

**In autumn gold and Sylvan green
the forest paints itself.**

**The archer revels in its glow
as he puts the shaft to shelf.**

**And in such quiet revelry to catch a glance within,
to walk the paths of wild things,
to do it all again.**

—Bob Martin

INSTINCTIVE ARCHER®

Fall, 1997

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REMEMBER: We offer all traditional archery organizations 100 FREE words to advertise their events, benefits, fund-raisers, etc, in each issue of Instinctive Archer™ Magazine.

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Editor
Rik Hinton

Assistant Editor/Chief Illustrator
Robert V. Martin

British Editor
Hugh D. Soar

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From the old oak desk of the Editor



Rik Hinton, Editor

Bob Martin and I decided to take the scenic route on the return trip from the 1997 North American Longbow Safari. Instead of taking the more conventional paved highway back to the United States (and feeling a bit adventurous), we drove south on a slowly winding dirt road along British Columbia's Kettle River.

As new vistas revealed themselves around each bend of the Kettle River, I reflected on the success and popularity of the North American Longbow Safari, and of traditional archery in general. For many, the Safari is the high point of the summer—camping out four or five days with several hundred longbow enthusiasts somewhere high in the Rockies; groups of backquivered archers merrily roaming the hills and dales; the opportunity to shoot and admire handcrafted longbows from all over the world; hiking through the timbered courses with new friends and a full quiver of broadhead-tipped arrows; and long evenings spent discussing archery, philosophy, and bowhunting around gently-crackling campfires. In many ways, the Longbow Safari, and other similar gatherings of traditional archers across the globe, are reminiscent of simpler times.

The ageless sport of archery is one of the more enjoyable ways of bringing those simpler times back into our lives, and of slowing the pace. I think everyone at the Safari noticed that after several days of camping, hiking, and shooting with old and new friends north of the border, life had slowed to a much more normal pace. For a few blissful days, time was meaningless, the weather was perfect, and the sounds of bowstrings and gently whistling arrows filled the air.

We spent the last evening of the Safari clout shooting with friends for no purpose other than to watch our arrows sail through the evening sky, and I was once again reminded of why many of us are so inexorably drawn to traditional archery:

The timeless allure of simplicity.



If you are interested in attending the 1998 North American Longbow Safari in the beautiful mountains of Central Idaho, contact:
Doug Kenyon North Idaho Traditional Bowhunters
P.O. Box 8823, Moscow, ID 83843
(208) 875-2301 E-Mail: hoskins@idaho.tds.net
(All attendees must register by May 31, 1998)

COVER PHOTO: Hank Curtis provided this photo of his grandfather's deerskin jacket, osage bow, handcrafted custom arrows, and an old photograph of his grandfather with these very items, circa 1920.



Letters to the Editor:

Dear Instinctive Archer

Allow me to introduce myself. My name is Peter Dallman and I am a Bowaholic. As you know, there are several archery magazines available, three that address the needs of the wood bow archer and of these only one occasionally finds its way to the newsstand. The first traditional magazine is more fiberglass-oriented than wood and contains 60% hunting stories. I grew up in Northern Wisconsin where all you hear is hunting stories, it gets a bit tiring.

The second is geared to very primitive period and has lost its historical perspective unless it is about, again, hunting.

I make and sell about 150 bows a year. After I discovered your magazine at a friend's house, I borrowed his copy. Cherishing this first issue, I photocopied a key sample article and included it along with your order blank for all my friends and customers. I hope you do not punish me for violating your copyright, but I consider your publication required reading to insure complete enjoyment and safe operation of the weapon. I would suggest that you include an extra page with four order blanks to make it easier to hand out. . .

I have sent bows to Korea, Hong Kong, and all over the U.S., even Hollywood. I met a nice guy, a fletcher, at a Rendezvous. He made the arrows for "Runs With Wolves; and "Indian in the Cupboard." It sounded like great fun. I got a phone call not two weeks later. A prop shop wanted to place an order.

The bow I made was used in the Chris Farley movie entitled "Hollywood Ninja." This magic bow is a key plot point, not just a backdrop prop for a change. Sly is deciding when to do the last and final "Rambo" and I will make the bows and arrows for this flick (or so I am told by the prop master).

I hope to do a couple more movies next year. I strongly suspect they like my deals better than my bows. I am the "three F's: fast, free, and FUNdamentally well researched. My price: a picture of me and the Star for the wall with a caption like "Thanks for the bow, it made the movie happen. Your buddy Sly" (I supply the camera—Hi Mom); maybe one of those embroidered ball caps (only the Director and the Star get the satin jackets); a box lunch; bragging rights; and a day on the set.

Chris' bow had to be a 48" ninja Yumi bow. I had two days to complete it, including delivery time. Let's just say I got the shape right. It shot decently. I made it out of bamboo and hickory. My neighbor has a huge bamboo grove right next to his house. I always have a nice supply on hand. The prop master said they needed some arrows. That would take another day. They

decided to use some arrows from "Robin Hood, Prince of Thieves"—ouch.

I look at the gear in movies very closely. I have seen films about Egypt with the archers shooting barred turkey feathers. Hercules and Zena use disguised compounds, like traditional bows are so hard to find. This disguising modern equipment with rags and torn camouflage is such a cheap shortcut. . .

"Braveheart" and "Rob Roy" were perfect. I have some great bow stories and adventure, unrelated to hunting. I may write about soon. Many of my adventures were inspired by articles in IA. I get so much valuable information, I refer to a page and fax the quote off to a Studio as an authoritative source. . . I look forward to my next issue.

Sincerely, Peter Dallman, Bowyer
The Black Rose Traditional Bow Company
2300 Fairview Rd. F202
Costa Mesa, CA 92626

Dear Sir,

I would like to congratulate you for a wonderful magazine, lots of interesting articles and well illustrated, can't wait for the next issue and can't get rid of the old one, well done.

Eric Franques
No Frontiers Archery
8206 Townsend St. #203
Fairfax VA 22031

Dear Editor,

Thanks for a great publication. I was wondering if anyone there knew where I can obtain a copy of the *Secrets of the Omaha Bow* by William Vonderhay or if you could publish this in your letters to the Editor.

Thank you
Gary Grassi, 575 SE Mansfield St.
Sherwood, OR 97140-9776

Dear Secretary,

Hi. At the traditional shoot in Forksville, PA I came across your magazine. I bought the Spring '97 issue and really like it. Because I helped other archers enjoy their weekend (with chiropractic adjustments), the dealer knocked \$1.00 off the price of this magazine, so I have a very warm feeling toward him and this Instinctive Archer® Magazine. I know I'm going to enjoy every issue.

Sincerely, Leon E. Pepper, DC
Towanda, PA

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VIVAT REX

Ethics, Honor, and Respect —An Opinion

by Bob Krout

Originally this was supposed to be about how bowhunting has changed over the last 25 or 30 years. A few of us, charter members of the quasi-official club known as the "Tri-county traditional archers," were discussing just that not long ago. As we talked, noting the way things were as opposed to the way things are now, it suddenly dawned on me that bowhunting hasn't changed at all! We had changed!

Our equipment has improved significantly over the last 30 years, but a longbow is still a longbow, a cedar arrow is still a cedar arrow, and a leather quiver is still a leather quiver. We are much better educated about what we do compared to the 1950s and 1960s, and if we keep improving, we might eventually get to know 1/2 as much as a 15-year-old Cherokee youth of the 1700s.

No, it is we who have changed, and not always for the better. Too many of us are divorced from the land and the natural order of things. Too many of us do not understand that we are still, despite our aura of modernity, tied inextricably into the cycle of life and death, birth and renewal, age and decay.

Bowhunting is, and should be, a natural extension of that life and death cycle. We take to the woods and fields with our bows and our arrows and seek to become one with our natural surroundings. We know that in order to fulfill our quest for that elusive whitetail, elk, or whatever, we must become part of that creature's world. In order for us to get close enough for that fast and fatal shot we must learn to think like that creature and anticipate his reactions. But, unlike our ancestors, we now have the luxury of passing up a shot if we want to or if it is not "just right." We no longer must depend on the bounty of the hunt for our very survival. What is important now is for the survival of our soul.

A good friend recently wrote in our club newsletter that each of us identifies with certain images when we take to the woods, some see themselves, if only for a short time, as Native American hunters providing food and clothing for our family and tribe. Others like to identify with the old english longbowmen. Some want to be Robin Hood, gliding silently through the greenwood in pursuit of the King's deer. I tend to see myself as a sort of "everyman" from the distant past or, possibly, from a distant reverting future where technology has at last gone past its own usefulness and become obsolete.

When I go to the field in those magic days of autumn, I don't want to blend in with the earth, I want to be the earth. I don't want to hide among the trees and branches. I want to be a tree. I need to become a clump of branches.

If all things have a spirit of their own as is espoused by our native brothers of the bow, then I want my spirit to become part of that greater whole. When I think of all the

men and women I have known who hunt with a real bow and with respect for the creatures they hunt, I see that same kindred force. We do not enter the wilds to conquer them, but to become a part of that natural world. By our actions and by our choice of equipment we are demonstrating our love and respect for the land and for its creatures. In that sense we are merely continuing a sport that was once a vital necessity of life and survival.

At this point it would be very easy to fall into a diatribe against "hi-tech" bowhunting and all of its associated ills. But you probably all know that litany of complaints at least as well as I, and, really, that would just be the easy, lazy way of doing things. This spring, at the Professional Bowhunters Society odd-year gathering, I had the chance of meeting many fine and dedicated hunters. Not all of them used "traditional" equipment. Some had the cables and pulleys, sights and stabilizers that we have come to think of as hi-tech and therefore not worthy of our respect. Actually these were as fine a bunch of ethical, honorable bowmen as anyone could hope to meet. And therein lies the difference—ethics, honor, respect. It is not the choice of equipment! No, it is the attitude of these men and women, that basic desire to become one with the natural order of things. That almost spiritual feeling that we all get when the stalk is going well and the quarry is unaware of our presence. That feeling of "another successful hunt," because, though our hands are empty of game, our hearts and minds are full of even more rich memories to carry with us through our remaining days.

Ethics, honor, respect. What beautiful words! Simple to say and simple to spell, but profoundly intricate in their meanings and profoundly satisfying when taken with us into the field and into our lives. To my mind, that is bowhunting as it has always been. Bowhunting at its best. May it always be so!



TED'S TIPS are provided by Ted Fry of Raptor Archery.

TED'S TIPS

- (1) Apply a thin line of beeswax to the edge of your fletching jig clamps to prevent glue from sticking to the clamps.
- (2) To increase the weight of a 125-grain field point or blunt, install a lead spit-shot (the kind used for fishing) inside the ferrule before gluing the point to your shaft. Split-shot comes in many sizes, so you can custom fit your point weight.



Champion Archer/Custom Bowyer **RED CHAVEZ** of Bitterroot Bow

by Scott Toll

Red Chavez, of Bitterroot Bow, is a top-flight competitor who makes his living building bows. Red builds about three custom bows a week for customers at his shop, located in Hamilton, Montana. Besides building high-quality bows, Red likes competitive archery and he's good at that, too. He will travel great distances to attend tournaments with good competition.

I met Red Chavez at the Third Leg of the Western Triple Crown where we were flighted together for the competition.

The local archery club, Ed-Da-How Bowhunters, had done an exceptional job of setting up this tournament, just outside of Moscow, Idaho. Northern Idaho has some very good archery tournaments and they seem to attract some of the best traditional archers in the Northwest. This particular course was different than most in this part of

Red Chavez showing the excellent form that helped him win several IBO titles and State championships, in addition to his National NFAA Championships.

the country. It was as rugged and steep as the others, but the brush was thicker—and the shadows more deceptive. Many of the 3-D animals were located in very dark, shaded areas, making it extremely difficult to pick spots to shoot at. It reminded me of the courses I shot during the World IBO Tournament at Flatwoods, West Virginia.

Red sure liked this course and proved it by outshooting all of us. He had a composure about him that set him apart from the other archers. I've noticed this before when shooting with top ranked archers. He was friendly, yet careful not to distract others when they were shooting.

After the trophy ceremonies were over and people were leaving, I walked back to where I had camped the night before. It was getting late and I had a five-hour drive to get home. To my surprise, Red was camped right beside me. He had arrived late, the night before, after I had already gone to sleep, and I didn't know who had camped next to me.

For the first time that day, we started talking about bows, competition, and bow building. I soon realized that Red was no ordinary archer or bowyer. We talked, non-stop, for the next three hours.

Red was raised in Montana and has been shooting bows since he can remember. He told me, *"My grandfather owned an 1,100 acre stretch backed by National Forest, with a creek running through it. We spent all of our earlier years running around shooting Pearson fiberglass bows and little wood arrows at anything that ran, jumped, or moved."* He attended Hamilton High School, and after graduating, he joined the Army. Afterward, he traveled around the country for several years as a truck driver. When he did settle down, it was in Southern California. While living there, he picked up a compound bow and joined an archery club.

Like many of us, the compound held his interest for awhile, but he eventually returned to a traditional bow. In 1987, only eight months after picking up a recurve again, he became the California State Champion in the Instinctive class. At that time, longbows, recurves, and compound bows were all included in the same "instinctive" class. He was undaunted by the compounds; however, and moved into their class even when traditional bows had their own.

Red kept shooting his recurve and eventually won two California Championships, six Southwest Regional NFAA Championships, and four Northwest Regional NFAA Championships. In 1989 he won his first NFAA National Championship. He was also the 1990 NFAA Champion, and placed second and third at the NFAA Nationals several years later.

Spoken as a true competitor and good sport, Red told me, *"In 1991, I went to the NFAA Nationals, in Washington, thinking that I was the best shot in the world. A gentleman out of Texas, by the name of Jerry Peach, cleaned up the floor with me. I placed second, Peach set all new records."*

Red laughed, *"It goes to show you, that you never know what can happen in competitive archery."*



Mr. Chavez shooting an arrow into the "Wall of Champions" at the NFAA Tournament Headquarters Lodge in Watkins Glen, New York.

Red was instrumental in creating the Traditional Class in the NFAA. In 1987 and 1988, the NFAA Traditional Class was in existence on a trial basis only. The spring of 1989 was going to be the last year for this trial. The NFAA needed more response and participation from traditional archers at their tournaments to continue offering this class. Red got busy and drafted a petition to present to the NFAA. He collected 600 signatures from archers throughout California, Arizona, and Nevada. He sent this petition to the District Councilman at the NFAA. With this response, in 1989, the NFAA made the decision to include the traditional style of shooting as an official class.

It makes good sense for top-flight archers, like Red, to build bows for a living, especially when they build traditional bows. Traditional bows must be tuned for shooting as they are being built. Unlike their modern counterparts, compounds; there are no mechanical adjustments or replacement parts to readjust their tiller, draw weight, draw length, handle shape, or force-draw curve. When the finish has been applied to a traditional bow, there is very little more that can be

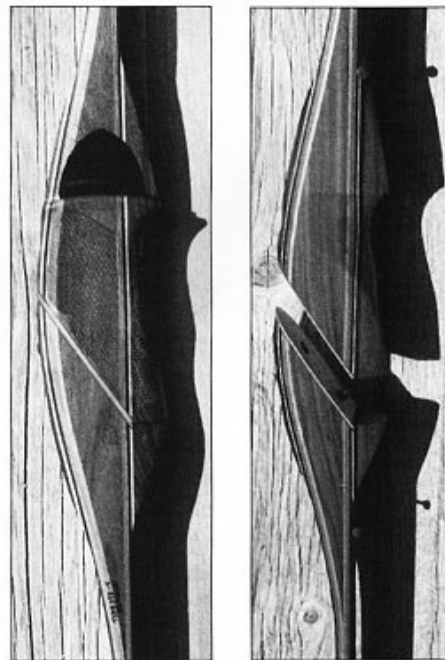
done with it, with the exception of adjusting the brace height and nocking point.

Decades ago, when "traditional bows" were the only bows, many of the top archers built their own. They knew how to make a bow shoot well. If they couldn't point, shoot, and hit what they were aiming at, they just kept building bows until they got it right.

It was common practice for the major bow manufacturers of the 50s and 60s to hire top archers and then train them as bowyers. They knew that champion archers, with good bowyer skills, were better qualified to build their custom line of bows.

Once again, there is a great demand for quality longbows and recurves. As in the past, the best shooting bows are still being built by the top-flight archers who build their own bows. Proof of this can be seen at any archery tournament or traditional gathering. Competition will quickly point out that many of the trophies are still going home with the bowyers. Red Chavez happens to be one of these bowyers.

When I asked Red how he shaped the handle of a longbow to fit a



The uniquely designed Bitterroot take-down longbow. The bow on the left shows optional checkering on the grip. The bow on the right is taken down, ready for traveling.



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customer's hand. He explained it to me in great detail, starting with a simple tracing of my hand. It was more complicated than I thought it would be. He offered to build me a custom longbow and correctly fit a handle for it. We agreed to meet at the North Idaho Bowhunter's Traditional Shoot in another three weeks for final fitting. I was looking forward to this meeting.

When ordering a custom bow, a person should expect to have the bow handle fitted properly. A bowyer must take measurements from a person's hand in order to complete this task. Most often, a simple tracing of the hand onto a piece of paper is all that is necessary. The average archer simply does not understand bow handles like an experienced bowyer. Measuring an archer's hand properly and making the necessary adjustments to best fit their bow takes an experienced bowyer and sometimes, several fittings, before the handle is correct. If you are going to spend the extra money to buy a custom bow, then you should find a bowyer, like Red, who will properly fit the bow handle to your own hand.

When we met at the Traditional Shoot in Dreary, Idaho, there were nearly 200 people attending it. Red was shooting one of his longbows and it was a real beauty. He shot it very well that Saturday, topping all scores for the day, even in the recurve class.

After turning in our scores and eating some lunch, Red brought out the bow he had built for me. It still had masking tape on the limbs and had no protective finish yet. He wanted me to shoot it first, before applying the finish, to make sure that it fit me correctly. He explained that by leaving the masking tape on the limbs, he could tell whether or not the limbs were working properly when I shot it. We each shoot a bow differently and this will often affect the way a bow will perform. The wrinkles in the tape on the belly side of the limbs would reveal any problems with the limbs.

We went to the practice range to test my new bow. For such a short bow, it was very easy to shoot. Right from the beginning, I was shooting tight groups with it. The handle fit me so perfectly that the bow seemed as if it were part of my arm. It was easier to control than the 70" longbow that I had used in competition that day. If it would have had a finish on it, I would have used it the next day in competition.

Red contours the handles on all of his longbows to fit the customer's hand perfectly. There are advantages to this. Most longbows still have very simple shapes in their handles; even though, custom recurves usually have fully-contoured handles. Some archers disagree with this kind of progress because the day may come when straight-limbed longbows and simple handles will disap-

pear from competition altogether. Maybe it's time that we move forward and accept the improved versions of the longbow; I certainly enjoy shooting a more sophisticated longbow, and that doesn't keep me from competing with my straight-limbed longbows or recurves.

With the new bow in front of me, I asked him to explain his method for fitting a bow handle again. I attributed its excellent shooting characteristics to its customized handle. There was an eagerness in Red's voice when he explained it to me. Never before had I heard such a detailed explanation from any other bowyer.

To start with, Red cuts the rough shape of the handle with his hand-saw. This forms a square handle with a predetermined shape, which suits his bow design well. Next, he roughly shapes the handle with his belt sander, leaving it slightly oversized. From this point on, he uses measurements, taken from customer's hand tracing, to locate the bulges and contours necessary for a proper fit.

The first measurement Red used from the tracing of my hand was the distance between the forefinger, at its base, and the thumb, where it meets the web (the fleshy portion of the hand between the thumb and the forefinger). This would determine the depth of the handle, front to back. Then, he measured down from the top edge of the web to the center of the palm.

Red explained, *"I took a measurement out to the center of your palm from the outline of the web. I do this when the fingers are out and the thumb is straight up. The reason for this is to find where on the bow handle I am going to make that little bit of a bulge to fit into that pocket in your hand. Something has to fill that spot. If you curve your hand, you'll see that it forms a cup and we want to fill that so that it is comfortable. We need to have contact from the web, down from the pad, below the thumb, into that cup and then onto the pad at the palm of the hand. We want there to be contact along the whole line."*

After shaping the bulge, he dishes out the lower portion of the handle to fit the heel of the hand. The heel is best described as the pad which

extends from the base of the little finger along the bottom of the palm. This contouring helps to define the bulge mentioned earlier and also provides contact along the entire back centerline of the handle.

The next step, according to Red, is to determine the length of the handle, for the purpose of positioning the fingers on the front of the handle. He does this by measuring across the hand at the joints of the fingers, with the fingers placed together. A hand tracing, with the fingers held together, instead of spread out, works best for fitting a bow handle. Red likes to have both open and closed-hand tracings of the customer's hand.

By now, the back of the handle is shaped and Red can place the handle of the bow into the customer's hand at the proper angle. This positioning is critical because Red will contour the front and sides of the handle, too. The tip of the forefinger which wraps around the front of the handle, is positioned slightly lower than where the thumb rests. Red transfers a line onto the handle to position the forefinger by wrapping the paper with the customer's hand tracing around the handle. He initially positions this paper by placing the tip of the forefinger onto the handle. In this manner, he can determine the width of the handle at the front, and then, make accurate indentations for the forefinger. He will also make slight indentations for the rest of the fingers on the front of the handle.

Red commented, *"After I have contoured the grooves into the front of the handle for the index and second fingers, I shape them further. I round them off a little bit on both sides, with a slight bit of indentation on top, on the backside of the bow. That's it, I'm done."*

"If it feels comfortable in your hand, it becomes a part of you, it's that simple. It happens so easily and it's not a lot of work, either. It's just that little bit of contour that probably makes you shoot three times better."

Because my hand was so much larger than average, and the fact that I'm left handed, Red was really put to the test. Red constantly compares his own hand with his customer's when he is shaping their handle. He moves his hand up or down on the handle to allow for

differences in hand size and contours differently for hand thickness, but in the end, most of this shaping is done by feel and intuition.

Before applying a finish to the bow, Red will send it to the customer to try out first. If the bow handle does not fit perfectly, the customer can mark those places where it does not feel right. Red spends a lot of time on the phone, with his customers, discussing this fit. When the bow fits and shoots well, the customer simply sends the bow back to Red and he will apply the finish. He has never had one come back after he has applied a finish.

The Bitterroot bow line is a very impressive one. The quality of workmanship is exceptional, and their design and custom features are unique. Besides building various lengths of longbows and conventional recurves, he has started production on a one-bolt, two-piece take-down longbow. Most two-piece take-down longbows use a metal sleeve in their construction, but this one-bolt model does not. There are several advantages here that are significant. First of all, this take-down bow is as light as his one-piece models, but the biggest advantage is that the all-wood handle can still be contoured to fit the archer's hand. I looked at a prototype this summer and it looked very durable and well finished. He is now producing this model and selling them to the public.

Red is very innovative with his bow designs and continues to build new prototypes whenever he has time. He loves to build all kinds of bows. He has no secrets about his bow building techniques and says that it's only a matter of time before someone else duplicates a new design or technique anyway.

I also asked Red to explain his methods for building and constructing this particular bow. He surprised me with another very complete explanation.

Red has developed a variety of limb shapes to fit the different bows he builds. This requires building additional bow forms which are costly and time consuming to make. His form is constructed from laminated plywood, covered with formica.

The first thing he does when he builds a form is to draw the shape of his bow on a piece of formica. Then he cuts



Tournament shooting isn't the only thing at which Red excels: he took this Montana mule deer with a longbow at 33-yards.

the formica, using a router to keep a smooth line. If he makes a mistake, or is not satisfied with his work, he can easily reshape the formica. When he is satisfied, he clamps the formica onto the laminated block, which is the structural part of his form, he then uses the formica as a template and cuts the rest of the form with a router. This makes an exceptionally smooth and flat surface for the limbs to press against during glue-up. The back sides of his bow limbs are absolutely flat. He demonstrated this to me using the backside of his pocketknife as a straight edge. I've seen plenty of custom bows which had dips and valleys on the back of their limbs. This is caused by using a belt sander to smooth the form. Uneven limb surfaces may eventually cause limbs to weaken at the edges, causing splinters and irreversible damage.

The bow that Red built for me is called a TSDB, which stands for Tree Stand Doe Bow. This is Red's favorite, naming it after the success he has had with it during Montana's "five-doe per season" bag limit. Its design is not typical of most longbows being built today. It can be classified as a reverse handled bow, with reflexed, parabolic limbs. The limbs have no deflex in them whatsoever.

Deflexing is a term used when the limbs are angled back toward the archer. Deflexing is commonly used with modern longbow designs for the purpose of stabilizing highly reflexed



Fall, 1996: Red with his trusty longbow, a full beard, and the smell of elk in the air.

limb tips. Deflexing will actually slow a limb down. Red prefers to use a reversed handle for this same reason. It has the same effect as limb deflexing without inhibiting the action of his limbs.

The riser of a bow can be either reflexed or deflexed, depending on what the bowyer decides. A reflexed riser will increase the amount of stored energy in the bow's limbs by increasing the distance that the string will be pulled back under tension. Reflexing will increase arrow speed. However, it will also affect the bow's shooting stability, and when we move the actual pivot point or neutral place further back, the bow becomes more difficult to control. Its comparable to the way a pole vaulter must control his pole as he vaults skyward. The mistakes we make when gripping the bow become magnified.

A deflexed riser is more stable but loses performance due to a shorter force-draw distance. Many recurves have highly deflexed risers to control their very fast limb designs. The TSDB longbow's handle is positioned in a mod-

erately-reflexed position, 1/2" behind its fadeouts. This helps to control its highly reflexed, parabolic limbs.

Limb shape and strength can alter the amount of energy it takes to pull the string at different places of the power stroke. Bowyers work hard to design limbs which are smooth to draw (gaining only three to four pounds per inch as they are drawn). They should remain smooth for as far as the archer will draw and anchor to. By today's standards, if a bow gains more than three to four pounds per inch, it is not acceptable. The 62",

TSDB is very smooth drawing all the way out to 30", never exceeding 3 1/2 pounds per inch in his draw distance.

The TSDB is a short longbow, but only has a 14 1/4" riser, measured between the fadeouts. This gives the working part of its limbs 23". Its smooth-drawing, parabolic limbs are reflexed approximately 1 1/8 inches forward of its fadeouts. These limbs are very fast in design, but tamed down considerably by the reversed handle.

THE BOW:

Red has many models of bows to choose from and a variety of exotic hardwoods to use in them. I wanted a bow like the one Red was using at the time we met; It's his personal favorite. My TSDB has Red Elm laminations showing through the clear glass on both the back and belly sides of the limbs. The middle lamination is Maple. Depending upon their length and weight, three or four laminations are used on the TSDB models. A beautifully-grained piece of Bubinga was used for the riser. It came equipped with a fast-flight string. The elk antler overlays at the tips of the limbs provide ample strength to handle the fast-flight. The vital statistics for my bow are as follows:

- Length: 62"
- Draw Weight: 64# at 30"
- String Length: 58"
- Brace height: 7" plus or minus 1/4"
- Sight Window: 1/8" from center
- Arrow Rest: 1 15/16" above center

I like to use the chronograph to test arrow speed consistency when I am actually shooting. This is a great way to test a bow to see if it's controllable. I

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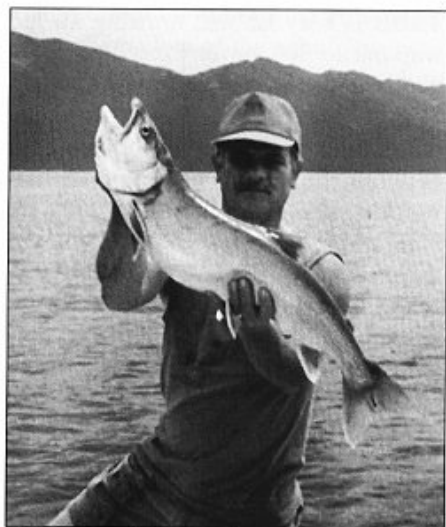


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OK guys, with a bit of sleuthing we were able to discover one of Red's top secret, never-before-shared training secrets: *Relax the day before a big tournament by catching lunker lake trout!*

ing difficulty finding well-matched wooden arrows. As far as accuracy went, both wood and aluminum arrows seem to group about the same.

When the UPS man delivered my bow several weeks after the North Idaho Bowhunter's shoot. It came in a large PVC tube. When I pulled the bow out, it had a beautiful finish on it. The dark Bubinga used in the riser was an exceptional piece of wood. As I looked at the Red Elm used on the limbs, I found a name on them. Red had named my bow, "One Up On Me." I smiled, as I remembered when we last shot together in competition. I was shooting my best on Sunday and wound up winning the tournament. It was my best shooting for the year and I even won a knife as a trophy. Red's shooting was off that day but he still encouraged me to shoot better. I'm

comfortable with my victory for the time being but hope that Red doesn't clean the floor with me at our next tournament together. He's probably looking forward to changing the name of my bow. I might surprise him again however, because I'll be using it when I shoot with him.



Red Chavez can be reached at:

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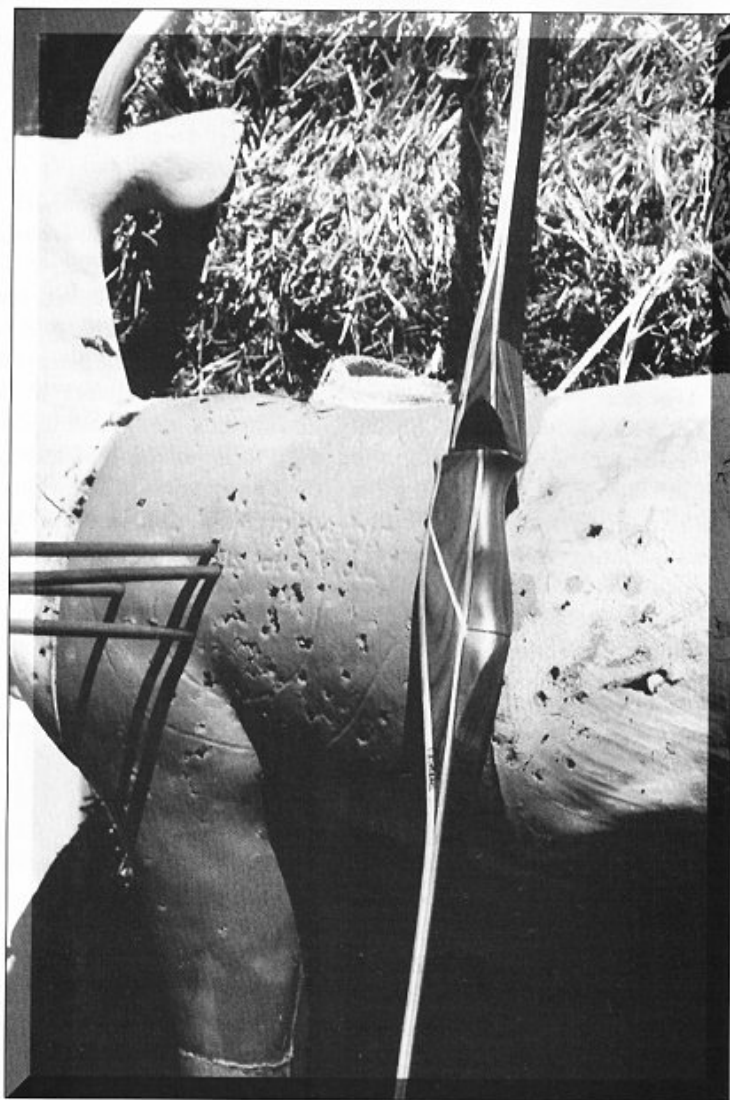
call this control, "shootability." I don't use a machine because it only tests a bow for speed out of a machine, which doesn't help "me" shoot the bow. Instead, I use a chronograph for developing my form with a particular bow. It teaches me quickly how I must shoot a bow to get consistency. At 20 yards, I can also shoot for accuracy, while shooting through the chronograph. A one-hour session with the chronograph will give me some very good indications of whether or not the bow is controllable.

