps later that trend had reversed itself so that all but one had a coach!

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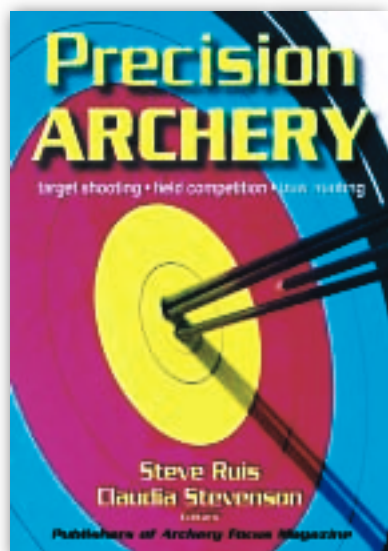
I am not sure if many people understand the milestone the National Archery Association achieved with this first camp. Prior to that point, virtually all of the responsibility for archers to become a world champions was squarely on their shoulders alone. The organization was only there to make sure everyone followed the same rules, the trials were held correctly and fairly and that the team was sent according to FITA rules. This training and testing camp was the first step made by the National Archery Association to help guide and train the archers in order to achieve a higher level of success.

My next article will discuss some results of the testing made and what impact this had on our archers.



Rick McKinney is one of the world's most decorated archers. He was born in Muncie, Indiana where his father was a professional archer and managed a pro shop. His mother and brothers were also archers. Rick won the 1977, 1983, and 1985 World Championships. He won the US national Target Championships nine times, Field Championships six times, Indoor Championships three times and Collegiate national Championships seven times. He has two Olympic Silver medals, 1984 (Individual) and 1988 (Team). His best score is 1352. Rick is currently President of Carbon Tech, a manufacturer of arrows, in Sacramento, California.

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How to Measure Up a Custom Built or Self-Built String and Cable Set

Today's bows, while they are great shooters, are also very sensitive to having either their brace heights or axle-to-axle lengths, or both, within a very narrow range of values in order for them to shoot their best. The article that follows is a guide to help you to measure up your current bowstring and cables, without removing them from the bow, for either ordering a custom set or for building a set by yourself that will almost perfectly match what is on the bow now.

Preliminaries

I assume that you have the bow properly setup and tuned and also have taken the time to mark down all the settings mentioned in my previous article (See the last issue. Ed.), such as brace height, axle-to-axle length, peep height, nocking point height, etc. Items #1 and 2 on the list below can be factory specifications, however #3 thru 7 are seldom known by archers. If you really want to match up the new set with the old, these need to be measured out carefully. This helps to insure that the new string and cable combination are as close as possible to what is on the bow now. Your tune can be saved, and also your bow's draw length and speed can be preserved closely, since the weights of the string/cables will be close as well.

The following items will be addressed in this article:

- 1.string and cable lengths (if not known)
- 2.numbers of strands (if not known)
- 3.sizing of end loops
- 4.to serve or not to serve end loops for cam or axle pegs
- 5.serving lengths, end loops, "Y" splits, or special circumstances.
- 6.center serving
- 7.the power cable ("y" split)

Note The Photos included in this article have been set up for clarity. The yellow string used for measuring and the measuring tools were used in order to allow you readers to see clearly what is going on. However, I did find that measurement accuracy wasn't compromised during the photo process as long as the yellow string was stretched out fully.

Measuring Up the String and Cable Details

The first step in the process is to either look up the specifications for the particular bow model and cam size you are currently using. If you have changed the specifications for any reason, then you should use the new measurements for the new setup.

1. *String & Cable Lengths* Normally most people will stay with the specifications indicated by the manufacturer. However if you don't have that information, it is a simple

Continued on the Next Page

process to determine your string length without removing your current string from the bow.

Simply:

- A. Take a piece of string that doesn't stretch, making it long enough to do the job. Center serving material works really well. Another thing that works well is a seamstress cloth tape measure.
- B. Tie a loop on one end and loop it over the string peg on the cam, then wrap it around the cam and down to the other cam, wrapping it around that cam, too. Then, at the end of the cam peg for the

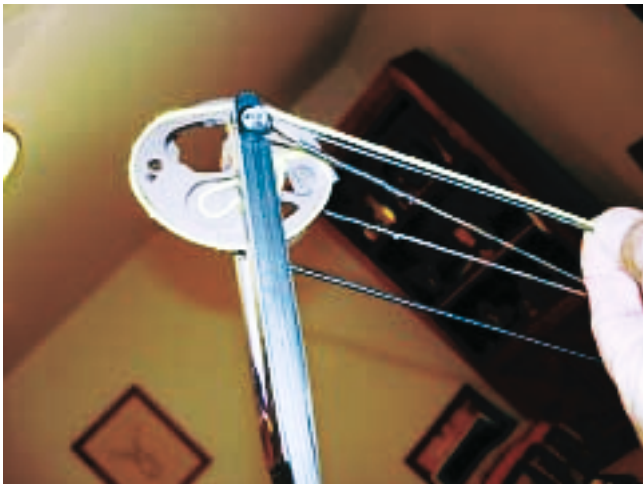


Photo 1 Measuring string hook up, . . .



Photo 2 . . . then pinching off for length measurement.

string, either mark the string, or pinch it off with your thumb and forefinger. (see Photos #1 & #2)

- C. Measure the length of the piece of string and record that length. Compare this to the manufacturer's specifications if you have them or to the limb tag on the bow. It will allow you to get the



Photo 3 Measuring string length . . .



Photo 4 . . . and sizes of end loops.

length of string you need based upon the tune of the current bow and allows for the "stretch" you get when the string is under pressure (see Photo #3).

2. *Number of Strands in the String and Cables* You should have counted these as part of your initial bow documentation. However, if you haven't, you can still count the strands. It is easiest to place the bow in a safe bow press and loosen the string enough so that you can count the strands. Do not remove the string from the cam pegs or the bow.

3. *Sizing of the End Loops* This is much more important than you might think. The size of the opening of the end loops can have a huge impact on how easy they fit onto or come off of the pegs. Too small, and you could tear the loops up getting them on and off. Too large and the "over serving" could

interfere with the string/cable fitting into the grooves on the cams. To measure the opening of the end loop, simply place a thin ruler marked off in $\frac{1}{16}$ " or $\frac{1}{8}$ " increments at the end of the cam peg and measure to where the long serving starts down the end serving of the string or cable. Most loops that I've seen are about $\frac{3}{4}$ " long, but some are a bit longer than this. Smaller than $\frac{3}{4}$ " is rare and is usually too tight to fit on today's cam pegs (see *Photo #4* above).

4. *To Serve or Not to Serve the End Loops* Many strings and cables that come with bows today do not have the ends of the loops served. All those strands are "open" and fit over the cam peg. However, many of the custom string manufacturers automatically serve these so that the end loop will fit cleanly over the cam peg and you don't have to worry about a "stray strand." You need to make that decision on your own. Personally, I prefer to have those loops served.

5. *Serving Lengths* This is an easy thing to measure up so that your new string and cables have the same amount of serving on them and that the center serving is in the same location on the string as the original set. You can also do this without removing the string or cable(s) from the bow.

- A. Using the same piece of serving with the loop that you made to measure string length, again place that onto the cam peg and wrap it around the cam (see *Photo #5*).
- B. Pull it tight and pinch it off with your thumb/forefinger where it comes to the finish off of the end serving.
- C. Write this measurement down to nearest $\frac{1}{8}$ ".

Repeat A-C, above, for all the end serving lengths for the both the string and the cables (see *Photos 5 & 6* right).

6. *Center Serving* The center serving's location can be a very important matter, especially on today's high performance bows and the very "slippery" nature of today's string materials. The length of the center serving is one of personal preference, with 3-D shooters normally putting as little center serving on the string as possible and FITA style shooters putting as much as 12 inches of center serving onto the bow. However, it is a wise idea, in my opinion and experience, to position that center serving so that no less than $1\frac{1}{2}$ " of serving is above the nocking point location. Release shooters tend to put a lot of upward pressure on a nocking point or D-loop. Therefore, any serving separation or movement will be upwards.

If there isn't any serving above the nocking point to



Photo 5 Measuring end loop serving length . . .



Photo 6 . . . and down to the top of the center serving.

"absorb" this movement or to lock the serving down, then the entire serving can move and ruin a good tune in no time. Here is one way of duplicating the location of the center serving by measuring it while it is still on the bow (see *Photo #6*).

- A. Choose one cam or the other. On a single cam bow, you have no choice; it is the bottom cam for both ends of the string.
- B. Place the loop of the measuring string you've been using on the cam peg.
- C. Wrap that string around the cam and follow the string to the start of the serving. (I always use the top cam on a cam and a half bow or twin cam bow).
- D. Pinch off the measuring string where it contacts

Continued on the Next Page

the start of the serving.

- E. Measure and write down this distance.
- F. Measure the length of the serving down towards the bottom cam and then write this down.
- G. When ordering your string, specify how far from the end of the top loop to go before starting the top of the center serving and how long to make the center serving. It is also a good idea to tell the string maker the size and type of nock you are using and ask them to serve the serving so that type of nock has proper fit onto the center serving.

7. *The Power Cable ("Y" split)* The power cable has one other specification that can be very important. Some "Y" split cables are not served at all where the split of the cable occurs to the axle on the top limb. Other manufacturers have their splits served. I personally like to have mine served at the split. Measuring the "Y" split is a simple process:

- A. Using a ruler, write down the length of each leg of the "Y" from the end of the axle loop to where the "split" occurs (*see Photo #7*). Write down this length.
- B. Measure how long the serving is from the split down the string. Most are from 1 1/2" to 3" in length. Remember, the closer to the axle end you go with the "Y" split serving, the less limb clearance you are going to have with your "pigtailed" (*see Photos 7 & 8*).

These pigtailed can be twisted to align the top cam lean or the idler wheel lean. In addition, the "pigtailed" can be used for fine tuning draw length as well. Always remember that changing the length of the power cable by twisting it will change the nocking point height and, therefore, its travel.

In this article, I have outlined the seven basic steps needed to duplicate your bowstring in order that the loop sizing, the loop serving lengths, the Y-split lengths, and the center servings are as close as possible to being the same as on your original string. You can do all this without removing your bowstring from the bow.

As in all measurement systems, consistency is the key. If you are uncertain, take the measurement again, always being sure to write the numbers down. I also recommend that you always start from the top of the bow and work towards the bottom of the bow; do the bow string first, then the power cable (Y-split), and then, if a cam and a half, the "control" cable.



Photo 7 Measuring length of Y-split loop serving . . .



Photo 8 . . . and the Y-split serving length.

If you know, for certain, you have changed the string and cables away from factory specifications for whatever reason, or that the bow is shooting so well with how you have it set now that you want to duplicate what is on there, I'd still recommend that you go with the factory specifications. If you are in doubt, you can look up the specifications for the strings and cables on the bow manufacturers' websites.

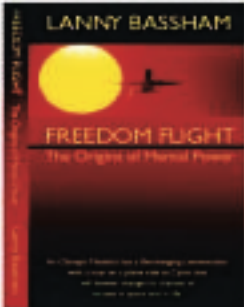
Through the use of nothing more than a piece of serving thread or a seamstresses tape and a tape measure, you now have the means to do this without disrupting your bow's setup and tune! You can now measure up for the new strings and cables and continue to shoot while you await your new set to arrive. Once completed, if you have written all of this down on your documentation record, ordering or building a

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new set of strings and cables is an easy and repeatable process.

Tom Dorigatti has been shooting archery since he was 12 years old. He has been bowhunting and in competitive archery for nearly 40 years. During his archery career, Tom has competed or shot archery in no fewer than 38 of the contiguous United States plus Alaska, Hawaii, the Azores, and Guam. He has won numerous local and state tournament titles and has placed as high as second overall in three different sections of the NFAA. Tom prefers to shoot in the Unlimited Division, but has recently been learning to shoot a recurve bow FITA style. He is also the mastermind behind the archery puzzles currently adorning these pages.