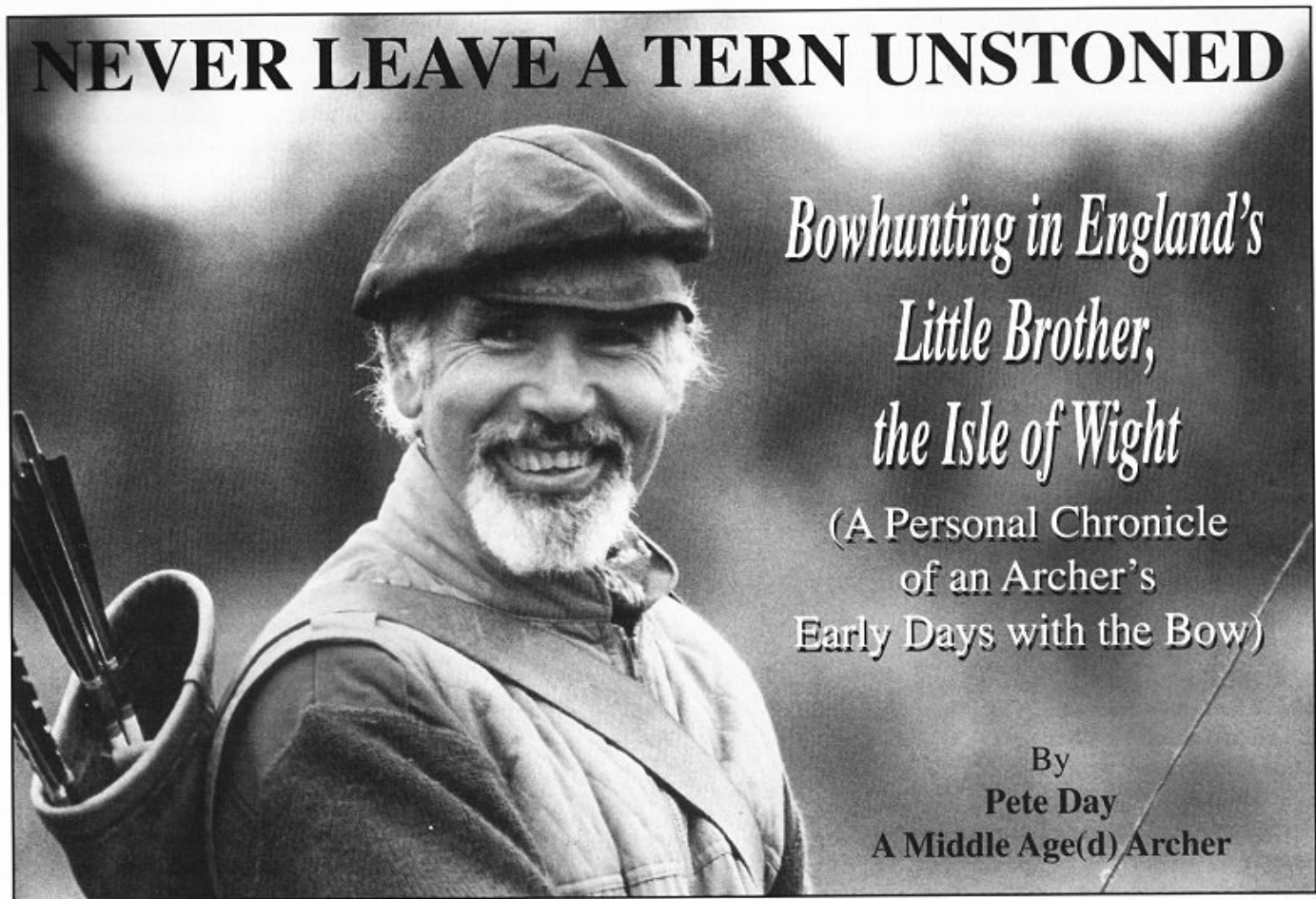
This bow passed my chronograph test with flying colors. All arrow speeds were within one foot per second of each other for all test groups. An archery friend of mine checked my draw length as I shot six arrows for each test group.

My draw length was approximately 30", measured 1 3/4" ahead of the dish in the handle. The test results are listed below:

1. 493 grain arrow: 189.4 fps
2. 535 grain arrow: 184.9 fps
3. 561 grain arrow: 181.9 fps
4. 604 grain arrow: 178.0 fps

The TSDB is a very controllable bow with ample performance. It was also very easy match wood arrows to because of its ability to handle arrows with slight spine variations. It's not nearly as sensitive as many quick-shooting bows. This is helpful if you are hav-





NEVER LEAVE A TERN UNSTONED

Bowhunting in England's Little Brother, the Isle of Wight

(A Personal Chronicle
of an Archer's
Early Days with the Bow)

By
Pete Day
A Middle Age(d) Archer

The ears twitched. I could clearly see them through the tall grass, distance twenty paces or so. But everything else bodywise was invisible. Now should I lob an arrow at the base of those twin wands, or stalk closer? In my excitement, the thought of whizzing a shaft into the unknown and listening for the familiar "chuck!" appealed; but a stalk was more ethical.

It took perhaps four hours (in reality, twenty minutes) to close the gap. Between the two players in this scene was a waterlogged gravel pit. Silent and careful negotiation of the pit placed me lower, but now at eye height and at a distance of probably ten feet, from my quarry—which was a true Englishman, a hare. Now the quandary arose that I could still only see the black tips of the hare's ears. So which way was the body lying? Up I stretched, ever so slowly, arrow nocked, ready for the inevitable shot. Suddenly, those long legs took flight—I had been spotted by the hare's mate, and off they both went. With a 'tch!', I scrambled up the slope, picked out the culprit, and let fly.

If you are expecting to see a photograph of me kneeling by my perfect heart shot, don't hold your breath. I missed, but was satisfyingly close. The bonus came when I retrieved my arrow, for a shard of flint stone was next to the arrow head. This turned out to be a very ancient flint scraper. Ultimately, through that one shot, I discovered more very ancient scrapers, and also some flint arrow heads. Thus various artifacts in my 'museum' go back to Paleolithic times, which started some 250,000 years ago.

This happened on the Isle of Wight, shortly after I had moved there from London in 1963. The Isle of Where? Get a map of the world, find Europe, find England, scrape off that tiny fly speck just below Portsmouth on the English south coast - wait! don't scrape it off - that's the Isle of Wight.

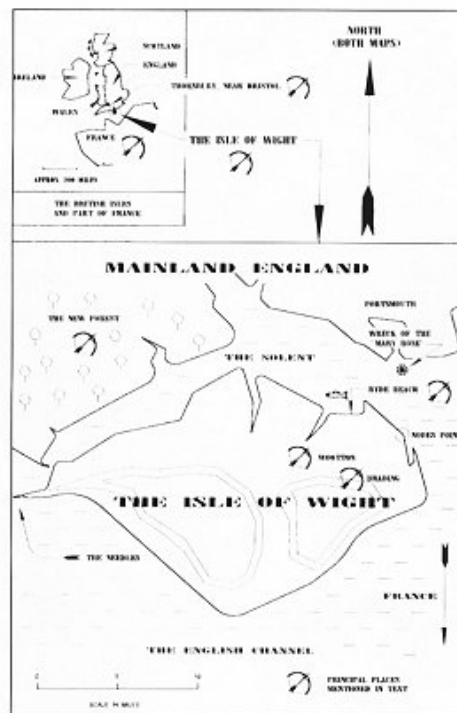
Archery on the Isle, and the adjacent mainland, has a long and fascinating history. For example, in 1545, King Henry the VIII's flagship, the Mary Rose, sunk in the waters just off Portsmouth with the loss of all hands—see Robert Hardy's esteemed book *Longbow - a Social and Military History* which documents the longbows and arrows brought up from the sunken vessel. The Isle itself has always been a strategic stronghold, acting as a watery buffer zone between England and France. In consequence, the Isle has been invaded by the French on a number of occasions, the local archer home guard always successfully keeping them at bay. In fact one of the Isle's promontories is called Nodes Point, the name Node coming from the word "noddy" which was the local nickname for a Frenchman.

To return to the 1960s. It was then that the English anti-hunting lobby were beginning to turn their attention on those hunting with the bow. They took the serious view that, as an archer, you actually shot at things like dear little fluffy bunnies. Eventually, the lobby loosed its first arrow, and it turned out to be a heart shot. The arrow was in the form of a proposal to the English Crown (Parliament) to outlaw hunting with the bow. Robert Hardy's book *Longbow* records the leg-

end of the ensuing parliamentary debate; apparently, there was no debate. It seems the Member of Parliament who was representing the hunting archers' interests, was in the bathroom at the moment the debate was due to start. So the appropriate legal clause proscribing hunting was immediately passed (sic!) without argument, and hunting with the bow was later outlawed. Bow hunters of the world, beware! Fortunately, the new law was not ratified during my time on the Isle and if one was friendly with a landowner there, they would allow you to shoot "vermin" with a bow and arrows on their land. Rats, rabbits and wood pigeon, were typical examples of "vermin."

My first bow was a simple lemonwood Jacques flatbow, bought from a local sports shop. It was then classed as the standard training bow, although I hunted with it. I have a number of these bows, and they are still great to shoot—at rabbit distance. Shortly after I started hunting, my neighbour, one Mike Lankshear, who also had a Jacques flatbow showed an interest in hunting with the bow too. So we sat talking about taking on the rabbit world. In consequence, a bit of upgrading was deemed necessary. Enter two Les Dunsdon solid glassfibre recurves, forty-five pounders ... wow! our misses were getting closer.

Our hunting grounds were on farmland at Wootton (meaning woody town), no more than a good bowshot from our homes. As deer could not afford the ferry tolls to graze our Isle, we had to be content with ground game comprising such animals as rabbits, hares, marauding foxes, and rats, and flyers comprising such birds as pheasant, wood pigeon, and the black beasties of the crow family. Deer inhabit the mainland just across a stretch of water called the Solent, which separates the Isle from the mainland. An area along part of mainland coast there is called the New Forest. It was a favourite hunting ground of the English Kings and aristocracy in the "middle ages" over a period of between 500 to 1000 years ago. Our poor old King William II (called William Rufus - Rufus meaning red as he had a ruddy complexion) was smitten with our goodly art, but was unfortunately on the



receiving end of a crossbow bolt whilst hunting in the New Forest. It killed him. The year was 1100 AD.

Some 20,000 years ago, the "island" was still joined to the mainland but the area was slowly sinking. Finally, about 7,000 years ago, the last chalky ridge disappeared and the Isle of Wight (Wight meaning man) was born. Remnants of the ridge can still be seen at the Isle's western tip. It is in the form of huge jagged rocks standing out of the sea, and they are descriptively named the

Needles. Horses, oxen, boar, and deer were plentiful then, but the wild varieties have since been hunted off the island. However, wild deer still inhabit the New Forest, and, to my knowledge, are distributed throughout every county of the British Isles. They vary from the smallest to the largest species, the latter called red deer. Red deer are now mostly confined to the West Country (the New Forest, Somerset and Devon, and to the wilds of Scotland). Apart from poachers, Scotland seems to be the last stronghold of hunting with the bow, and that only through the elite British Bowhunter Society. Anyway, as far as my hunting was concerned, suffice to say that there were no deer on the Isle. If they did exist, then they were cleverly disguised as holiday makers and hippies who flooded there each summer.

So what was our hunting scenario? Well, Mike and I used to meet early each Sunday morning, complete with tackle and tucker, and walk out to the start of our (permitted) hunting territory. First, we'd have a few practice shots with blunt tipped arrows, arrange to meet later at a certain spot, and then split up. Our methods of shooting were totally different, although we were both greatly influenced by reading Saxton Pope's works and studying Howard Hill's methods. To add another North American dimension, Mike had the perfect features of Errol Flynn and the female of all (game) species just flocked

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to be his first victims. He could rush about, bolt upright (due to a back problem), and 'whack!' - rabbit stew! As for me, I walked slower than slow, listening to everything, working so much harder for my rabbits, and then to meet Mike at our agreed spot, teeth all aglow, smoking a cigarette, and smugly pointing to his bag.

Jangled

I did get my own back though. One morning, Mike overslept. So, with a new convert, one Jim Caws, who was a brilliant leather worker, I stood in Mike's kitchen making his sandwiches whilst Mike hurriedly dressed. They were to be "Marmite" sandwiches, "Marmite" being a particularly strong tasting yeast extract, and quite offensive to the taste if spread on bread more than 1/100th of an inch thick. I layered it on, almost 50/100ths inch thick, and then wrapped the lethal package. His first bite later in the morning was promptly spat out! He said it tasted like ... no, I cannot write the word. It was that day too, when he first wore a superb new quiver which Jim had crafted. It was decorated with highly polished horse brasses. Of course, he literally jangled and twinkled up the road when we set off, so I pointed at this audible and visual distant early-warning system, and then pointed back at his house. Mike skulked off to re-appear later much subdued, with dulled brasses and a much quieter quiver. Hell hath no fury like a bow hunter scorned!

Jim Caws was the Rat Man. This genial giant was QUICK. Rat Creek was a junk yard on the farm, and comprised a pit covered with corrugated sheets. Jim would stand with blunt nocked, and then tap the metal with his foot. The rascally rodents then made a bolt for it - wrong word - zip! Jim's blunt almost never failed to nail one of the blighters on the run. Amazing. We also shot at the rats in the hay barn.

Standing outside, we would loose into the packed bales of hay and shoot at the emerging rats. This continued until all our arrows had been shot. Then came a very scary bit ... when retrieving the arrows, you always had the feeling that the rats were surrounding you and about to attack - uh! This was not my favourite hunting. Eventually, I could stand it no longer. As the senior and founding member of our hunting party, my word was law, and I forbid this practice. I think the other two were as chicken hearted as me.



Lefties? Nope, the newspaper reversed the negatives! From left to right, Pete, Mike, and Jim—the Wight Stuff, 1960s AD.

readily agreeing to leave the rats to their play in the hay; forever. Not so the rabbits. They were bigger and fiercer than the rats, and, when cornered, were known to puff themselves up to twice the size and run like hell. Oddly enough, none of us ever witnessed this when with one, or both, of the other two.

But one's very first quarry in the bag! I can still remember my first successful connection with game. Like your first anything, it is still vivid in my memory. I was stalking along a hedgerowed field, eyes swivelling like a ventriloquist's dummy, when, just in front of me, I spotted a rabbit. I don't remember aiming, drawing, or anything else that most of the writing hunters tell us they do. Whack!. . . My rabbit was now the possessor of my arrow. I well remember the expected exhilaration, though. Mind you,

I was not prepared for the remorse that followed, which was itself followed again by the thrill of my very first kill. And for all the game that subsequently fell to my arrows, the same remorseful feelings towards my quarry always returned.

There was a pond not far from the farm. Silently mooching past it early one morning, stalking rabbits, I saw a mallard duck waddling in my path. Now when you are on a field archery course, and one of the 3Ds or faces is a duck,

where do your arrows invariably hit? Yep!... in the neck! And that's what happened to this quacker. But this time, my feelings of thrill - remorse - thrill were mixed with a most sobering thought ... had I been spotted? You see, it was one of the ducks which were owned by my farmer friend, and now my instinctive shot had just reduced his brood. I sneaked off self-consciously, innocent victim tucked inside my jacket, just like a petty thief; which of course, I was.

That tale reminds me of the bowman poacher who, and it could have been by the same pond,

shot a duck. He plucked it, and was about to prepare it for the pot when he heard approaching footsteps. In panic, he hastily concealed bow, arrows, and bald duck in a hedge, and waited. The footsteps turned out to be those of a very red-faced gamekeeper.

"Oh, hello," the bowman said casually.

"What the hell are you doing here?" the irate gamekeeper demanded.

"Just looking at your ducks."

"Then what are all these feathers?" the gamekeeper yelled, eyes a-poppin.

"Oh, one of the ducks wanted a swim, so I'm looking after its clothes," came the desperate reply.

Dinosaurs

Now some words on our involvement with target archery. As mentioned, the trio comprised Errol



Fibreglass and Fryers.

Flynn who could smile a rabbit into the pot, the giant comedian Jim Caws who could feather a running rat at twenty paces with a well-placed joke, and Pete Day (me) who could transfix a hare prior to the fatal shot, by reflecting the sun in its eyes via my balding pate. Jim joined us from a new Ryde target archery club called Wight Bowmen. The club's Secretary, through Jim, invited Mike and

I to meet the club members. They had read about our hunting exploits in the local newspapers (NOT in the columns recording the Isle's magistrates court proceedings). The newspaper quoted of us: "... they had permission from a farmer to seek out Brer Rabbit in the old style. The farmer was amused, and so were the rabbits ... who now know better than to yawn indifferently when the bows are raised. ..."

Our invitation to meet the club members came in the form of attending a club social shoot on a Sunday, at a place called Brading. We modestly declined, but relented after I had a visit at my workplace in Ryde, by none other than the club's Secretary, Derek Nethercot and his wife Joy. So, on the Sunday, and armed with back quivers, bare recurves, and field arrows, we nervously strode onto the targetfield. We felt like dinosaurs because there were people there with knitting needles for arrows, and what seemed to be bells and whistles festooning their bows. But oh joy! It so

happened the target distance was set at 30 yards—our hunting distance! Each with a "thwack!", huge arrow after huge arrow started filling that gorgeous gold. One of the knitters, Phil, complained about "those bloody telegraph poles" and refused to shoot with us. Still, we unexpectedly enjoyed this competitive side of archery, and joined the club, much to Phil's chagrin.

Life wasn't all at 30 yards though. We were in for a shock, for these blighters shot up to 100 yards in some rounds ... mmmm! ... well, this chronicle is about instinctive archery so I won't go into my seedy past life which, horror of horrors, saw us use ... knitting needles, whistles, and bells.

Back to our hunting days. The thoughts of a longbow appealed to Mike and me. Lillywhites, a giant store located in Piccadilly, London, was selling longbows made by Charles Dowsen, a bowyer to the Royal Company of Scotland (a company of archers who form part of the Queen's Bodyguard). He supplied the mentioned Robert Hardy's first longbow. The longbows were at a price of L11-7s-6d (in our language, 11 pounds, 7 shillings, and six pence - about \$30), a dear proposition. . . Ah! If we bought two, there would be "deer" on the Isle after all. Anyway, I arranged to purchase a brace by mail order and we eagerly awaited their delivery. After what seemed like ten years, a large long parcel arrived at my house. In great excitement, I rushed it around to Mike's house, where, in even more excitement, we laid the parcel on the floor and slowly unwrapped it. Excitement promptly vanished when, upon lifting the lid of the shipping box,

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we found ourselves gazing upon what looked like a rough cut billet of wood. Shock began setting in as it slowly dawned upon us that such a weapon could only kill our quarry by splinters. In deepening shock, I slowly lifted the "bow" from the box. Well, shock went to elation quicker than Art Young loosening at a charging rhino, for, underneath this "bow," we saw that two of the most beautiful works of art (pun not intended Mr Young) were nestled there. Elation then went to delirium as we tenderly picked up these works of art, and began lovingly fondling them. . . *Oh Lady Chatterly! You knew not of such caresses.*

Isn't life strange though. Each bow had its own destiny. In that room, for choice and like children, we must have closed our eyes and picked up the bow which we were to keep. Mine proved to be a 57 pounder, and Mike's a few pounds less. We braced them with straining difficulty, and I now squirm to think how we must have treated the bows in our ignorance. I well remember not enjoying shooting mine because of its draw weight - I had no control. As if that wasn't enough, I was later devastated by the discovery of a crack in its top limb. I sent it back to Lillywhites who refunded the money and informed me that they were not selling longbows anymore. So that was that as far as I was concerned; back to the reliable recurve. Though neither of us now live on the Isle, I still keep in touch with Mike. He owns an antique shop, and seems to delight in telling me that he still has all of his archery tackle. It includes some arrows I had made for him, and, guess what? His Charles Dowsen longbow which is as good as new. Secretly, I now wish I'd cheated by taking a peek at both bows before we made the choice and had taken the lighter one. Still, the crack in my bow was probably some sort of Divine punishment for those Marmite sandwiches.

It was to be quite a while before I decided to shoot in a longbow again, and I decided this time to make my own. It was to be an English longbow. Now, after many years of making English longbows, shooting in them in tournaments, and teaching the art of shooting in them, I still vividly remem-



I see no ships. . . (Pete the hunter treed at Wootton.)

ber those first days. Not least in that I implore my pupils to keep their draw weights down. After all, it's far better to fully draw a 45 pounder than to half draw a 65 pounder!

To return to the Isle, we settled back to hunting with our recurves. We used them for both target archery and hunting, the only difference being that they wore camo-sleeving for the latter. We were really economical in those days, including our procurement of arrows.

Flint Alley

We only had one arrow fletcher—me. I made them both for Mike and myself. Port Orford cedar was very plentiful then, and I managed to acquire the skill for turning out a fair arrow. I hand painted them bright red so they would stand out when they landed, say, in thick brush or buried in leaf litter. They really looked quite pretty. You can imagine that when we lost arrows, I would spend ages looking for them. I could see hours of work going down the pan, so we searched extra hard . . . or I did at first, as Mike didn't

quite appreciate the effort in time that was required to produce even a single arrow. But he soon learned when I cajoled him into making his own! We used various types of arrowheads—for hunting rabbits, blunts made from spent 9mm cartridge cases, for hunting pheasants and hares, small home made steel broadheads, and field points for shooting over a target field course we had set up in "Flint Alley"—the Stone Age factory site, and the spot where the mentioned hare incident took place. Which reminds me of the two dozen arrows I made for Mike and myself—a dozen each, individually crested, and stood on their nocks in a row along my lounge wall on a Saturday afternoon. I had just given the last coat of varnish to these little beauties, and had stood them there to dry. This was to be in readiness for their use on our field course on the following Sunday morning. My dear wife Jackie came bustling in, caught the first arrow with her skirt, and "zip!" . . . the whole row went down like dominoes. Now, with fluff and dust clinging to them, the resultant sheaf looked like a swarm of psychedelic caterpillars. As this is a family show, I will not record my language.

As regards to accuracy with the bow and arrow, then it hurts me to mention that Mike was a marvellous archer; a supreme archer in fact, both in the hunt and at the target. Okay, for some reason (certainly not my looks), my tally of game was the larger. I think this was due to my patience in the field. But for absolute accuracy, Mike was tops. Giant Jim was a Master Target Bowman too. Me? well, I just kept my "end" up!

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I have already said that our Isle was flooded with holidaymakers and hippies in the summer. In the heat of 1969, the hippy contingent invaded our hunting fields. There were thousands of them, all come to hear Bob Dylan performing at the (in)famous Isle of Wight Pop Festival; and why not! I love that man's music, plus that of the Beatles, The Band, et al. But how we wished the site had been cleaned up afterwards, for it seemed that even the rabbits were high on the drugs left behind. A few weeks after this event, the three of us returned to the fields for a rove, a possible hunt, and to survey the damage. I now think that if anybody should have written "protest songs," it should have been us!

Gloomily making our way back across the fields, Mike suddenly shushed us. He signalled us to "lay low." We peered in the direction of his pointing finger, and saw he had spotted a hint of gingerish fur showing through a clump of grass—a hare! We watched Mike nock a broadhead, and, due to his prowess, the result was a foregone conclusion. He came to full draw, held for the inevitable half second, and was promptly grabbed by me and disarmed. I still feel pleased that I saved the life of a hippy, all snug in his sleeping bag, his ginger hair facing us. We like to eat what we shoot, but I draw the line at sleeping bags.

Planning

Although surrounded by the sea, our bowfishing expeditions took a long while to organize. The sands at Ryde are quite beautiful. They slope gently into deep water, and we thought they would be an ideal place for bowfishing; especially as highly edible sea bass were often visible just beneath the surface there. The first expedition finally materialized. It was a family affair, with fussing mums, frolicking kids, tables and chairs, picnic hampers,



Nowadays we would be called posers! Jim is shooting his Damon Howatt.

and so on. Whilst mums warily stalked wasps with rolled-up newspapers, Mike and I warily stalked the shallows with plastic drinking beakers. The beakers were taped to our bow risers, and acted as spools for our fishing lines (I said we were economic). We made some clumsy shots, the arrows planing across the water in a series of skips; like the aircraft-launched bouncing bombs invented by Dr Barnes Wallis for breaching dam walls. After a while, we looked at each other and started giggling. Our gathering audience were greatly puzzled by these antics, particularly as our bows were starting to parallel the horizon in response to the incoming tide. Ishi's style had nothing on ours! Eventually, our brains, numbed by cold sea water, cottoned on, and we decided to abandon the hunt. Wading back shorewards, we became totally immersed several times by stepping into deep hollows left by fishermen who had been digging for bait worms at low tide. The deepness of these hollows have drowned several children over the years as you cannot easily see them under the surface. The upshot on

this occasion was that, at times, nothing could be seen from the beach apart from two bows, each held by a single blue hand protruding from the surface. It must have looked an odd, if not worrying, spectacle to new arrivals on the beach. Some may have assumed that it was the start of a French covert invasion.

On another occasion, I did have a successful bow fishing trip with my sons, Paul and Simon, who were excellent archers. Whoa! I said, Whoa! This chronicle has gone on long enough, and my brain's shooting glove is beginning to chafe.

My life has changed so much since those idyllic days on the Isle of Wight. The move to the village of Thornbury, near Bristol on the English mainland; founding what is now a thriving field archery club; the devastating bereavement of my dear wife Jackie in 1979 . . . But let's end this part on Vectis—the Romans' beloved Garden Isle. Keep 'em straight!

THE END



Weight lifting and Archery: —A Time and Place for Everything—

by Price Ebert



While shooting a 3-D contest recently, the subject turned to weight lifting. The group, after a short while, all at once turned and looked at me for my comments. I think they were shocked when I said, "I feel weight lifting and archery don't mix". Now anyone who sees me knows I lift a lot of weights. I love to lift weights. I also love traditional archery. So, what's a boy to do? Compromise and schedule are the answers.

Lifting heavy weights and shooting big bows at the same time will lead to poor shooting and shoulder injuries, I assure you. However, you can lift light weights and shoot archery. Or, in the case that your trying to gain strength, you must stop shooting the bow. This probably sounds like sacrilege to some of you. Consider that in Bob Swinehart's book "Sagittarius," he says after the hunting is over for the year he puts up his bow, and trains with weights. This is an excellent idea in my opinion, for two very good reasons. First, you minimize the possibility of overtraining and risking an archery-ending injury. The second, and to some this may be the best reason, you get to learn to shoot all over again. Just consider this, while your getting stronger, you could be losing some, if not all, of your bad habits. Let me go into a little detail on this one. You may have read before that I think instinctive archery is "thirty-three percent physical, thirty-three percent neural, and thirty-three percent mental, one-percent luck." What I'm talking about here is of course the mental aspect. Since you won't be shooting the bow at all you'll be thinking about shooting a lot. You can use this mental torture to your advantage. When your mind begins to day dream about shooting your bow, see yourself shooting in the correct form. See yourself free of all those bad habits that are holding you back.

Now if you don't know what good form is, I highly suggest you get some good professional help. Every archer needs two coaches. First, and foremost, a world class, seasoned veteran, sure enough first class instructor. After that process you'll need a video camera. Only then will you know what your bad habits are.

A lot of you readers may be thinking, "After hunting season, I shoot 3-Ds." Well that's fine. You see, even the strongest weight lifters in the world only train heavy a couple of times a year. So, we're going to train real hard, January to February. Then we'll do transitional training to wind down in preparation for 3-D season. In this article, let's lay the ground work for a safe, productive strength program. Strength training is quite different from body building. Strength training is big compound movements, involving a big muscle group and lots of smaller (auxiliary) muscles. Body builders like to use movements that isolate one muscle group. Both types of Weight lifting will make you strong. The difference is coordination of a concerted effort. And, as far as building what I like to call, "Practical Strength," strength training is superior. It is also much more efficient for the purpose of improving ones archery.

Rest and nutrition are the foundation of the strength program. If you don't make the time and effort to eat right, and get enough sleep, your final results will be minimum. That's right, you will get stronger on this program no matter what. But diet and rest will be the deciding factors. Eat as much whole natural foods in their natural state as you can stand. Some foods you will have to cook. Meats should be cooked just enough to be safe, and palatable. Heat destroys proteins, enzymes, and other nutrients. You need one gram of

protein for every pound of body weight to get the maximum benefit from this program. May I suggest you eat as much broiled or grilled fish as possible. Don't get me wrong, beef and chicken are excellent strength foods. They just don't have the protein to calorie ratio white fish does. Protein powders make achieving this protein quota easier. Be careful, most of these powders are junk. Met Rx, Myoplex Plus, Designer Protein, Just Protein, NRG Protein, these are the real deal. If your favorite powder is not on my list you're maybe wasting time and money.

There are two kinds of carbohydrates: sugars and starches. Besides raw fruits stay away from the sugars. They're worst than fats for unwanted weight. With fats, eat as little as you can stand. However, some fats are healthy, like salmon and nuts. A typical meal should look something like this: a generous portion of broiled meat, beans, corn, broccoli and/or rice, and for dessert some raw fruit, maybe yogurt. Snacks should consist of protein drinks, or raw nuts (not roasted or honey roasted). Simply put, stay away from empty calories, like sodas, candies, pies and cakes. Other than that you can eat as much as you want as often as you want, (unless advised other wise by a physician).

Rest is just as important as nutrition. During this program if you don't get eight hours of continuous sleep a night, you'll be miserable. On days off from the program do not shoot archery, go for a run, or a swim, or play tennis. Just enjoy the day off, and rest. Besides if you feel up to doing something on your days off your not working hard enough. (Except perhaps during the transitional phase.) Either add some more weight or take shorter breaks between exercises. Learn to listen to your body. If you're so tired that you are cross with the family and the guys at work, take a couple of days off, then start up again. This strength and archery stuff isn't worth a job, or a divorce, or hurting a little ones feelings. If you eat and sleep right, I doubt you'll have any problems at all.

Before we start weight lifting we need to discuss proper breathing. This is really no big deal, as long as you breathe. At no time do you ever want to hold your breath during an exercise. Almost everyone inhales on the contraction, or lift part of the exercise. Exhale on the return part, or finish. If you reverse them it will make no difference to your body. Just breath deep, and do it

with each repetition of any exercise.

Okay, let's get down to the meat and potatoes. This training regime will start with a transition program for two weeks. Then four weeks of "Heavy Training" Followed by another two week transitional program that will lead into 3-D season.

THE TRANSITIONAL PHASE PROGRAM - FIRST TWO WEEKS: (Monday, Wednesday, Friday)

PULL DOWNS (use 40% of max):

Warm-up ____ X15, ____ X 8, ____ X8, ____ X8

DEAD LIFTS/SHRUGS (use 40% of max):

Warm-up ____ X15, ____ X8, ____ X8, ____ X8

OVERHEAD PRESS (use 40% of max):

Warm-up ____ X15, ____ X8, ____ X8, ____ X8

TRICEPS PRESS DOWNS (use 40% of max)

____ X8, ____ X8, ____ X8

BARBELL CURLS (use 40% of max):

____ X8, ____ X8, ____ X8

HANDLE PUSH-UPS:

____ X8, ____ X8, ____ X8

BACK SQUATS (use 50% of max):

Warm-up, ____ X15, ____ X8, ____ X8, ____ X8

CRUNCHES: 2 sets of MAXIMUM EFFORT

If you don't know what your one-lift maximum is on these movements, and can't even guess, no problem. Just start with an empty bar. Do 8 reps, record the weight and a brief comment about the set. If it was too easy add a little weight next set. In the Transitional Phase, these sets of 8 should be performed with a weight you can lift for 10 reps. And, always keep a journal. Make yourself a copy of the above program, for each work-out day, with room to write comments next to or just under each movement. This will be important because after each set of eight you are going to add five pounds. (On a barbell that's two and one half pounds each end.) Handle Push-ups and Crunches being the exceptions. The next workout you'll start five pounds heavier than the one before, and end five pounds heavier. Your last workout at the end of two weeks will be a little tough. You should be feeling the power by this time.

Let's go over these exercises one at a time. Pulldowns should be performed on a lat machine. Use a grip a little wider than your shoulders. Sit so the bar and cable are in line with the front of your face and body. Sit straight up, back 90 degrees to your thighs. Absolutely, don't lean back on this exercise. Pull the

bar straight down till your upper arms are digging into your ribs. Now, squeeze your arms into your ribs with much effort, not quite everything just yet. Let the bar back up slowly. The bar and your arms should travel straight up and down. Stay tight. (This is a Weight lifting term, it means don't relax anytime during the exercise.) You don't need to flex your whole body till you get an aneurism. Keep the muscles of the back and shoulders involved all through the exercises.

DEAD LIFTS/SHRUGS are the most basic weight lifting movement of them all. Besides squats they are the most productive. The deadlift is merely grabbing a barbell from the floor, and standing straight up with it. Bend your knees to grab the barbell. I prefer using an all overhand grip, about shoulder width. Look straight ahead and slightly up, keeping the back flat. The initial pull from the floor should be slow, but powerful. As the plates leave the floor the speed of the bar should accelerate. Now you should be standing erect. Try sticking your shoulder into your ears, shrugging your shoulders as high as possible. Return the bar to the floor with your back flat, and the bar under control. The secret to safe, effective dead lifting is keeping a flat back (your head up) through the entire movement, and keeping the bar very close to the body. Stay tight throughout deadlift.

The **OVERHEAD PRESS** should be performed standing to realize the maximum benefit of this movement. It doesn't matter if you clean it from the floor, or shoulder the weight from a rack. The rest is as the name implies, with a shoulder width grip, and as little body movement as possible press the barbell over your head. If you don't have a shoulder condition that prevents you from locking out, lock out for a second. But, don't rest up there, stay tight, and flex the shoulder muscles. Let the bar down slowly, and under control.

To perform **TRICEPS PRESS-DOWNS**, use the same machine you did Pulldowns on, if you do not have a separate station just for this type of exercise. Grab a straight bar with less than shoulder width over hand grip. Tuck your elbows and upper arm into your ribs, and leave them there. Your hands should be under your chin. Press your hands down, your forearms should be the only body part moving. Moving up and down like a pump handle. At the bottom of the press, squeeze your triceps hard for a second. After the squeeze, return the bar up under the chin under control. Stay tight in the arms and shoulders.

BARBELL CURLS are a great biceps exercise. A lot of people try to make them into a poor back exercise, so don't rock back and forth with your back on these curls. I know I want compound movements, but I have to draw the line somewhere. Stand straight up with an underhand grip on a straight bar. With sheer arm strength lift the bar, bending only at the elbows, to your shoulders. (Just the opposite of the Triceps Press-downs.) At this point squeeze the biceps muscles hard for a second. Stay tight and slowly return the bar to arms length.

HANDLE PUSH-UPS are like regular floor push-ups with a twist to make it harder. This exercise is worthy of any seasoned weight lifter. You need to find some kind of handles to raise your hands high enough so your chest will go deep, past your hands. In a gym I use the biggest pair of dumbbells I can find. At home I use a pair of handles made just for this exercise. I bought them at a popular department store. To begin the Handle Push-Ups, get in the push-up position. The hands should be just below the chest muscles, and facing each other on the handles. Set your hands just wide enough for your rib cage to clear. With your back straight, lower yourself by bending your elbows till your chest touches the floor. Focusing on using your chest muscles, with a powerful effort return to the starting position. At this point squeeze the chest muscles together tightly for a two count.

Everybody in weight lifting hates **SQUATS**, and everybody who's anybody in weight lifting squats religiously. The Squat works every muscle in your body. The Squat is arguably the greatest exercise anybody's come up with, so far. The Back Squat has gotten a lot of bad press, especially from doctors—doctors who don't train with weights. It's my opinion the reason Squats got such a bad reputation is from the over use of knee wraps. People reading (looking at) muscle and strength magazines saw pictures of world class weight lifters making these huge lifts with knees wrapped. So, they assume they can lift more if they wrap their knees. They wrap their knees every set. Well, they can lift a little more, but they fail to realize they are compressing the knee cap into the bony processes of the femur. So, all these muscleheads had knee surgeries, and there were thousands. We're not concerned with world record Squats, so **DON'T WRAP YOUR KNEES!** Now if you have bad knees,

hips, back, or high blood pressure, forget this one. Half or Parallel Squats will be ample. To perform a Half Squat start with a barbell across the back of your shoulders. The bar should actually rest atop your shoulder blades. Your hands should be pretty wide on the bar. Your head should be up at all times during the entire lift. Stance should be shoulder width. Slowly, and under total control bend at the knees, trying to keep your back straight, until your thighs are parallel to the floor. Not only do you want to keep the back straight (by keeping the head up) you want to avoid bending at the waist. This is very difficult and will take practice. In the parallel position, with intensity stand erect. Not to the point of jumping into the air, just very deliberately come to a standing position. Do not lock out your knees. When in the standing position leave a little bend in the knees. This way the bones aren't holding the weight, the muscles are.

CRUNCHES are for the abdominal muscles (stomach). I'll admit crunches aren't going to make you a better archer. They will however save you a lot of back pain in the future. A strong back and a weak stomach can literally cripple a person with pain. Crunches are the easiest exercise in this program, so don't skip 'em. If you do, you'll be sorry someday. Crunches have replaced Sit-ups in the world of fitness. Crunches are better for your abs and lower back. No special equipment needed—just grab some floor, lie on your back with your knees bent and feet flat on the floor. If you haven't been doing crunches for a while, start by crossing your arms over your chest. This will keep you from pulling on your neck, by placing your hands behind your head. If you can't keep your neck straight during this exercise, hold a tennis ball under your chin. Your abs won't know the difference, your neck will. In this position, lift your shoulders and upper back off the floor, by pressing your lower back hard against the floor. Contract (flex) your abs hard in this fetal-like position for a second. Return to the

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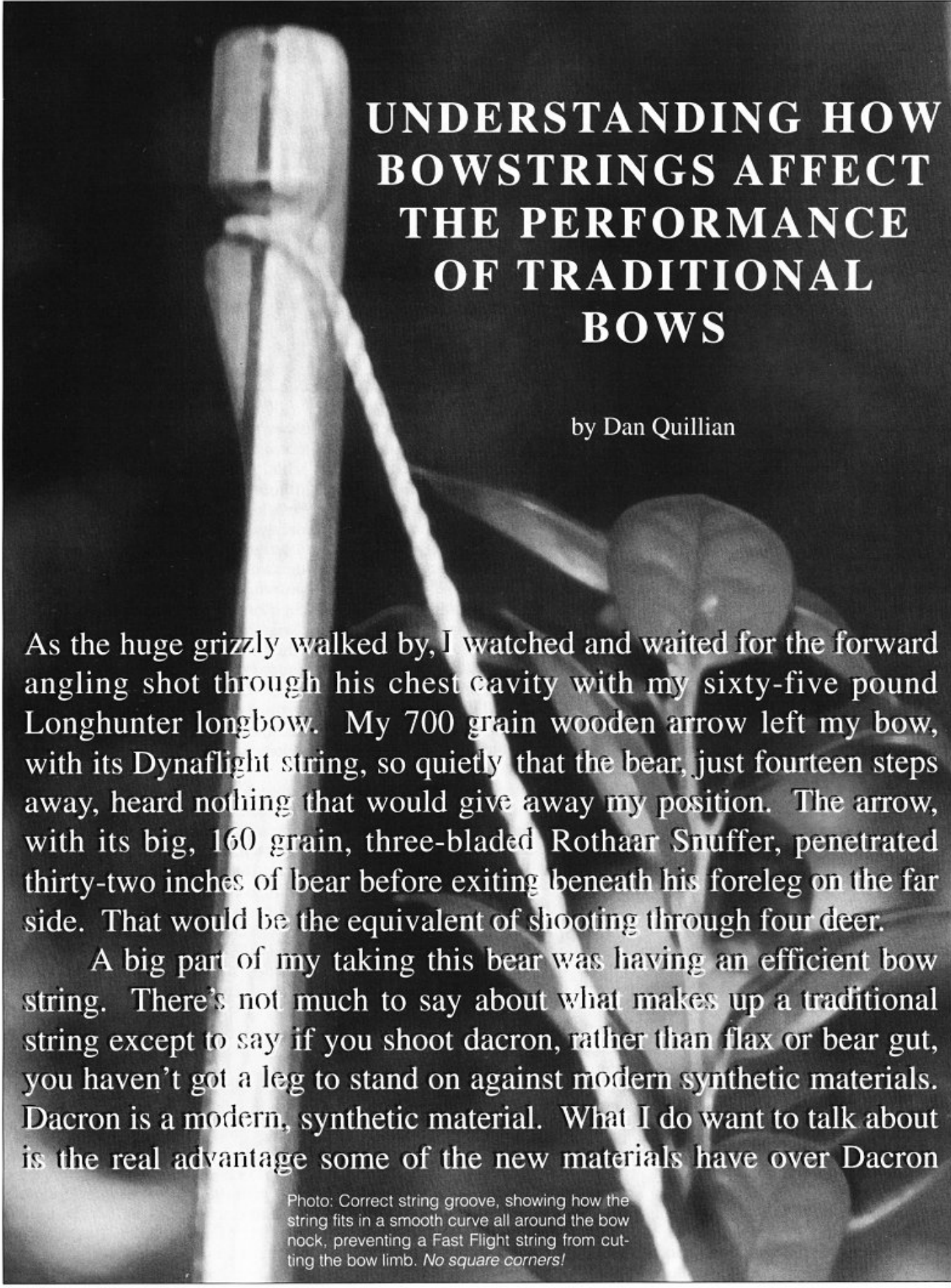
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floor under control. The absolute best and most effective way to do a crunch is with one of these new ab roller contraptions. You don't need the fancy ones with leg attachments for over a hundred dollars. The ones from \$40 to \$50 are just right. Actually, they work better than the two thousand dollar ab machines you probably have in your fitness center.

All of these exercise descriptions are very simplistic. It will take a while to learn the proper form. It may feel awkward in the beginning, but stay in the form to groove-in those neural pathways. These exercise forms are designed to keep the neural pathways of drawing the bow growing.

The Transitional Phase is supposed to be somewhat easy. It is not designed to be a mega strength regime. It is a get-your-feet-wet program. Your intensity level should be moderate at the most. I'm a really good sweater. I just begin to sweat at about the squats. At the end I have just begun to sweat through my sweat shirt (a half a wet T-shirt sweat). The Transitional Phase is a low-intensity fun work-out designed to wake your muscles up, and to focus on developing good form. Now just because this is low intensity doesn't mean you can forget your common sense. If you've never worked with weights, and/or you're over 40, see your doctor first. All weight lifting is potentially dangerous. Stay serious, stay alert. Next issue I'll give you the Strength Phase work-out. You'll be sweating through your shoes on that one. So, pace yourself during the Transitional Phase, no ugly faces.





UNDERSTANDING HOW BOWSTRINGS AFFECT THE PERFORMANCE OF TRADITIONAL BOWS

by Dan Quillian

As the huge grizzly walked by, I watched and waited for the forward angling shot through his chest cavity with my sixty-five pound Longhunter longbow. My 700 grain wooden arrow left my bow, with its Dynaflight string, so quietly that the bear, just fourteen steps away, heard nothing that would give away my position. The arrow, with its big, 160 grain, three-bladed Rothaar Snuffer, penetrated thirty-two inches of bear before exiting beneath his foreleg on the far side. That would be the equivalent of shooting through four deer.

A big part of my taking this bear was having an efficient bow string. There's not much to say about what makes up a traditional string except to say if you shoot dacron, rather than flax or bear gut, you haven't got a leg to stand on against modern synthetic materials. Dacron is a modern, synthetic material. What I do want to talk about is the real advantage some of the new materials have over Dacron


Photo: Correct string groove, showing how the string fits in a smooth curve all around the bow nock, preventing a Fast Flight string from cutting the bow limb. *No square corners!*

and to dispel some of the modern myths. First of all, there is nothing new in archery except the materials. All of the old physics of the bow and arrow are still there and they still apply. As near as I can tell from reading old archery literature, the old-time craftsmen, who made bows, bow strings and arrows, knew and understood everything about a traditional style bow and arrow, including the fact that the mass of the string affects the cast of the bow. In the 1930s, the physicists; Drs. Paul E. Klopsteg, Forrest Nagler, C. N. Hickman and their associates translated archery theory into sound physics. I quote from page 208 of *ARCHERY THE TECHNICAL SIDE*, "Hickman and Klopsteg have figured that a third of the string weight may be considered as equivalent arrow weight. The penalty of excess arrow weight in reducing its velocity is definitely known; and velocity is the only thing that will increase the range of an arrow or flatten its trajectory."

Translated into more practical terms for the bowhunter, this means that a properly used Dynaflight/Fastflight string can give your 50-pound bow more cast than an identical 60-pound bow with a Dacron string. This you can prove to yourself, as I have many times, by shooting both a 50- and a 60-pound bow of the same make and model through the chronograph with the same weight arrow, with the lighter bow using the Dynaflight/Fastflight string and the heavier bow the Dacron. Because of Dynaflight's/Fastflight's strength, one is able to use far lighter string strands and seems to work fine up to a 70-pound bow, while with dacron you would need 16, or more, strands. This extra cast means that YOU will have to increase the spine of your arrows approximately ten pounds if you are using a spine chart that does not take string material into consideration.

To put what I am talking about into figures, a sixteen-strand Dacron bowstring has a breaking strength of about 584 pounds. A twelve strand Dynaflight/Fastflight bowstring will break at about 1,020 pounds, while an eight strand 450 premium bowstring will have a breaking strength of 960 pounds.

I spent two years shooting the Dynaflight string on my personal bow,



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making sure that it was safe for the bow. After watching a number of bows of different makes come apart shooting both Fastflight and Dynaflight, I realized that the proper shape of the nock groove was what gave the bow its protection from splitting. When a bow nock is damaged by a string, regardless of its material, it was generally due to a poorly designed nock groove or, if it was designed at all, or was just a place to hold a string. The nock-groove should be cut into a hard, wooden overlay so that the string does not lie in a square cornered groove. This distributes the stress over the entire loop and protects both the bow and the string. I have sold hundreds of bows using a hard wood for this groove, that have had no problem with Dynaflight or Fastflight strings. On the Flemish spliced strings I use, I add some extra protection by putting six strands of Dacron in the loops. This provides additional surface area in contact with the string groove without adding weight to the part that counts.

Back to performance, while Using a Dynaflight string experimentally, I tune my bows with a bare shaft. I found that with the Dynaflight I could effectively shoot a fistmele approximately one and one quarter inch lower than with a Dacron string. The reason for this is a greater lack of elasticity in the Dynaflight string and that its lower mass weight prevents it from traveling past its "at rest" position as far as the Dacron string travels. This allows you to shoot accurately with a lower fistmele because the nock leaves the string at about the same position as with the Dacron string. This, in turn, means that if you have a 28" draw and you are able to lower the fistmele by about an inch then, with a properly designed bow, you have the equivalent of

a 29" draw in terms of the power stroke (period of acceleration) of the arrow.

NOW, just to keep some of those archery engineers happy, we are talking about ten (10) grains of arrow weight, at least, per pound of bow weight. I know that with very light target arrows, a bow reaches its maximum acceleration with a shorter draw, but with a traditional weight arrow, what we're saying is valid. Now, just a few facts about string material. B-50 Dacron and B-500 polyester bowstring material are about the same strength. One strand of dacron has a breaking strength of roughly 50 pounds. Dynaflight and Fastflight have a breaking strength of about 85 pounds per strand, so it is easy enough to see why you use fewer strands and end up with a lighter string and, also, a string that is much less likely to break while in use. Many a \$500.00 bow has been destroyed by a breaking string.

If we use fewer strands, we end up with a smaller diameter string. This seems to upset some people terribly because their nock fits too loosely; however, a trip to the drug store for some waxed dental tape (like dental floss but flat) will cure this problem. Simply serve this material on the string at the point where the nock of the arrow goes. One caution, a tight fitting nock affects your accuracy, so use just enough dental tape to prevent the arrow from falling off the string.

For the last couple of years, I have been trying an even newer string material and that's BCY's 450 Premium. It has several advantages over Dynaflight and Fastflight; 450 Premium has a breaking strength of 120 pounds per strand and does not creep or elongate as much as Dynaflight and Fastflight.

Because of its great strength, I use eight strand strings on traditional bows up to 70 pounds and I find that these strands are of larger diameter individually. The string ends up about the same size as Dynafight and Fastflight strings and are about the same weight (every little bit helps).

From a noise standpoint, I find these new materials to be the quietest I have ever used. Some people have thought they were noisy when the extra cast their bows were getting made their

arrows too weak and caused arrow slap. All they needed were stiffer arrows to get that maximum efficiency out of their bows and quiet them down. Also, I have developed a very light weight silencer by taking about ten pieces of Fastflight/Dynafight string two-inches long and inserting them into the twist of the string at right angles about a foot from the ends of my 68" bow. They don't look like much to start with but after about a couple of hundred arrows, they loosen into fluffs of waterproof

fibers of negligible weight compared with rubber or plastic silencers.

A bow out of tune is like a car with bad plugs. A 10-strand string out of 450 Premium would pull your 2000 pound automobile out of a ditch. There is certainly no need for slowing your bow down by loading it up with extra string mass. The correct string can make a huge difference in the performance of any good bow.



Traditional Archery Questions—In-Depth Answers

by Dan Quillian



Jerry Hill demonstrating proper form. Notice that his forearm is directly in line with the arrow—a correct draw.

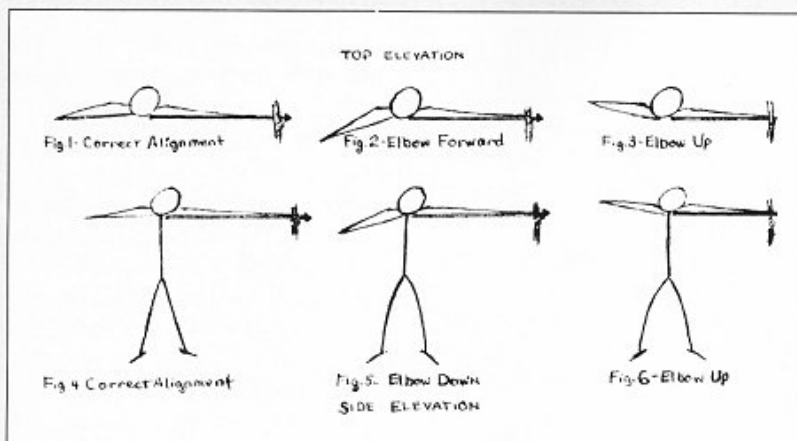
WHAT IS MY PROPER DRAW LENGTH?

Your proper draw length is a personal thing that happens when your arrow, your shoulders and your arms and hands are perfectly aligned. This means that when the bow is off your left shoulder (if you are right handed), you pull the bow until the point of the arrow, back to your right elbow, is a straight line. That means no up, down, or out elbow. The back of the string hand should be absolutely straight. If the elbow is high, you will have a tendency to throw the bow hand down on release. In fact, any misalignment of the drawing arm will cause the bow to be thrown in the opposite direction. The anchor is an individual matter and will be determined by properly drawing the bow. Some people will be able to anchor at the corner of the mouth. Others will anchor anywhere from the corner of the mouth to the ear, depending on their bone structure (Howard Hill anchored on his last

jaw tooth. Will and Maurice Thompson anchored on their ears when hunting). When you are at your proper draw the weight of the bow will be on your back muscles. Your head should be turned square to the target, not reaching forward but just slightly canted to get your anchor underneath your eye.

Many compound shooters draw their bows too far just because of the light holdweights of their bows but those archers who are truly champions shoot a draw length that fits their bone structure. The most common fault I see, when watching traditional archers shoot, is under-drawing the bow. One inch of draw length will give you more cast than ten pounds of bow weight. Under-drawing the bow often happens because the archer is not strong enough to pull his bow to a full draw but it also happens because the archer is shooting an under-spined arrow. Arrow spine is a function of the weight of the bow, the efficiency of the bow, the mass of the arrow, and the draw length of the shooter. If you want to be a better archer and have more killing power in your bow, give this information a fair try.

I will try to answer in depth one or more questions from you in each issue of this magazine. If you have a question that you would like answered, send it to Dan Quillian, 483 W. Clovehurst Ave., Athens, GA 30606, Fax me at (706) 353-3828, or send E-Mail to DQTRAD@AOL.Com.



The National Bowhunter Education Foundation's **INTERNATIONAL BOWHUNTER EDUCATION FOUNDATION**

What is it?

What's in it for you?

Why is it good for bowhunting?



By Curtis Hermann

HELLO! To all the readers of "INSTINCTIVE ARCHER®," aren't we a lucky group to be able to enjoy all the good work of those incredible archers that contribute to this fine magazine. I admit that I'm very impressed and always surprised and delighted at the variety and quality of the articles in each issue.

My name is Curtis Hermann and I am an instinctive archer, which means I look at what I want to hit, let the bow hand feel its way into the pocket (target) and release with full

confidence of a hit.. at least sometimes. I keep my shooting pretty simple and shy away from complicated things like point of aim or three fingers under, perhaps I just am not disciplined enough to shoot with the good shooters anymore. However I do enjoy every minute I get to spend with a bow in hand and in the company of another archer.

Today I'm in my den, its walls covered with the bows of my life, fourteen recurves, seven longbows, a half dozen antique quivers and multitudes of beautiful hand-

crafted wood arrows. It is here that archery flows through me with a life-long love and from here I'm going to attempt to keep up with all those wonderful contributors to this fine magazine. I will keep you informed on the progress of the world of bowhunter education and how it affects you, the archer in the field, hunting the great game animals of the world.

I'm the State Chairman of the California International Bowhunter Education Program (IBEP) and the Bowhunter Education Officer of the California Bowman Archers State Archery Association, long titles that simply mean that I am involved and that I care about maintaining and preserving the world of bowhunting and archery, something that every traditional archer I know is concerned about. So...

Welcome to my den, to share what I can offer, and I too, expect to learn much from you as time goes on.

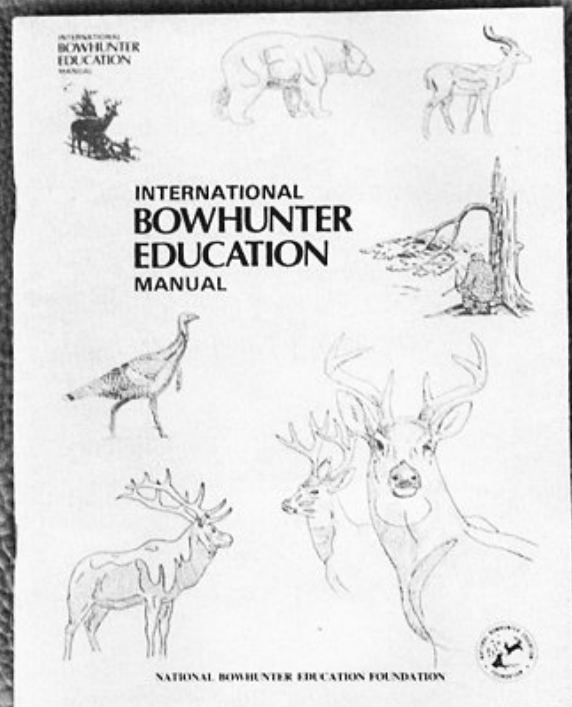
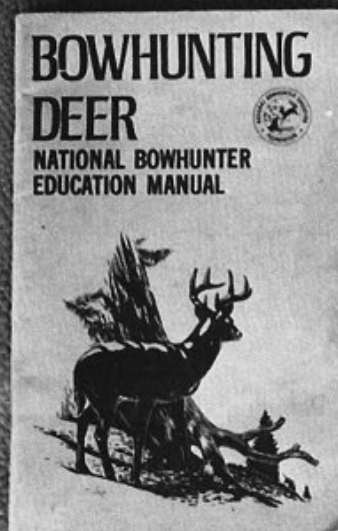
NBEF is a term that many of you are acquainted with, many of you have taken the bowhunter education course and maybe became an instructor afterward. I know I did, back in 1982.

When I heard the course was coming to the Conejo Valley Archers range in Thousand Oaks, California, I signed up right away. This course was taught by a long-time bowhunter named Walt Powell, a retired engineer from Nasa. Walt was a Master Instructor and the Region 5 chairman for the program (IBEP), as well as a life-long member of the Pasadena Roving Archers (one of the two oldest archery clubs in the USA). Even then I was involved and I don't think I had argued with anyone so much in my life, but by the time the class had come to an end, I was convinced that this was a very good thing and some-

thing I should try, so I signed on as an instructor. Walt and I taught together for over ten years before his passing on to the great spirits of the hunt. How I ever thought I could argue with an engineer in his eighties with over fifty years in the growth of archery—it's not the first time I had to learn the hard way. I see this story repeated in so many classes, the experienced hunter who thinks he has many answers (all earned the hard way) and by the end of the class is so impressed by its value that he wants to

the leadership of Bill Wadsworth (Bill, had a lifelong involvement with the Boy Scouts, therefore the resemblance of the two programs in the early days), they created a booklet titled *Bowhunting in New York State* and the NYS Field Archery Association provided funding for 10,000 copies. "BOWHUNTER EDUCATION" had begun.

About the same time in California, bowhunters like Doug Kitteredge, Jim Dougherty, Jack Howard (bowyer and hunter supreme) and Walt



become involved and be a part of it.

So just what is it, this course that seems to be self-perpetuating and is creeping into the lives of bowhunters all over the world? Back in the fall of 1967, a group of eight to ten bowhunters in northern New York state sat around the campfire discussing the field behavior of bowhunters, many of whom were friends that they had observed during the days of that year's hunting season. The need to provide information on the basic principals and etiquette of bowhunting was very apparent. They knew that William Rice had written a small pamphlet in 1954 titled *What About Bowhunting?* Perhaps it could be improved upon. Shortly thereafter this small group, under

Powell (my original instructor and friend) were writing a similar manual, *How to Hunt Deer with Bow and Arrow*. I have their manual and other writing, but that is an article for another time.

It was not long after that Bill Wadsworth was asked to serve as Chairman of the National Field Archery Association (NFAA) conservation and bowhunting committee. He made bowhunter education a top priority. He assembled 21 of the finest hunters in the country into his committee and by 1979 the members of that committee had organized the program in every state in the union and every province in Canada. A new manual titled *BOWHUNTING*

DEER was created. Having grown so large, so fast, this group created a non-profit organization named the "National Bowhunter Education Foundation" or "NBEF." They had simply grown to large for the NFAA, however they did maintain the same basic emblem of the stump with an arrow and a whitetail buck bounding away, (in the late eighties the arrow in the stump was dropped). It was not long before the program began to invade many foreign countries and an international manual had to be created, as well as a small home-study course that is required in addition to the normal course to hunt Africa's big five. At this time the program portion became the "International Bowhunter Education Program," created and delivered by the NBEF.

Many years of work and dedication by many of the finest bowhunters in this country had created a good solid course in the broad basics of ethical bowhunting. They had created a course that was done so well that it has become the international guide by which all other hunting courses are designed.

The NBEF has as its goal *"TO INSTILL IN BOWHUNTERS A RESPONSIBLE ATTITUDE AND TO ASSIST THEM TO ADOPT AND FOLLOW AN ACCEPTABLE BEHAVIOR TOWARD PEOPLE, WILDLIFE AND THE ENVIRONMENT IN WHICH THEY HUNT."* To this we add the strong belief that *"THE FUTURE OF BOWHUNTING DEPENDS UPON EFFECTIVE AND SUCCESSFUL BOWHUNTER EDUCATION"* and therefore to accomplish the above, we created the following mission statement: *"The NBEF is dedicated to helping ensure the future of bowhunting through education. This is accomplished through the development and administration of a universally accepted, volunteer delivered, International Bowhunter Education Program and related activities."*

That's "what it is" and it's a lot, bowhunters the world over are lucky to have it, it is a good thing. What's in it for you? That's an interesting question, I think you may find the answers helpful.

As I mentioned before, I describe the program to archers (and non-archers or non-hunters alike) as a

good, solid course in the broad basics of ethical bowhunting. Just what does that mean? Through experience we have learned that, by taking the course, the average bowhunter will improve his (or hers) performance in the field by at least 25%, not bad for a 12- to 14-hour course. More experienced bowhunters may only find a few points that are helpful to their hunting, but if they have become that good before taking this course, I can assure you that they did not do it in 12 to 14 hours. What they will find fascinating will be the area of ethics and behavior. You see, these experienced hunters have been observing field behavior in the woods for years and suddenly they have found a vehicle or tool that they can use to alter much of the behavior that has bothered them for a long time. Sometimes they even find out things about their own behavior that they never recognized before, thinking that they had always been totally ethical or they may have felt that some of their own little discrepancies were not really all that harmful to the big picture. This is why so many of the experienced bowhunters gravitate into the organization to become valued instructors. The inner feeling you get from giving something back to the sport is a reward you find as an unexpected surprise.

If you have graduated from this course, you know that you have been part of a good thing and you are now among

the fraternity of others who have done the same. It is a feeling that you will proudly share. You will be reminded of that experience every time you see a flyer for an upcoming class or an advertisement or article about the course in a magazine.

Should you step forward and volunteer as an instructor, you will find some interesting perks involved, for instance, some major manufacturers of archery equipment and camo-gear offer a discount program for active IBEP instructors—very helpful on the hunting budget. You will make friends and become involved with other instructors who are excellent hunters and you all become a part of a large brotherhood of bowhunters learning from and hunting with each other. In the long run, the real value will be the satisfaction and well being you will find in your heart for having been involved as part of the solution, not as part of the problem. The more years you teach the more satisfied with life and bowhunting you become. I find it so satisfying that so many of the very serious instructors are from the ranks of traditional archers as well as members of such organizations as the Professional Bowhunters Society, the Pope and Young Club, or other prestigious organizations. There can be a great deal in it for you, it depends on you—how much do you want?

Ron Brown

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Genesis 1:1 John 3:16 Matthew 5:16

As a State Chairman, I am mostly involved with the day to day operations of my 150+ instructors over a large geographic area, keeping records up to date and providing updates or current information from the national office. Every once in a while it helps to just sit here in my den and try to get a perspective of the overall picture of the program and where its going. This helps me to see just where I fit into the puzzle and usually will give me a few new ideas on how to improve things in some small way. One of those things given a lot of thought is *"why is Bowhunter Education good for Bowhunting?"* What are the benefits? Lets take a look at how the IBEP has helped the average bowhunter, involved or not.

- It develops leaders from the grass roots ranks of bowhunters, the more they instruct and grow, the more deeply they tend to get into the preservation of our fine sport.
- It provides these volunteers with the very tools needed to advance in leadership.
- Because the courses are taught in every state and province in North America, they graduate an average of 70,000 bowhunters a year, with a standard of ethics and responsibility not found anywhere else in the sport.
- It educates bowhunters in subjects not covered in basic hunter-education courses, subjects that are important to the art of bowhunting. Subjects such as tree-stand safety, specialized game recovery, the importance of shot placement and its effects on recovery of the game animal, learning the value of

knowing your own effective shooting range, and the importance of maintaining sharp broadheads.

- Studies show that graduates of this course become 25% more effective over a two-year period as opposed to non-graduates who improve only 11.4%. Therefore a graduate accomplishes in two years of bowhunting what a non-graduate will take more than four years to accomplish. Graduates show a higher knowledge of deer, deer behavior, deer habitat, and they have more hunting skills than most non-graduates as well as a greater awareness of ethics and show more responsibility in the field. The world of bowhunting wins with an NBEF/IBEP graduate.
 - Other studies have shown a steady decrease in hunting accidents in all states after Bowhunter Education became available.
- Several conclusions can be drawn from the many studies
- NBEF/IBEP graduates are less likely to drop out of bowhunting.
 - Because of their increased awareness of ethics and responsibilities, they tend to present a better public image to the non-hunting public.
 - Their improved understanding of game anatomy means fewer wounded or unrecovered game animals, again presenting a better public image.

I think you can now see why we feel *"The Future of Bowhunting depends*

on bowhunter education!" Since that first discussion around the hunting camp fire thirty years ago in 1967, concerned bowhunters who became NBEF/IBEP instructors have educated over 500,000 bowhunters all over the world, opened up bowhunting in countries that have never even considered bowhunters before as well as successfully changing negative impressions of bowhunting within many game agencies.

The NBEF Directors have received Hunter Education's first, second, and third Gladney Davidson Awards for outstanding contributions to hunter education. All in all, I can't think of a better way to be involved in improving the life of bowhunters everywhere. Bowhunter Education is good for bowhunting!

I started bowhunting in 1950 (a wee bit of a lad in what was known as the glory days) and I can assure you that, had this course been available at that time, I would have lit a handful of purple Wyoming sage and given many thanks to the spirits of the hunt through its cleansing smoke. The knowledge that is available today in this one course is monumental in comparison to the days I spent on that prairie with a lemonwood longbow in hand.

Let me recommend to you that one day, when the urge to give back to the sport that has given you so much begins to develop in your heart, that you consider the ranks of the over 8,000 bowhunter education instructors around the world.