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It was with our usual, “we learn it the hard way” discovery that we became proponents of the gear bag. And not just one gear bag. With three archers using equipment, and sometimes on different fields, we realized that each archer needed his own gear bag, even if it meant duplications. I don’t have enough fingers and toes to count when someone forgot ‘their’ screwdriver, or ‘their’ multi-tool, despite double checking the check list and needing to dig

around in one of their brother’s bags for the necessary equipment.

You might think then that three gear bags ‘fully loaded’ would do the job. Nope, we’re equipment junkies. Mom has one of her own where she throws the real odd-ball stuff, like extra grips, and the stuff she sees at the last minute as we leave the house for a trip (those bow squares that seem to always be laying around, extra stringers, that metric multi-tool that you just never know you might need, my own ‘hot melt’ because the boys hot melt seems to disappear at the thought of needing it). I like to sometimes keep the ‘found at the last minute’ stuff in the gear bag until the owner of the needed gear realizes they need



it. To watch them after three years come over and ask, “Mom, do you possibly have my . . .” gives me the opportunity to again remind my archers why we have checklists and why we actually should ‘check’ them. I could do all the checking myself, but at some point, they will need to go to tournaments on their own, and

“Mom, the Fall Back Equipment Gal” won’t be there to save them. They need to learn to keep their gear bags stocked properly and be prepared at tournaments. I’ve given up on the ‘neat and orderly’ gear bag and now only care that they’ve got everything in the bag.

In our gear bags, we have learned to keep duplicates of everything. For this, we use a few different sized fishing tackle plastic boxes. A small one with lots of small compartments holds the real small items like nocks, pin nocks, and fletches. Another one with longer compartments holds the tools, the backup items, and pens. Another one holds all the screwdrivers, pliers, and wrenches. A partial list beyond the obvious fletches and nocks: Beiter clicker, plunger (set to current plunger setting), arrow rest, finger tab (already broken in), strings (nock point set to match current string), glue (I like fast set), multi-tools, screw drivers, pens for marking arrows, pens for scoring, Lock-tite, Band-Aids, safety pins, . . . to name a few. I also carry extra screws for the finger tabs and extra springs/buttons for plungers.

In addition, we always have emergency snacks, an extra shirt, practice target, golf tees for hanging a target, and backup shirt protectors and armguards in the bags.

A well stocked gear bag has saved my archers more than once. Best of all, our well stocked gear bags have been able to keep other archers shooting too. There have been many occasions in the last few years where someone needed a screw for a finger tab, or a finger divider that just broke and is needed in a hurry, or a different color nock because everyone on the same target was shooting blue nocks. Once when I was attempting to help another archer, someone joked that the little vial was probably marked ‘Cavalier parts,’ only to discover that yes, in fact, all of the containers are labeled; it is so much quicker to find things that way. We have not hesitated to dig into our gear bags to help other archers, even during competition. It has led us to make friends with people we perhaps would



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not otherwise meet, and it has felt good to be able to hand over ‘whatever was needed’ to get an archer back on the line, which leads to a very satisfying day at a tournament.

Loretta Sinclair is the mother of Dakota, Clarke, and Barrett Sinclair. President of Clarke Sinclair Memorial Archery Scholarship (www.clarkesinclair.org) and collegiate division publicist (www.collegiatearchery.org).



Van Webster

Hot-Rodding a Mathews Genesis Bow

A bow arm shoulder injury had sidelined me from shooting for more than two years. As the shoulder healed I wanted to get back to the sport while protecting my still fragile joint. I needed a low mass bow with about 40 pounds of draw weight. The Mathews Genesis bow is a light weight arrow flinger with a unique single cam that allows a wide range of draw lengths without the typical let-off found on more traditional compound bow designs. As a compound finger shooter, I am more comfortable with true let off. So the challenge was to create a bow with low mass

weight, adjustable draw length, and reasonable performance.

Warning The information contained in this article is for recreational reading only. Compound bows store tremendous forces that can seriously injure and possibly kill the unwary. Any modification of a compound bow should be undertaken by a competent bow mechanic with the proper tools. This is not a task for amateurs. Also remember that any unauthorized modification of a bow will void all manufacturer's warranties. Archers attempting this modification do so at their own risk.

Tools and Materials

This modification will require some basic tools and archery specialty items. The following tools will be needed:

Bow Press
String Jig
Drill motor or preferably a drill press
3/8" Drill bit
#29 Drill bit
8-32 tap
Propane torch
Large pipe wrench
General hand tools

The materials list is:

Mathews Genesis Pro Bow
Hoyt Accuwheels #3 size
Saunders Z-Rod
1 extra Mathews Genesis long axle shaft with cable retainer clips
1 8-32x5/8" machine screw
Golfsmith golf shaft epoxy
Acetone
Paper Towels
String making materials and serving thread



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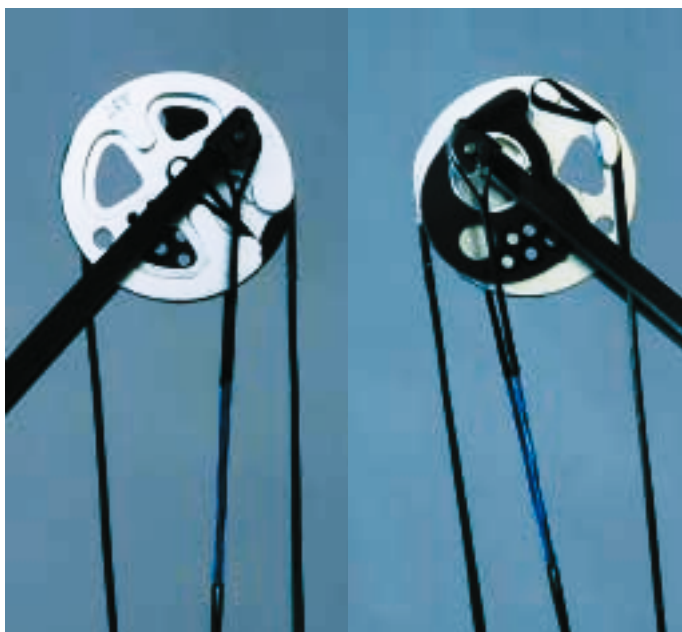
Preparing the Riser

The first step is to remove the bow string, cables, cam and idler wheel from the bow. Use the bow press to lower the tension in the strings for removal. After the strings have been removed, *slowly* release the pressure on the bow press to release the riser. Keep all the parts in a Ziploc bag as you may want to restore the bow to its original form later.

This modification will cause the cable to move farther rearward as the bow is drawn than the original single cam setup. It will be necessary to remove the stock cable guard rod and install a longer one. The stock rod is epoxied in place. Use a propane torch to heat only the rod to soften the glue. Do not heat the riser. Then use a pipe wrench on the rod to break the glue bond and free the rod. The old rod can be thrown away.

The cable guard mounting hole in the riser will need to be cleaned out using a $\frac{1}{8}$ " drill. This task is best accomplished on a drill press but a hand drill can be used. The objective is to remove all of the old epoxy and provide a clean, bare metal surface for the new glue.

Cut off the threaded portion of the Saunders Z-Rod and then sand the remaining short portion of the rod to remove the paint and provide a more solid foundation for the glue. Mix up a batch of golf shaft epoxy, coat both the hole and the Z-Rod and put the rod in place, rotating it to provide adequate cable clearance. Excess epoxy can be removed with a paper towel light-



Left Top Wheel Left Side. The wheels are marked for size and placement. A3T=Accuwheel, #3 Size, Top.

Right Top Wheel, Right Side. The Accuwheel can be adjusted for draw length by moving the plastic cable cam element.

ly moistened with acetone. Let the bow set for 24 hours before moving on to the next step.

The forces acting on the cable guard rod will eventually cause the rod to rotate in its mounting, reducing the sting clearance. To prevent this rotation, cross drill through the mounting boss and the rod using a #29 drill bit. Thread the resulting hole with an 8-32 tap. Inserting an 8-32 X $\frac{5}{8}$ " machine screw will secure the rod and prevent any future rotation.

Should you desire to restore the bow to its stock configuration, the longer cable guard rod will work just fine.

Installing the Wheels

The single cam design of the Genesis Pro bow means that the top axle shaft will be long with cable retainer clips and the lower axle will be short with e-clip retainers. Set aside the short axle and its e-clips in the Ziploc bag for future restoration.

The Hoyt Accuwheels are made in three sizes and two styles. Because of the short axle-to-axle length of the Genesis Pro, the largest (#3 size) wheel will probably be the most useful as it permits a wide range of draw lengths. The early wheels had a simple brass bushing fitted into the aluminum wheel to act as a bearing. Use this style wheel if you can find a set. Later versions of the wheel added a shoulder to the bushing that widens the space needed to fit the wheel between the limbs. Either one will work fine.

Mount the wheels in the bow, noting that the wheels are marked "top" and "bottom" for right hand-

Continued on the Next Page



Figure 3. Cable Guard Mounting. Once the cable guard epoxy glue has cured, cross drill and insert an 8-32 machine screw to prevent future rotation of the rod.

ed archers. Use the long axles and secure them in place with the plastic cable retainer clips. It's a good idea to place a drop of lightweight machine oil on the shafts before assembly to insure smooth operation. Test the wheels by spinning them after the clips are installed. The wheels should turn freely with no binding or rough spots.

String and Cables

This conversion will require one bowstring and two cables. The goal of the string-cable dimensions is to produce a net axle-to-axle-length of 35 $\frac{5}{8}$ ". The bowstring length is 54 $\frac{1}{4}$ " with end servings of 13" top and bottom. The center serving can be to taste.

Hoyt style cables are made in two parts. The yoke is made from a 12" long string served into a loop at both ends. When folded over itself it adds 6" to the overall working length of the cable. The cable is looped over the yoke to form the typical cable configuration of a loop at one end and two loops at the other. The cable length without the yoke is 31 $\frac{3}{4}$ " long with the loop end served 8 $\frac{1}{2}$ ". I used 14 strands of B-500 material for both the string and the cables.



Left Genesis Bow, Left Side. This is the Genesis Pro bow fitted with #3 Hoyt Accuwheels. **Right** Genesis Bow, Right Side. Note the use of a longer cable guard rod.

Put the riser back in the bow press and thread up the string and cables. Take your time and be sure that the loops are seated solidly. Check to see that the cables are not crossed and that they align easily with the grooves in the wheels.

Slowly release the pressure in the bow press and bring the bow up to tension. Always stand to the side when tensioning a bow so that any mishaps happen away from you.

Once the bow is up to tension, you can test it for smooth action by drawing and letting down the bow. Be sure everything is stable before trying an arrow.

The bow setup is the same as with any bow. Set the arrow rest and nocking points. Adjust the cams for the draw length that fits you. Set in the peep sight if you are using one. The bow is now ready for tuning.

Performance

So, what does this effort get you? The resulting bow has a very low weight of 3 pounds 8 ounces (1.6 kg) without accessories. Add the usual arrow rest, sight and stabilizer and the bow will still come in under 5 pounds (2.3 kg) ready to shoot.

The draw weight is 42 pounds with about $\frac{3}{16}$ inch of additional limb screw adjustment available. The let-off is about 50% which is good for a finger bow. Using a 305 grain arrow, I found the calculated arrow speed to be just over 200 feet per second, enough to shoot 80 yards.

On the down side, the short axle-to-axle length means that the string makes a sharp angle at full draw which can pinch the fingers and increase the holding weight. Release shooters should find this small angle less of a problem. The very light weight of the bow means that it is highly sensitive to any hand movement by the archer. This bow will sharpen your form. Finally the bow riser is top heavy by design and is therefore less stable than a balanced or bottom heavy bow riser.