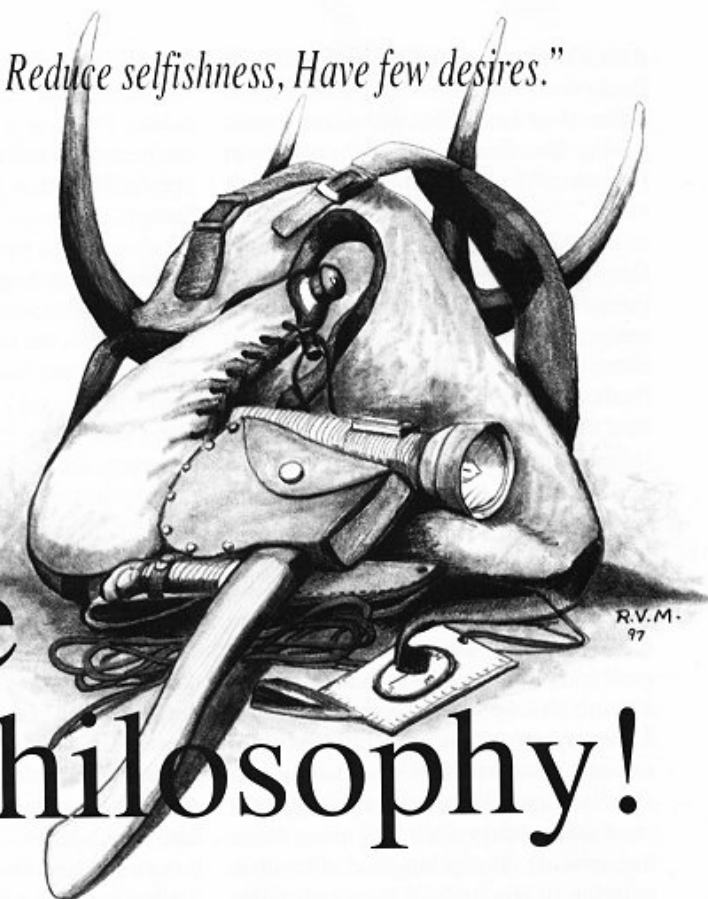
From my den to yours, hunt hard, keep em' sharp, and shoot straight.



"Manifest plainness, Embrace simplicity, Reduce selfishness, Have few desires."
—Lao-Tzu (c. 604-531 B.C.)

Tips, Ideas, and Some Pseudo-Philosophy!

by Bob Adler



The trick, I have found, to having a great time, as opposed to just a good time, is to keep things simple, share the experience with others who can appreciate what's going on, and have a few yucks while playing the game (what ever it is you're doing). Now let's put this into archery perspective. Every time you complicate things, trouble seems to follow. A perfect example is high-tech archery equipment. Wheels, pulleys, sights, releases, yadda, yadda... somehow go out of whack just at the worst time. Simple is well, simply better. Therefore I, and probably you, have opted for a stick and a string. It works and is a heck of a lot of fun even when you don't hit perfectly (while practicing, of course). Ever see a compound shooter at the line when a nut or a bolt gets loose? They run for the tool bag. Meanwhile, we traditional archers just keep shooting and having fun.

Second part of the trick to having fun: sharing the experience. Could you imagine what it would be like not having some buddies (or budettes) to share your good times with? Why was Robinson Crusoe so happy to meet up with Friday? We are generally very social, to the point of going the extra mile for a friend just so they can be part of the activities we share in common. Ever drive way out of your way to pick someone up so they can go with you somewhere? Why do you think you do that? Just try having a great day in the field and keep it to your self. It's like trying to eat just one potato chip.

Last, but certainly not the least trick to this fun thing is laughter. If it isn't fun, we just don't continue to do things,

or we fail to do them well. Now consider the last time you messed up something, like that once-a-season shot at a huge buck. I had one of those this past season. Seems this suicidal buck, way late in the season, decided to follow this trail that no self respecting ten pointer would ever take except during full rut with a primed and ready to go queen doe taking the lead. So anyhow, this firebreather is coming towards me and the trail is arching to my left for a perfect broadside shot at about twelve paces, when the chili I had for lunch decide to well up in my gut and blurt out.

Moby Deer stopped at twenty five yards and looked up at me while I tried to act like a pine cone. He tilted his head from side to side, squinted to get some focus and then did the Texas two step backwards very slowly. He sniffed the air, shook his head in disgust, turned 180 degrees and slowly started to retrace his steps. At about fifty yards he glanced back over his shoulder, shook his head again and sauntered off giggling to himself. Lesson learned: no chili for lunch anymore. Best part of the day, however, was telling my hunting buddies the story. We all laugh at ourselves and that's what makes the experience so much fun. Now the guys who I hunt with all shoot compounds. They rib me constantly about my longbows, backquivers, and wood arrows. They expect me to start the next season using bowling balls in preparation to hunt with rocks as I retrograde. The thing is we all respect each others choices and we have a ton of fun teasing each other. It's all in fun, and we know it. The actual hunting we take very seriously because we respect the rights of the ani-

mals we hunt and the property of those landowners who give us permission to utilize their land. But when it comes to poking fun, there is virtually no limit to the amount of ribbing we give each other.

With that said, here are some tips that may be of value in keeping things simple. They have come from some laughable experiences and hard earned research. Try them out or reject them, but give them some consideration next time you meet up with the problems they solve.

The best haul lines we have found are made from colored parachute cord. The real thing (watch out for those inexpensive lightweight rolls of "utility cord") now comes in colors like brown, olive drab, and even camouflage. On each end of a twenty two foot length, tie a two-inch loop with a figure-eight knot. You can leave these haul lines in place all season long wherever you have a tree stand set up. We usually tie it off to a stout short stubby limb by pulling some line through the top loop and slipping it over the stubby limb. This way it tightens on itself and is easy to place and remove quickly if needed. We try to place it within easy reach or if no limb is available, loop it to the footing of the treestand that presses into the tree, or as a last resort, tie it to the chain of the tree stand. Now when you get to the tree where your stand is located simply slip the string's bottom loop through a brass snap ring's opening and pull the snap part back through the haul line loop to cause it to bite. Doing it this way allows you to take your snap ring to any stand and quickly hook onto your bowstring securely without worrying about any knots coming loose. Then when you climb into your tree stand and haul your stuff up you can quickly unhook everything without worrying about knots that don't come apart easily. Also the snap ring gives the haul line some weight so when you drop it back down it stays put and doesn't blow around in the breeze.

The next tip is to go to your local hardware store and find one of those old metal shower curtain clips. Use a pair of pliers to bend the top over onto itself to form the perfect hook for hauling up your dropped items (this has never happened to you...yeah, right!).

Just clip your snap ring on your haul line to your shower curtain clip hook and go fishing for your goodies that fell or were inadvertently left down below. Hunting and fishing all in one sit, what could be better?

Have you ever felt the cold coming up through the bottom of your boots from the cold steel of your tree-stand? Did the noise of repositioning your feet ever startle a deer when you tried to slide your feet to position yourself for a better shot? After a night of snowing did the morning freeze ever make your treestand into a mini ice skating rink? A simple solution to all these troubles is an old floor mat from the back seat section of a car, preferably with a color that is camouflage coordinated. These mats generally have rubber (noise dampening) bottoms with little points to keep them in place. The carpeting tops prevent the warmth from your feet trying to heat up the cold steel of your treestand. And for those rare icy times, firm footing. You can even spray paint a camo pattern on the rubber bottom, if you're of a mind to further break up your pattern. The mat folds easily lengthwise a couple of times, or roll it up so that it can be easily lashed to the top of your fanny pack.

You know those expensive little brown bottles of scent lures? Instead of pouring that liquid gold into the standard film canister stuffed with cotton balls inside, where the lure evaporates and wastes much of the goods, you might try using a Q-tip. Take a Q-tip, dip one end directly into the bottle and bend it in half. Place it on a twig of a tree in the best shooting lane about head high at your best shooting distance. With this method a little goes a long way, you won't spill half the bottle out in the dark, and Mr. Deer may come right up to it to sniff it at the perfect angle and distance.

While we are on scents, consider this idea: go to your local drug store and find one of those small plastic bottles (about 4 ounces) with a twist-to-close cap, one that doesn't leak. Fill it with apple cider and when you climb into your treestand squirt the cider in an arch as far as it will go. This works well as a cover scent and an attractant. I have tried apple cider vinegar also and it seems to work well also because it has a more powerful smell.

Carry a whistle on your person, or in your fanny pack or backpack at all times. Try this if you don't think this is serious stuff: Lay on the ground and yell in the woods to a friend who is just over the next rise in the land topography. Throw in a breeze blowing the wrong way and guaranteed they'll never hear you no matter how much you scream. A good quality plastic whistle (Fox 40 preferably, or at least an Acme Thunderer) will be heard infinitely better and at much greater distances than your voice and it uses a fraction of the energy you might need for minor things, like staying alive, if hurt.

Ever break a knock? If you practice shooting often, as you should be doing, this is just one of those things that happens all the time. There are two ways to remove the balance of the broken knock from the taper of the arrow: (1) use a knife and carefully cut the knock off in sections whittling away from the arrow shaft. (2) boil the knock in water for about a minute and gently twist it off with a pair of pliers. Some knocks are stubbornly glued on so just boil it longer. The plastic eventually gives up the fight. I've yet to damage an arrow using the boiling method.

Have you ever been bored sitting in a tree waiting for Venisaurus Rex to waltz by? Confiscate your child's walkman and throw in a "book on tape." Most libraries now carry a reasonably good book assortment of audio tapes on hand. (I'm partial to the Tom Clancy novels, like *The Hunt for Red October*.) If you keep the walkman in a pocket and pull the wire up your back with the headphones going over your head gear (hood or hat) you can even continue to listen while taking a shot, if necessary. Just keep the volume low. The worst thing that happens is when you run out of juice in the batteries and the narrator's voice becomes slow and very deep, signaling the end of your listening pleasure. I suggest you keep some extra batteries handy, or you'll be very frustrated.

If you hunt in tick infested areas it's a good idea to try to keep the little critters from climbing up your pant legs where they otherwise will set up camp in your most sensitive areas. Find some 3/16 inch bungee cord and using a square knot, fashion a blousing bungee

that you can tuck your pant bottoms under and over your boot uppers. This also helps keep you warmer when those cold drafts try to worm their way up your legs.

Field dressing a deer in the dark is tough when holding a flashlight in your teeth. Take a trip to Radio Shack and pick up one of their head light set ups on an inch and a half wide elastic head band. They are very inexpensive, lightweight, small, and run on two AA batteries.

The best target I know of is also the least expensive! Find a burlap bag. Some potatoes still come in burlap bags and supermarkets don't keep them. Next, save up all those plastic bags from the supermarket and any department stores. When you have about three months worth of plastic bags, stuff them into the burlap bag and tie the top of the burlap bag really tight with a piece of sisal string leaving a tie in loop at the end. Sisal works well because it holds a bite on itself. Hang a length of parachute cord from an overhead tree limb and use a slip knot to tie into the sisal loop on the burlap bag target. Draw on the bag using a waterproof marking pen to your heart's delight for something to aim at. I'm pretty partial to black dots like those on a dice face with five dots. This way I don't have to boil as many knocks. You will be amazed at how long this target lasts if you put it in a shed or a garage instead of leaving it out to the weather. The plastic bags stuffing stop arrows very well and lets you pull the arrows out with just two fingers. You may have to stuff the bag tighter with more plastic when using very narrow arrows like graphite. If you have to have an animal to shoot at buy one of those Ames burlap targets and sew an old broom handle along the top. Put a couple of screw eyes near the ends of the broom handle and hang it in front of your burlap bag target. A couple of pieces of short string tied to the bottom corners of the Ames burlap target face and two tent stakes will keep it from swaying in the breeze. It isn't 3-D, but lasts a lot longer and costs next to nothing comparatively. If you must have a 3-D target maybe you can find someone who can sew burlap and save a lot more plastic bags. It's

environmentally a great idea since those plastic bags get used for something other than taking up landfill space.

Speaking of targets. Living in the suburbia of a great metropolitan city, it's hard to go out roaming, roving, or stump shooting for lack of unpopulated open space. This is where 3 ounce dixie cups come in handy. Toss a few of those tiny paper cups around at varying distances and blunt 'em out of a tree or fluff them from the top of your garage roof (or even on a step ladder if you can't straddle the roof peak). Use your imagination on where to shoot them from, cause, when you hit those little suckers the sound is delightful and your chest gets bigger...it really does!

A pet peeve of mine used to be when those crimp-on-the-bow-string metal knock set points would cut into my leather tab or glove. So if you have this happening you might try using waxed dental tape to make your knock set points. Dental tape, which is slightly wider than floss, can be found among the dental floss at your local drug store. Mark your bow string where you want the set point to be using a bow square. Now take two lengths of the waxed dental tape about 18 inches each. Double over one of the lengths of the waxed dental tape on itself to form a loop at one end. Lay this along your string with the loop about two inches past where you want the set point to be. Take the second length of waxed dental tape and start tightly wrapping it over the string and the doubled over itself length of tape. Wrap about a half inch then go back and forth a couple of more times wrapping tightly. Take the end of what is left of the wrapping tape and stick it through the loop of the original piece of tape laid on the string. Now grab the two ends from the piece of tape that formed the loop and pull it quickly in the opposite direction of the loop. This will pull the loop with the end of the wrapping tape through and under all the wrappings thereby sealing the whole thing in place. Cut off the extra tape with a sharp single edged razor blade, being careful not to cut the string. When needed, simply wax this knock set point from time to time to keep it from fraying. This knock set point will stay put and never do any harm to any of your leather goods or strings. Also, a single package

of dental tape can make dozens of knock set points. This method also can be used with waxed dental floss to keep other things in place on all sorts of things. Keep it in mind when something doesn't stay put.

Need a place to hang your bows while not in use? Try this idea: get a hold of some 1" X 2" lumber. Furring stripping will do nicely. Locate an out of the way place in a basement or a cellar, away from any heat source, where the beams are exposed. Cut the 1" X 2" lumber to a length that will fit perpendicular to the beams (38 inches should give you what you need if the beams are a standard 16 inches apart). Use dry wall screws to drill the 1" X 2" piece to the beams. Cut some old or broken arrows to lengths of six inches and sand paper the ends smooth. Find a drill bit that is the same diameter as your six inch arrow shafts and drill sideways through the 1" X 2" lumber leaving enough room for each bow to hang, about every four inches (obviously don't drill in line with the beam). Hammer the arrow shafts through the drilled holes until one end is flush. Now you can hang your bows vertically by the string on the arrow shafts sticking out. Each shaft should accommodate two longbows or one recurve nicely.

It doesn't happen often, but sometimes we set up treestands on very wide trees near deer trail funnels where no pine trees are available for their great cover. When this does occur, these huge trees are usually without limbs at tree-stand elevations (12 to 18 feet at the bottom of the stand). Where do you hang all your stuff including bow, quiver, fanny packs, bags, etc.? A great bow hanger are those U-shaped vinyl (red, yellow, black) covered doo-dads with a screw attached for hanging gardening tools. Virtually every hardware store has them, but look for the ones with narrow threads because they are easier to get into a hardwood tree. We also use L-shaped metal hangers with threads to hang all sorts of items. They come in different sizes for whatever. L-shaped work much better than hook shaped because less hang-ups occur. I hate when I have to physically hang out in the breeze that high up in a limbless tree when trying to unhook things half way

around the tree. OK, I'm not the greatest high-wire aerialist, I admit it. But I don't care who you are, quick and easy up that high definitely reduces the sweat factor.

How do you keep those broadheads sharp in a back quiver? I read somewhere that my idol, Howard Hill, used oatmeal in the bottom of his quiver to keep his broad heads separated and sharp. That must have meant Howard never hunted in the rain, and I can't imagine that. James Schulz of American Leathers suggested getting some closed cell packing foam and cutting it to the shape of the bottom of the back quiver. It works great. I went a step further and cut out completely a section of the foam for my practice blunt arrows that lines up with the little section separated by the piece of leather at the top of my quiver (if you use a back quiver you know what this means). In this way if I have to reach for a broadhead arrow, I don't accidentally grab a blunt arrow as the blunts sit lower in the quiver and higher on my back.

Somehow, during the course of a season, things grow and get into shooting lanes. Sometimes these are close by, but stubborn. A small set of hand pruning shears in your fanny pack is a great idea. The other method that works well, from time to time, is the old tie down method. We very often don't want to cut any more than absolutely necessary, especially from pine trees where we try to sit as often as possible for the excellent cover they afford. But deer are savy to anything that is disturbed, so we'll use a haul line with a brass snap ring as a weight to throw over the outer portion of a limb, then grab both ends of the haul line and pull it down out of our way for taking a shot. We then pull one loop of the haul line through the other loop and cinch it on the limb. Next we find a sapling nearby and either tie a slip knot around the sapling or better yet, use a screw in hook and loop the tie down on to the hook. When you leave this hunting spot simply release the limb, when

you come back hook it back down. At the end of the season, just slip the haul line off the limb. Ecologically sound and simplistic.

I am amazed at how many times I hear about folks who walk in to their hunting area fully dressed. For the life of me I can't imagine why, except, possibly they don't have any place to hang their outer clothes when walking in. I'm a fanny-pack person. I have about a half dozen different ones for different activities and they are always loaded and ready to go. If I'm going to set up a tree stand I have one for that. If I'm actually hunting I have my camouflage fleece fanny-pack for that. If I'm going skiing, I have one for that activity. This makes my life easy since I don't have to start rummaging around for what I need for each activity. Where is this maniac going with this train of thought you ask? Every pack has lash down straps attached. Some came with the packs, others I sewed using quick disconnect Fastex type buckles and one inch flat nylon webbing. They are easily adjustable and handle lashing down any outerwear leaving my hands free. I strongly recommend you stop and ventilate as soon as you begin to feel any overheating. Get rid of the moisture coming from your body and you'll stay warmer and more comfortable. It is worth the extra moment or two to ventilate for the comfort it will provide later on, guaranteed.

Being some what of an equipment hound, I have a different set of quivers, arm guards, and gloves for target practice and for hunting. This makes it easier for me when it comes to getting

out there and actually handling the different disciplines. One thing that would happen however, due to changing temperatures I'd sometimes find myself in a tee shirt and other times I'd be in a fleece jacket. To accommodate this change regarding my arm guard adjustment I added a spring lock toggle to the 1/8th inch bungee cord on my arm guard. Now the same arm guard could be eas-

ily adjusted to the clothes I am wearing at the time.

Ever need to change clothes near your car? This occurs quite often when it's very cold in the morning and quite a bit warmer by the afternoon. Find a 4 foot by 4 foot piece of heavy duty plastic sheeting or a piece of water proof fabric to stand on. It works a heck of a lot better than trying to change clothes in the car or standing on the wet dirty ground. The plastic folds up fairly clean and takes up very little room in your vehicle.

Vernon Howard, an author who deals with psychological insight, has some great advice for living a happy life. Parts of his writings advise us to:

Look towards lightening your load (literally and emotionally), hang with the people you really enjoy, smile often, do good deeds for others without expecting anything in return, always strive to learn more, and engage in outdoor physical activities that are different and exciting.

These concepts may just be the ticket to a really great life.



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The term "Heavy Arrows" brings to mind such well-known archers as Pope and Young who used heavy wood arrows to hunt North American and African dangerous and non dangerous big game as well as Howard Hill who used a specially designed heavy aluminum arrow to hunt African elephant. More recently, a gentleman by the name of Monty Browning has successfully used solid fiberglass "fishing arrows" to take dangerous and non-dangerous big game in both Africa and North America.

If you are reading this article, you are probably already convinced that heavy arrows provide better penetration, but perhaps, like me you had never given them a try.

I had wanted to try heavy wood arrows such as ash, birch or maple, but as I browsed through various traditional archery catalogs I found that they only stocked heavy wood arrows in spines that were too stiff for my 45 and 50 pound longbows. (Note: I have since found several custom shaft producers who can provide ash shafts in the 30-35 pound spine group.)

I then looked into the possibility of using heavy aluminum arrows. Purchasing one aluminum arrow from each spine group from the local archery shop should have been an easy proposition, but what I found was that lighter spined aluminum arrows weighed less than heavier spined aluminum arrows, just like their wood counterparts. In other words, if I wanted a heavy arrow I had to settle for heavy spine.

I even tried Mr. Monty Browning's answer and ordered a 5/16" solid fiberglass shaft from Three Rivers

Archery. I asked that they spine check and weigh it before shipping and it spined out at 93 pounds and weighed 1300 grains! Just for the fun of it, I fletched it with 4 full height 5" feathers, installed a 190-grain Grizzly broadhead and let her fly. Two things became immediately apparent. First, I would have to stand a whole lot closer to my target and the strike plate on my Big Five was taking a beating since the arrows were not flexing enough for the rear of the 1300 grain shaft to clear the sight window.

What to do? I had heard that some folks had tried filling aluminum arrows with sand and another fellow was filling carbon arrows with salt. Both methods, it seemed to me though, would serve to increase arrow spine. As I sat pondering this problem (actually, I think best while lying on the couch) it hit me. Why not try filling an aluminum arrow with water? It wouldn't change the static spine and it just might not change the dynamic spine either.

I had done quite a bit of bare shaft testing while trying to find arrows suitable for my long bows and had found that it could be successfully accomplished if the cant of the bow was maintained from shot to shot. I therefore set up two identical 30-inch 1816 shafts with 145 grain bullet points and snap on nocks, but with no fletching. These shafts had flown well during earlier bare shaft testing and would serve as a reference for comparison. The air-filled 1816 weighed approximately 460 grains while the water-filled shaft weighed over 800 grains!

I stepped off fifteen paces. (My experience with the 1300 grain arrow had taught me not to stand too far from the target.) What I experienced would forever change my longbow shooting. Both bare shafts flew down range without any tendency to yaw either nock left or nock right. In other words they had the same dynamic spine. Amazing!

I immediately headed to the fletching bench. Thank God for fletching tape. It's really quick and provides a better glue line than I can get with most fletching cements. Back to the range. Shooting the water-filled "hydro arrow" was really addicting. Once I got the trajectory programmed into my subconscious it was a lot of fun. The flight of the heavy arrow was much more "purposeful" than the standard air-filled arrow. Instead of striking the bales with the usual "whack," they hit with a "thunk." My longbow was much quieter and there was significantly less vibration upon release.

The results at the target butts was equally interesting. The heavier, water-filled arrow significantly out penetrated its air filled counterpart. Accuracy also seemed to improve slightly with the "hydro arrow."

Comparing arrow speed with a chronograph showed that while the water filled arrow weighed approximately 50% more than the standard arrow it flew only 20% slower. That meant that the bow was able to be more efficient with the heavier arrow.

Later, as I pondered what had taken place (on the couch again) I realized that for this idea to work I would have to find some other liquid to fill the arrow. Water worked great at 70 degrees F. for informal testing, but what about when the deer woods were a cool 10-15 degrees F. or less? I was also concerned about the corrosion that was sure to follow if the water was left in the shaft. After due consideration, I chose mineral oil. It wouldn't freeze at normally encountered temperatures and shouldn't change dynamic spine. Additionally, if the arrow lost its integrity (leaked) after



entering a big game animal, the mineral oil would not contaminate the meat.

Other Tests

Weight Comparison - To discover just how much weight difference would result from filling different aluminum arrows with mineral oil, I filled both 27-inch and full-length arrows with oil and compared their weight with their air filled counterparts.

You will notice, that in some cases, the oil weighs almost as much as

the original, unfilled arrow.

I did not test any arrows of a larger diameter than 5/16" due to the substantial weight increase provided by the oil.

Velocity Comparison

An arrow speed comparison was done between standard aluminum arrows and their oil filled twins. The arrows were chronographed at point blank and at 18 yards out of a 55# AMO Martin Mamba with the following

results: (Note: draw length for the tests was 25".)

In reviewing the results one can see that the heavy, oil-filled arrows lost approximately 1/2 the velocity of their lighter air filled counterparts over an 18 yard distance. I do feel that bows with a higher draw weight or a test shooter with a longer draw length would have produced significantly higher velocities for both the air-filled and oil-filled arrows. One interesting observation, that was not noted on the chart, is that

SAMPLE ARROW WEIGHTS

Arrow Size	Length	Weight (air)	Weight (oil)	Oil Weight	Weight/In.
1816	27"	414 Grains	694 Grains	280 Grains	22.0 gr./In.
1816	30"	440 Grains	760 Grains	320 Grains	
1916	27"	452 Grains	757 Grains	305 Grains	21.3 gr./In.
1916	31"	504 Grains	842 Grains	338 Grains	
2013	27"	417 Grains	781 Grains	364 Grains	24.8 gr./In.
2013	33"	474 Grains	930 Grains	456 Grains	
2016	27"	458 Grains	807 Grains	349 Grains	27.6 gr./In.
2016	32"	510 Grains	945 Grains	435 Grains	
2018	27"	505 Grains	842 Grains	337 Grains	28.8 gr./In.
2018	33"	80 Grains	1015 Grains	435 Grains	

Note -All arrow weights include nocks, fletching, inserts and 125-grain screw in points.

Water Weight: In order to determine how much more water weighed for a given volume than mineral oil, I filled two identical 27" 2013s with oil and water respectively. The weight for each, including nock, fletching, insert and fluid filler was 654 grains for the oil filled arrow and 716 grains for the water filled arrow. If these figures are accurate, and they should be pretty close, the ratio of water weight to oil weight is approximately 1.1 to 1. Therefore, to get a rough idea of what any of the above oil filled arrows would weigh if they were filled with water, simply multiply the weight in column five by 1.1 and then add that amount to column three.

SAMPLE ARROW VELOCITIES

Arrow Size	Oil/Air	Weight*	Velocity(P/B)	Velocity(18 yd.)
1816 (27")	Air Filled	414 Grains	144 f/s	124 f/s
1816 (27")	Oil Filled	694 Grains	118 f/s	107 f/s
1916 (27")	Air Filled	452 Grains	144 f/s	122 f/s
1916 (27")	Oil Filled	757 Grains	116 f/s	108 f/s
2013 (27")	Air Filled	417 Grains	146 f/s	126 f/s
2013 (27")	Oil Filled	781 Grains	115 f/s	104 f/s
2016 (27")	Air Filled	458 Grains	145 f/s	127 f/s
2016 (27")	Oil Filled	807 Grains	116 f/s	102 f/s
2018 (27")	Air Filled	505 Grains	139 f/s	123 f/s
2018 (27")	Oil Filled	842 Grains	113 f/s	104 f/s

* Includes nock, fletching, RPS (Replaceable Point System) insert, and 125 Grain bullet point. The fletching used was 5-inch "High Profile" style (3/4" - 7/8") to insure stabilization over a wide range of spines.

the oil-filled arrows showed no velocity variation at 18 yards between fletching types, while their air-filled twins showed a marked preference for lower profile (low drag) fletching types.

Penetration:

I purchased a fresh, tightly packed straw bale at the local feed store and shot it ten times with each of the test arrows, measuring the depth of penetration after each shot. No measurements were taken unless the arrow impacted near the center of the bale to insure consistency. The oil filled arrow consistently penetrated four inches deeper into the bale than the standard arrow. How that translates to penetration in a big game animal beats me, but there is none the less, a significant difference between the heavy arrows and the lighter arrows in the realm of penetration.

Temperature Effect:

To determine if lower temperatures would cause an increase in spine, one oil filled shaft was left outdoors over night where the temperature hovered in the high teens. Another oil-filled shaft was kept indoors where the night time temperature was maintained at approximately 65 degrees F. The following morning, both shafts were shot from the same bow without fletching and the results compared. The shaft that had been left indoors at 65 degrees exhibited

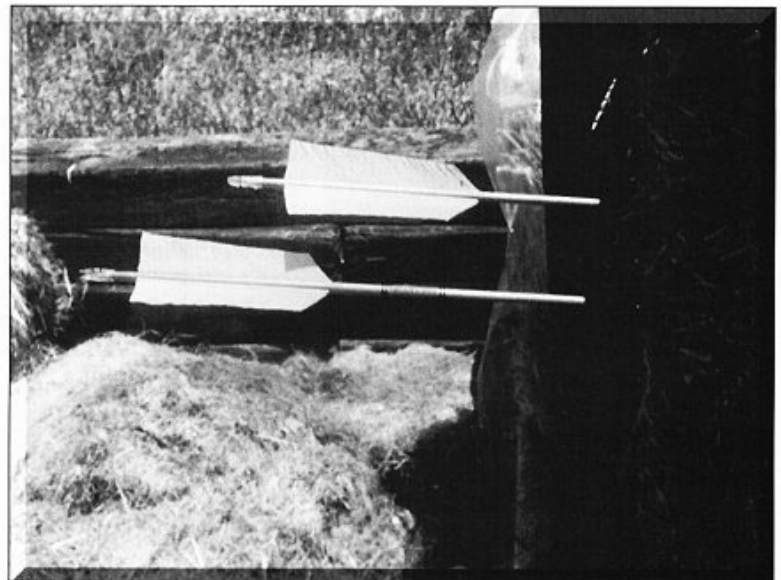
a slight nock left tendency while the shaft that been left outdoors straight lined all the way to the target from 15 yards. That minor difference between the two would have "washed" had the arrows been equipped with fletching. It was not possible to repeat the test at lower temperatures since the weather would not cooperate, but below zero temperature testing would have been interesting.

Durability Testing:

To compare the durability of standard aluminum shafts with oil filled shafts, three standard arrows and three oil filled arrows were shot repeatedly at right angles into stacked railroad ties from twelve yards. The results were recorded for each arrow.

90 Degree Tests:

For these tests I chose 2016 XX75 shafts: three air-filled standard shafts 27



Penetration comparison

- a. Upper arrow = Oil filled
- b. Lower arrow = Standard, air filled



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inches long and three oil-filled test shafts of the same length. Each shaft was equipped with 5" high profile feathers (to insure stability at close range), RPS (Replaceable Point System) inserts and 125 grains screw-in steel blunts. The distance from the stacked railroad ties was 12 yards. Each arrow was fired repeatedly into the stacked ties at right angles from 12 yards until it became unusable due to shaft damage. Broken nocks and fletching were replaced as necessary.

I was very surprised when the air filled aluminum shafts proved to be no stronger than before. This time, however, the 125 grain steel blunts swaged straight back into the shafts instead of splitting them as before! The average number of shots required to swage the 2016 27" air filled shafts (arrows) was 4.7.

The oil-filled arrows were even more interesting. None of the three oil filled test shafts swaged as did their standard, air filled counterparts, but they did bend behind the insert if they struck the railroad ties in the beveled area where two ties came together. As long

as they struck the railroad ties directly and not a bevel, they remained undamaged. One shaft bent on the sixth shot and one on the tenth shot when the bevel was struck. When shooting the third test arrow I tried my best not to impact in a beveled area, but only on the flat surface of the railroad tie. That shaft did not bend until I hit a bevel on the 40th shot! Interesting.

Oblique Testing:

The same tests were conducted using the stacked railroad ties, but this time the impact angle was 45 degrees. The test arrows were equipped with bullet points instead of blunts to insure maximum ricochet potential.

FRONT OF CENTER (FOC) COMPARISON

2016s (27" w/145 grain point [air filled])

Balance Point = 17.5" (From the nock valley)
Length = 13.5"
Difference = 4.0"
4" = 14.8% FOC 27"

2016s (27" w/145 grains point [oil filled])

Balance Point = 16" (From the nock valley)
Length = 13.5"
Difference = 2.5"
2.5" = 9.3% FOC 27"

A review of the results provided no particular insights, except that aluminum arrows tend to bend when they strike a hard surface at 45 degrees. If anything, it seemed that the lighter, standard shafts tend to bend less when striking a hard surface at an oblique angle. This is more of a feeling though than an observation and the bevel between the railroad ties again seemed to play a part in the results.

Further, in-depth testing might indeed show that an RPS insert equipped, oil filled aluminum arrow is significantly stronger than one that is air filled. Of course, the same test might show that an oil-filled arrow might bend easier than one filled with air when it strikes an oblique surface.

Front of Center:

The front of center (FOC) significantly changes when the hollow alu-

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minum shaft is filled with fluid. (see table above). I also noted that changing point weight from 100 to 145 grains on oil filled arrows seemed to have no visible effect on accuracy or trajectory as it did with their air filled twins.

Leak Tests:

To determine if there was a danger of the oil filled shafts slowly emptying themselves over a period of time I placed a number of them, point down on tissue paper that would immediately show leakage. After one month period there was no visible leakage. I am therefore reasonably sure that if the shafts are properly filled and sealed*, they should maintain their integrity for an indefinite period. (*Please see "Procedure" below.)