Costs

This modification is a relatively low cost way to get a lightweight compound bow with good target performance. Genesis Pro bows retail for about US\$170, the Hoyt wheels for about US\$100 and the rest of the parts for

Continued on the Next Page

under US\$50. So for about US\$300 you end up with a fun bow that's easy to shoot. It worked well enough for me to win my class at the local Senior Games this year.



Van Webster is a NAA Level 3 coach and is Vice President of Pasadena Roving Archers. He is the co-author of the Basic Archery Instruction Program (BAIP), a 6 week course in archery shooting form, taught as part of the PRA Saturday morning archery classes. PRA serves up to 90 community members a week with free and low cost archery instruction. Van is also coordinator for the Woodley Park Archers grant-funded archery outreach program.

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Want to Play a Game?

Okay, after reading the title of this article, how many of you thought about a movie? You know the one—in which the computer takes over the missile guidance systems—oh, never mind. I'm dating myself. Seriously though, how many of you have found the benefit of playing games a help in your coaching? What? Have fun! How dare you! The thought of having fun while training, well, that would be just zenful! Sorry, it was there and I just had to do it. My apologies to the masters.

In Roget's College Thesaurus fun is listed as a noun and right beside it are the words diversion, sport, and amusement. Simply put, all work and no play . . . well you get the idea.

One of the best tools we have in our arsenal of coaching secrets is creativity. Al Henderson speaks about the need to have fun in his book *Understanding Winning Archery*. He explains that in the 1976 Olympics in Quebec the archery team didn't always practice when they went to the range. Some days they just shot a few ends and then tossed a Frisbee around. His explanation was "They knew they were shooting fine, everything felt fine, the shots were going in . . . so why stand there and needlessly repeat it." He knew the importance of "play."

We've all done it at some point during practices. You're shooting, doing okay, had a few not so good shots but overall not too bad. Then for no reason what so ever, you shoot at one of your own arrows. Dang it . . . missed. Bet I can hit it this time. Couple of misses, maybe a ruined fletch, lucky if you Robin Hood; but it took the stress off. You laugh it off and get back to business.

In my experience, adults tend to focus on the matter at hand and what needs to be done to accomplish a goal while kids tend to focus on, well, everything at once. There are those that want to succeed and work hard to do so, but what about those that want to excel except not quite that fast. There will always be those who just want to get enough training to experience archery in a different way, a way that can be enriching as well as entertaining.

How many archers have you lost because they just lost interest? Archers you knew were good enough to reach the elite level. I've asked adult archers how they got involved in archery and most all told me that they were involved as a kid. In the same breath that same number told me that they lost interest at some point. Reasons? Cars, dating, jobs, or they just got bored. A few told me that they just couldn't find the coaching they needed to go farther. It was much later in life that they picked archery back up as a diversion, recreation, or to lengthen their hunting season.

Working with our JOAD kids we find the time to play. How do you balance training with play? At what point do you know that the work is over and the reward of having fun is at hand? Trust me, if you are working with kids they will let you know. Even adults will let you know when they have had enough. Our kids work hard for their ranks and they deserve a break. Even the NAA Level 1 book talks about game playing and its values. We've recognized this in our certification classes and have arranged the classes to maximize the range time. This tends to keep minds active and not fading out during lectures. It not only keeps their minds awake but their bodies as well.

With our young archers the last 15 to 20 minutes of class are spent in some type of game. We even have special days set aside just for fun. We like to schedule our game days so that everyone is excited when they arrive. We call them specialty shoots or fun days. Funny how no one misses those practices. These are not just games but some type of skill enhancing challenge. These games are developed to increase their skills and they don't even realize it. So, let's get down to it. By the way, if you have any games you like or have created yourself, let me know, I'd love to hear from you.

We all know about balloons and we have talked about them before so I'm not going to cover the glories of the "ka-boom." Besides . . . how hard can it be-blow them up, pop them. Use your imagination with balloon games. The games I am going to describe are challenging games. Games that sprang forth during a regular practice when someone said, "You know, it would be fun if we did this." Keep in mind that all the games we discuss have been safety tested by our own "Safety Department" (my wife), so that all participants are guaranteed a safe experience.

QUADRANTS

This game just sort of evolved at a practice one day. Everyone was bored and we knew we had to liven things up. I took a 60 cm target and turned it over and made a giant X across the back. In the valley of each X I placed a direction, N, S, E, and W. Now the ideal was to have them move around on the target shooting at different directions, but each archer soon started calling out areas and they all had to shoot there. Soon they were seeing who could shoot the closest to the center of the X in that quadrant. Some of our archers shoot 3-spot targets and this gave them some great practice moving around.

TIC-TAC-TOE

We play this with a twist. You only get three shots. You have to play to win. Here again you can draw this on the back of a target or I have found recently that you can purchase the target already made (Maple Leaf Press (www.MapleLeafPress.com) publishes quite a number of these novelty targets. The Tic-Tac-Toe target is also available on Amazon.com. Ed.) This has been a load of fun and the winners get to challenge the coach. I get beaten frequently.



POKER CHIPS

Got a few poker chips lying around from the last game night with the guys? Put them to good use. We've done this two ways and find that both are a challenge. Stick an arrow in the target butt and tie a poker chip hanging down with a piece of string. It gets really fun if you put a fan blowing across the room. The other way is to just tape them with clear tape to a target face. It's gotten to the point I have to keep some in my quiver just in case. The bad part is having to clean up afterward. We have had some of our advanced kids try to cut the string.

TEACH THE PARENTS DAY

Want to really have some fun? Try this. Pick a Saturday and let the kids coach their own parents. You'll just absolutely love how they tell Dad that he's doing it wrong. And you'll hear terminology that you thought they were ignoring: set, anchor, and followthrough. Well, they were listening. We had one parent tell us that they enjoyed it very much and his son found something he was doing wrong all along. The best thing about this game is that it re-enforces things you've taught by having them teach it. It even gets the most reluctant parent involved and introduces them to the sport. Who could turn down their own child?

CARD SHOOT

Take a deck of cards and glue them to a piece of cardboard. They get the point value of the cards they shoot. For a twist, they have to subtract the value of face cards from their total if they hit them.

ANIMAL TARGETS

Animal targets provide a new experience for young archers. We like the hunter targets that have the black and white drawings with scoring circles in the animal. You know the kind, the ones where you can't see the rings at 20 yards and have to guess. We put stick-on orange

Continued on the Next Page

dots at the ten ring so it's a bit easier. Color animal targets are fun, too, but sometimes they can be a little too realistic. Some kids, and parents, may not be comfortable with animal targets so make sure you ask before using them. Have alternatives ready.

RIFLE TARGETS

I was in a local sports store and found the coolest rifle targets and thought they would make great archery targets. They are orange circles, squares, and triangles arranged in different designs. As the shapes get closer to the center of the design they get smaller. They are great targets for working on focus. I found that most any target used for sighting in a rifle makes a fantastic archery target.

OKAY, UH, BALLOONS!

I just had to mention this one. Every time we use flu-flu arrows for something someone always asks us about the history of what they were used for (aerial targets). So at a recent outdoor shoot we filled balloons with helium and staked them to the ground at different heights. It was great and tons of fun. One safety point-have a huge area available.

As you can see these are just a few games and with a little imagination there is no limit to what you can come up with. Everybody likes to have fun and a little fun is a great stress reliever. It also gives a coach a little window

of opportunity to do some archer/coach bonding. It's great for getting parents involved and has, at least for us, brought some of our quieter kids out of their shells. When training and coaching don't underestimate the value of having fun.

Tim Scronce and his wife **Sandi** are both NAA Level 3 Coaches. Tim has been involved in archery since around the age of seven. He shoots compound, recurve, and occasionally longbow. He competes regularly, when time permits. Sandi and Tim teach and certify Level 1 and Level 2 instructors, work with Girl and Boy Scouts thru archery, coach in a JOAD program, and have a range at home to teach privately.



In the past three years, they have used archery to raise money for the American Cancer Society, the Union County Lions Club and the Sun Valley Community Fair supporting five schools in the area. Tim does commercial heating and air conditioning. They have two children (Crystal and TJ) who both shoot recurve and compete as well. They are proud to add that Crystal spent two years working on getting an archery club going in her high school which became a reality in February 2002. She now attends North Carolina State where she plans to help reinstate the college's archery team.



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On Beginning a Coaching Library

Special Feature

Aspiring coaches can attend training workshops, seminars, listen to CDs, and watch DVDs and videotapes, but there is still a great deal to be said for books. Regular readers of this magazine probably have heard that I am working on a book for beginning to intermediate archery coaches. The reason for this brash undertaking is, well, there aren't any books directed specifically to archery coaches. I know this because I searched extensive through online, new, and used bookstores and came up with almost nothing. And, instead of making you wait until the book comes out, I decided to share with you what books I have found to be genuinely helpful to archery coaches. If this interests you, read on!

Introduction

I have broken my recommendations into sections that address as many of the technical, mental, physical, emotional, and social aspects of archery as I can recommend. The first section is just those rare books that were written for archery coaches which are absolute "must reads."

"Must Reads"

Sadly, there are just two books in this category and one is out of print, so you will have to scour online bookstores or search your areas used bookstores for a copy (*see the sidebar Shopping for Used Archery Books*).

Peak Performance Archery by Al Henderson (with Dave Staples) This is a book entirely about coaching archery by a gifted archery coach. Most people are aware of Mr. Henderson's other book, *Understanding Winning Archery* (recommended below) but that book is more for archers than it is for coaches. Find a copy of *Peak Performance Archery* somehow (as it is out of print) and read

it. If I had the rights to this book, I would get it back into print as a public service.

Archery Anatomy by Ray Axford This is more than an anatomy book! Most of what an archery coach needs to know about the physical aspects of shooting a bow are covered here. The author struggles mightily to take a technical subject and make it accessible and, by and large, succeeds. It is still technical and may be slow going when you read it, but it is all highly valuable information.

Shooting Technique

This is where you will find the bulk of the books published for target shooters. I break these books into two subgroups—for compound archers and for recurve archers.

Shooting Technique-Compound Bows

Core Archery by Larry Wise The core teachings of one of archery's finest coaches.

Professional Archery Technique by Kirk Ethridge The author was the first to publically blow the whistle on "illegal" rangefinding techniques. It also is a textbook on compound bow technique.

Idiot Proof Archery by Bernie Pellerite Bernie can be controversial, but that doesn't keep him from being a master coach and he poured his heart and soul out in this book.

Mastering Compound Bows by James Park An elite archer takes it all apart and puts it back together.

Precision Archery by Claudia Stevenson and Steve Ruis (Editors) This may be a shameless plug, but it is also a darned good book featuring your favorite AFm authors. Covers both recurve and compound archery.

Shooting Technique-Recurve Bows

The Simple Art of Winning by Rick McKinney A classic for Olympic style archers. Dan Quillian, a foremost authority on traditional archery, commented that, "This was the first book I have read in which the author got it pretty much all right." This book still sells well (around the world!) for good reason.

Understanding Winning Archery by Al Henderson This book is a little disjointed and a little dated but still a very valuable read. Now back in print.

Total Archery by KiSik Lee Olympic style archery by the most successful Olympic coach of today.

The Heretic Archer by Vittorio and Michele Frangilli Olympic style archery by one of the world's most successful Olympic style archers and his father/coach, somewhat controversial.

The Fundamentals of Recurve Target Archery by Ruth Rowe The author not only describes how to perform the shot but lays out a step-by-step plan for building championship form.

Traditional Archery by Sam Fadala A classic for traditional archers.

Precision Archery by Claudia Stevenson and Steve Ruis (Editors) This may be a shameless plug, but it is also a darned good book featuring your favorite AFM authors. Covers both recurve and compound archery.

The Mental Game

There are myriad books on the mental side of competition/performance and all of them have something to offer. These are my recommendations:

With Winning in Mind by Lanny Bassham This is a must read, and it is not just because Lanny writes for Archery Focus! There is a reason this book has sold over 100,000 copies and is being read by everyone from Olympic hopefuls to dog agility trainers. Read it, then read it again.

Winner or Loser? by Shig Honda and Ralph W. Newson Valuable for the twelve pages in the back on the mental game. The rest is somewhat dated. Very hard to find.

Golf is Not a Game of Perfect by Bob Rotella I know it is not an archery book, but if you read it thinking of archery, it all applies.

The Inner Game of Tennis by W. Timothy Gallway This is the bestseller that introduced the mental game to the general public. I know it is not an archery book, but if you read it thinking of archery, it all applies.

Equipment

A coach who hasn't mastered our equipment isn't going to be very helpful, so here are some aids to all of archery's equipment issues.

Simple Maintenance for Archery by Alan Henderson and Ruth Rowe This outstanding reference has almost everything you need to know about building arrows and bowstrings and maintaining archery equipment in a clear, step-by-step format with text and explanatory photos.

Bow and Arrow by Larry Wise Chock full of technical wisdom from one of the world's best compound bow mechanics/coaches/archers. A long time best archery seller on Amazon.com.

Mastering Bow Tuning by James Park A tour de force on tuning both recurve and compound bows.

Coaching

There are myriad books out there for coaches . . . of other sports. Many of them focus on team sports and thus are limited in their application to archery but here are some I have found useful:

Coaching Kids for Dummies by Rick Wolfe This is one of the now famous ". . . for Dummies" series. The author is the Chairman for the Center for Sports Parenting, which is a big clue as to why this book is immensely valuable for those of us who work with kids.

Coach's Little Book of Wisdom by Ron Quinn This tiny book is full of aphorisms for coaches of children, e.g. "Don't talk to your players about their parents unless you have something wonderful to say." A wonderful source of inspiration for youth and adult coaches.

The Parent's Guide to Coaching Physically Challenged Children by Richard Zulewski There is a limited number of books written to assist coaches of handicapped athletes. This is one I found that was helpful to me. There is even a small section specifically on archery, but the general information all seems quite good.

"The Holes"

There are three major "holes" in the archery coaching literature, from my viewpoint. One of those holes is books by successful coaches on how to coaching (like *Peak Performance Archery* mentioned above). I have become a major pest to many in the archery community by begging coaches to write about their coaching techniques. I will continue in that endeavor.

The second major hole in the archery literature is in the form of "drills." In all of the other sports, one can find books full of exercises, drills, and activities to build

the skills of the practitioners of those sports. In archery, one can occasionally find a drill here or there (double draws, reversals, clicker checks, Bernie Pellerite's target panic exercises, KiSik Lee's SPTs) but one has to read wide and far to accumulate even a few such coaching tools. In just one issue of *Golf* magazine, you can read more golf exercises/drills than archery exercises/drills I have been able to identify in all of my reading.

The third hole is help for coaches of handicapped archers. The Olympic Training Centers have been directed to expand their support for handicapped athletes, but the coach training programs haven't bolstered this aspect in their training programs yet and I haven't found much literature to recommend.

As editor of *This Magazine*, I can virtually guarantee that any article submitted on any of these three topics will get published. Please let me know if I have missed some treasure trove of information!

Other Media

I have planned a followup article on the audio and video materials that are becoming more and more abundant out there. I may combine that with an article on the web resources that are useful to coaches, but that may have to be an article unto itself. If you think I have missed any important books above, or you have a favorite video or audio program to recommend, please let me know at steve@archeryfocus.com.

Addendum

At my recent Level 4 Coach Training Course (and after writing this article) I asked if there were any information on archery-related injuries. One of the trainers plopped down on my table a book produced by FITA (in 2004!) on just that topic! (Thanks, Bill!) I will be reviewing the book, available from FITA on their website (www.archery.org), but it is irksome that none of the organizations I am affiliated with deemed it important enough to bring it to anyone's attention.

Steve Ruis is Editor of This Magazine.

SHOPPING FOR USED ARCHERY BOOKS

Here are three good places to start any used book search—Amazon.com, Abebooks.com and your local bookstores.

Amazon.com Yes, Amazon.com has used books as well as new ones. It even has a book searching function that allows you to indicate a book you want to buy (and how much you are willing to pay) that will spend weeks looking for your book. The way to start is to use Amazon.com's search engine. If the book is available new, it will tell you, and it will also tell you if it is available in used condition (including a rating of the physical condition of the book). If it is unavailable in either new or used condition, you may be able to order it.

Abebooks.com Abebooks.com (ABE stands for Advanced Book Exchange) is not a store in itself, but a site where used bookstores can market their inventories and stores they do have—over 13,500 of them! So, when you search this site you are rummaging through a huge number of used bookstores! The procedure is much like that of Amazon.com; there is a search engine (the advanced search functions allow you to set price ranges, publication dates, issues (hard or soft cover, etc.)) that works very nicely. All of your choices go into a shopping cart and one payment pays for all. Abebooks then pays all of the individual stores and you get emails from those stores acknowledging your purchases and giving shipping details. Be careful, though, since many of their stores are from far flung places (Australia, New Zealand, South Africa, India, etc.), the shipping can be more than the price of the book (sometimes much more) and the shipping costs don't show up until you reach the next to last stage of the checkout procedure.

Abebooks.com has a companion site, www.bookfinder.com, that searches even more sites for your book (even Amazon.com).

Your Local Used and New Bookstores Be sure to check in with your local bookstores. They may not have the book you are looking for, but they tend to be well connected and can either order it or refer you to a place more likely to have it. And, like local archery pro shops, if you don't spend some of your money locally, that store may not be there the next time you need something.

Lanny Bassham

Mental Skills

Dealing with Distractions

Part 2 of 2

Welcome back to the topic of dealing with distractions. In the last issue we looked at several ways that other people can distract a competitor in a competition. In this article we will add to the list and then look at the number one distraction and what to do about it.

People Distraction Number Three: The Socialite I believe that there are four participation levels in sport: people-training-to-learn the sport, people-training-to-compete, people-training-to-win, and people-advancing-the-sport to a completely new level. The Socialite often starts in the people-training-to-learn level and then advances to the people-training-to-compete level. Understand this. The Socialite is in this for recreation, not recognition. They will not advance to the people-training-to-win level because it is just not important to them. What is important is that they have a really good time at the competition. I personally have no problem with Socialites as long as they flock with other similar species. They become a distraction to the People-Training-to-Win competitors (PTWs) when they rationalize that they are actually PTW competitors themselves. Remember,

PTW competitors are there to perform well and to win the competition. Enjoyment follows execution in the priority of the PTW competitor. The Socialite may tend to pull the PTW competitor's focus away from why they are there. Socialites are more interested in you becoming like them than paying the price to become like you.

Are we enjoying ourselves so much with the Socialites that we fail to run our mental system? Now do not be confused by my point here. I believe that the PTW competitors can and should have Socialite friends. He should respect them for their level of dedication and not look down on or talk down to them because they do not share his goals. He is not better than them in any way. He just has a different priority; he places winning over enjoyment. Equally, the Socialite should not blame the PTW competitor when he begs off of going to the bar for a nightcap after dinner. He is not being rude or unfriendly. His need for a good night's sleep is important for his chances of winning and rates a higher priority than being out late with his buddies. It is good for the Socialite to have PTW competitor friends and vice versa as long as they do not try to



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remake the other in their image or make them feel guilty for being who they are.

People Distraction Number Four: The Over-tight

Have you ever tightened a nut on a bolt so tight that the nut breaks? The Over-tight archer is at the opposite end of the spectrum from the Socialite. Where the Socialite is not concerned about winning, the Over-tight is only concerned about it. They are wound so tight they squeak when they walk. The Over-tight distract everyone that they come close to. Serious is not a strong enough word to describe them! They are so intense to be downright petrified. They are only concerned about winning. If they are not winning, they are unhappy and, if they do win, they complain because they could have scored higher or had a higher x-count. Do not be distracted by the Over-tight's apparent zeal or try to compare yourself to them. They tend to exaggerate how hard they are training in preparation for the event. Do not get too near them either because they tend to explode.

generate how hard they are training in preparation for the event. Do not get too near them either because they tend to explode.

People Distraction Number Five: The Analyst

I love to watch the commentators in the NFL games on television. They always have a play-by-play man and an analyst. You've seen them. The Analyst is quick to point out that they were once the champion and this is how we did things back then. He will go on to indicate that today is not as good as his day. Archery Analysts are legends in his own minds. They are experts at Monday morning quarterbacking your training plan, your equipment and even your style of shooting. Analysts tend to compare today's technique with last year's and this event's winner with last year's winner. Be careful of the Analyst when they compare your instructor

“Our sport grows because there is a balance between the focus on winning and the joy of just being around people who love to shoot.”

Continued on the Next Page

against their current favorite instructor because last year their current favorite was someone else; normally from far, far away.

People Distraction Number Six: The Complainer

They complain about everything: the entry fee is too high, the lighting is not up to par, the scoring is unfair, the rules are interpreted incorrectly, not enough participants this year, too many participants this year, that old injury showed up again, got a new injury, left a piece of equipment home again, parking lot is full, favorite motel is full, credit card is full, gas is too high, line surface is too slick, peep did not turn, alarm clock didn't work this morning, don't like it when people watch them, don't like it when people don't watch them, cannot get problems at the job off of their mind, can't find a job, can't find a spouse, wishes they had a more understanding spouse, wishes they didn't have a spouse but more than anything else they wish everyone would stop complaining so much.

“The number one distraction is that you discover that you have become one of the people who are distracting others. Get your act together.”

People Distraction Number Seven: The Thrower/Slammer

When frustration peaks and somehow a Thrower/Slammer loses it, they are likely to throw or slam something to let out the frustration of the day. You would like to think that a mature person would have more self-control. The Thrower/Slammer is reinforcing the error by this kind of behavior. Mentally mature people do not respond to their environment in such an immature way. Thank goodness there are just a few of these folks in the sport. If the throw/slam is accompanied by colorful expletives, then we know that the last bit of self-control has left the archer for certain and they need to go to time out.

Okay, now for the number one distraction. This is the big one and the one you must avoid at all cost. The number one distraction is that you discover that you have become one of the people who are distracting others. Get your act together. Become the competitor that others want to compete with. If you are not in it

“We might best take a lesson from our young children in the joy department. Win or lose, they are never distracted from having fun.”

to win, then respect those who are. If your only concern is winning, remember that not everyone is wired that way. We like a person that is focused on doing well, but also keeps the needs of others a high priority. We don't need a complainer, a criticizer, or a crank. We could use more understanding, more complementing, and more smiles all around. We like a humble winner and we promise to congratulate you when you win, if you will stop throwing things when you lose. Our sport grows because there is a balance between the focus on winning and the joy of just being around people who love to shoot. We might best take a lesson from our young children in the joy department. Win or lose, they are never distracted from having fun.

Lanny Bassham is an Olympic Coach and an Olympic Gold Medalist. He is a member of the Olympic Shooting Hall of Fame, ranks third among all shooters in total international medal count for the USA and is one of the most respected mental trainers in the world. His book ***With Winning in Mind*** and his ***Mental Management***® concepts are used and endorsed by Olympian and World Champion shooters. You can reach him at 1.800.879.5079 or at www.mentalmanagement.com.



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Making Your Own Outdoor Target Backstop

Special Feature

In this article I will go through the materials, instructions, and procedures to build your own replaceable/rebuildable 4' x 4' target backstop for target shooting. This target is great for home archery as it is highly mobile, long lasting, and versatile. You can even use it as a back stop for most 3-D targets should you flinch a shot and miss. The only caveat is that it is not suitable for broadheads. So let's get going!