I did notice that, inexplicably, I began to loose nocks while shooting the oil filled arrows. At first I thought that I might have inadvertently contaminated the nock taper with oil when I cemented on the nocks with Fletch-Tite. Later, I found mineral oil inside some of the nocks and I began to think that it might have been oil seepage due to arrow acceleration upon release. I now believe that it was neither, but rather the hydraulic effect of the point being screwed into the insert that was partially filled with oil. I have found that if I do not follow the steps set forth in the "Procedure" portion of this article, the hydraulic pressure generated by screwing in RPS points with Teflon tape on the threads is sufficient to force the heat glued inserts out of the shafts!

Materials:

- Fluid (Mineral oil recommended - water is OK for testing)
- 2 oz. Dispenser bottle
- 7/64" bit & drill
- Dupont P.T.F.E. Teflon tape or equivalent.

Procedure:

1. It is much better to set up the aluminum arrow as you would for normal use before attempting to convert it to a hydro-arrow. In other words, complete all fletching as well as nock and insert installation before making the conversion. This is to insure that

there is no oil contamination of any of the surfaces on which glue will be applied. Heat glue, if it's flexible is OK for insert installation, but epoxy is better, especially 24 hour epoxy such as JB Weld.

2. (This step is optional, but highly recommended.) Once the arrow has been set up for normal use, the next step is to drill out the rear of the insert to facilitate filling of the shaft. I use an electric drill and a 7/64" bit and am careful not to damage the threads inside the insert.
3. I have found that the 2 oz. plastic glue dispenser bottle available in most archery catalogs works well to facilitate filling the shafts. I place the shaft on the floor with the point end up and then insert the spout of the plastic bottle in the open end of the insert. I then apply a slight pressure to insure a seal between the spout and the insert and then squeeze the plastic bottle with moderate pressure. I stop from time to time to allow the vacuum to break in the bottle and air to escape from the shaft.. Most arrows will require 1 bottle or more to be topped off.
4. After you feel that the shaft has been filled, allow it to stand for a few minutes so that any trapped air bubbles can escape. Repeat the filling procedure as necessary until the fluid level in the insert remains constant.
5. Slowly screw in a RPS point without any Teflon tape on the threads. This will allow the excess fluid to escape from within the insert. Failure to complete this step can cause an increase in spine as well as migration of fluid into the nock cavity and possible ejection of the RPS insert.
6. Remove the RPS screw in point, wrap Teflon tape around the threads and replace.
7. After the first shooting session, again remove the screw in point, top off and repeat steps 5 and 6.

Is the hydro arrow the answer for hunting large, dangerous game or even large non dangerous game? I really don't know, but the concept is intriguing

to say the least and there's really nothing to lose by experimenting with one or more of your aluminum shafts and a little water. The hydro arrow does provide deeper penetration, less hand shock, a quieter bow, and even possibly increased shaft durability (toughness). All these benefits are provided with no change in arrow spine, but... you might want to stand a little closer to the target! (At least at first.)



Author's Note: The testing conducted for this article was not meant to be exhaustive, but rather was geared to "wet the interest" of the reader. Further experimentation is obviously in order and the author and Instinctive Archer® Magazine would very much appreciate any information you can provide regarding the results of any testing that is conducted. Heavy arrows have always been known to penetrate better, but what may prove significant is the increased durability of an aluminum arrow filled with fluid. Happy shooting and experimenting. -KW

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TARGET PANIC

(Part 2)

by Gary Sentman

I discussed ways to recognize target panic in the Summer 1997 issue of *Instinctive Archer*® magazine.

In this article I want to cover how to control it. Remember there are many different kinds of target panic and we are all made up a little differently. Therefore I will try to cover the basic problem of target panic—THE FEAR OF MISSING THE TARGET.

Those who have known me for some time know that I have experienced target panic in the severest degree. I set out two years ago and pronounced war on target panic. There have been times when I failed miserably, inasmuch as I thought that if shooting a bow was going to be such a mental letdown I would just stop shooting. However, my love affair with traditional archery has kept me fighting to win the battle.

If you're one of the unfortunate ones that has had target panic develop into a subconscious reaction, forget about the quick fix. It's going to take constructive thinking and a lot of hard work. The first thing you must do is quit dreaming about the magic bow that can solve your problems, or changing your form or equipment every time you get the impulse. Unless, of course, you truly believe your equipment is inferior.

We must recognize the fact that the body and mind reject change. Whether it be as minor as a change in our diets or as major as an organ transplant. Implementing a lot of changes in your form, arrows, and particularly your bow will increase doubt and uncertainty in your shooting. Your brain will have to make all the adjustments for timing, pull weight, etc. The more you change, the less confident you become in your equipment and shooting ability. Therefore the sooner you can find the right bow with the proper arrows and establish an anchor point and form, the better off you will be. Avoid *love affairs* with *wallhanger* bows. Shooting a bow because it looks good or has a certain romance about it may lead to target panic of some kind if you don't feel it is a very accurate bow. Remember, the laws of physics in choosing your equipment.

A 58" bow, whether it cost \$100.00 or \$1000.00 is a short bow and will have drawbacks under some shooting conditions. A light arrow may be faster, but not as steady under adverse conditions as a heavy one. Your equipment must radiate confidence. Once you feel you have the best equipment for you, begin the mental conditioning.

MENTAL CONDITIONING

The purpose of mental conditioning is to establish a rock-hard foundation in your shooting. A foundation that allows you to shoot any time, any place, under any conditions, and to be confident that you can do well. You must condition yourself to be in control of your equipment at all times. Control is the objective. Once passageways are formed in your brain, it is my understanding that they can never be erased. However they can be rerouted.

Begin by surrounding yourself in as secure an environment as possible—your back yard for instance. Put a small spot on your target, then standing very close to the target, draw your arrow, and aim at the spot—but do not release the arrow. Continue to aim at the spot and count to 2 or 3 while at anchor. Then let down without releasing. Do this exercise at different distances, from 10 yards to the maximum distance you will require yourself to shoot. When you can hold on the spot at full draw and anchor, you should feel confident that if you were to release the arrow it would definitely hit the spot, then you can release the arrow. Shoot slow and deliberate at first, as if every shot you make must count.

Next, hold the arrow on target for a count of 3 to 5 seconds before releasing. This will train your reflexes to not release prematurely. This keeps your brain in command. It will teach you to draw, aim, and shoot when you want to, not as you've been programmed to do by conditioned reflexes—if you have had target panic for some time, it has developed into a subconscious reflex. You will have to work very hard and not give in to the old habits. Keep your progress positive. Avoid stress and pressure. Your confidence will progress one inch at a time. Be careful not to lose a mile by jumping beyond your limits. Spend a lot of your practice time shooting targets you know you can hit.

Avoid rhythm shooting and practice variables. For instance—draw, aim for 2 counts, next shot 4 counts, next 3 counts and let down without shooting the arrow. This type

of practice keeps you in charge. As you progress with your shooting you should continually go back to basic form. Deliberate shooting and mental control. Applying the principle that you can't learn geometry without having a good understanding of general math, approach pressure shooting very slowly. During my recovery from target panic, I would do great until I would think "win," even if as little as a nickel was the compensation for winning. This would start a chain of subconscious reflexes and I would freeze, unable to aim the arrow at the target.

To this day I have to be on guard and not allow the fear of missing and target panic to come right back. At times, I noticed that when I would return to the target range after relaxing, I was able to laugh when I missed the target—I just started to have fun and didn't really care if I placed first or last in the competition. Consequently I found I could aim and hold on target. I use this example to point out the necessity to relax and enjoy the game.

Visualizing is very important. However it took me a long time to realize what to visualize. I had read that visualizing the arrow going into the target was the thing to do. But it never worked for me, it only made things worse. What did work for me was visualizing myself holding on target 2 seconds without releasing the arrow. Visualize yourself relaxed and in total control, pulling the bow all the way to your anchor point, holding for a few seconds and loosing the arrow with smooth control.

When at competitive 3-D shoots try to relieve the pressure of competition by thinking about anything but the shoot. Laugh, wave your arms, or do whatever it takes to release the energy that builds up pressure. When you let the energy out you will find it easier to relax. Try not to think about the next shot or the shot you blew on the last target. The only shot that should concern you is the one in front of you. Thinking ahead to the next shot or rehashing the last one will be too much for your mental control and may cause you to fall apart.

To control target panic, you have to prove to your subconscious mind

that you are good with your equipment and can perform well under all conditions. To do this you must shoot with different archers as well as practice hard shots.

Easy shots or shooting alone won't give you the confidence to compete in a difficult 3-D shoot. If you lack confidence, target panic will take over. Never allow yourself to shoot on reflexes during your practice sessions. Whether hunting or target shooting, all thoughts should be on aiming the arrow, because you will release the arrow at that time the way you practice: either controlled or uncontrolled.

TRAINING EXERCISES

To progress in the battle against target panic you may find that going from sight to sound may benefit you. Some archers with target panic have gone to a clicker on their bow. The clicker is a spring wire that fits on the sight window. When the arrow is drawn to full length the wire spring closes and makes a noise. This then triggers the release of the arrow by the shooter. Going from sight to sound helps the shooter regain mental control, enabling him to not release the arrow prematurely. However most traditional shoots do not allow clickers on bows during competition.

I suggest a different way. When practicing or even at 3-D shoots, have someone stand next to you. When you get to full draw and on the target say "now" then wait until they say shoot before releasing the arrow. This will not allow you to shoot your best score, but will help you gain mental control.

Another exercise is to get together with one or several archers. Line up in front of the target and draw your arrows at the same time. No one should loose an arrow until the designated shooter releases, then all may follow. Take turns on who will lead or release the arrow first. If you have target panic you may jerk, shake, and

sometimes shoot the arrow before your time, but if you keep trying, this exercise will help you gain control.

I have found that changing to a lighter pull weight won't necessarily help the problem of target panic. In my case, dropping down in pull weight only lead to insecurity. I worried about trajectory and getting a good release. Where with a heavier pull weight I shoot more positively and therefore do much better. However, it does help to have a bow approximately 5 to 10 lbs. heavier in pull weight for an exercise bow. Use the heavier bow to draw, aim, hold for 3 seconds, and let down without shooting. This should be done only after practice shooting as this exercise will tire your muscles and make good shooting more difficult. Use the bow you are most confident with for practice and use it all the time. Again, avoid changes.

KEEP SHOOTING FUN!

I often found myself stressing out at tournaments. When I walked up to the first 3-D target I would subconsciously relate to a 3-D shoot as a kid in school would relate to test time. I would be fine until the first target when I became nervous and uptight. I felt that if I didn't "ACE" the test I would be laughed at. So remember, you're good, but not perfect. When you miss, don't stress out, laugh it off, and have fun.

In closing, show me an archer with good form and total mental control and I will show you a very good, consistent shooter any time, anyplace, or under any conditions. Good shooting.





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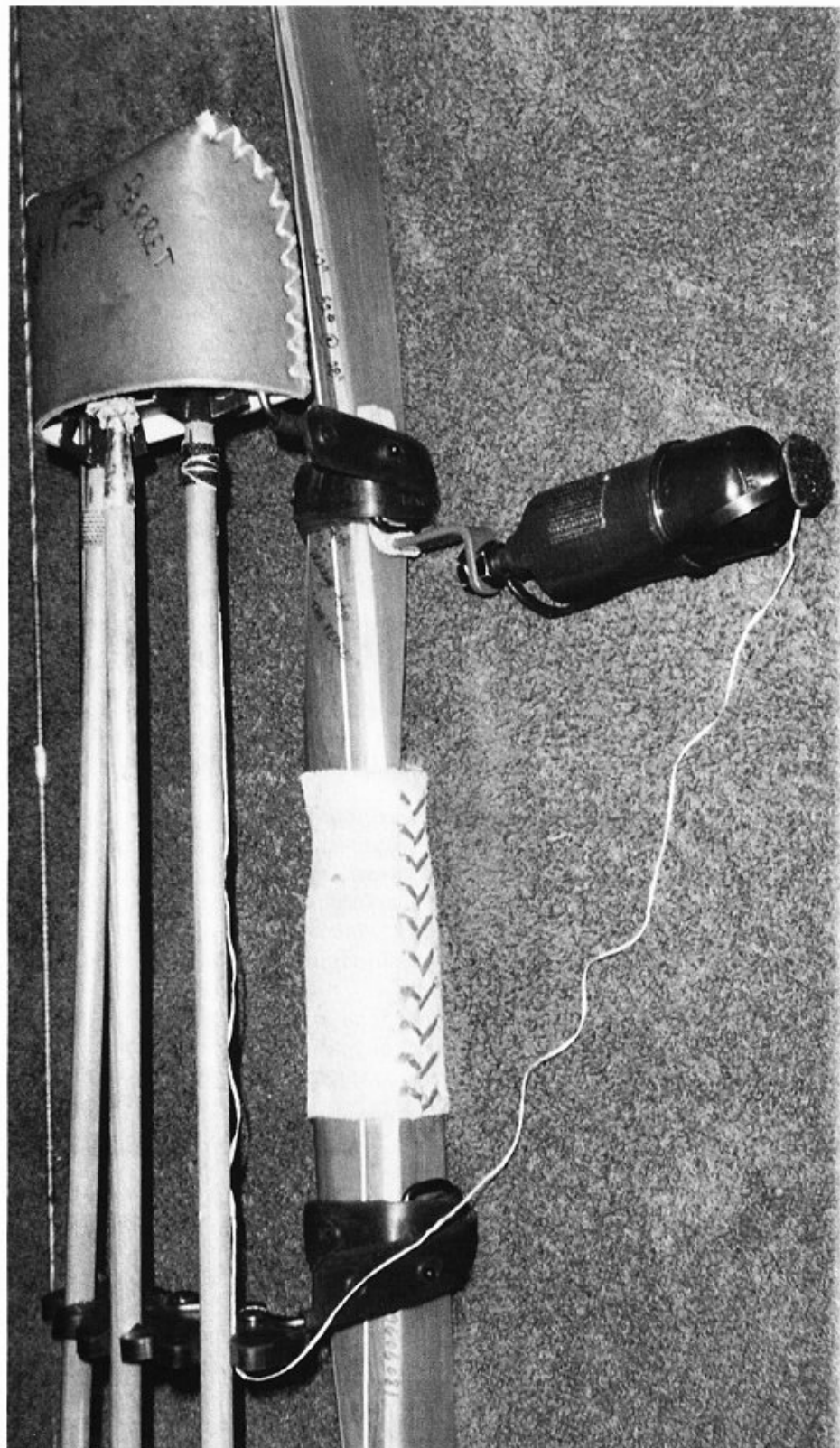
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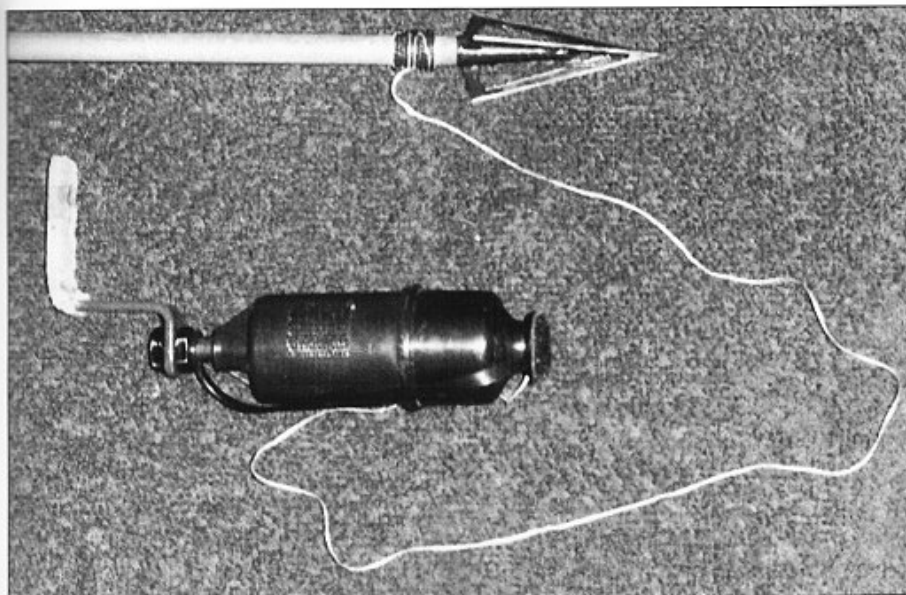


by
MICKEY E. LOTZ

We shoot traditional equipment, especially longbows, because of their simplicity and ease of use in the field. No extraneous "stuff" hanging on the bow to weigh you down, get in the way, or worse yet, fail just when you need it most.

Unfortunately some of the critters we choose to hunt particularly black bears (because of their fat and long hair don't bleed well) and turkeys (because they can fly off even if mortally wounded without leaving any blood trail) almost require that conscientious bowhunters use a string tracker when hunting them. I like to use one when hunting whitetail deer as well, especially during the early season when green leaf cover can make finding a dead deer difficult.

Custom bowyer Bob Morrison of Granville, Ohio (614) 587-0368 recently built me a beautiful 62" tempered bamboo and cocobolo longbow with stag horn nocks that I named "Sweet Thing" because of its incredibly smooth shooting characteristics. I



Close-up photo showing the unattached string tracker with home-made (custom) mounting bracket.

intend to do a lot of hunting with this bow especially for the whitetails and longbeards that inhabit my home state of Ohio, so I had to come up with a way to mount a string tracker on it.

Necessity being the mother of invention my brother and I devised a little bracket that would allow me to use

the existing rubber strap from my Great Northern Bowhunting Co. strap-on bow quiver to mount a small, light weight Game Tracker Model 1000 string tracker which carries over 300 yards of 17# test line, quickly and securely. (Game Tracker also makes a larger model 2500 that holds nearly 1/2 mile of line)

A look at the photos that accompany this article shows the simplicity of the bracket. Basically a 1/8" X 1/2" wide piece of steel with 2 bends and one 5/16" hole. Mine measures 1 3/4" X 1 1/4" X 3/4". A jam nut is used to secure the string tracker to the bracket. Using Elmers Hide Glue I glued on a piece of tanned mule deer hide, left over from the piece used to make the grip on my bow, to pad the bracket and prevent it from possibly scratching the finish on a limb. I also painted the bracket brown to compliment the bow and prevent rust.

Making the bracket was simple compared to coming up with a method of securing the string to my arrows. If you use aluminum arrows, Game Tracker makes a little clip

that slips on under your screw-in broadheads, or you simply unscrew the head a few turns, wrap the string around the insert a couple times, and screw the head down tight again securing the string. I prefer to use homemade cedar arrows with traditional self sharpened Snuffer broadheads, and neither of the previous methods will work on wood arrows.

After much experimentation I discovered that a 1/2" band of self sticking velcro (the stiff sticky part) wrapped around the shaft just behind the broadhead works great. Just wind the string tightly around the velcro a couple times and you can't hardly get it off the stuff. A couple 15 yard shots at the McKenzie deer target in my back yard verified the system worked perfectly as designed.

My first opportunity to test my set up under actual hunting conditions came one frosty November morning when a beautiful 8 point whitetail buck with love on his mind followed a doe a little too close to my treestand. After the shot, the buck ran off unscathed. But hey, it sure was easy to retrieve my arrow. All I had to do was follow the string.



The author and a tremendous 19-point non-typical buck taken in Ohio. This was the largest buck taken with a bow during the 1995-1996 Ohio season (206 ⁷⁸ P&Y).

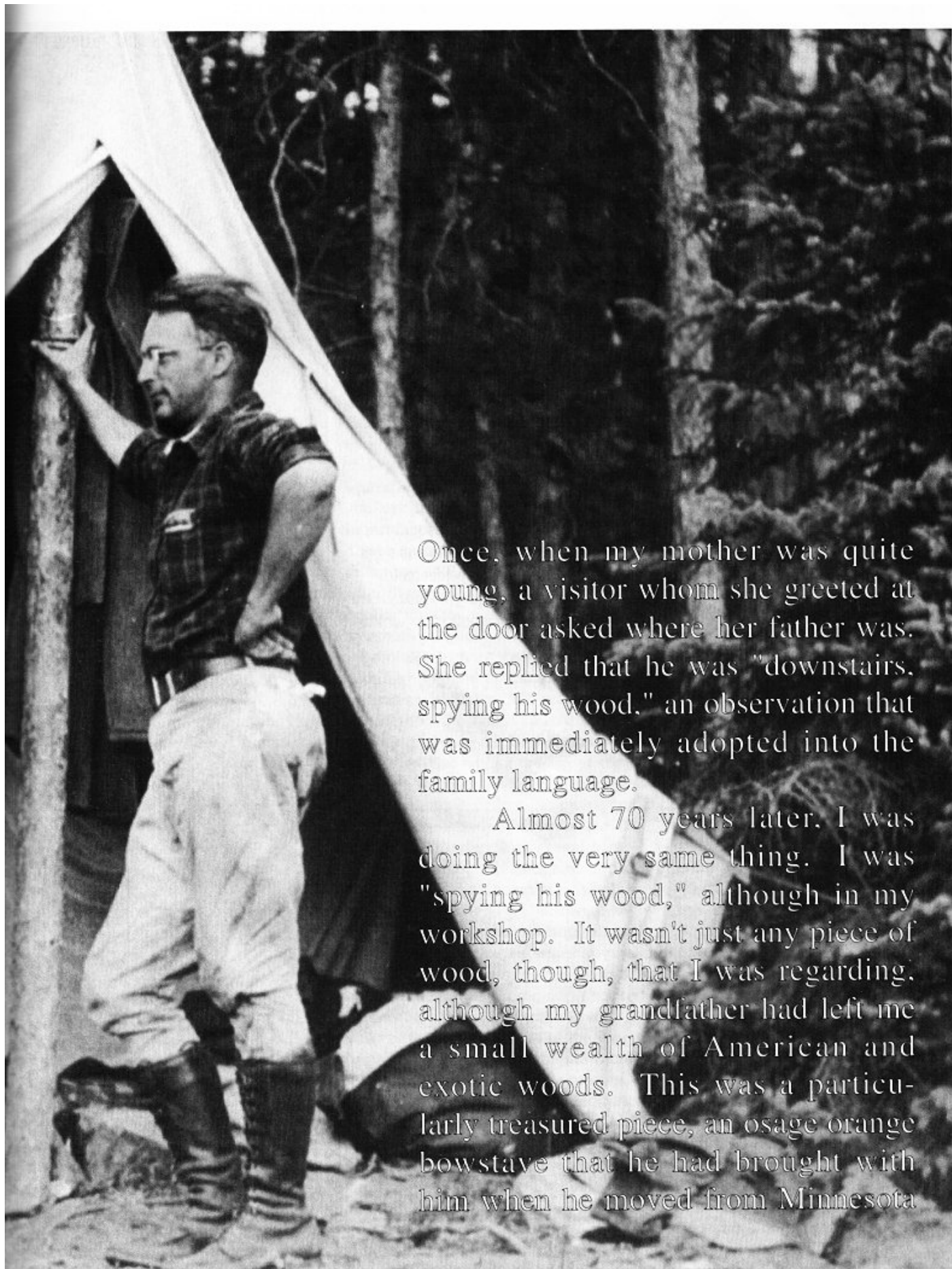


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IN MY GRANDFATHER'S DAY...

by Hank Curtis



Once, when my mother was quite young, a visitor whom she greeted at the door asked where her father was. She replied that he was "downstairs, spying his wood," an observation that was immediately adopted into the family language.

Almost 70 years later, I was doing the very same thing. I was "spying his wood," although in my workshop. It wasn't just any piece of wood, though, that I was regarding, although my grandfather had left me a small wealth of American and exotic woods. This was a particularly treasured piece, an osage orange bowstave that he had brought with him when he moved from Minnesota

to Washington, D.C. in 1936. There was no telling how many years before that it had been cut and rendered a stave, and therefore of knowing precisely how old it was. But one could describe it, without the slightest exaggeration, as well seasoned.

It was now, in 1996, almost 25 years since my grandfather and I had laid out and rough-cut the limb shape on the old Delta bandsaw and I had, under his tutelage, begun working the tough old piece into a bow. I had gotten as far as scraping the back to a single growth ring and had begun to shape the handle and face of the bow when several things, largely forgotten, had caused me to shelve the project temporarily.

"Temporarily" lasted a long time. With every intention of picking up where I had left off, I had toted it wherever I moved, attending it the same care I gave my prized Hardy and Partridge cane flyrods, although it was as delicate (and nearly as heavy) as a 6' prybar. Over the years, I had taken it out with halfhearted resolve, each time putting it away, daunted by the challenge. Of course, he who waits often waits too long. I sure had. The osage hadn't gotten one bit softer. And my grandfather, surrogate father, friend, teacher, mentor, master bow maker, and all around craftsman, the man who had cast the direction of my life and who should now be at my elbow to share and advise, had died in 1983.

As I glowered at the bow clamped to a workbench, the bright yellow wood I had exposed years ago oxidized to a dark brown, it dawned on me why I had put it aside. I had lately assaulted it with every piece of artillery I had. Planes, spokeshaves, rasps, including one that would have intimidated a large shark, succeeded only in leaving a few puny scratches. I had encountered many hard, tough woods before, but this was like working steel. A drawknife would have been suicide and I was damned if I would resort to a power tool. Absolutely stumped by this piece of wood, I also began more fully to appreciate why my grandfather, who normally underpriced his wares, had asked and gotten a staggering \$70 for his osage bows during the Depression, a week or a month's wage for many.

* * * * *

Precisely when and how my grandfather was first introduced to archery, made his first bow, or began making archery tackle professionally are largely lost to the family history. We do know that he was making archery tackle in the family home after work, at least on a small scale, in the early 1920s. Almost surely he was exposed to the sport some years before that. How that happened is also speculative, but easier to deduce and more revealing of the man.

George Francis Snell, my grandfather, was a man of extraordinarily diverse talents and pursuits, but in one way or another they were mostly tied to his foremost passion for the outdoors, in all its permutations. Wherever he went, one of his first priorities was to reconnoiter the full range of outdoor opportunities in that region and immerse himself in them. He moved easily from one to the next, hunting to fishing, salt water to fresh, seashore to pine woods, applying past knowledge and acquiring new.

Though he was not a child of the wilderness, he had a gift and ardor for it that was revealed and kindled when he

was very young by his father and grandfather. He took it from there.

Born in 1897 in Providence, Rhode Island, Grandfather was raised by a father who taught him to hunt waterfowl and upland game, and an indulgent grandfather who introduced him to the sea.

His father, George Ellsworth Snell, was a lumber merchant who in 1880 worked as

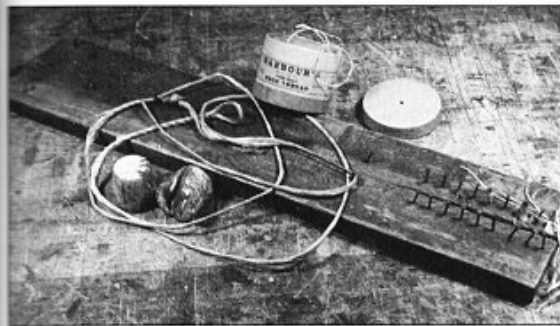
a surveyor in Montana on the construction of the Northern Pacific Railroad, bringing home several artifacts, including buffalo horns, an exquisitely-beaded knife sheath, and a number of colored pencil sketches in his journal drawn by Flying Eagle, "a Sioux who fought and bled but did not die in the Custer Massacre, 1876. One of [the] 'Rain in the Face' band." (Interestingly, Rain-in-the-Face, of the Hunkpapa Sioux and one of the principal leaders with Crazy Horse at the Little Bighorn, had a personal score to settle with Lieutenant Thomas Custer, General George Armstrong Custer's younger brother. On the general's orders, Lt. Custer had arrested Rain-in-the-Face in 1875 for killing two civilian members of the General Stanley Expedition in 1873, an army unit ironically guarding surveyors of the Northern Pacific project. Rain-in-the-Face escaped, threatening revenge. By his own later account, he recognized Tom Custer at the Little Bighorn battle, shot him, cut out his heart, took a bite out of it, and spat it in the dead man's face. More or less in the same vein, Flying Eagle's sketches included one depicting two Indians meeting two soldiers—on whom one of the Indians is urinating.) Unfortunately, the artifacts included no bows or arrows.

Abruptly, in about 1912, Grandfather's father moved the family to Minnesota, an environment at once as removed as can be imagined from his seacoast upbringing, and yet as subtly alluring in the appeal of its untrammelled and rich offerings as the Narragansett and Lauderdale.

Just entering high school, he was soon immersing himself in the North Woods of Minnesota, acquainting himself with its lakes and forests and the fish and wildlife it supported, many of which were unfamiliar to him. He learned woodcraft and camping and adapted what he already knew of



Several of Grandfather's friends spending an enjoyable afternoon on the target range. The little girl in this photo is my mother.



Grandfather's string-making jig and supplies.

of hunting and fishing to the new habitat and species he encountered.

Quitting high school, he took several jobs, eventually one with the St. Paul Pioneer Press as a livestock market news reporter. A few years afterward, the paper gave him the opportunity to write a weekly outdoor column, undoubtedly because of his outdoor interests. He made the most of it, building the single column to a full outdoor page in a matter of years.

Minnesota is a grand place and it was a grand time to be there. It stirred in Grandfather an unquenchable appetite to learn everything there was to know about its outdoor opportunities and the arts necessary to exploit them fully. It was therefore inevitable that he would encounter archery.

Sport archery at that time was not new to the U.S. According to Arthur W. Lambert, Jr.'s *Modern Archery*, the first club, the United Bowmen of Philadelphia, formed in 1828, maintained a tiny membership, and folded in 1859. A brief flurry of national interest occurred in the late 1880s, spawned by a national tournament that the newly formed National Archery Association of the United States first sponsored in 1879. But the enthusiasm of the "archery craze of 1878-1880" as Lambert called it, quickly evaporated when those who had been caught up in it discovered the sport required more than passing fancy to master.

Thereafter, the sport pattered along without growing much, kept alive by a handful of hardcore devotees scattered around the country, until 1926, the date Lambert marked as the real beginning of sport archery in this country.

Lambert offered several rea-

sons for the sport succeeding in the 1920s where it had failed to take root in the 1880s, principally among them the newfound concept of recreation. Before the Great War, only the wealthy could afford to recreate. The great majority of people were too busy working to indulge in it. After the war, a new culture emerged that acknowledged and encouraged recreation and provided the environment for archery and many other sports

to flourish.

Lambert's premise certainly describes the evolution of archery in Minnesota. In 1920, only a handful of people, outdoorsmen mostly, practiced archery. In 1925, the first clubs were formed in the state. By 1929, when Lambert published his book, archery clubs had sprung up all over the country. Interclub and open competition was widespread and growing yearly in popularity. The sport quite literally exploded, and Grandfather was in the thick of it from the beginning.

He learned what he could of shooting bows and crafting tackle from his new archer friends, but they were scarcely more enlightened than he. They were all modeling the English longbow in those days, a natural enough starting point for a forgotten craft.

No bow, perhaps no weapon of war before gunpowder, had been the subject of more Western history and literature. Unfortunately, precious little of that literature dealt with the practical matters of how to make bows and arrows, what woods to use, how to select the best bow wood from among each species, how to billet them, how long to season, where to position the handle in relation to the true center, how to shape. If such practical instruction existed, archers of the early Twenties were largely unaware of it. They may have had a few photos of museum bows, but from there, they were on their own and pretty much in the dark.

In the beginning, each bow Grandfather and his friends made was an experiment. They shared what they learned from each attempt, building their collective knowledge through trial and error. But their pool of knowledge was

limited largely to themselves. Their progress might have been faster, their mistakes fewer had they the means of learning what other bowmakers were doing. But this was before archery clubs and periodicals provided the medium. Under the circumstances, the fact that they were able to fashion bows at all, much less credible facsimiles of the classic English longbow, of traditional, sapwood-backed yew with narrow and deeply-stacked limbs, cordage wrapped handles, and carved cowhorn nocks, is more than a little remarkable.

They used common hand tools almost exclusively—saw, drawknife, spokeshave, plane, rasp, scraper—the same tools we use today. In an era of greater self reliance, when a working knowledge of woodworking was cultivated as an essential element of one's education, they might have had some advantage in approaching the task. Still, they had to address the unknowns of achieving proper shape, the business of balancing the longer upper and shorter lower limbs together in an even bend, avoiding "hinges" and "whip ends," (weak spots revealed in the drawn profile), correcting for wryness, or lateral torque of the limbs, and the other myriad problems of shaping bows. Achieving this transcended woodworking mechanics. It demanded true craftsmanship. And the bows they made reflected their relative abilities. Some of them produced good bows. Some didn't.