Materials

- 16' (feet) of 2x12 treated lumber (if you want to leave it outside). You could use a wider board such as 16" but I have found it unnecessary. I have shot carbon arrows from high powered compound bows into this target without pass throughs.
- 2' of 4x4 or 4x6
- one 8' 2x4
- plastic chicken wire—one roll of 25' x 2' should be plenty
- 32' of 1x2 trim
- at least 4' x 8' of synthetic grass carpet or similar material
- 18" of $\frac{5}{8}$ " threaded rod (if you want the target to be mobile)
- 2 washers and jam nuts for the above (if you want the target to be mobile).
- 2 agricultural wheels (if you want the target to be mobile).
- 2' of 2x6 or 2x8—4' if the target is to be non-moveable.
- 3" deck screws
- roof shingles (if you want to leave it outside) and roofing nails to affix them
- 2" deck screws

- two 3' pieces of $\frac{3}{8}$ " nylon rope (if you want the target to be mobile).
- a small piece of round stock or 1x1 wood for rope handle.
- lots of plastic shrink wrap or similar filler.
- wood stain (if you like).
- basic tools such as a power saw, hacksaw, and cordless drill/screwdriver

Instructions (Cutting, Assembly etc.)

The first thing to do is to cut the 2x12s to form a 4' box. This requires you to cut two pieces at 48" and two at 45". Plan to use the longer pieces for the top and bottom of the target. You will want to reinforce the lower corners with either 4x4s or 4x6s (*see Photo 1*). Screw these together using the 3" deck screws.

If you intend to make the target movable cut a 45° corner off one of the braces to allow clearance for the wheel axle (*see Photo 2*).

Also drill a $\frac{3}{8}$ " hole in the lower portion of one side. Insert the rope and tie a knot so the rope

Continued on the Next Page



Photo 1

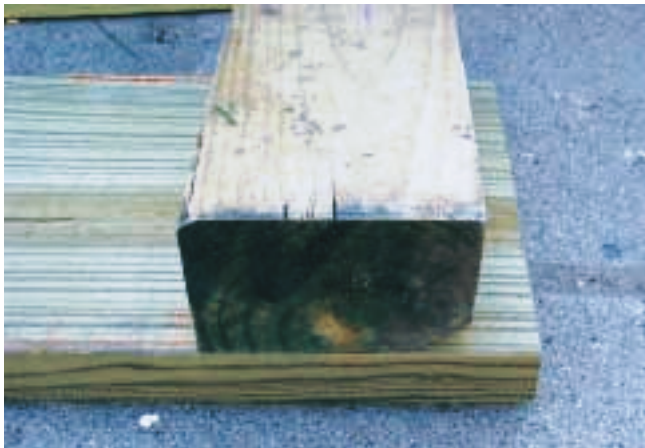


Photo 2

cannot pull out. Drill a $\frac{3}{8}$ " hole through the small piece of round or square stock and put the rope through the handle and knot it. Adjust it to a length where the target lifts off the ground about 6" when your arm is at full length and you are standing straight. This will be the lift strap if you intend for the target to be mobile.

Once you have the lower section sides and lower braces assembled you are ready to put in the top braces. For this use two 2x4s cut to 45 inches (*see Photo 3*).



Photo 3

The reason for these braces is they will allow you access to the interior for stuffing the target and to take the top off later to refill the target without the sides caving in. Try out the top by fitting it and running a few screws in. Use the 3" screws for these steps. Once satisfied remove it and go to the next step.

Once you have got the frame complete you will wrap the target with the plastic chicken wire (PCW). This will provide support for the stuffing during assembly and use. Use the 2" screws to secure the PCW as tightly as possible. (*see Photo 4*)



Photo 4

It is time to stuff the target with the filler. Stuff the target full with plastic wrap or whatever filler you decide to use. (*see Photo 5*).



Photo 5

I picked the shrink wrap up from work where it was used on incoming material on pallets and then discarded. I would think a Home Depot would probably have a bunch of this stuff they throw away. You might be able to acquire a similar or better material. Be creative.

Now take the outdoor carpet and cut two 4' square

sections for the faces. Screw this in place using the 2" screws. Next cut the 1x2 trim to the size of the frame to reinforce the face material. You can either make 45° corners using a miter box or butt the square ends (*see Photo 6*). Use 2" screws to secure these strips.



Photo 6

Insert the 5/8" rod through the face and bracing. Install a wheel, a washer, and a lock nut on one side. Put the other wheel on the opposite side and measure how



Photo 7

much rod is needed allowing room for the washer and nut on that side. Remove the wheel and cut the rod with a hack saw. Install the wheel washer and nut. Tighten these down to a point where they are secure but still roll easily.

The last thing to do is to install a front foot. This should be a two foot section of 2x6 or 2x8. Space it as tall as needed to sit level with the wheels installed. Use the 3" screws to fix it in place. If you make the target non-moveable, you should use two pieces of the wood on each end as feet. This step is necessary so that the target does not tip in use or in the wind (*see Photo 7*).

The final steps involve either staining the wood and/or installing shingles on the top section. If you decide to shingle the top, do so before you put the screws in the top. This is done so that you can remove the top later to repack the target when, and if, necessary.

Conclusion

So, there you have it, your own "can't miss target". The faces can be replaced as use warrants and it will hold up to arduous use. I have yet to wear out the filling even after a year's use of the target. The target is big enough so that even the largest FITA or field faces can be used or several small target faces can be set up on it for multiple people shooting.

Jane Johnson

Special Feature

Judging in the NAA

You Be the Judge (Really!)

Do you still enjoy archery but find yourself not shooting? Consider becoming a judge, one of those people on the tournament field wearing red shirts and khaki pants. These are the folks who keep the tournament moving along in a timely manner; use a magnifying glass to determine the value of an arrow and get to watch the archers shooting from up close.

I've been an National Archery Association (NAA) Judge since 1983 after meeting Ann Clark, NAA National Champion in 1955 and 1960, at the U.S. Olympic Festival in Colorado Springs. She said, "Jane, you ought to be a judge." (Thanks, Ann, for getting me involved!) So I wrote to Allan Martin who sent me an open book test. I read the FITA Rule Book, completed and returned the test and became a Judge Candidate. Experience came with judging at several tournaments and understudying other judges, while continuing

to keep up with rule changes every two years.

It's even easier now to become a Judge Candidate.

You must have been a member of the NAA for at least one year immediately preceding your application and be 18 years of age or older. The application form can be found on the USA Archery web page (www.usarchery.org). Complete it and send it to:

Tom Green, Officials and Rules Committee
Chairman

9830 Tavernor Rd.

Wilton, CA 95693

Phone/Fax 916.687.8541

E-mail tgarchery@frontiernet.net

When you return the application (and a check for \$35), you will receive a voucher for the Judge Guidelines Manual and one Judge's shirt. You mail the voucher to the NAA and the Judge Guidelines Manual and Judge's shirt will be mailed to you from the NAA office. A



name badge will be mailed to you later. Your training will consist primarily of being involved at local, state, and regional tournaments. You will also need to purchase the current FITA Constitution and Rules Book from the NAA or download it (free!) online from the FITA web site (www.archery.org). You'll be expected to answer correspondence in a timely manner and meet any and all deadlines. You will need to study the rules in the FITA Constitution and Rules Book and the Judge's Guidelines and then learn how to apply them.

Come join me—you'll find you have the best seat on the range!



The author is at the left, doing what judges do best, enhancing the experience of the tournament participants. Ed.

Editors Note—

I am still looking for an NFAA Judge to write about what it takes to be a NFAA Judge. If you are a NFAA Judge and would like to write such an article, please contact me at steve@archeryfocus.com.

A DAY IN THE LIFE OF A JUDGE (NAA)

As a judge you'll receive a form from the NAA Officials and Rules Committee late in the fall to sign up to judge your choice of NAA tournaments (National Indoor, National Outdoor, Field Championships). For these tournaments, judges receive a *per diem* payment which helps defray travel costs. After being notified of your assignments, the Chairman of Judges for each tournament will e-mail the judges details of their assignments.

For other tournaments, the tournament director will recruit judges for their tournaments. Sometimes the tournament organizers will provide lodging and meals for the judges.

Judges are expected to arrive early on the practice day before a tournament to measure the field and make sure it is "FITA legal" according to the Range Layout section of the FITA Rule Book.

On each day of competition judges will usually:

- arrive at the range about a half hour before practice starts to make sure targets are lined up and staked properly.
- attend a meeting held by the Chairman of Judges during official practice, to assign judges their targets and discuss the conduct of the tournament, rule changes, etc.
- time a trip to the "facility" so as to get to assigned area on time for start of competition.
- walk to and from the targets, calling arrows as needed, checking targets to prevent future pass-throughs, answering archers' questions, diplomatically correcting archers who are not complying with the rules.
- take breaks periodically as arranged by the Chairman of Judges.

At the Outdoor National Championships there are two shooting sessions, so judges are usually on the range from 7:30 in the morning until about 6:00 in the evening.

Are You Losing Interest in Archery?

Special Feature

As we practice archery, we all progress at various rates. At some times we improve rapidly and at other times, we seem to be getting worse each time we shoot.

When we first started shooting, we really enjoyed it and seemed to progress rapidly in being able to get more and more arrows in the red and gold. It was a game and we were like children. You'd note your score or how many arrows hit the gold and then try really hard to either match it or, preferably, beat it. It was fun and you loved it. You'd lose all sense of time. How many times have you told someone, "I'll only be half an hour" and then turned up two or three hours later? If you missed a shot or didn't do as well with one arrow as you did with the last, you'd tell yourself, "Oh heck," "Damn it," or something along those lines with an unconcerned voice and when you came away, you'd tell yourself that you did 'pretty well' or 'fairly well' or 'alright' or 'really well this time' and look forward to going again next time.

Somewhere along the road, though, it all changed. It seemed that the longer you had been shooting, the less you seemed to improve. You bought better, more expensive equipment and bought instructional books. You poured over the Internet or through magazines searching for tips and hints to improve your technique. You consistently

checked each and every part of your technique and form as you constantly strove to accurately replicate each and every movement in your shot. The most annoying thing was when you shot three or four arrows accurately and consistently and started to feel good and then the next two or three were all over the target. You became more and more frustrated and your internal dialogue changed to more 'colourful' language as well. Your tonality changed from indifference and gentle chiding to exasperation and frustration. It seemed as if the harder you tried, the worse it became. You saw that others were improving at a faster rate than you felt you were. Before, nothing would stop you from going shooting, you began missing sessions or your practice sessions got shorter and shorter. Your internal dialogue was getting more severe and abrupt and you were beginning to think that maybe 'it's not for you.' What changed? What happened? How come something that was so much fun and so easy became so hard and frustrating?

At some point it all got very *serious*. Where at first, you'd go shooting and be laughing and joking as you shot and encouraging fellow club members who were shooting on the same target as you, now you're secretly competing with them, silently whooping with joy as their arrows hit the

blue or black as yours hit the red or gold and hoping that they'd even miss altogether.

We do need to take some things very seriously, as some things are serious and that it's part of the very seriousness that makes them work safely and smoothly. We can't be talking to people as they shoot - the consequences could be disastrous.

“At some point it all got very serious.”

Remember though, that there are times to be serious and times to lighten up. Often the harder you try to do something, the harder it becomes. I once worked with a woman who had 'forgotten' how to swim and the harder she tried, the quicker she sank to the bottom of the pool. Her problem was that she was simply trying too hard.

When you learnt to walk or talk, it happened almost without thinking. You were rewarded for doing it right and encouraged to do it again if you did it wrong. We made up games and jokes and learnt through experience, but most of all, it was fun!

We, as human beings, learn from physical experience and especially when we enjoy something. That is what we are often missing from our trainings-fun. Somewhere along the line, we started to take it all too seriously. Archery and especially competitive archery is serious but not too serious. Look for ways that you can really enjoy your training. Shoot at larger or smaller targets, balloons, dartboard target faces, even photos of people who you don't like, anything that makes you laugh when you do it and that makes it fun and enjoyable. A psychiatrist would probably watch you shooting at pictures of people who you don't like and think, "Hmm. I could spend a lot of time working with this person as they obviously need a lot of help," but, what the heck, whatever works, works.

“The best archers don't take it seriously all the time. They have ways of consistently enjoying the whole process of training and shooting”

The best archers don't take it seriously all the time. They have ways of consistently enjoying the whole process of training and shooting. They laugh and chat between shooting rounds, they laugh and enjoy shooting



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when they are accurate and even when they aren't.

We learn best while we are laughing and having fun. When you can learn to laugh at what was perceived as a problem, it ceases to be a problem. Look at your training and ask yourself, "How can I make it more fun, interesting, and enjoyable?" If your club doesn't appreciate your using different target faces of your own choosing, go to the range earlier than the others or stay later, shoot by yourself first thing in the morning when you're going to be the only one there. Do whatever it takes to make your shooting fun!

The very word 'training' makes it all sound so very serious. The word 'shooting' or 'archery' makes it sound much more relaxed. Which do you say? "I'm going training" or "I'm going shooting" or "I'm going to archery"?

Try this to recover the joys of archery: find somewhere quiet where you can sit or lie undisturbed for a while. Think of something that you do because you love it, something that you really enjoy and find it very, very pleasurable, something that you don't take too seriously

Continued on the Next Page

but you'd never pass up an opportunity to do it. Does anything come to mind? Now, look at the qualities of that image or movie that just ran through your mind. Where is it in your mind's eye? Straight in front, down to the left or the right or upwards? Wherever it is, just take note of it. Is it in colour or black and white? Note the vividness of the colours. Is there movement in what you see? Notice the size of it. Do you see yourself in the pictures or are you seeing what you'd see if you were seeing it through your own eyes? Take note of the brightness and the distance of the pictures in front of you. If you're

“We learn best while we are laughing and having fun. When you can learn to laugh at what was perceived as a problem, it ceases to be a problem. Look at your training and ask yourself, “How can I make it more fun, interesting and enjoyable?”

not sure yet, then trust your intuition and go along with the answers you feel are correct to these questions. Is there any sound? Any internal talking? If so, take note of where it comes from, how it sounds - tonality, tempo, etc and lastly, are there any feelings within your body that lets you know that this experience is really enjoyable? Take note of any that you feel and notice how strong they are and where you feel them within your body.

Now think about your archery and let an image or movie come to mind. When you have one, note that it will probably be in a different place, with somewhat different qualities to the 'really love it' one. Now take the picture or movie of your archery and move it to the position of the one of what you really love and begin to change the qualities of 'archery' to those of what you 'really love to do' - the same position, closeness, colours, brightness, focus, distance in front of you, size, etc. If the 'archery' thought was a photo and the 'really love it' one was a movie, make the 'archery' thought into a movie and give it movement. Change the sounds, the internal dialogue and the feelings to those of the 'really love it' thought. Continue to do this until you see, hear and feel the 'archery' representation in exactly the same way as the 'really love it' representation. For some people this will be

easy while for others it will necessitate a bit of effort.

Now, see the two images in your minds eye again and repeat the transfer of the archery representation into the representation of the thing you really love. Do this again and again about ten times and do it faster each time you do.

When you do it fully and accurately, you will attach the feelings of what you really love to do to archery practice. Combine this with the question “How can I make it even more fun and more enjoyable still?” and then just do it, *e.g.* shoot at pictures of X , or shoot at balloons or animal face targets.



Colin Remmer, DHP, LHS, *is a registered Clinical Hypnotherapist and a Master Practitioner and Trainer of Neuro-Linguistic Programming licensed by the Society of NLP. He has helped many people improve their abilities. He practices archery regularly at his local club in the south of France where he lives with his wife Gail. You can reach him at colin.remmer@tiscali.fr.*

What is Archery, Anyway?

Just what is archery? I guess that it depends on who you ask.

Is it a sport?

A recreation activity?

A martial art?

A spiritual activity?

A physical discipline?

A moral discipline?

An ethical study?

Or is it something else?

I believe that the activity of shooting the bow and arrow is whatever the shooter needs or desires it to be. That is one of the things that makes archery so appealing to such a diverse group of people in every culture and on every continent.

So, archery is what you make it. Every person who participates has their own reasons, goals, and desires when it comes to their personal shooting. Some crave competition, others enjoy it as a recreational pastime, and still others seek a more metaphysical path. Whatever your reasons, they are correct for you. That is all that matters. It is not important what your friends think about your reasons for enjoying archery. Not everyone has the same drive, goals, or desires.

In most martial arts settings, people are looking for exactly the same things.

There are those who are looking to feed the ego, get in shape, learn something new and exciting, or experience the mystical Far East. Whatever the reasons, the people are there.

The teachers are teaching. And the personal journeys are in various stages of progression.

One of the aspects of archery that immediately appealed to me was that it is a martial art.

And like all martial arts it has several facets like a large precious gemstone. There are mental facets, moral facets, ethical facets, physical facets, and many different facets that each person brings with them. Archery by itself is like a diamond in the rough. It is just another rock like all the other rocks around it. When you pick up the bow it is like when the diamond first reaches the diamond cutter's bench. It is examined, studied, and then the work begins. As the archer progresses he adds more and more facets to the diamond. Eventually all the extraneous material is carefully removed and the beauty of the diamond will show. Diamonds are like us, they are more than they appear and no two are alike.

Or maybe, we are the diamond in the rough and the bow and arrow are the cutter's tools.

Perhaps as we progress in our personal archery journey, the bow begins to shape and polish us physically, mentally, spiritually, or whatever it is that you are searching for the bow will bring to the surface.

My martial arts experience has been a personal journey lasting more than 20 years. The reasons for my practice and

dedication have changed and evolved with me as my life changes and evolves. My practice has led me down some amazing paths that I never anticipated or could foresee in the beginning.

Archery has done the same in my life. When I began serious study and practice in Olympic target shooting, I never expected to become a writer/sword swinging philosopher or even a top-level local competitor. But I have got to be honest with you; it has really been a cool ride. I have tried to be open to every path and opportunity

Continued on the Page 37

“One of the aspects of archery that immediately appealed to me was that it is a martial art.”

Mastering the Mental Game of Archery-Volume 1: Building the Triad

This audio CD by Troy Bassham is part of an archery-specific set of lessons on the Bassham's take on the mental game. The introduction to the series was *What Every Archer Should Know First About the Mental Game* which was reviewed in Vol. 10, No. 1. The other volumes will be released over time and have the following working titles:

- Volume 1: Building the Triad
- Volume 2: Improving the Conscious Mind
- Volume 3: Improving the Subconscious Mind
- Volume 4: Improving the Self Image
- Volume 5: Mastering the Mental Game for Tournament Archers

This first CD starts off where *What Every Archer Should Know First About the Mental Game* leaves off, so it is desirable that you have listened to that CD first. It also refers to Lanny Bassham's book "With Winning in Mind" several times. This was an attempt to provide the graphic images that accompany discussions of the triad state. The diagrams are important, though, as they provide something concrete to characterize things that are intangible. They also allow progress in the mental game to be tracked, etc. That said, I would rather they did not rely on references to the book as some listeners will not have the book handy and, in addition, it is easy enough to describe the size of three circles, e.g. if the conscious and unconscious circles are the size of grapefruit and the self-image the size of a ping pong ball" Painting such pictures for the listener would help them focus on the ideas being presented as well as obviate the need for the book.

Troy begins by reinforcing the basic model (your conscious mind is your thoughts, your subconscious mind is the seat of your skills and abilities, and self-image is your attitude and habits) with the goal of being balanced-meaning all three parts of your mental makeup are about as strong). He then goes into several types of archers, describing how their mental weaknesses show up in archery:

Beginners need to develop all three circles through the conscious mind, which is why it is so hard to build up smooth and effective form, you have to think about everything.

Frustrated Experts suffer from weak self images. This is a stage almost all archers pass through at some time.

Unfocused archers lack the conscious mind programming that shuts out distractions and interrupts performance.

Overconfident archers are relatively rare in archery and have smaller subconscious skill than their inflated self-images warrant.

Troy provides ways for listeners to deal with each of these situations should they identify themselves from the descriptions. He goes on to say that most archers are fairly well balanced and their task will be to "grow all of the circles." The circles represent the health/strength the three aspects, with them being about the same size indicating a "balanced state." The only person who can out perform someone in a balance triad state is someone who is also in a balanced triad state but with bigger circles (indicating a strong conscious program, greater subconscious skill, and a more confident self-image. This, of course,

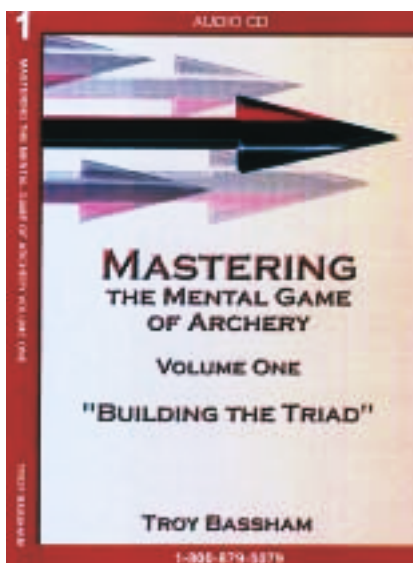
sets up the next three CDs.

He finishes with several ways for listeners to assess their own mental triads.

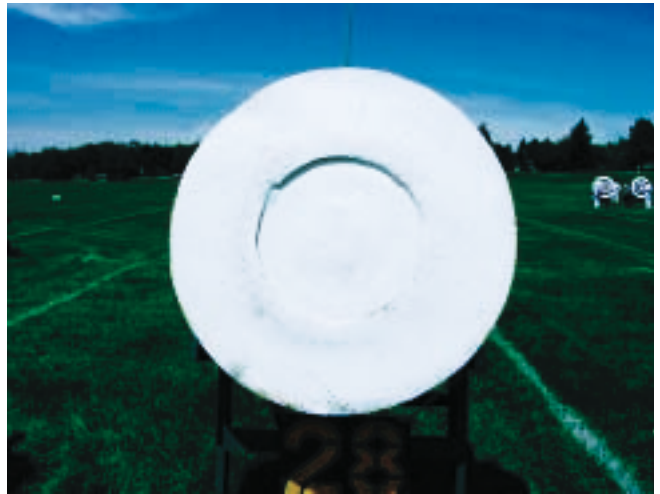
As I mentioned in the previous review, the strong points of this CD series are accessibility and affordability. The list price of US\$30 per disk is not much above typical prices for music CDs and their lengths are not too long for young archers to work through. And this is especially good for those who prefer listening to reading. (I have spent many a work commute with such CDs playing.)

As I also mentioned in the first review, Troy is not as smooth and polished as his father in delivering the message. There are a few bobbles, but none of them detract from the message. And Troy has the advantage of being closer in age to younger archers, thereby making him easier to hear than us older folks.

So, if you prefer to get your archery wisdom through your ears rather than your eyes, or are the parent of an aspiring younger archer, you now have another strong option! The response to the initial disk was strong, so Disks 1-3 are available now at www.mentalmangement.com and I expect the rest of the disks will be coming out in the not too distant future.



Continued from Page 35



that I have come across. I have become friends with Olympic medalists, bow design engineers, and even a couple of icons/legends in the archery world. I have traveled and competed with the best athletes in the sport. And on a wild throw of the dice, I became a published writer.

So what is archery anyway?

Who cares?

Take archery, whatever it is, and make it yours; that is the magic of it.

It is not that the arrow lands in the center of the target. It is how it got there that is important.

John Vetterli says, "I live in Salt Lake City Utah. I have been a professional Firefighter since 1987. I am married and have a daughter and son. My martial arts history began in 1984 with Osaka Sensei in the Karate form of Wado Ryu (the way of peace or harmony). Osaka Sensei instilled in me the desire to always know why we do things not how. I began the study of Eishin Ryu Iaido (the art of the Japanese sword) in 1998 with Harris Sensei. A Zen Buddhist Priest who finally taught me how to focus. This has been a profoundly life changing experience. I am a partner in the Zen Bu Kan Dojo with my two friends Dick and Jason. We teach Iaido and Kendo."