They made strings from shoemakers' flax with Belgian-style woven eyes for the upper nock, timber hitches for the lower, and served arrow nock points. For added strength at the bow nocks, both ends of the strings were reinforced with double the number of flax strands of staggered lengths so the reinforced sections feathered gradually into the main bowstring.

Making a good set of arrows was almost as great a challenge as the bow. First was the question of wood. Before archery's popularity created a commercial market for archery supplies, the nation's full range of arrow woods was not always obtainable, so one generally used the best of what was locally available. This was of course true of other archery materials. In Minnesota, Norway pine, strong, straight-grained,

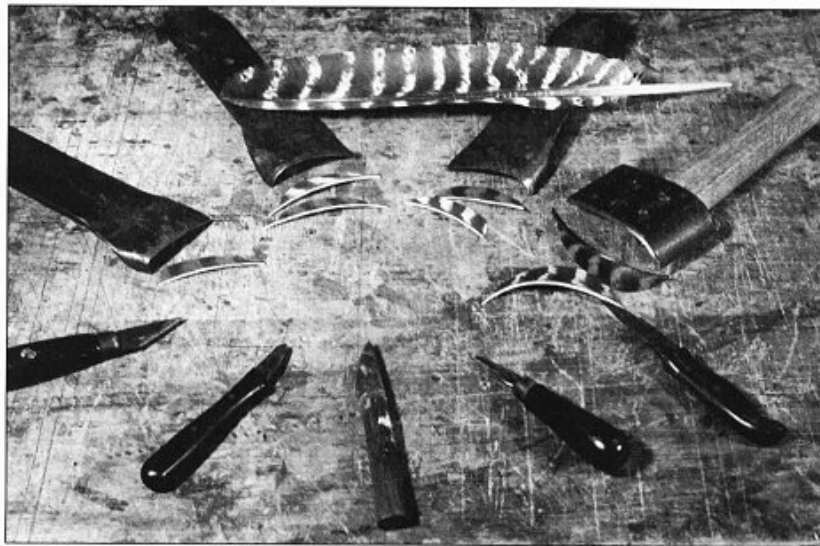
stable, and somewhat heavy, was readily available. An excellent arrow wood by any standards, it was their early arrow wood of choice until Port Orford cedar and others became available.

Shaping the shafts was another matter. Initially, none of them had a doweling machine, so they had to hand-plane their arrow shafts. Grandfather used a piece of flooring, clamped in a vice, groove-up, to hold the shafts as he worked them, a stroke at a time, a turn between each, until they were at sanding stage.

A skilled, patient woodworker could, in this manner, produce a set of reasonably-round shafts of an approximate diameter and weight. But it was a painfully slow and inherently imprecise process, lent neither to large scale production nor to the making of anything approaching matched arrows. Shooting such arrows, an archer far less skilled as a bowman than their maker was in his craft, could readily detect the variation in their performance. If the archer who made them happened also to be a craftsman of uncompromising standards and rare ingenuity, this was intolerable. The design and fabrication of a quality doweling mechanism was a matter my grandfather soon addressed.

Fletching had its challenges as well. The vane material itself presented no particular problem to the early archers, simply because there weren't many high quality, readily obtainable feathers from which to choose. There still aren't. The short list came to a choice between turkey, turkey, and turkey.

There were esoteric alternatives, including peacock and eagle, which Lambert described respectively as highly prized and unsurpassed, and buzzard and condor. Even then, these were so difficult to obtain as to be out of the question. Now of course, save peacock, they are also seriously illegal. There



As it happened, Grandfather had a ready source of exceptional quality steel through his father-in-law, whose raw stock for ice skates was the ideal thickness and width for fabricating feather choppers. Using this steel, Grandfather annealed, forged, shaped, tempered, then sharpened a number of feather choppers of different sizes and shapes which he used throughout his archery making years.

were other feathers some archers no doubt tried when they could get them, including Canada goose, snow goose, and swan. Saxton Pope and Art Young used feathers of the greater bustard, a very large European gamebird of some thirty pounds, for the heavy arrows they made for hunting rhinoceros, to balance the seven-inch broadheads with which they tipped them (*The Adventurous Bowmen*, Saxton Pope, 1926).

But for most archery applications, the common barred turkey feather was, and is, one of the sturdiest and best vane materials. It had the additional advantage of being widely available as butcher's trash and cheap, at least for awhile. How things change.

Of the two methods of removing the feathers from the quills (stripping, and the more time-consuming process of cutting them from the quills) Grandfather probably never tried the former, knowing that it would pull the barbs apart, destroying the integrity of the vane. The cutting method required highly-specialized knives. As none was commercially available, he designed and made a battery of them for cutting the vanes from the quills and for trimming the inner quill base. He used broken putty knives, discarded cutlery, any stout, high-carbon steel he could find that would take and hold an edge, once tempered. Each knife

had a different shape for its individual function and, the work being close and precise, all had thin handles designed to be held as a pen or scalpel, between thumb, index, and middle finger.

Once trimmed from the quills, cutting the vanes to shape, by knife, was as tedious and inexact as was the process of hand planing shafts. This was as immediate a problem as the lack of a doweling machine, but one more quickly solved.

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He made stamps for two styles of vanes, triangular and parabolic, basically in only two sizes, 2-3/8 by 1/2 inches and 3-1/8 by 9/16 inches for the parabolics and slightly smaller, 2-1/4 by 7/16, for the triangular. Mostly he used the parabolics, evidenced by the fact that he had made left- and right-wing stamps for both parabolic sizes, but only a left-wing stamp for the triangular. Though very small by today's standards, these vanes followed the preference of the day for less rather than more feather, as a means of reducing drag. They were actually slightly larger than Lambert recommended (2-1/4 by 3/8). He used these two sizes both for target and hunting arrows, the larger vanes of course for heavily spined, broadhead-tipped, arrows.

Although other glues were employed for fletching, Grandfather's choice was hide glue. The varieties he

used came in various forms, depending on the manufacturer, some in thin, broken flakes and others in large, thick cakes which had to be broken into pieces for use. He heated the glue in a simple double boiler of tin cans, the outer being shallow and wide, the inner a taller six or eight ounce size can, into which he put a small quantity of raw glue product and a bit of water. Temperature and the amount of water added to the mixture was critical to the glue's set time. The hotter it was, the longer it took to cool; the thicker it was, the less it penetrated the wood. Since hide glue does not adhere to finished surfaces, the arrows had to be fletched raw, afterward brush painted between the vanes, crested, and otherwise finished. He wanted the glue to set in a matter of two or three seconds to minimize the time he had to hand clamp the vane to the shaft before setting it aside.

For applicator and stir stick, almost any wood scrap worked, but he preferred a thin, fairly wide one. Once the glue melted, he would check its consistency with the stick, using essentially the same method a cook uses to test the readiness of jelly for canning. Dipping the stick into the solution, he would hold it at about a 45 degree angle and observe the bead as it ran down and dripped off the stick, correcting with more water or glue flakes as he judged necessary.

All other archery-making operations took place in the workshop, but for fletching, Grandfather commandeered the kitchen, principally because he needed the stove to melt the glue, but also because the adjacent kitchen table afforded a suitable work surface for his mini production line. Grandmother hated fletching days and surrendered her domain under protest, registered with certain, darkly muttered Teutonic oaths, because the heated glue, frankly, stank up

He was so deft at it that, thirty years out of practice, Grandfather could still fletch a dozen arrows in 20 minutes, not counting preparations.

not only the kitchen but the rest of the living quarters as well.

Even before he got into the archery business on a large scale, Grandfather concerned himself with the methods of efficient production, consistent with quality. This was particularly applicable to arrow making because it consists of a variety of repetitive operations. In fletching, he organized his materials on the kitchen table before melting the glue, vanes divided in three piles, one dyed for the cock feather (some of his early arrows had undyed cock feathers). The shafts, with nocks cut, he arrayed in a neat row on the right

side of the table, a few inches apart, nock ends hanging over the edge.

When the glue was ready, he would put the first shaft under his right arm, nock end to his front. The cock feather, placed of course perpendicular to the nock, was the first to go on. Aside from being the only feather whose position on a wood arrow matters, like the label on a baseball bat, it also establishes the relative placement of the other feathers, which is essential if one fletches

entirely by eye, with no reference marks, as he did. (The cock feather is positioned on a shaft's edge grain for the same reason a bat's label is placed on the flat grain: it presents the edge

grain, which is stronger and flexes less than the flat-grain side, to receive the stress of lateral flex. Similarly, with a properly-held bat, label facing up or down, the bat's edge grain, 90 degrees to the left or right, takes the ball's impact. In both cases, the use of the edge grain minimizes the likelihood of breakage.) Taking a cock feather by the rear end in his left hand, he ran a drop of glue with the applicator along the bottom of the quill. Replacing the applicator stick in the gluepot, he grasped the arrow with his right hand, leaving thumb and forefinger free. Then he positioned the feather on the shaft with only the slightest spiral, holding it in place by thumb and forefinger of both hands, for a second or two until it set. After a quick look down the shaft to check alignment, he replaced the arrow on the table and took the next, running out the string of cock feathers, then second and third feathers in turn.

He did not evolve his fletching technique overnight by any means, but once he became comfortable with it, he did not change. He was so deft at it that, thirty years out of practice, Grandfather could still fletch a dozen arrows in 20 minutes, not counting preparations. I timed him at it, not once but several times. He was not hurrying for my benefit. Each move was deliberate, its transition to the next smooth and without haste. It was like watching something well choreographed and practiced. In



A sampling of my grandfather's hand-carved horn nocks.

retrospect, however, at that rate he was working slowly, about one fletch per half minute, thirty-six in eighteen minutes. I can only wonder how much faster he must have been when in practice. (If this sounds incredible in the age of vane clamps, one had to see the man in action. I once watched him, using a hammer double, put three shots on a clay bird he launched himself with a hand thrower. Starting with the shotgun broken open, loaded and crooked over his left arm, he threw the bird, dropped the thrower, closed the

gun, cocked the hammers, fired both barrels, missing purposely, broke it open, extracted the right barrel empty, reloaded it with a shell he held between right middle and third fingers, closed the gun again, cocked, shot and hit the bird.)

His fletches held, too. I've found more than one of his arrows, a year or more after slithering their way under groundcover, the barbs long gone but the quills still firmly attached to the shafts.

With such equipment as their combined knowledge, wit, and relative craftsmanship enabled them to make, this small circle of archers practiced a great deal together, getting proficient enough eventually to hunt snowshoe hare and other small game and with bigger game in mind. (In the early 20s, bowhunting for deer was illegal in Minnesota, a restriction Grandfather later worked with a few dedicated archers to change. After their intense lobbying over several years, a law was finally passed on April 12, 1929 to permit taking deer by bow.)

In the course of things, however, they also discovered the fun of competitive shooting. Others among their friends were drawn to it as well. Archery, they realized, had appeal as a sport, not just to the hardcore Robins of Locksley like themselves who made their own tackle and midwived its rebirth, but to the broadest of audiences. It was ideally suited as a family sport, as few sports are, crossing sexes and ages, physiques and levels of skill. And it had potential, they soon learned, as an equally appealing social activity.

By 1925, interest in archery had grown sufficiently in St. Paul, where Grandfather lived, to prompt him to establish a club, the Kaposia Archery Club of South St. Paul. During its brief life, it staged several archery-golf matches with members of a local golf

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course. Kaposia's short run may have had to do with the formation, the same year, of the Twin Cities Archery Club. He may have concluded there was insufficient interest in archery then to support two local clubs. In any case, Grandfather joined Twin Cities as a charter member, along with his early circle of archery friends, Dr. John M. Armstrong, James A. Garrow, Charles T. Burnley, and Earl G. Lee.

The club set about doing what clubs do—attracting members, holding weekly practice sessions, teaching classes, initiating intra-club tournaments, and organizing and participating in invitational.

These contests took many forms, from conventional target competitions to archery-golf, roving shoots (a courseless substitute for archery-golf), flight shooting, wand shooting, and clout shooting, an event involving indirect fire at unseen, horizontal targets. Grandfather participated in as many of them as he had time for, usually paired with Garrow, Armstrong, or Burnley.

It actively encouraged women and youth to participate and eventually engendered enough interest to include women and junior divisions in their meets. In 1926, the club obtained the use of the St. Paul Athletic Club gymnasium for an indoor winter range. Although the facility afforded a range of only 30 yards, the twice-weekly sessions they

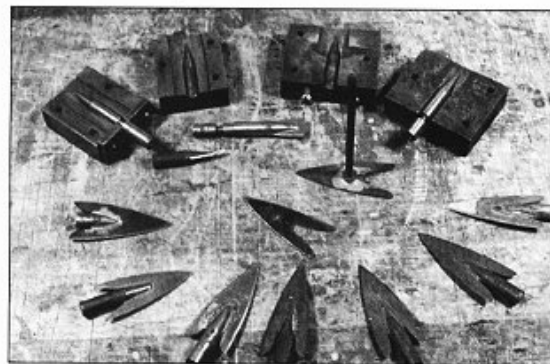
held there offered a new winter diversion and kept the members in practice. At one such session, someone shooting an exceptionally feeble bow at a rabbit silhouette invited Grandfather to take a shot. Never thinking to ask what was being used for a backstop (who would?),

he accepted, discovering only after his footed arrow exploded with a mighty WHRANG! into a shower of splinters that the backstop was a piece of boilerplate.

But the Twin Cities club had another mission. It also had to promote a

new sport. And it went about it with a vengeance. Seizing every opportunity for exposure, the Twin Cities club gave lectures and shooting demonstrations for clubs, civic groups, and other organizations who frequently invited them to perform as featured entertainment. Sport archery was still very much a novelty in the mid 1920s and audiences were easily impressed by these exhibitions, some of which were almost carnival in nature. The exploits of nationally-known archers like Art Young, to whom they made frequent, effusive reference, were grand coattails to ride. The club taught archery to Boy Scouts and organized competitions for them. And in all these activities, it apparently never missed an opportunity to invite the press.

Club members sometimes competed with Indians from upstate Minnesota at invitational hosted by other organizations, the obvious angle being to see whether Native American



grandfather's broadhead manufacturing apparatus. The dies and mandrels formed the steel ferrules that held the blades afterward trimmed by tinsnips. The blades were riveted and soldered to the ferrules. The blade pattern with rod soldered to it is at center right.

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archers could be bested with their traditional weapon, a claim certain sport archers were making with some recklessness.

This expectation was not always borne out. According to Earl Lee, in *"Early Archery in Minnesota,"* a short history of the club he wrote and published in 1954, the Indians *"were very good at short distances, not over 40 yards. Beyond that they had not practiced, because their woodcraft enabled them to get game at the shorter distances."* Apart from a veiled admission of a meal of crow (for Lee, by his own account, had made such boasts), the implications of his observation are clear. For the Indians Lee described, the bow remained a necessity of life, with such competitive target shooting as they might have engaged in among themselves directly relevant to their hunting applications.

Grandfather was well established in the archery tackle business several years before the formation of the Twin Cities club and with a growing reputation, had been doing a reasonably brisk trade. But the surging membership of the club propelled him into high gear. Many, if not most, of the newly-recruited members would never have taken up archery had it been necessary for them to make their own tackle, and that of course meant new business.

He was prepared to accommodate the demand, at least insofar as his tools and techniques were concerned, if not how the workload would monopolize his evenings and weekends. His complement of tools had expanded to include a knurling tool he devised for affixing points to shafts, a small table saw he used to saw arrow shaft and footing squares and for cutting footing

splines, and special circular sawblades for cutting nocks. Most importantly, he had conquered the doweling machine dilemma.

The secret to a good doweling machine, Grandfather realized, lay in the shape of the cutter — everything else in the mechanism basically was little more than a housing and delivery system. Having studied commercially-made dowels, he concluded that the cutters that produced them were ill-designed, chewing more than cutting their way through the wood, leaving torn grain and tooling marks as their signature. What he wanted was a cutter that would produce a straight, smooth shaft, with neither burns, tool marks, nor heat warpage, requiring little sanding.

He had learned enough of wood turning in high school shop to know that in turning stock from square to round, the chisel must address the wood at a shallow angle so as to slice through the corners of the squared stock rather than "gouge" at them (even though the gouge is an appropriate chisel for this application). In addition, the chisel must also take a small bite with each pass, gradually increasing depth as the stock comes closer to round.

The trick was to contrive a cutter design that would incorporate all these principles, permitting a single, clean pass of the arrow shaft. He settled on a one-piece design with opposing fixed blades and a hollow center through which the arrow shaft passed. The cutter was flared outward at the feed end, blades milled at something approaching 45 degrees, so that as the squared stock was fed in, the cut it made was both graduated and slicing. The cutters, of which he had several made, he threaded to a hollow shaft with an attached, fixed pulley. That, in turn, was mounted on a salvaged cast iron shaft housing with brass bushings, whose original purpose is utterly obscure.

At the feed end, he installed laterally-adjustable guides and a vertical

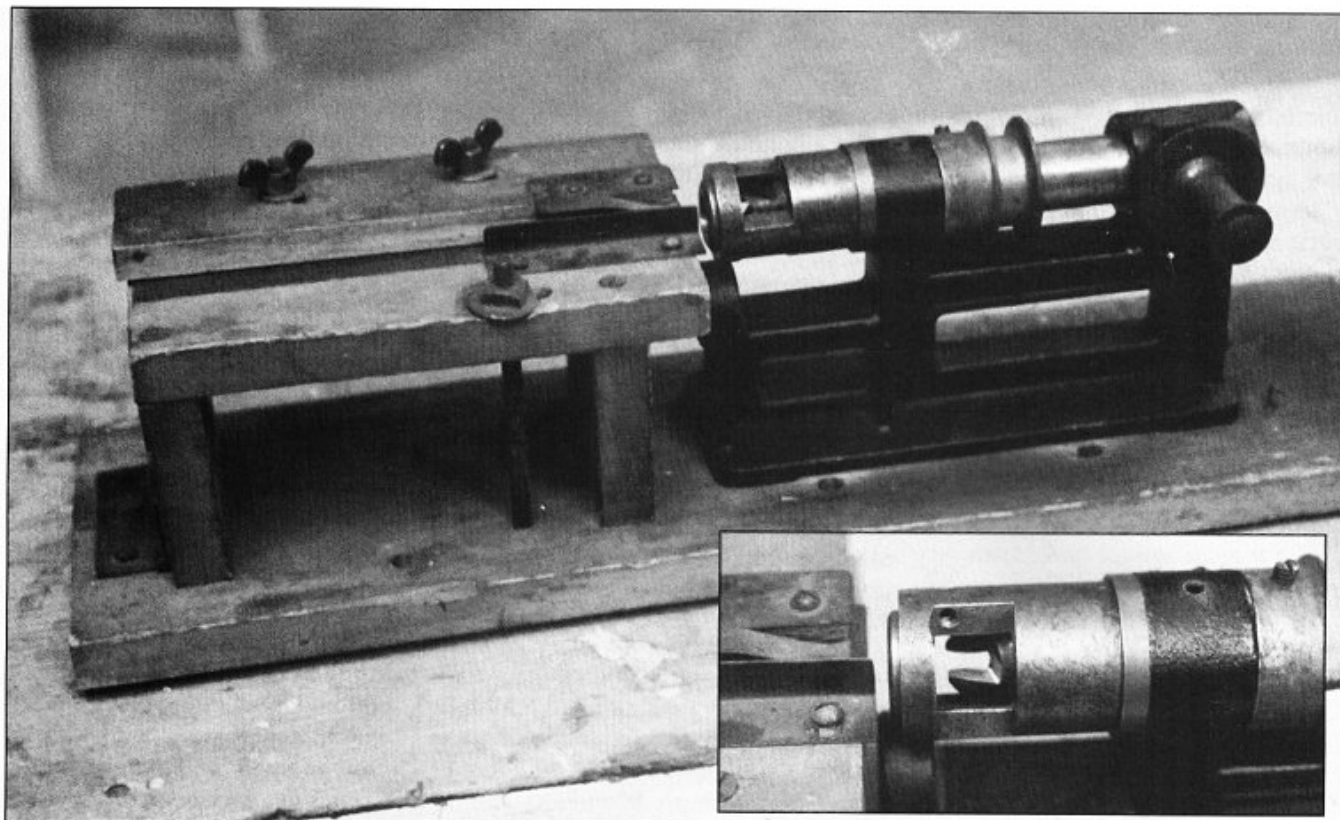
hold-down spring, both mounted on a short wood feed platform, to accommodate different shaft sizes. The whole business was clamped to a workbench with a belt run from the pulley to an electric motor, also clamped to the workbench. It was—is—an ungainly looking contraption, but what shafts it produced! It howled and threw sawdust and fine wood chips all over Hell's half acre and, as I recall from helping him years later dowel Port Orford cedar, it filled the workshop with that wood's permeating, once scented, never forgotten aroma.

Grandfather's printed invoices from his first years in the archery business bore on its letterhead an unregistered trademark of his design, with which he also labeled his bows, and advertised bows of yew, osage orange, and lemonwood, as well as footed and matched arrows, all under the general heading "Archery Tackle." (Although he knew the term bowyer, he never referred to himself as one. A man who thought of himself, at best, as a skillful craftsman, and who throughout life unfavorably compared his accomplishments with those of others, he would have regarded the title as pretentious.)

He added lemonwood (degame) and osage to his bow woods to offer a wider range of prices and quality to his customers. While still making yew bows of the English style, he also began turning out hickory-backed yew bows, which were less time consuming to produce and made more economic use of the billet.

A sapwood-backed bowstave used only the outer part of a billet, wasting the rest. As hard as good yew was to obtain, waste was a high crime. And Grandfather abhorred waste almost as much as the abuse of tools. On the other hand, a single yew billet could produce several staves. It was necessary only to fair the billet's outer surface, removing sapwood in the process, then resaw it into staves of the desired thickness, half inch, three quarter, or whatever. He added stacked handles of necessity, but laminated them of different colored hardwoods to dress the bows.

Lemonwood was a good, if less than great, bow wood. It tended to follow the string (take a set) and was slower in cast than yew or osage. But



Grandfather's doweling machine.

the wood was relatively cheap, worked easily, and made a very good and inexpensive beginner's bow. Its chief problem for the bowmaker was that its grain was virtually indiscernible, making it impossible to tell, by visual observation, whether the grain ran true the length of the billet or cut across it. Evidently, the harvesters did not split the logs into billets, but rather sawed them. At any rate, before investing any other time in a billet, one first needed to "try" the grain to establish whether the billet was viable for a bow.

For this purpose, Grandfather used a broad hatchet, a tool little seen today having a D-shaped blade beveled on only one side like a chisel, a right-hand bevel for a right-hand user. Standing the billet on end, he struck its edge with the razor sharp hatchet at a very shallow angle, getting a bite that he worked to the end of the billet by tapping it and the imbedded hatchet together on a solid surface, letting the hatchet follow the grain to the end. He repeated this on both sides, top

and bottom of the billet. Sometimes, he told me, he'd try and have to scrap several billets in a row, their grain running fully across the billets, before he found a true one.

This was wasteful too, but unavoidable. Better to find out a billet would fail at that stage than later, as a

It was—is—an ungainly looking contraption, but what shafts it produced! It howled and threw sawdust and fine wood chips all over Hell's half acre and, as I recall from helping him years later dowel Port Orford cedar, it filled the workshop with that wood's permeating, once scented, never forgotten aroma.

finished bow, in the bowmaker's hands or worse—in those of a customer.

Building backed yew bows led him inevitably to a flatter, somewhat wider limb shape that he began using for lemonwood and osage bows as well. It also prompted him to eliminate the use of

horn nocks except for English-style bows because the bow tips were wider, permitting nock grooves to be cut directly into them without weakening the tips.

Complementing his basic line of bows, he added footed arrows to his pine target arrows. Footed target arrows were coming into common usage in the middle 1920s because they provided strength and endurance behind the pile (point) and thus extended the life of the arrow. They also added a certain amount of forward and overall weight to a given shaft without increasing its diameter and spine. And though they were more expensive than one-piece pine arrows, they were still relatively affordable.

For customers new to the sport, he also began offering starter sets, which he called archery kits, consisting of bow, arrows, and basic accessories, at a package price. This proved to be popular, so much so that he had gummed address



The result of a fine day afield hunting snowshoe hares with other members of the local hunting club. The meat from the tasty hares was donated to needy families. (circa 1920s). The bow and his jacket are featured on the cover of this magazine.

labels printed, with "Archer's Kit from Geo. F. Snell" blazoned across the top and places to identify the model and weight of bow and the arrow length.

It gave him the idea of producing do-it-yourself kits, composed of the necessary materials and a set of instructions for those inclined to take a hand at making their own outfits. He got as far as mocking up a plan for the instruction manual and writing part of it before he quit the business.

While this basic line of tackle comprised his bread and butter, so to speak, his custom equipment gave him his reputation.

Matched, footed arrows were as revolutionary to target archery at that time as was the introduction of fiberglass to pole vaulting. As with anything else, though, the relative quality of these arrows depended entirely on who made them. There was no industry standard, no quantitative basis by which to judge them save by their actual performance and by the reputation of the manufacturer.

Grandfather, who detested shoddiness, put his pride on the line with everything he ever made, wrote, or did. Thus when he undertook to build matched arrows, he set himself a most stringent standard. Matched meant to him a set of arrows with equal spine having a finished weight tolerance of two grains avoidupois, plus or minus one grain from a constant. Put in perspective, two grains is the approximate weight of three of the small, square U.S. penny postage stamps. To meet this standard, he had to make eighteen fully-finished arrows for each dozen he sold. He weighed them through each process on a simple apothecary balance scale, making adjustments as necessary, to the final steps of cresting and finishing, to keep as many of the original eighteen within the two-grain tolerance as possible. Among the finished arrows, he would then select the dozen most closely matched for the customer.

These arrows gave great advantage to an accomplished archer. At the

same time, they were so prohibitively expensive compared to the cost of other arrows, in fact to the cost of an entire archery outfit, as to be beyond the means or interest of the average club member. For these reasons, many clubs, including his own, did not allow them in their competitions, fearing they would discourage participation. Archers instead had to learn to "clock" their unmatched arrows, numbering or marking them in some fashion and then studying their flight idiosyncrasies so as to compensate aim for each individual arrow. (*Let's see. Number eight arrow's next. So, the hold is at the white ring at 2:00 o'clock.*

Or was it the blue ring at 7:00?)

In a comparison of representative arrow prices in 1929, Lambert wrote that fairly good but inexpensive beginners arrows, in birch, ran fifty to seventy five cents each; a better quality pine arrow from seventy five to a dollar; unmatched footed arrows one and a half to two dollars each; and matched footed arrows twenty-five to thirty-five a dozen and "hard to get at any price."

Grandfather charged much less, getting about fifteen dollars a dozen for matched arrows in the 1930s, a price he believed fair considering the work involved, but scandalous, nevertheless. It was, after all, during the Depression. Matched footed arrows clearly were the province of the serious, major tournament archer, a relatively small market. Even so, he sold a great many of them.

His last innovation, before leaving the business, was the design of a significantly wider, thinner flat bow than he had previously made. Innovation



This is an example of the mailing labels for the archer's kit. Note the trademark logo in upper left corner. The author would like to hear from anyone having a Snell bow bearing this trademark. If you have one of these bows, or know someone who does, please drop us a line at Instinctive Archer® and we will forward it to the author.

perhaps is a somewhat misleading term in that it can imply something rapidly evolving. Actually this resulted from a long evolution in his thinking of limb shape, beginning with the English longbows he first produced. His personal bow for many years was such a bow, of seventy-five pound draw, no mean feat for a man of five foot six weighing one twenty four. But his experience with this bow and his knowledge of wood led him to believe that the English limb design did not make the most efficient use of yew, or in fact of any bow wood.

Intuitively, he believed that a wider, flatter shape would produce faster spring, hence faster cast, per pound of draw weight than the narrow, stacked limbs of the English bow. Such a bow could thus either exceed the cast of a stacked bow of similar weight or, conversely, match the cast of a stacked bow, but with a lesser draw weight.

A few years' experience building flat bows generally bore out the theory but failed to achieve the potential he believed possible. Eventually he presented his dilemma to an engineer, who advised that the limbs, each one—and that was critical—needed to be shaped like automobile leaf springs, thin and of uniform thickness the entire length, widest at the greatest point of effort, with each limb tapering both toward the handle and the tips. The handle, as the limbs' connective element, necessarily needed to be strong and added a certain amount of power to the bow's overall

represented a significant departure from the flat bows he had been making, whose widest points, about 1-3/8 inches to 1-1/2 inches for a 64-inch bow, were little more than an inch outward from the handle on each limb. It was only a design concept, of course, not a precise formula, but it was the guidance he needed.

After some experimentation, he arrived at a shape that moved the widest limb points about 6 inches above and 5 below the edges of the served handle which was about 3-3/4 inches long. It increased limb width to 1-3/4 inches and made a smooth but rapid transition from handle to limb. In profile, the handle ramps died into the limbs about an inch before reaching the wide points. Frontally, the handle swept out to the limbs with a slight concavity, quite unlike the sharp-shouldered modern designs that seem to be favored by some bowyers. Cross-sectionally, it was not truly flat, but rather like an extruded D, on the face somewhat crowned in the middle and rolling over gentle radiuses to the edges where it met the back with sharp radiuses.

The result quite exceeded his expectations, a bow faster than any he'd made. He switched his flat self bows to the new design and built one for himself of osage, at forty-five pounds, the same bow I have lately been copying. (In sixty years, it has only lost about three pounds.) He made quite a number of this design in high-dollar custom bows of osage and at least one in purpleheart,

effort, but not appreciably to its cast. Deducing that the greatest cast potential lay not at the center of the bow but at points on each limb outward some distance from the handle, he recommended that the wide spot on each limb be moved away from the handle and suggested a wider limb than Grandfather had been using.

according to Mother. I never saw the latter, but she remembers it vividly, a bow of great beauty, like the osage.

When Grandfather left Minnesota to take a writing job with the Department of Agriculture, he left his part-time trade, never to return. It is a curious end to the long affair he had with archery.

I simply think the fun had gone out of it for him. He had been making archery tackle for nearly 20 years, out of profound interest at first, but with a family and the Depression, increasingly out of necessity. At the same time, he had also been cranking out wooden figure skate guards by the hundreds of pairs, totally unstimulating hackwork, but an essential income supplement.

What had sustained his interest in the archery business, the sport itself, his cronies, his customers, the hunting and fishing, the North Woods, the outdoor page, were I think inextricably woven together in a lifestyle he left behind. While his new job made the extra income unnecessary, he might have continued, but it would have been out of context. He would have had to start over with all the other parts of the package. His heart just wasn't in it.

Instead, close again to the sea, he returned to his roots, devoting his recreational pursuits to ocean fishing.

* * * * *

The defiant, half-worked osage stave stared up at me from the workbench as if to say, "What are you going to do now?" Frankly, I wasn't too sure.

I faced two immediate problems, reducing the size of the handle and fairing the face of the limbs, which I had previously addressed with scrapers. It had been the wrong approach, the scrapers following the contours of the back of the bow, so that the limb face mirrored the highs and lows of the back. That may not have affected the bow's performance, but I didn't know. Grandfather's bow that served as my model had a faired face and I was not about to experiment.

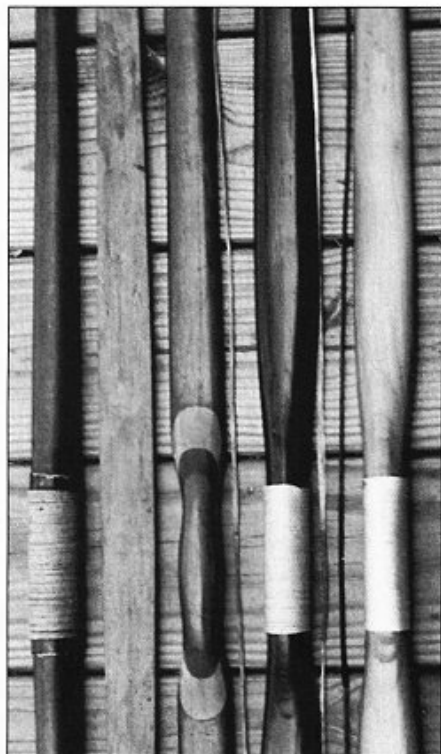
A rasp, I concluded, was the right tool for the handle and shoulder work, but one with much greater authority than any I owned or with which I was familiar.