Brian J. Luke

Traditional Archery

My Second Second Chance

“Archery is supposed to be fun.” We have heard that statement repeated over and over again; but what are we to do when it just isn’t fun any more?

Since we are all unique, I could not possibly address the infinite number of ways we can somehow manage to disrupt the intended natural flow of a proper shot sequence. When that flow is disrupted in such a way that it seems beyond our control, it isn’t long before the sport we once loved becomes our worst enemy. In my forty plus years behind the bow I have approached archery from an experimental point of view. At least I can say some learning comes from that sort of approach, as opposed to just quitting in which there is none.

Over the years I have learned way more of what not to do about shooting difficulties than actual practical remedies; however I have played with a few things that just may help you or someone you know. This article is about one of these.

First, I am going to give you a little background on my archery experiences to help give you a better understanding of two things: for one, the struggles I have gone through but, more importantly, some insight into the mindset of the person who is trying to give you advice.

First and foremost and one of the things I have learned for sure is that children with a bow in hand need responsible supervision. To skewer a perched squirrel from it’s feeder with an arrow in the park will highly upset the kind little old ladies who come there to feed bread to ducks.

This I know from personal experience.

At around kindergarten age, I got bored with the bow and suction cup arrows I had received for Christmas. Off came the suction cups and into the pencil sharpener my arrows went. I could now impale cardboard boxes, I could even draw things on the boxes to try to hit. My elder brother shared in the fun even though he should have been old enough to know better than to do the thing I am about to tell you. I had this desire to see what an arrow actually looks like from the target’s perspective, so into the box I went while my brother shot arrows at me. Eventually I caught an arrow right above the eye. It laid open my entire eyebrow, but luckily my cheap fiberglass bow was no match for a thick skull. This is definitely one of those experiments not to try.

On and off for about ten years I shot inexpensive fiberglass bows that I bought from Kmart. Eventually I purchased a bow I could hunt deer with and, at the age of sixteen, I shot and killed a six-point buck with a single arrow. Around that same time a cousin of mine stopped at my parents house and noticed me practicing archery in the back yard as I often did. He was interested in that my “Cousin Eddy” (Ed Grant) was a past tournament archer (unbeknownst to me). Cousin Eddy is about 18 year my elder and shot N.A.A. and P.A.A. target tournament throughout the 60s and early 70s. Cousin Eddy could keep up with and sometimes beat a few of

the best archers on the circuit.

With good intensions cousin Eddy began to instruct me about proper shooting technique. Up until then I would just look at your target, pull 'er back, and let 'er fly. The first thing Eddy had to do is correct my bow arm. It seems from years of shooting and watching the arrows fly my bow arm would move out of the way after each shot for a better view. This reaction to the shot somewhere became a

reaction on the shot. I developed a trained reflex where my bow arm would lose tension on or just before the shot. Week after week, arrow after arrow Eddy had me shoot at a blank bale, ten feet away looking at nothing but my bow arm. It finally looked like I had this bad habit licked and I wanted to give target archery a try.

I was then introduced to a sight, stabilizer, and finger sling. I set aside my 50 lb Herter's recurve hunting bow and purchased a used Bear Takedown target bow of around 35 lbs draw. Eddy's stories about target archery sounded intriguing. I joined a JOAD class at a local archery range. I kept at it until I got to the point where I expected to hear the sound of arrows clanking together by the second or third shot at twenty yards. This was a time, a very brief time, when archery seemed incredibly easy. This was so much fun I just wanted to shoot more and get even better, but it seemed I was just getting worse with practice. Consoling Cousin Eddy was quick to point out my original bad habit was plaguing me again. It was not the bad collapse on the shot like it was when Eddy first saw me; it was a mere twitch of the bow shoulder at the instant of the shot. It was enough to spoil the whole shot and the harder I worked at it the worse it got. I blamed it on the sight, lost interest in target archery and just went back to shooting instinctively with my hunting bow. I remained that way for the next fifteen years until 1992.

It was at that time I discovered Robert Elmer's book "Archery" in our local library. I became intrigued with the all wood longbow and arrows that you could build yourself. Reading Elmer's book several times over got me interested in shooting traditional target rounds. With his



The under the chin anchor I used for the palm out style using the bow sight; little finger tucked under the jawbone, back of hand flat and snugly against neck, and the string bisecting the nose.

book and the records the NAA kept, I could shoot an American Round in my back yard and compare my scores against the scores of those archers of old.

It was great fun and one afternoon I was talking with Ann Hoyt while ordering supplies from Sky Archery and she informed me that a man named Norm Graham was shooting the longbow also and I should hook up with him. Norm informed me of a shoot in Nashville, Indiana called the Brown County

Open and there would be a class for the traditional longbow. I showed up that very year.

I was hooked; I was shooting target archery again, but this time with a wooden longbow, wood arrows, and no sight on the bow. I naturally found myself wanting to get better and worked very hard to improve. I did not shoot instinctively as I did for hunting, but rather I used the traditional target method of the point of aim for my sight. I would simply align my fully drawn arrow point on a reference mark on the ground that would give me the proper trajectory to hit the target.

It did not take me long to realize the bad habit from my past had never really left. My bow shoulder would lose tension just before the shot, making consistent shooting nearly impossible.

By now I was really into making my own wood longbows and arrows, I loved it; but what fun is it to make this stuff and not be able to shoot worth a darn. I was going to beat this thing once and for all.

I went back to the blank bale training. I shot arrow after arrow watching nothing but my bow arm. When I resumed normal shooting it was not long before the twitch was back. I tried multiple form changes and each time, each change worked, but for just a few weeks or so. It was so bad I even collapsed on the shot while I was shooting with my eyes shut for form feeling practice.

I was desperate. I got out my very best wooden footed shafts that I had spent countless hours in making. They had Purple Heart footings, horn nocks, and brass piles. They were just beautiful. I set my target in my

Continued on the Next Page

basement against the cement block wall. A bow arm collapse could cause a shot off the target and sure disaster for any wooden shaft. I really put the pressure on because I really wanted to beat this thing. I figured I should just face my fears head on and charge ahead. Well that advice may be helpful for some things in life, but it is a really bad idea for archery. I ended up destroying all but one of those footed shafts.

It was at that moment I decided to try some advice my cousin told me about and switch from right-handed shooting to shooting left-handed. Finally, I had my second chance. I could develop muscle memory shooting left-handed and this time I had an idea of what made up a good shot. It was like starting all over, I could not even nock an arrow at first, but in time I learned to shoot that way and my scores started to climb. I was able to shoot the traditional longbow right handed. I have shot that way for the last eight or nine years now and continue to enjoy the sport.

You are probably thinking right now “I read all of the above just to hear something I already knew? Switching hands is something I just cannot do! I cannot do anything with my opposite hand!”

Calm down . . . I could not do anything with my other hand either, but when I got to the point where it became impossible to do the thing I loved with the one hand, it was worth the effort to learn how to do it with the other. It was time consuming and you will have trou-



My side of the face anchor using the palm out method. I can now shoot with both eyes open, little finger snugly under cheek bone and string drawn into the bone beneath the eye brow. It looks like I crept a little posing for the photo.

ble just keeping an arrow on the rest at first, just like it was the first time you picked up a bow. But in time you can and will be able to do it if you really want to.

If you will recall, I stated that switching to left-hand shooting gave me a second chance, but the reason for this writing is not just about my second chance, but rather my second second chance. Let me explain.

In one of my many conversations with Cousin Eddy he told me how he wanted to shoot with his drawing hand palm out instead of the normal palm in. He felt it would produce a cleaner release with less chance of a flip out. He explained the only problem was that it was very hard to keep the arrow from falling off the rest. The more I thought about this the more I became interested in trying it. He was right, it was very hard if not nearly impossible to keep the arrow on the rest shooting this way, but I concluded to solve that problem you would have to shoot off of the other side of the bow. In other words you would shoot a left-handed bow right-handed or a right-handed bow left-handed if you wanted to draw it palm out. That way the torque on the string would be in a direction that would keep the arrow on the rest and against the arrow plate or plunger.

I tried this at first with my longbow. The bow has no rest or arrow shelf, you shoot the arrow while it is resting on your knuckle, however if you shoot “palm out” the arrow is on the other side of the bow and must therefore rest on your thumb.

The results were disastrous! If I shot palm out left-handed with the arrow on the left side of the bow, the arrows flew dramatically left even though I had the entire shaft in line with the intended target. I just did not understand, so I managed to draw an arrow back palm out shooting left-handed on the right side of the bow, as a normal left hand shooter would do. It was hard to do and keep the arrow on the rest (my knuckle), but I could eventually do it. The results were equally disastrous, this time with my arrows shooting dramatically to the right.

The release felt crisp and incredibly fast, but why did the arrows act as they did? My only potential cause for the dilemma was the fact the longbow is so far out of center shot. To test my theory, I got out a lightweight right-handed recurve. It was a newer, introductory level Win and Win bow I picked up on eBay. Even though I am a left-handed shooter now, I bought the bow to use as a teaching tool for any right-handed person who may be interested in learning how to shoot. I practiced drawing the arrow several times and tried to establish a comfortable “under the chin” anchor. Shooting this right-



This is the first time I shot palm out, right-handed in public; about six weeks after I had first tried it. I did not keep score, I was more interested in viewing the grouping. The next day I shot the same bow normally (left handed). The surprising thing to me is that the target from the first day didn't look much worse, if any, from my left hand shooting I have been doing the last nine years or so. I did not expect my palm out shooting to progress as fast as it did.

hand bow left-handed, palm out was pleasant surprise! The arrows flew straight in line as I had aimed them. Maybe I was right about the “palm out style” requiring a bow that is nearly center shot. In that first afternoon I was shooting some groups that were really not bad at all. From such a dramatic form change, I had not expected to group at all.

I was so excited I could not help but call Cousin Eddy. He sounded a little confused as to what I was trying to do and a little concerned, too. He was worried about all the work I went through teaching myself the shoot left-handed might be lost if I practiced something so dramatically different. He suggested that I might want to just play around with this palm out shooting right-handed. Since my right hand shooting was a disaster anyway, I would not be risking ruining my hard won left-handed form.

This seemed reasonable and I had several left-handed recurve bows I could use to shoot right-handed, palm out. Just so I am not confusing you, I was shooting a left handed bow holding it in my left hand and drawing it with my right hand, palm out (see photos). I practiced drawing the bow until I could do so without a great amount of difficulty.

Some things felt very awkward, and some things felt quite natural. At first the left handed grip on the bow felt strange drawing it right handed, but after a while I noticed that it felt very good. The ridge on the one side of the grip lay nicely along my lifeline. The next thing I noticed is that I needed a left-handed finger tab to shoot right-handed, palm out. If you try using a right hand tab

shooting right-handed, palm out there would be two fingers above the arrow and one below. I tried this at first but the arrow kept lifting off of the rest. I was drawing to an “under the chin” anchor and was confused as to what to do with my pinky (little finger). I could either keep it with my other fingers and let my pinky rest under my jaw bone, or I could try to relax it and let it ride over my jaw bone along my face. I settled on keeping it with my other fingers, so now there are two fingers under the arrow and two fingers above the arrow. The pinky is just barely resting on the string doing little or no actual pulling. After a little practice it felt very comfortable and I found my comfort by raising my drawing elbow slightly, allowing my drawing hand to lay flat, tightly up against my neck and snugly under my jaw bone. You can really get under the chin this way because the thumb is out of the way. I checked my alignment in the mirror and feel it was actually easier to get in line with the arrow on the same side of the bow as the drawing hand.

The left hand bow I was using had a sight on it because I had just started (once again) to shoot target style with the recurve. I had been shooting nothing but the longbow 13 years and this change of styles was fun.