A boatwright friend tipped me to heavy duty farrier's rasps he'd used, among other applications, to turn down a bronze driveshaft. I promptly located a source and acquired one. With chisel-shaped teeth, it was the first tool I'd found that could touch the osage. He also provided me a resin-bound sanding disc of 36 grit which I cut and adhered to a long sanding block. These two implements were the ticket, and suddenly I began making progress.

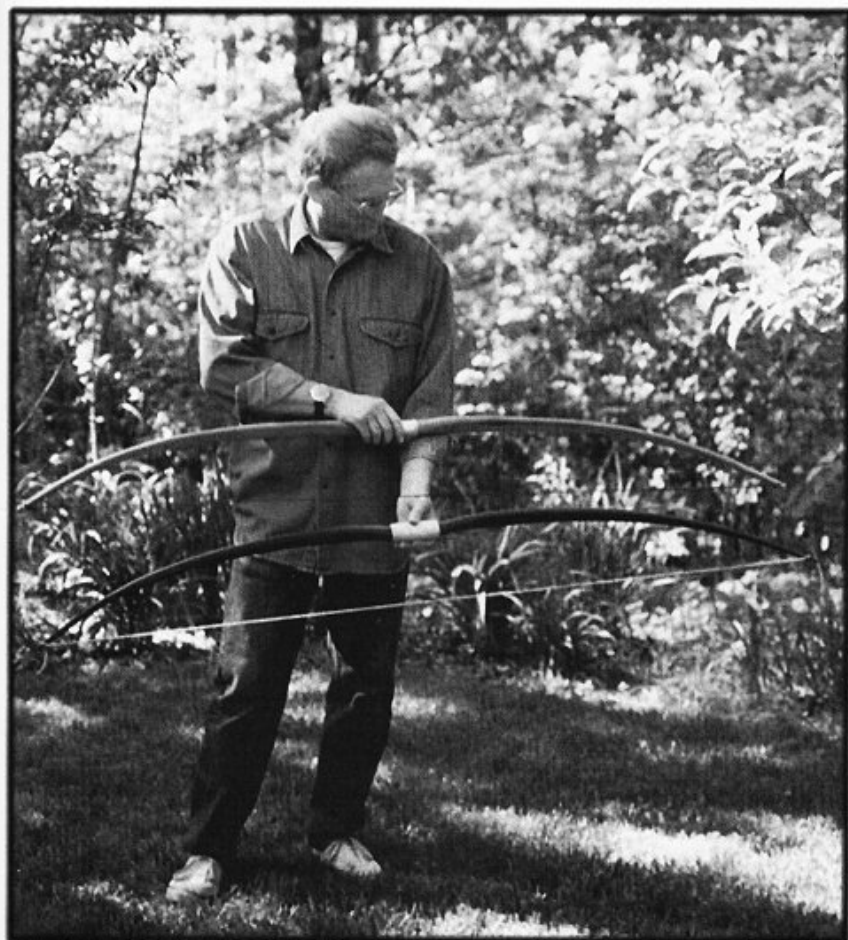
The handle pared down and the limb faces faired, I cut it down to the length of the old bow, 64", filed nocks, bent a string to it, and began working the limbs. It was scary and I worked very slowly, at first floor testing the bend, then with the string, later with a weight scale.

As much as Grandfather had taught me, I had little recollection of this final stage. The principal piece of his advice that stuck with me was the need to align the bow dead-center to the string and how to use the string to identify and correct limb torque. I didn't think that was near enough to go on. But I followed his guidance and realized afterward that it was. The finished bow, though nowhere near as graceful as his, was at least a reasonable facsimile.

The day it was done, I sat alone with it a long while, musing on how this grandfather/grandson connection can repeat itself. I felt him close by, and I think he was pleased.



Grandfather's bow design evolved over the years. This photo shows the evolution of his bows chronologically from left to right.



The author comparing the bow he made to his grandfather's bow.

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BOWS ON THE LITTLE DELTA

A Book "Preview" by Glenn St. Charles



ABOUT BOWS ON THE LITTLE DELTA

I was winded as I reached my vantage point, but gradually settled down into my glassing of the humps and ravines on both sides of the valley. While sweeping my side of the slope, something caught my eye about a half mile downstream. Further observation showed someone was moving at a pretty good clip toward the valley floor. Yes, it was Dick running just below the crest of a small

1957 Little Delta Hunters (left to right): Dick Bolding, Keith "Clem" Clemmons, and Glenn St. Charles

ridge, quiver and pack flailing wildly on his back. Right behind him is Clem, bow in one hand, camera in the other.

What in the world, I conjectured. Then—yes! The top of a caribou rack appears barely from the other side of the ridge, then disappears again below the crest. The boys are trying to get ahead of the bull and perhaps others. No matter—the rack I saw was plenty big enough. Yes, now there are several bobbing racks—a beautiful hunting scene, if I've ever seen one. Finally all of the bodies seem to arrive near the valley floor at the same time. Dick pulls up, kneels and prepares to shoot. Clem tosses his bow aside and readies the movie camera from about ten yards back. As Dick crouches low to draw, the big bull moves into sight slightly facing him. It pauses to snatch a clump and exposes the side Dick wants. The arrow is away! It appears that the bull almost drops in his tracks. Oh, if only Clem got that on film! At this time, it can be the break we need, with only two more hunting days!

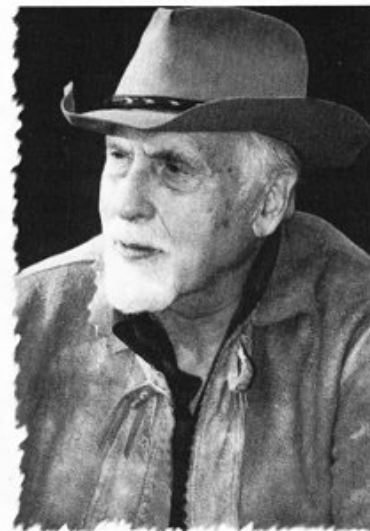
The above story is typical of what *Bows on the Little Delta* is all about—the centerpiece being the saga of the Alaska Little Delta hunts beginning in 1957. Three bowhunters took to hunting animals in the Alaska range, unknowingly following the bootprints of pioneer bowhunter, Art Young, where, in 1923, he felled a Dall sheep on a glacial moraine in the headwaters of the Wood River, less than forty miles away. Picture, if you will, a trapper's cabin, brush growing out of the sod roof, caribou on the valley slopes fast-feeding to a rendezvous with the main migration, stopping only to slurp from a nearby mineral spring, moose feeding on the lush willows along the river, an occasional wolverine lopes across the colorful kinnikinnick vine-covered slopes, ptarmigan floating over the valley floor, always under the watchful eye of hawks noting where to get their next meal.

Yes, this is the same place that I invited Fred Bear and cronies to hunt with me in the two following years—1958, 1959. *Bows on the Little Delta* is full of hunting stories in other places in North America. Most occurred before fair chase and trophy hunting when the pioneer bowhunters shot "everything that came down the pike." The book takes you to Prince William Sound where in 1959, Fred Bear, Russ Wright, photographer Dick Bolding and I, with guide Ed Bilderback cruise the pristine waters in Ed's fishing boat, the Valiant Maid looking to encounter the brown bear prowling the many beaches, mud flats and creeks for food.

One such encounter found the five of us slowly drifting ashore at the mouth of a creek teeming with salmon. The bears working the middle of the creek did not notice our landing. Fred, nocking an arrow, slowly approached the bears with Ed and his 375 Winchester right behind him. The rest of us, with movie cameras, brought up the rear. Fred shot three arrows and missed. They were all he had in the quiver. The bow string was hitting his unbuttoned jacket! He calmly buttoned up his jacket, dug an arrow out of the gravel, sat down on the creek bank, sharpened it with a file as the bears slowly walked up the creek. He again approached a bear with that one arrow, shot it where it counted! Of course, all hell broke loose! Both bears bolted for the brush.

Knowing that he had a good hit, we waited—then spread out to look and listen. Fred heard a thrashing around

in the brush and called out, "Is that you in there, George?" (my nick name). "I'm right behind you!" Fred about jumped out of his shoes and remarked, "It must be the bear, then!" It was time for Ed to take over. He found the bear duly dispatched. It was a beautiful young Kodiak, one of several that Fred would take during the ensuing years that he was to hunt with Ed Bilderback.



As we continued our hunt, we visited the live Columbia Glacier, alive in that it constantly is moving into Prince William Sound and calving ice bergs off its high cliffs. Yes, ice bergs big enough to make it mandatory to not long stay in the area, especially at dark. Ed occasionally would toot the ship's horn. The vibration calved more bergs from the ice cliffs, sending huge waves which constantly rocked the Valiant Maid. Black clouds on the horizon back of us kept Ed in a rather nervous state. Finally, he decided we'd best get out of there. A storm was brewing.

We would make a run to a safe harbor at Hinchinbrook Island. Winds began to pick up. We were in for a blow. Sheets of rain rippled across the decks and that evening in the ship's galley over a cup of coffee, Ed recounted an experience he and his wife Doreen had in a 55 knot blow several years before while on a mail run. On their way back to Cordova, they hit an ice berg which punched a hole in the ship's bow below the water line. How they coped and lived to tell about it and how we coped with a similar storm on that night in 1959—it's all in the book. That and much more about my life, philosophy and thoughts as to the future of bowhunting. If you'd like adventure, this is it!



Bows on the Little Delta will be available from Northwest Archery Company in three formats: *Limited Presentation Edition* (limited to 200 copies), *Limited Edition Deluxe* (limited to 500 copies), and *Trade Edition*. Each book will have over 400 pages, 30 chapters, 20 full-color photographs, and over 200 black and white photographs. For more information or a free flyer, write to the Northwest Archery Company, Dept. IA, 19807 1st Ave. South, Seattle WA 98148-2493 or call them at (206) 878-3329 or (206) 878-7300. To send a request via fax, dial (206) 824-4377

Of Bows And Bow Woods

By. Hugh D. Soar.

In the beginning was the word—and the word was YEW! Thus might the story of English longbows start. *"The warlike yewgh, by which, more than the lance, the strong armed English spirits conquered France."*

Sir Thomas Browne (1605-1680) or again, William Shakespeare in his Play, King Richard II *"Thy very beadsmen learn to bend their bows, of double fatal yew against thy state."*

"Double fatal," because to add to the bow's deadly power, the poisonous juice of yew berries was rubbed on arrow tips.

For generations of bowyers, yew (*taxus baccata*) was the only real bow wood. Statute law however, required them to make and sell two bows of lesser wood for every one of yew; Justices of the Peace, the King's law enforcers, had specific instructions:

"...and boyers (bowyers) for everie bowe of ewe (yew), to make two of Elme wiche (wych elm, or ulmus glabra) or othere wood of meane (equal) price, and if thei be founde to doe the contraries to be committed to warde (gaoled), by the space of VIII daies or more..." 1559. In other words, eight days in the slammer if you broke the law.

But the public, then as now, wanted yew—it knew a good bow when it saw one, and wasn't impressed by authority's insistence upon second-best. The bowyers were left with egg on their faces, and bows of elm on their hands!

All was eventually well though, since after pleading with authority for a change of heart, they were allowed by Legislation in 1565 to make their bows of yew, provided that

they kept stock of others in witchhazel or ash, to be available to authority within twenty days.

By this time however, good yew was getting scarcer. Supplies from Spain and Venice were drying up, and quality staves were rapidly becoming just a memory. Bows began to be backed, a process which, although producing excellent weapons, vastly extended the manufacturing process, since glue curing times were lengthy. But the backed bow was here to stay!

At some time—we know not when, since no seventeenth, and very few eighteenth century bows survive—matters moved a stage further still. The single selfstave became first obsolescent, as the principle of matched billets was developed, and then obsolete, as bowyers recognized both the commercial and practical advantages of improved cast resulting from the joining of "brother and sister" billets.

Lumber which in earlier days would have been firewood, now created individual limbs; and the art of bowery had moved a significant stage forward. The weapon which we recognize today had arrived, and with it a fashionable revival of the ancient pastimes of Clout and Butt shooting.

All was not entirely well however. The revival was sudden, as fashions often are; bowyers were few, and commercial opportunity for foreign yew uncertain. As the eighteenth century drew to its close, archery societies formed, and with their formation came demands for equipment.

Whilst entrepreneurs (with others) turned their hands to bowery, and makers of golf clubs and fishing rods found new uses for their skills, there was at least one family of true

"mainstream" bowmakers, the Kelsalls of Manchester. Although by now few in number, by fortunate chance one Thomas Waring had at one time taken instruction from a member of the family in bow-making, and this knowledge was later to stand him in good stead.

For Thomas Waring was amongst the first of the new "breed" of bowyers; men whose task it was to satisfy the appetites of those aspirant archers who now sought to shoot.

With Waring came experiment; although maintaining the traditions of his adopted trade, he was not hidebound by them. Both he and his son, also Thomas, produced not only backed weapons, but weapons with core laminates. Whilst he had access to foreign yew, his choice—if we are to believe his contemporaries—inclined towards the more exotic woods.

Although Waring the Elder (as he is known) may have shown some preference for the exotic over the purely functional, his son, Waring the Younger, seems from examination of surviving bows to have been a tad more conventional in his approach. The author possesses four "Waring" bows, and these are described below.

The first is believed to date from the turn of the eighteenth century, and is thus by the elder Waring. It is of two-piece construction: Ruby Wood, alternatively called Red Sandalwood (*Pterocarpus Santalinus*) backed by Hickory (*Hickoria Glabra*). The cross-sections show the balance of one wood to the other.

It measures 70 1/4" between nocks, with upper limb 34 1/2" to handle, and lower limb 32". The draw-weight is marked at 69 lbs; but although seemingly a "heavy" weapon by today's standard recreational bows, which seldom exceed 60 lbs, it would not have been exceptional for the distances shot in its day. The cross-section is conventionally high-cambered, or in today's terms "stacked."

The second bow described is almost certainly by Waring the Younger and is a fine example in self-lancewood (*Duguetia Quetarensis*) circa 1840. It measures 69 1/2" overall between nocks, with upper limb 33 1/2" to handle, and lower limb 31 1/2". The draw-weight is

unmarked, but examination of the cross-section suggests something around 48 lbs. A gentleman's bow, it would have been used primarily for the 90-yard butt distances then shot by the Royal Toxophilite Society, to one of whose members it originally belonged.

The wood has been carefully and cleverly stained to resemble the light and darker shades of a self-yew bow, in accord with common practice at the time. The "forward-facing" stringing-horn (upper nock) is finer in workmanship than the rather coarser nocks of Waring senior's bows.

The third bow is believed to be by the younger Waring, although the stringinghorn (upper nock) is broken, and cannot be compared with others. It is of either Lancewood, or possibly Dagame (*Calycophyllum Candidissimum*) backed by Hickory. Its draw-weight is marked as 46 lbs, and it would thus have been appropriate to the 80 yard distance of the Gentleman's National "York" Round, which was that predominantly shot from the mid-1840s onward.

It's overall length between nocks is 69 1/4", with an upper limb measuring 33 3/4" from the handle, and a lower limb of 31". The cross-section is of a conventional high-camber, and compares with the bow described above.

The fourth and last Waring bow is again believed to be by the younger man, and is an attractive weapon of low (26 lbs) draw-weight, intended for use by a Lady whilst shooting at the 50-yard distance. Perfectly preserved, and dating perhaps from the late 1840s (possibly earlier) it is a well made combination of stained Lancewood, with a Hickory backing.

Overall length between nocks is 60", with upper limb measuring 29 1/4", and lower limb 26 3/4", each measurement taken from extremity of the handle binding. The stringing horn has the usual Waring forward-facing nock and features the "purging hole" (a hole through the horn, drilled to prevent hydraulic pressure from the glue pushing off the nock as it was applied) a common, but not universal, practice amongst bowyers before nocks were "brought in" from the Continent. None of the other Waring bows in the author's Collection display this feature. The cross-section of this bow

is low-cambered, in keeping with its light drawweight.

Before leaving the Warings and their mix and match of bow woods, a curious example of original thought can be seen in the Museum Room of the Society of Archer Antiquaries. Four pieces of wood have been combined to form a backed bow whose core laminate runs, not from side to side, but from back through to belly, in the style of a "TEE" girder. Exotic wood (probably red sandalwood) forms the sides and the belly. The cross-section is conventionally high cambered. Whilst there is no evidence for its cast, it survives almost intact and thus presumably held together during its working life.

A wood in regular use during the late years of the eighteenth century and the early years of the nineteenth, was Fustic. The word derives from the Arabic "Fustuq." Known also as "Pistachio," and sometimes Mastic (from the colloquially named "Mastic-tree") it is brownish in colour, and related to Osage Orange, and to the Bolivian wood Amirillo. It grows (grew?) in the West Indies, and bears the botanical name *Chlorophora Tinctoria*.

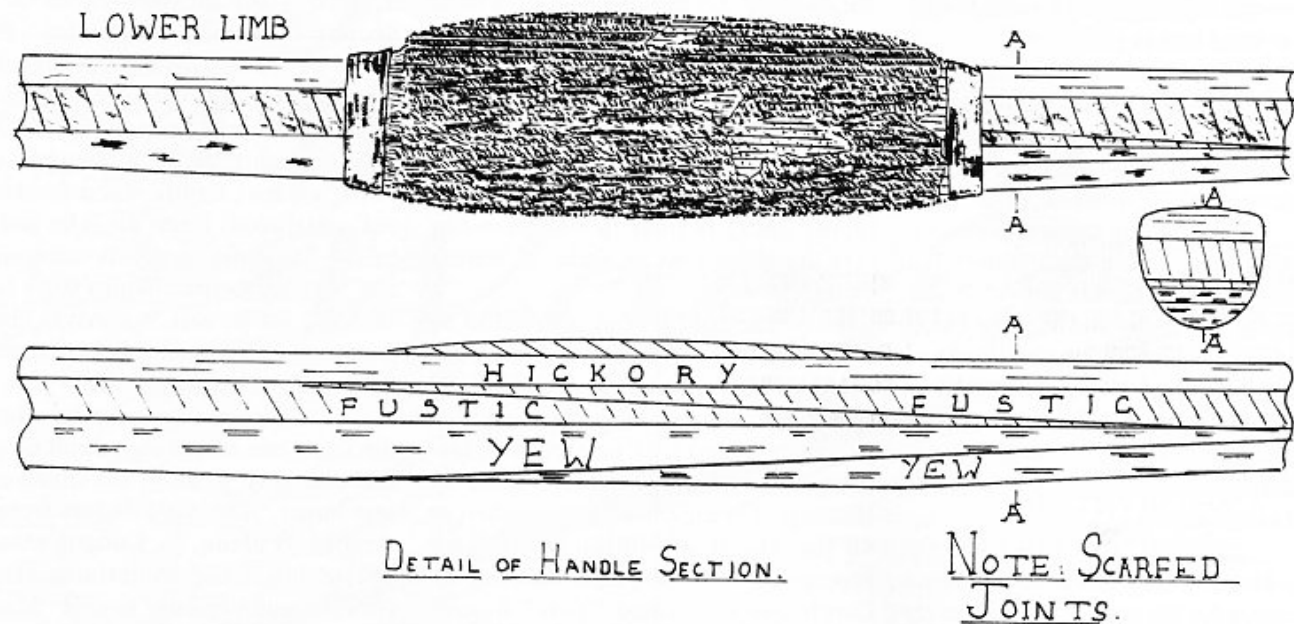
Whilst, to the author's knowledge, no self-bows were made of fustic, it regularly featured as a core laminate in three- and four-piece bows; and one of each from the author's collection is described below.

Selected for examination are examples by North-Country bowyers, Wrigley, and Ainsworth (this latter a rare double-core laminate).

Joseph Wrigley was one of a number of Manchester bowyers who flourished (if that is the right word) during the latter years of the eighteenth, and the early years of the nineteenth centuries. Although he is known to have been partnered by a Mr. Jones, and worked at Cheetham, little else is recorded of him or the scope of his activities. Miss Sophia Banks (whose passion for collecting archery ephemera of the period [now in the British Library] has proved invaluable to archer historians) notes "*Cheetham-Wrigley, an Arrow Maker; remarkably good, and good Bows.*"

The bow described is believed to date from the turn of the century, and

MAN'S THREE-PIECE LONG-BOW By WRIGLEY of MANCHESTER.



is thus some 190 years old. Nominally a "three piece" bow, with core laminate between back and belly, it's composition would be considered unusual today. Whilst the back appears to be a self piece of hickory, the core of fustic and the belly of dagame each consist of "scarfed" pieces. This form of construction, used by certain early 19th century bow-makers before the introduction of the hand-saw made fish-tail splicing viable, did not become mainstream practice. Scarfing was sometimes referred to in derogatory terms by later bowyers as producing "tea-caddy bows," although the resulting glue lines are as strong as the "conventional" joint; and even today, in fact, the practice is not dead, since at least one working bowyer scarfs in preference to fishtailing his splices.

The cross-section drawing of this bow compares the depth of tapered fustic core to back and belly.

The weapon measures 68 1/4" between nocks. From upper nock to base of handle is 32 3/4", and from lower nock 31". The draw-weight is marked as 45 lbs, both on the upper limb, and on the flat face of the stringing horn.

The second weapon, by William Ainsworth of Walton-le-Dale, Preston, Lancashire is believed to be an early example of his work. Certainly it differs markedly in construction from two other examples in the Collection, and in all likelihood dates from the beginning of the nineteenth century. It's draw-weight is marked as 51 lbs.

It consists of back in hickory, and belly in yew heartwood. The two core laminates, each of which are tapered, are of fustic and an exotic wood, possibly pterocarpus santalinus. The lower laminate "runs out" some 6" from each tip. Whilst the back, and upper fustic laminate seem to be "self," the belly and lower laminate are scarfed in a manner similar to the bow by Wrigley.

The nocks, although typical of Ainsworth's shapes, are of cow horn — another indication of age; whilst the arrow-pass is angular rather than steeple shaped, a form shared with only one other bow in the collection, that by another provincial bowyer, I. Rocke.

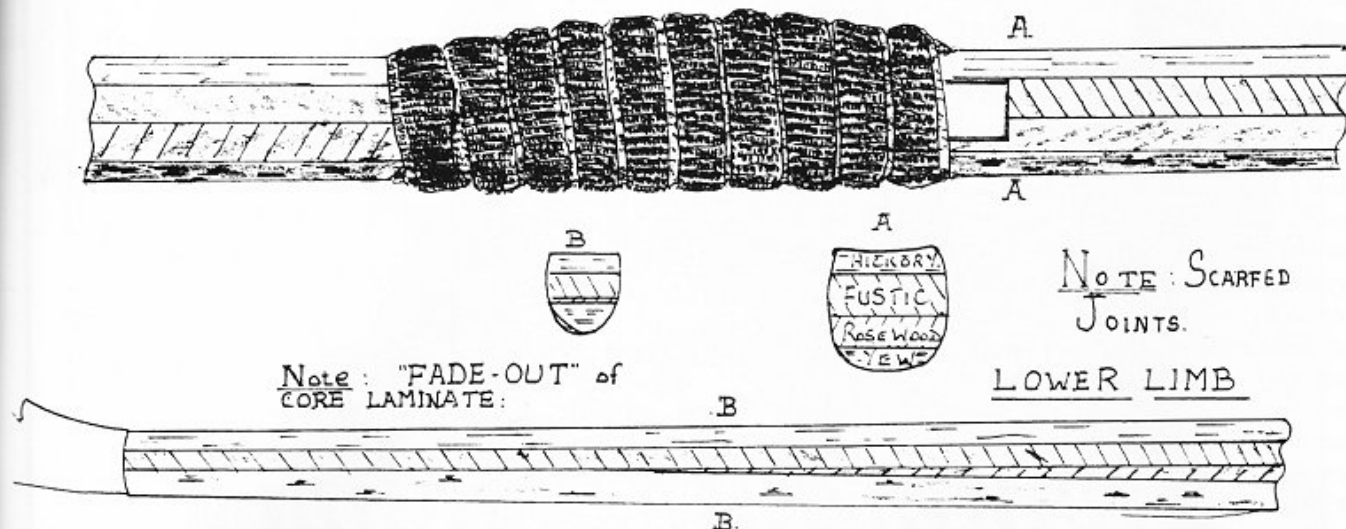
It measures 68 1/4" overall between nocks, as does that by Wrigley above. The upper limb, from-nock to base of handle is 32 1/2", and the lower 31 1/2".

Lancewood, (*duguetia quitarensis*) or "yari-yari" to give it a native name, has several botanical variations. "Yellow" lancewood, (*oxandra lanceolata*) is that used by nineteenth and early twentieth century bowyers. There is a curious dichotomy of view about its properties however. Jimmy Duff (bowyer author of *Bows and Arrows*) considered that it crysalled (compression fractured) more readily than other woods; whilst Robert Elmer (author of *Target Archery*) believed it to be tough, light in the hand, and of excellent elasticity.

Be that as it may, all who used it considered that it outshot dagame, its main rival bow wood. To the author's knowledge, no English lancewood bows have been made since the War; although given access to the wood, there is no reason why they should not be, and it is overdue for return to the bow-making scene.

The bow chosen to represent lancewood is by London bowyer George Jacobs, active for some twenty years from 1847. Jacobs succeeded bowyer Barth, of Cockspur Street, Charing

MAN'S FOUR-PIECE LONG-BOW By AINSWORTH of PRESTON:



cross, and inherited his Royal Warrant as "umbrella, cane, whip, fishing tackle, and bow and arrow manufacturer to the Queen." It seems unlikely that he had much royal trade however, since although he exhibited at the Great Exhibition of 1851, his work was passed over in favour of that by Peter Muir and Thomas Aldred who were each awarded medals.

The self-lancewood Jacobs bow in the collection, a fine, well-proportioned example, measures 70" overall between nocks; whilst its upper limb, from nock to base of handle, is 34", and the lower limb 31 1/2". A marked draw-weight of 40 lbs suggests that it was a gentleman's middle distance bow.

The final bow wood to be discussed in this article is "Snakewood" (*piratinea guianensis*), more usually found as a "footing" wood for arrows, there has been something of a revival of its use in English bowery circles. A dense and thus a heavy wood, it has been used by elite longbow archers of recent years to achieve impressive scores.

The collection possesses two antique self-snakewood weapons. Each has broken, and it would be fair to say that as a bow wood it has not always enjoyed a good press. Probably the best summary of this wood comes from a Note by a Mr. Powell in the 1931 *American Bowman Review*. "Snake-wood" he says, "comes from the

Guianas and has a very thick sap-wood. This sap-wood is removed, and the heart-wood, which has snake-like markings, is exported. It is very hard and elastic."

"A bow from this wood, no larger than a little finger" he goes on to say "will sometimes weigh as much as 60 lbs. The bows shoot very fast, but jar in the hand, break readily, and do not take glue well although it is necessary that they be backed" (my italics).

The first of two bows to be described is 71 1/4" overall, between nocks, with an upper limb of 34 1/2" from nock to base of handle, and a lower limb of 32 1/2" between similar points. The draw-weight is marked as 46 lbs. No maker's name appears, although the grooved Buchanan-style nock fitted may give a clue. It has been a most attractive weapon in its day, although now seriously fractured in the lower limb. As an aside, its weight in hand is 630 gms, compared with the 480 gms of a comparable self-yew weapon.

The second bow is believed to be by Edward Madle, of Frith Street, London, although there is a little doubt since the marking is unclear. Madle operated between 1830 and 1859, and the bow is consistent with the earlier of these dates. Its draw-weight is 48 lbs, and its weight in the hand 610 gms.

A fine weapon of its type, it has an ornately-carved stringing horn in the shape of a parrot, and a decorative handle

covering. Sadly, it has broken in the upper limb.

Its dimensions are, overall from nock to nock, 69 3/4", upper limb, 34" from nock to base of handle, and lower limb 30 3/4". A slightly unusual balance of length between the two. The almost elliptical cross-section contrasts with that of the majority of bows.

Other woods were used regularly for bellies: Amaranth and Pheasant wood, each backed by lance, appear in the 1879 Catalogue of E. I. Horsman of New York under *Best Back Bows*, although at half the price of self-snakewood, or backed snakewood weapons. These, and other exotic woods, still appear occasionally today as fancy risers on flat or other low-cambered bows, and on the simpler glassed recurves; but why do we no longer work them harder as compression woods? Maybe some do, but the door has been open a long time, let us all go thru'!



Author's Note: The Soar Collection of archery bows from which the above examples have been taken, includes over 180 antique long-bows.



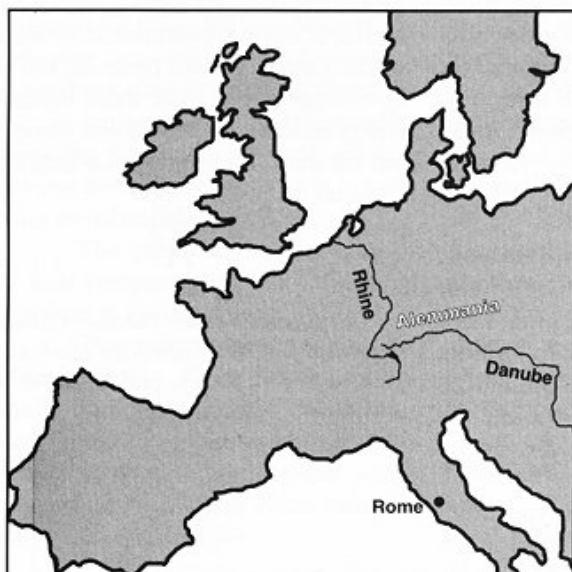
An Historical and Archaeological Background.

The Alemmanians were one of the greatest of the Germanic peoples. In the third century AD, they dwelt to the East of the Roman border, the "limes," in what is today's Southern Germany. As an alliance of several tribes (the Suebes etc) who called themselves "all men," or "Alamanns," in 260 AD they were able to overrun the "limes." Continuous

settlements were founded in the area between the rivers Rhine, Main, and Lake Constance, and in early medieval times these expanded towards Switzerland, and the Alsace. In the 4th century AD there were several wars between the Romans who tried to win back their former territory and the Alemmanians who raided the Roman provinces on the western banks of the Rhine.

In one of these great battles which took place near today's city of Strasburg (France) Alemmanic archers are said by Roman historian Arminius Marcellinus to have been involved in great numbers. Arminius's notice is one of the few written historic sources for Alemmanic archery. The other evidences for the use of bow and arrow come from archaeological findings. Most of these are of iron arrowheads deposited in Alemmanic warrior graves, although we also know of several arrowshafts and even a wooden quiver. Five Alemmanic selfbows and fragments of composite bows have also survived. All these relics of archery equipment date between the 5th. and 7th centuries AD (the Merovingian era in Central Europe). In the following I will give a short overview of these archaeological findings and an insight into the various aspects of early-medieval Alemmanic archery.

There are many variously-shaped Alemmanic arrowheads. Most have sockets into which the shafts were fixed with glue and/or little nails with, in some cases, a linen thread used to attach the point to the shafts. Whilst the average 6th or 7th century arrowheads are either rhombic shaped, have



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barbed wings, or are (four sided) bodkin points, there are also some with triangular or willow-leaf shaped blades, the latter being a traditional type since Roman times (See photo on previous page and below right). "Three-winged" arrowheads were also in use. These have their origin in Central Asia and were brought to Western Europe by steppe nomads like the Huns, and Avars who lived in today's Hungary between the 5th and the 8th century AD (Figure 3). We also know of transverse, or trident-shaped arrowheads but these are very rare and were probably used for a special hunting purpose such as shooting fish. Bodkin types were of course war arrowheads designed to penetrate contemporary armour such as chain mail or lamella armour. Long, barbed broadheads and big, leaf-shaped specimens with long cutting edges that caused severe bleeding were probably designed for hunting large game. All the other types could theoretically have been used both for war and hunting.

The length of Alemmanic arrowheads varies between 7 and 11 cm from socket to point; weights (of reforged points) range between the 12 to 15 grams of smaller types, up to more than 20 grams in the case of heavy broadheads.

In one case I was allowed to examine the metal structure of a fragmented Alemmanic arrowhead by kind permission of the "Wurtembergisches Landesmuseum" in Stuttgart (Southern Germany). A flat, originally rhombic shaped blade, it is made of three layers of different sorts of iron. The center layer consists of harder material, with softer iron on either side. This "sandwich structure" prevented the arrowhead from bending when hitting a solid target and facilitated sharpening.