Continued on the Next Page

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I had noticed by shooting both styles, right-hand palm out one day, and normal left-hand shooting the other that it seemed one style was helping the other. I was seeing more progress in my normal left hand style now, than before I started messing with the palm out method. I had not seen grouping like this since my days as a teen shooting a recurve target bow. The target pictured is from shooting normally left-handed; I had another target that I had shot shortly after this one with very similar grouping shooting my palm out style right-handed. Sorry, no photo for that one; the dog must have eaten it!

My next decision regarded string alignment. If I were shooting a normal right-handed bow right-handed, I would align my string just to the right of my sight aperture because I do not use a peep and I do not like looking through the blur of the string. On a normal right hand bow the string would then be aligned near or on the edge of the sight window.



My target from the Indoor Nationals shooting the recurve normally left handed. The only thing I can do is laugh! Just check out the bottom right spot. It seemed as if I did not realize what I was there to do until the third shot. My head always seems to get in the way, but that is just one of the challenges that make this sport fun!

Shooting a left-handed bow right-handed, palm out with the string on the right side of the sight aperture, the string will be away from the sight window. Since the position of the sight window is now different, I kept my sting aligned just as I would normally shoot a right-handed bow with the string on the right edge of my sight aperture.

I had already sighted in the bow for me shooting it left-handed (normally). The thing that really amazed me is that I did not need to change my sight marks at all when I began shooting that left-handed bow right-handed, palm out. Once I was able to shoot a group the arrows grouped where I was aiming just as they did shooting that same bow left handed!

The bottom line here is that if you experience seemingly insurmountable difficulties in the sport you love, don't hesitate to try something that seems strange. I will be writing more about my experiments shooting "palm out."

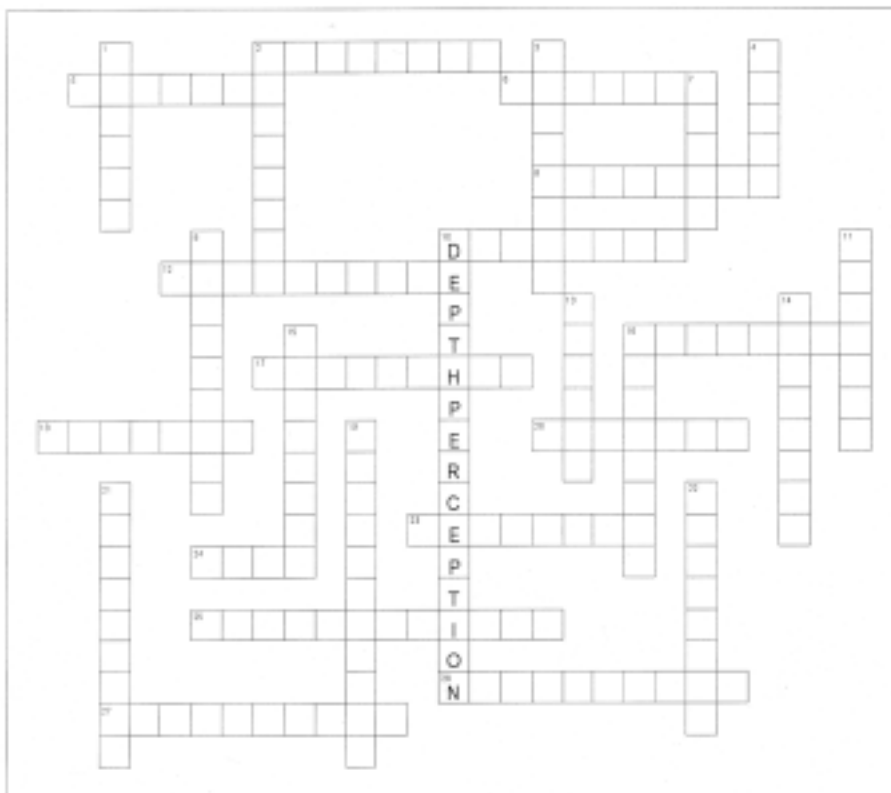


Brian Luke is a husband and a father of three young adults. He has worked as a tool and die maker since 1979 and has played with the bow and arrow nearly all his life. Brian has developed a deep respect and admiration for the accomplishments of the early target archers of the NAA. This admiration began in 1992 as a result of reading Robert Elmer's book "Archery" (circa 1926). From that time on Brian's quest has been to experience all that he had read about in Elmer's book from the making of his own wooden bows, arrows, and linen strings to competing in the traditional rounds of the NAA. Since then Brian has won six out of the seven Indoor Nationals and five out of the eight Outdoor Nationals he has attended, all shooting in the Traditional Longbow division of the NAA.

THE X-2 CROSSWORD PUZZLE

This puzzle was compiled from information contained in the articles and advertisements in Volume 10, Number 2 of Archery Focus magazine (hence the "X-2"). Note that the clues on the right are in ascending order of word length and that one word is already filled in for you. There aren't any spaces, hyphens, or apostrophes within the puzzle. I hope you enjoy the puzzle and the review of a previous issue! Tom Dorigatti

See Page 44 for the Key!



FIVE
BRAIN
THICK
ASCHAM
LOESCH
BASSHAM
CASCADE
DOINKER
PURSUIT
WILCOX
AMERICAN
BUCHANAN
DURATION
MCDOWELL
ORIGINAL
QUIETEYE
SCRONCES
SINCLAIR
THOMPSON
TRACKING
VETTERLI
BARNSDALE
CONSCIOUS
KUDLACHEK
HOOPERHYDE
LINGUISTIC
NOTTINGHAM
WORKMANSHIP
SUBCONSCIOUS
DEPTHPERCEPTION

Across

2. Author of "The Witchery of Archery."
5. The "Interrupted Transfer Polymer" is in this stabilizer system.
6. The ability to find things as they are moving.
8. The change to the rectangular cross-section limb in the 1930's resulted in the _____ longbow.
10. The two primary issues for the three second syndrome are location & _____.
12. Dominated the wood longbow era from 1930 to 1940, shooting scores well above 700 on both the American & York rounds.
16. The "Coaching Pair" are the _____.
17. Manufactures the Genesis release aid.
18. He improved the 1930's design longbow by recurving the limbs. First called the Duoflex bow.
20. Spot-Hogg makes this release aid that you relax pressure on the trigger to fire.
23. Author of "Lesson from the Martial Arts, Bee the Arrow?"
24. There are _____ skills that define the eyes' capabilities.
25. Shooting should be a _____ process which is controlled primarily by the right- brain.
26. "Shire" of Sherwood Forest.
27. NLP is also known as Neuro _____ Programming.

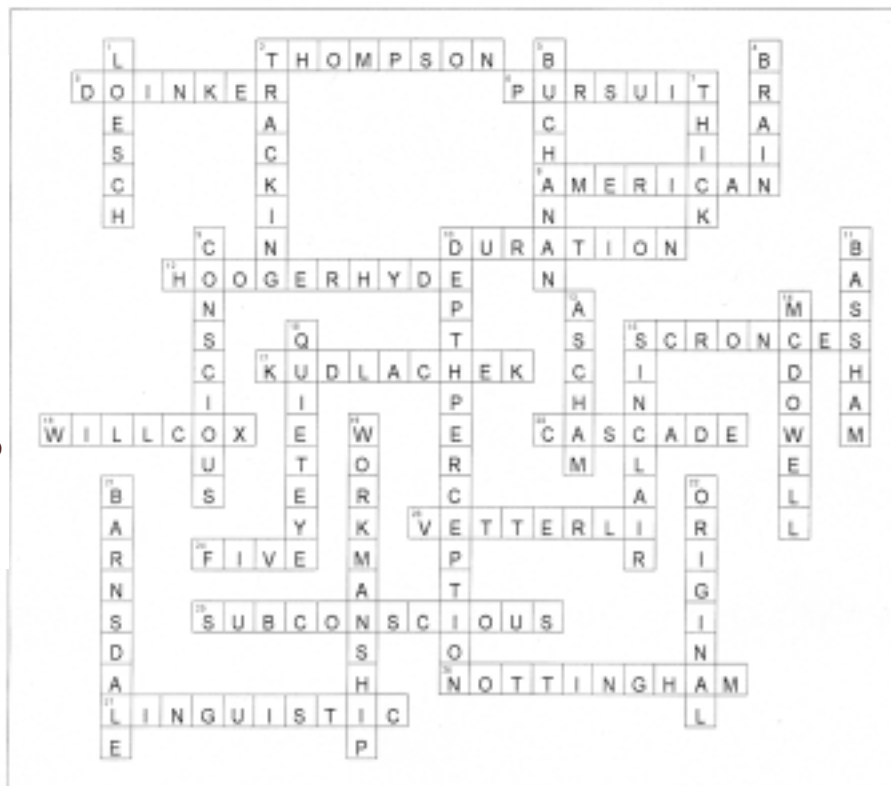
Down

1. Manufacturer of TRUE Back Tension Releases.
2. the ability to see things as they move.
3. Changed the "traditional longbow" into something more efficient by adding "dips."
4. Seeing is not done with the eyes alone: it is done with the eyes and _____.
7. If nock fits too tight, your center serving might be too _____.
9. This is a left-brain function.
10. skill accomplished with your two eyes working together, while your brain triangulates movement and distances.
11. Brainchild of the Mental Management System.
13. Set out to change the "war bow" over to something more manageable, of lighter weight, and easier to draw & hold, the traditional longbow.
14. Author of "Buying a Bow - What Matters"
15. This occurs when your gaze remains absolutely still on the point of focus just before and just as the shot is released.
16. The "Archery Mom".
19. Top three factors in a new bow are size, feel & quality of materials, & _____.
21. the "other" forest frequented by Robin Hood.
22. Most bow company warranties are limited to the _____ owner of the bow.

THE X-2 CROSSWORD KEY

Solve the crossword using the list of words and the clues.

See Page 43 for the Puzzle!



FIVE
BRAIN
THICK
ASCHAM
LOESCH
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DOINKER
PURSUIT
WILLCOX
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Created with the help of Wordsheets by Tom Dorigatti, 2006

Archery Focus Back Issues

Back Issues of Archery Focus magazine are US\$8.00 each, which includes shipping and handling in the U.S. Call for international shipping prices. Call 1.800.671.1140 or fax 1.530.477.8384 or write us at 12890 Greenhorn Road, Grass Valley, CA 95945. Supplies are limited.

For an index, go to www.archeryfocus.com or see Vol.5, No.1 for an index through the year 2000.

There are limited numbers of issues available from AFm's first four years.

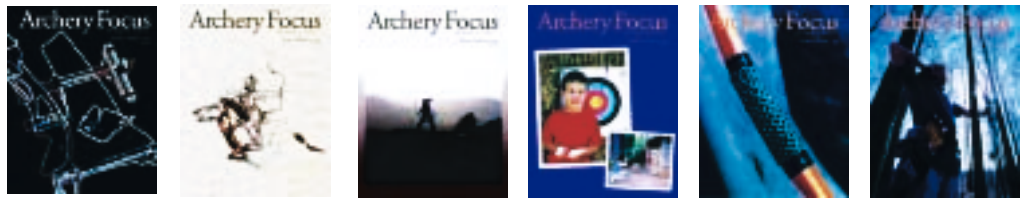
1997 Volume 1, No. 1, 2, 3

1998 Volume 2, No. 3, 4, 5, 6

1999 Volume 3, No. 2, 3, 5, 6

2000 Volume 4, No. 1, 2, 3, 4, 5, 6

2001 Volume 5, No. 1,2,3,4,5,6



2002 Volume 6, No. 1,2,3,4,5,6



2003 Volume 7, No. 1,2,3,5,6



2004 Volume 8, No. 1,2,3,4,5,6



2005 Volume 9, No. 1,2,3,4,5,6



2000 Volume 10, No. 1,2,3



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