SHAFTS, NOTCHES AND FLETCHINGS

We know from fragments of Alemmanic arrows that Hazel, Birch, and Wayfaring Tree (*viburnum lantana*) were some of the preferred shaft woods. Unfortunately no complete arrows remain today to give exact evidence of their size, shape of the notches (nocks), or the way that fletchings were cut and fixed. There are drawings however from an excavation in an Alemmanic burial ground in 1846 near today's village of Oberflacht (Southern Germany) that show 2 ft (57 cm) long shafts, 11 mm thick at the tip and tapering to 8 mm at the opposite end. Notches were of a bulbous shape. With a profile of 12 mm they could well accommodate the bowstring which must have been 3-4 mm in diameter. Bulbous notches could indicate

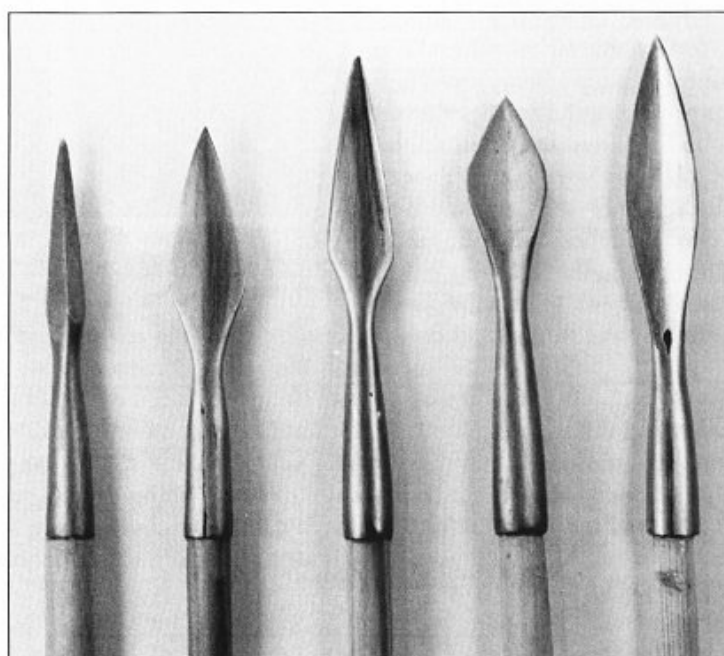
some kind of thumb draw, although the estimated draw-weights of Alemmanic bows exclude the primary draw and we do not know if there was any kind of Mongol release in Alemmanic archery.

At Oberflacht no fletchings remained on the shafts. The 150-year-old drawings though show sections of about 9 cm long that in the excavation report are described as covered with the remains of glue and thread. Contemporary manuscript illustrations (for example that in the 8th century AD *Stuttgarter Bilderpsalter*), of bows and arrows indicate that trapezium-shaped flights were preferred in Merovingian time. Taking into account the average arrowhead length of 7 to 11 cm we can assume the Alemmanic arrows (at Oberflacht) to have been at least 65 to 70 cm long. Arrow reconstructions (70 cm Hazelwood shafts including arrowheads) have an average weight of 40 grams. Weights differ considerably (between 30 and 50 grams) depending upon the type of arrowhead and the shaft wood used.

BOWS

1. Self Bows.

Today just five bows or larger fragments of bows remain from Alemmanic burial grounds Three com-



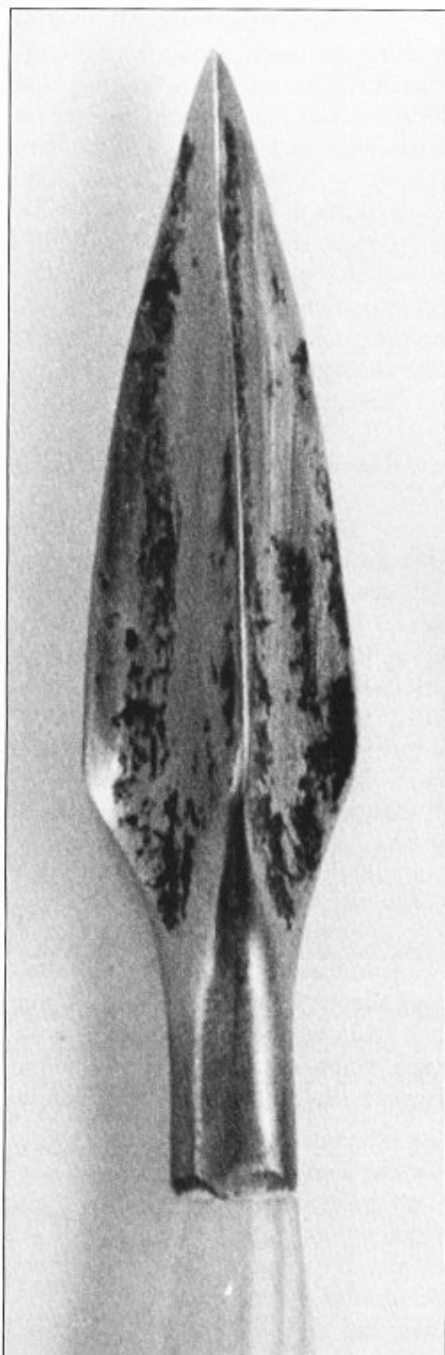
Several Excellent reconstructions of Alemmanic arrowheads.

plete yew bows and one fragmented elm bow were excavated in 1846 at the Oberflacht grave site. A fourth fragmented yew bow was found in 1969 in an Alemmanic grave near Altdorf (Kanton Basel, Switzerland).

2. The Oberflacht bows: Of 30 warrior graves at the Oberflacht burial ground, at least 18 contained bows and arrows. Bows were often placed, with arrows in threes, on the right side of the corpse. Unfortunately, many graves were opened without archaeological supervision at the beginning of the 19th century, and a great number of finds are now lost. The three remaining longbows and an elm bow (all dated to the second half of the 6th century AD) are now held by the 'Württembergisches Landmuseum'. Except the elm bow which is very much shrunken and deformed, they are still in excellent condition.

Wet and clayey soil had kept the graves air-tight, preventing the yew wood from rotting, or from seriously shrinking. All three bows have a long and ergonomically shaped reinforced handle section which forms a step of up to 1 cm to the limbs; these have a rounded back, straight sides, and a triangular belly. Notches are cut diagonally at the opposite sides of each limb tip. At the end of one of the limbs (bows, graves no. 8 & 21) there is a small hole above the notch. This could have been used to additionally tie and fix the string or, more probably, to attach the thread of a stringkeeper. The bow from grave No. 7 has two smaller, parallel notches above the side notch. Since the end of the opposite limb is splintered we cannot say whether there had been a hole there also, or if two parallel notches were used instead. The chart on the following page gives the measurements of the three yew bows and their average shape and cross sections.

The Oberflacht bows are of a unique design and differ from all other Iron Age, or early medieval bows found in Europe. The combination of the five-cornered limbs, and the long reinforced handle section have no contemporary parallels. This construction results in fast and powerful selfbows and is based upon an excellent understanding of bow dynamics. The high profiles of the



The "Three-Winged" design brought to Western Europe by Steppe Nomads.

limbs increases the efficiency of the bow and their five-cornered cross sections provide much kinetic energy (much more for instance than rounded profiles). The long handle section stiffens the bow and shortens the limbs which results in another increase in efficiency, less limb vibration, and more accurate shooting.

3. The Altdorf Bow: The selfbow found near the village of Altdorf in Northern Switzerland had been given as a burial

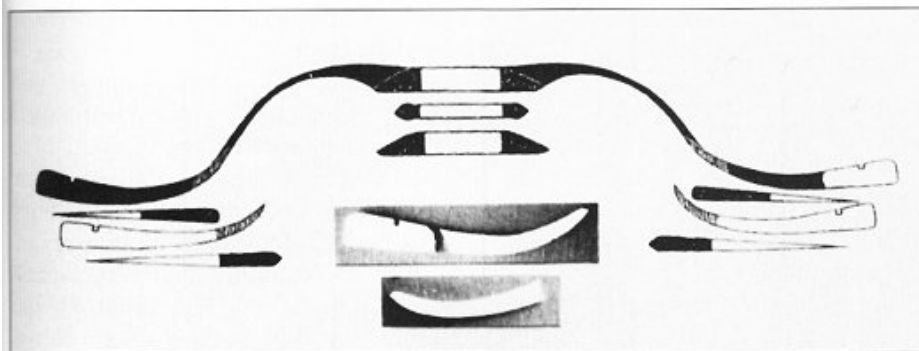
object to a wealthy Alemmanian of the first half of the 7th century. It was placed together with a wooden quiver and arrows. Its construction differs completely from the Oberflacht bows; the remaining fragments (held by the Swiss "Landesmuseum" in Zurich) are of a yew bow that must have been at least 170 cm long, with a rounded cross section and no reinforced handle, moreover a 8.8 cm long tin socket fixed with a little nail covers one of the limb's ends; it could have been used like the metal point of a stick on the unstrung bow.

Considering these features one can compare the Altdorf bow with Northern Germanic yew bows of the 3rd century AD found in the Nydam moor in Southern Denmark. On some of the limb tips of these (up to 190 cm long) war bows, a socket of horn was also attached; they too have rounded cross sections and lack a reinforced handle. The Altdorf bow is thus more closely related to the (at least 300 years older) Nydam bows than to its contemporaries from Oberflacht.

Here, it is important to know that the tribes of the Alemmanic Alliance had their area of origin in the North German Elbe region before they migrated towards Southern Germany in the first century AD. The Altdorf bow could thus indicate a "handed down" Northern Germanic longbow design in Alemmanic bowery of the 6th or 7th century AD.

4. Composite Bows

According to the frequency of the archaeological findings, yew longbows were the common weapons of Alemmanic archers. But, bone fragments of steppe nomadic composite bows also survive. Two laths of bone were found in an Alemmanic grave at Stuttgart-Bad Cannstatt. Their broad-shaped outer ends indicate that they belonged to a late Avar style (second half of 2nd century) composite bow. A pair of such (about 24 cm long) laths and an additional pair of wedge-shaped laths fitting in between, stiffened the recurved ears. The grip was reinforced by another three bone laths. A reconstruction drawing (see following page) suggests the possible shape of the original bow



A reconstruction drawing showing the possible shape of the original bow.

according to similar finds in Hungary and South East Russia. It is an unsolved question whether the Alemmannians themselves possessed the knowledge to make such complex composite bows, or whether they were imported. One has for instance to consider trade with the Avars, or the Langobards in Northern Italy. The latter had a lasting cultural exchange with the Alemmannians and were strongly influenced by Avarian archery.

Generally, finds of "Alemmanic" composite bows and three-winged arrowheads (the latter

often going together with composite bows) are relatively rare. They mostly come from rich Alemmanic burials, indicating that "steppe-nomadic" bows and arrows were preferred by some of the more privileged who could afford either to have them made locally by special craftsmen, or imported.

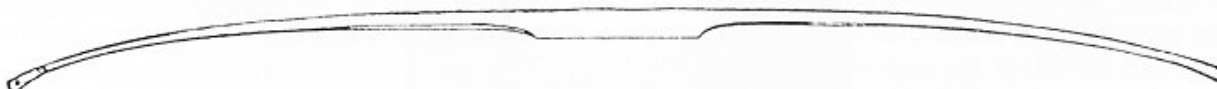
QUIVERS.








As mentioned above, the single Alemmanic quiver found also comes from the Altdorf burial. Its fragments of lime-wood covered with thin, ornamented leather had survived together

with remains of arrows inserted with the tips uppermost. The photo on the following page shows the reconstructed quiver body made of 3 to 4 mm thick lime-wood. It has an elliptic-oval cross section of 13 x 7.5 cm (width and thickness) at the bottom, tapering towards 8 x 5 cm at the upper end. There, a trapezium-shaped open space at the front enables the arrows to be removed. Originally the quiver was fitted with a leather lip which could be put over the upper end. This interesting design is based neither on Alemmanic, nor European development. We know from numerous wall paintings and rock monuments that similarly shaped quivers were used in Tang China and Central Asia at the same time. Worn as side quivers by horse archers, they also appear as grave goods of the Huns and Avars. However, unlike the all-wood Altdorf specimen, which is a modification of the steppe-nomadic models, these were made of leather with metal clasps (the latter sometimes remaining to provide the archaeological evidence).

Some decades ago etymological research (not knowing then of the

Bow from grave no.7	Bow from grave no.8	Bow from grave no.21	
170 cm	169 cm	183 cm	total length
159 cm	158 cm	171 cm	length from notch to notch
25 cm	24.6 cm	31.6 cm	length of grip
5 cm, 6 cm	2 x 5.5 cm	2 x 6 cm	length of end sections
2 x 67 = 134 cm	2 x 66.7 = 133.4 cm	2 x 69.7 = 139.4 cm	effective length of limbs
2.1 cm : 3.3 cm	2.4 cm : 3.3 cm	2.4 cm : 3.4 cm	width : thickness grip
3.0 cm : 2.0 cm	3.0 cm : 1.6 cm	2.9 cm : 2.1 cm	x : x limb (center)
1.7 cm : 1.7 cm	1.9 cm : 1.4 cm	1.9 cm : 1.4 cm	x : x limb (notch)
0.9 cm : 1.2 cm	1.3 cm : 2.0 cm	1.3 cm : 1.3 cm	x : x limb (end)



						
end section from notch to bow end	notch section	limb (center) between end of grip and notch	handle section	limb (center) between end of grip and notch	notch section	end section from notch to bow end

Measurements of the three yew bows and their average shape and cross sections.

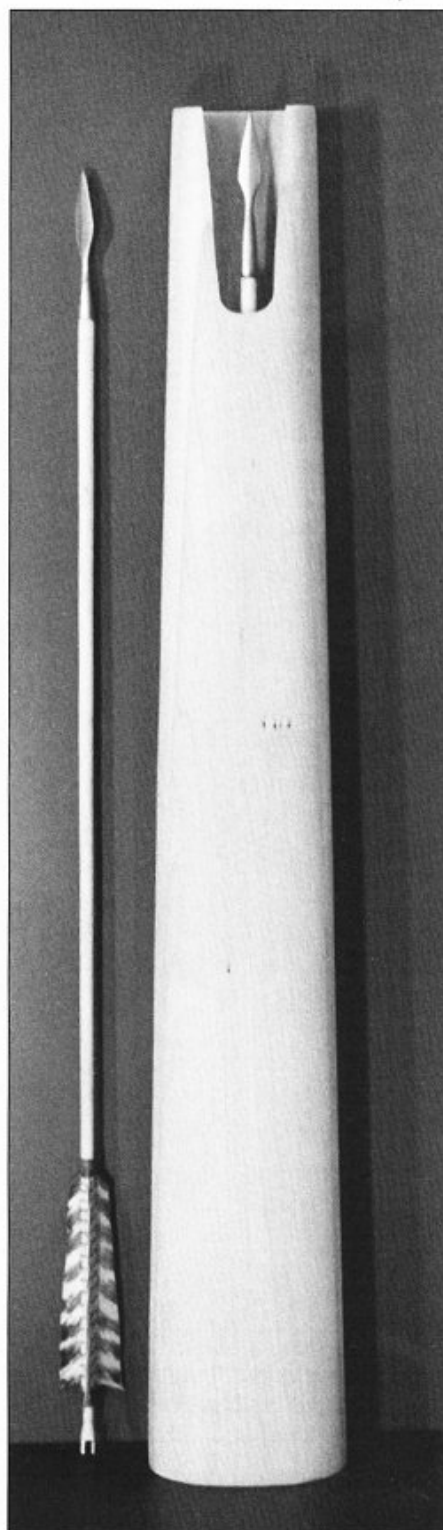
Altdorf Quiver) explained the origin of our modern term "quiver" as dating from the time of the Germanic migrations. According to the linguists, "quiver" could be a "loanword" adopted from the turco-mongol languages of the Huns and Avars. The original term "kukur" turned into early medieval Latin "coccoral," early medieval German/English "cohhor" / "cocerl" or "cocorl." Medieval French "couire" and today's "quiver." (German "Kocher," French "carquois").

The Altdorf finding now proves the accuracy of this. In adopting the foreign quiver design, Western Germanic tribes also took its steppe/nomadic name which, in a modified form, is that used today.

SUMMARY AND CONCLUSIONS.

The bow and arrow played an important part in the weaponry of Alemmanic warriors, as they were forced to counter Roman composite bows and missile artillery. Massive deployment of Alemmanic archers in battle is reported by Roman historian Ammian in the 4th century AD. Archaeological findings show that as a weapon of war, selfbows were more frequently found amongst social classes that could not afford expensive arms and armour. Axes used for close battle were the preferred side weapons of these warriors in later Roman times. Since arrowheads frequently appear in the graves of adolescents we can safely assume that archery was one of the more important skills to be practiced from childhood onwards.

The Alemmanians used great numbers of different arrowheads. Flat rhombic or leaf points were shaped in similar fashion to contemporary Alemmanic spear or lance blades and could be used both for warfare and hunting. Four-sided bodkins would penetrate metal armour. Long, barbed broadheads provided hunting points used to shoot large game at short distances. Three-winged arrowheads were adopted from Huns and Avars between the 5th, and 7th centuries AD. Unlike the flat or bodkin types, they are not found in later medieval times. From the metallurgical examination of an original arrowhead we know that structured layers of iron



We know from numerous wall paintings and rock monuments that similarly shaped quivers were used in Tang China and Central Asia at the same time.

were used by Alemmanic arrowsmiths. Metal points could consist of combinations of harder and softer material, with

the higher quality iron placed in the center of the blade.

Because we lack examples, the average shape and size of Alemmanic arrows cannot be described precisely. The Oberflacht arrows could have been about 70 cm long, tapering towards bulbous nocks. Replicas have an average weight of 40 gram (including metal point). Design and weight show them, not as light flight arrows for reaching maximum ranges, but as arrows for accurate shooting and of high penetrative power.

We know of two different Alemmanic selfbow designs. The Altdorf type of yew longbow with rounded profile but lacking a reinforced handle section. It is similar to the 300 year older Germanic longbows found in today's Denmark, indicative of a handed-down Northern Germanic influence on early Alemmanic bowery. The main characteristics of the much more sophisticated Oberflacht bows are five-cornered limbs together with a long, reinforced handle section.

They seem to have been an independent Alemmanic development (maybe by professional craftsmen specialized in bowery) based on a high level of understanding of bow dynamics. It is a matter of curiosity however that a traditional "old-fashioned" type of bow—the "Altdorf" and the more "modern" Oberflacht with its handle "dips" (allegedly not invented until the 19th century by bowyer Buchanan) should appear almost together.

Finally, Avar-style composite bows were also used by the Alemmanians. Some of the wealthy (mounted) warriors seem to have preferred these "horse bows" for war and hunting instead of the less-convenient longbows.

The Altdorf quiver also shows strong "steppe/nomadic" influence. The fact that Western Germanic tribes like the Alemmanians adopted and modified the Central Asian quiver design proves the correctness of a linguistic theory that today's word "Quiver" most probably has its etymological roots in the turco-mongol languages of the Huns and Avars.





CBA The Story

By David Bruce, CBA President

Christian Bowhunters of America (CBA) is a para-church ministry to the Bowhunting/Archery world seeking to exalt Christ and lead lost people to Him.

But where and how did this all begin? In September, 1942, in Marion, Indiana, a baby boy was born to a couple while preparing to enter the work of Christian ministry. That preparation resulted in 30 plus years of pastoral labors of love, mostly in small rural churches of a conservative evangelical denomination. During these years of faithfulness God began preparing the growing boy for a life of ministry.

David L. Roose was that lad who was raised in a Christian home by a busy, always-working father and a caring, guiding, always-concerned mother. At the age of 16 Dave knew the forgiving grace of God as a personal reality. Although Dave never was exposed to, nor experienced a deep sinful lifestyle, this personal salvation changed his life from one of deception and lostness to one of purpose and godly desire. As a senior in high school, he felt called to preach the Word of God and after graduation entered Bible College for preparation to do so. After receiving his diploma three years later, he enrolled in a liberal arts college, Indiana Wesleyan University, and completed requirements for a BA in Religion.

The pastorate was his desire. In January, 1964, while still completing graduation requirements, Dave began his long desired work, to be a pastor. In June of that year, Cullann, his wife of 33 years, and he were married. They now have two grown children and two precious grandchildren.

For nearly 11 years, Dave and his wife labored in pastoral ministry during which time he completed some seminary grad work. Even though circumstances beyond Dave's control closed pastoral opportunities, he never lost his calling and desire to preach the Word of God. It was that compelling desire and the faithfulness of the Holy Spirit that brought about the beginnings of the CBA ministry.

In 1983, Dave's boyhood love for bows and arrows and hunting and the desire for a positive Christian influence on his own young son, became the catalyst to start such a ministry.

It was while working on a Christian bowhunter friend's garage that the Holy Spirit brought human desire and eternal purpose together as a way to influence people to seek and know God in their lives. The general outline of a Christian ministry to the bowhunting world came to Dave's mind in a few minutes. He scribbled them down on a piece of cardboard and made a promise to God that if his attorney and

Christian bowhunter friend, Fred, agreed to help, he would pursue such a ministry. That day's encounter with the Holy Spirit resulted in the incorporation of Christian Bowhunters of America in July of 1984.

God used events at Michigan Bowhunters third Rendezvous in Houghton Lake, Michigan, as the first public place to testify to such a ministry. That is where he met Larry Babinger, a youth pastor, and the third CBA incorporation signee. During the year of formation, God used a trip to the first Public PBS function in West Virginia to sign up bear guide Wayne Boswich as the first paid member and gather some board members and other contacts. He used a postcard from Joe St.Charles, curator of the Pope & Young museum in Seattle, Washington, as a contact which resulted in Joe's drawing up our logo. He used the "Chaplain's Corner" of the PBS magazine as a contact basis for fellow minister, Howard McGinnis, who helped critique a statement of purpose and a state-

ment of faith, as well as provide our first treasurer and supporter, Tom Holt, current PBS chaplain. He used those first CBA advertisements, services and shoots to gather faithful members like Jim and Janice Gabbard, our membership secretary; Mike MaHan our first shoot sponsor; Lowell Thill our Vice President and Steve Seibel our first newsletter publisher. What was being discovered during this time was a number of Christian, bow loving and bowhunting people who just needed to be brought together into one group with common purposes and goals. And the Holy Spirit was faithful to Dave as He helped him write, contact and organize this small band of believers literally scattered from east to west and north to south across the U.S.

These beginnings were very humble but God indeed was in it. A current testimony to that is the fact that God does not sustain anything He is not concerned about. The growth of CBA has been slow but steady. God has a purpose for our being and has held us to our pur-

pose. We now have approximately 2,000 members in all United States, Canada, and some overseas. We have over 50 chapters in 21 states and an active board of men who love Christ, bowhunters, and hunting.

We have had dozens of opportunities to hold worship services at shows and shoots, published helpful tools to aid our members in the purpose for which we exist. We have become recognized as part of the bowhunting community. We are a ministry (church) to the bowhunting world.

God has been faithful and good in so many ways in the past but most of all the promise for a great future is with us. We will be faithful 'til Jesus comes again.



For more information about CBA write:

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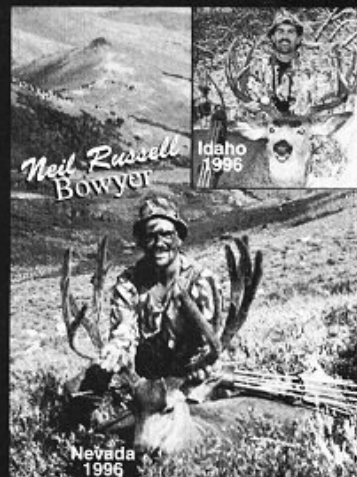
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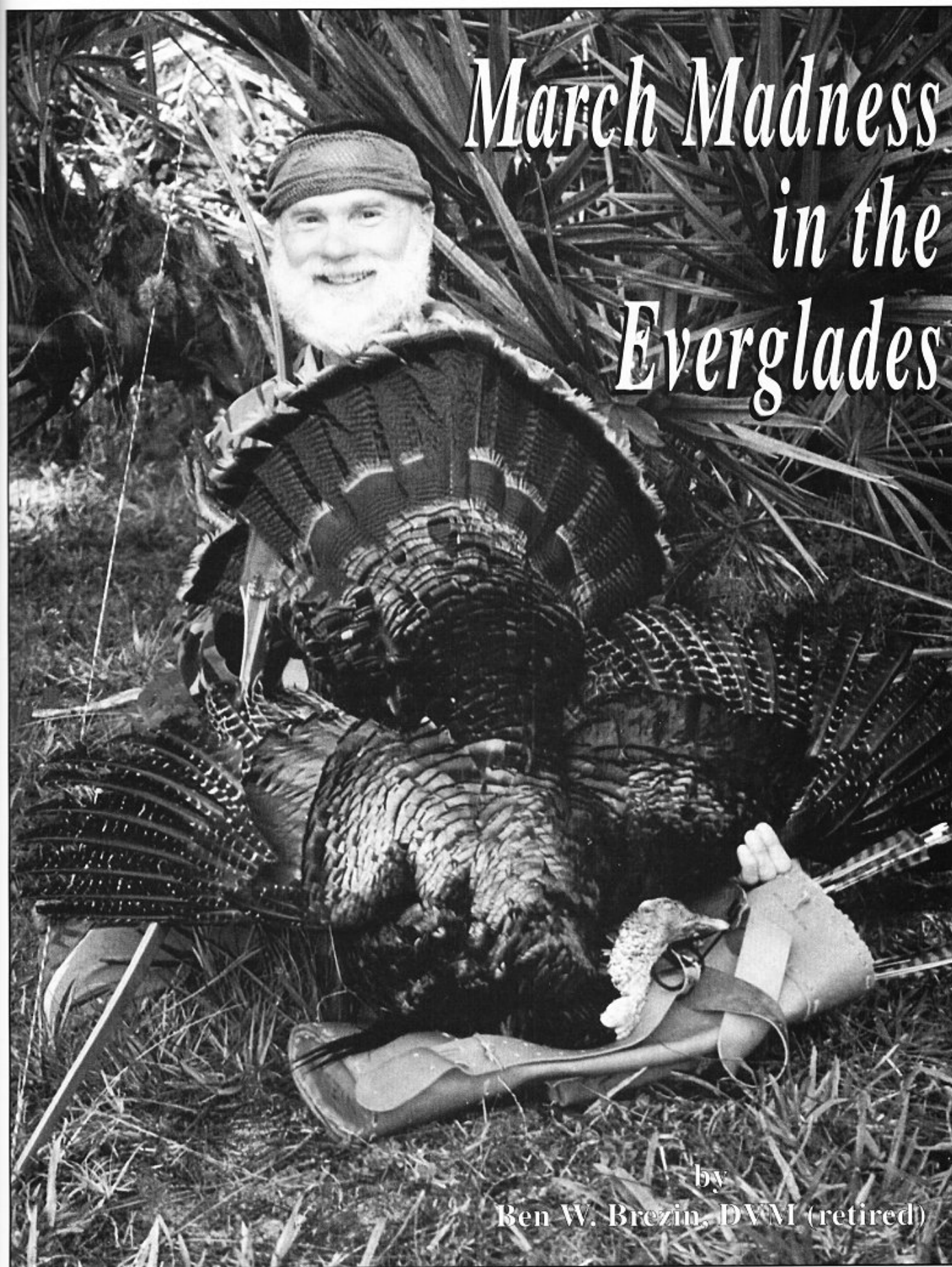
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One of my best friends, Bucky Pieck, M.D., invited me to turkey hunt in the Florida Everglades near Immokalee where his associates maintain a 3,000-acre lease managed by deputy sheriff Roger Fussell. The area consists of cattle pasture, swamp, pine forest, and palmetto thickets. The tropical birds, snakes, alligators, feral hogs, and humidity are a great contrast to my Colorado home hunting grounds.

Generally, shotguns are used from a densely prepared blind without the benefit of a decoy. The Osceola subspecies is notoriously wary and quick on its feet, requiring maximum concealment of the shooter. Having never turkey hunted, I took the advice of knowledgeable members of the Big Thompson Bowhunters Club in Loveland, Colorado. The consensus was that a hen decoy is mandatory to fix the Tom's attention, thus allowing the archer time to draw and shoot without spooking the bird.

The first afternoon on the property was spent stump-shooting and preparing a blind in the south section where turkeys were expected to roost that evening. Commercial harvesting of Sable Palms in the area resulted in a disappointing start—no birds of the turkey type!

Next morning, March 15, we went to the "north country" by default. The longbow was used as a snake-sweeper as we moved in under a live-oak tree covered with hanging moss. We settled down on folding stools on this dry hammock which overlooked a narrow pasture.

Bucky's call was answered by a tom a few hundred yards to our left. It was quite foggy until 7:00 a.m. so we sat tight. Soon a silent Jake circled around behind us and then sped past our hen decoy—gone before I realized what occurred! My fear of never getting an archery shot was growing even though "The Buckmeister" assured me that he could call a hot tom to within fifteen yards. Great if only a trigger finger need be moved!

Daily hunting ends at noon so we went touring looking for potential roosts and setups for the next morning. A mile away we spotted a large tom and hen feeding across a meadow. We positioned ourselves well ahead of them in the only sparse cover present. They appeared 60 yards out slowly feeding in our direction—a chance perhaps? When it was safe to do so, I moved a few yards to improve my setup. Suddenly the hen alone was approaching at 25 yards. Did I ever feel exposed kneeling there in spring green Predator camo! She looked my way and with no alarm slowly grazed off to my right front. We never saw either of them again—the frustration builds!

Noon was imminent so we headed back to camp, lunched, rested, and then went touring in the swamp buggy. We amused ourselves by watching the medium-sized alligators along the canals, taking photos, and just observing the numerous wild hogs, small deer, and endless variety of birds (wood storks, cranes, swallow-tailed kites, Coopers hawks, and a plethora of buzzards ever present overhead).

After discussing the situation over a supper of freshly barbecued feral hog prepared by Buster Mullin, M.D. and his father-in-law Bruce Aiken, we decided at Roger's recommendation to return the next morning to the same area.

The sky was clear at 5:00 a.m., comet Hale-Bopp easily visible in the northeast sky and the air cool and still. We used the same natural blind which held no crawling surprises the previous morning. The "rubber ducky" was stuck into the soft grass 13 yards out and we settled down to call and listen. Almost immediately a call was answered 200 yards west of us from high up in the pines. A few hogs scurried across the end of the pasture near the roost.

In quick time the bird alighted on the ground and closed the first hundred yards alarmingly fast. I slid off the folder, mistakenly moved back deeper into the blind and took up my favorite shooting position—kneeling. For the next 10 minutes, much to the chagrin of my 56-year-old knees, the tom

put on a display of everything one is capable of doing. This alone was probably the best part of the hunt and I wished that my son Danny was sitting behind me with the camcorder, but such was not the case.

My pacemaker maxed out at 120/minute and I was afraid that my defibrillator might fire resultant to the adrenaline rush as we watched the tom attempt to mount the decoy and slap it so hard with his wings that we expected the decoy to fall over. I drew and shot through the moss-covered branches only to have the 1916 Grizzly-tipped arrow deflect downwards into the grass at his feet—a miss at 13 yards!

Perhaps he thought it was the decoy responding because



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I took a few breaths, nocked another arrow, and knee-walked forward a few paces yielding a clear, unobstructed shooting tunnel.

his reaction was to circle it and pounce on it again. I took a few breaths, nocked another arrow, and knee-walked forward a few paces yielding a clear, unobstructed shooting tunnel. I didn't even see him look at me. He just folded his show and trotted straight away towards the jungle.

I am not exactly sure what happened next. I focused on the center of his back, drew the 52 lb., 64" Deathwish Longbow, anchored, and strongly suspect that I released. There was a sound like a cereal box being stomped on. The Tom gained about 8 feet of air as I saw the white nock disappear between the wing roots and a puff of small feathers followed by the spent arrow falling to Earth past him. A very lucky shot at 23 yards!

Bucky, who was sitting about 5 yards to my right, said disappointedly, "It bounced right off of him!" as we watched the bird continue 30 yards farther and vanish into the woods.


"No, good hit, right through center of mass," I yelled. Bucky blasted out of his concealment and charged into the palmettos expecting to chase the

wounded prey some distance into the brambles where there was an excellent chance of losing him. Even better luck—the bird lay bled-out just at the edge of the woods. Bucky, who had never seen a successful archery hunt, was even more excited than I.

Back at camp Buster cleaned the turkey and performed a forensic necropsy showing us where the arrow

entered high in the center of the back and exited forward through the base of the neck cutting the vein, artery, and trachea. The tom's strength showed in his ability to continue 30 yards after being fatally hit.

Those in camp who had shot-gunned turkey in years past told us that the turkey meat was mediocre. Not knowing better we pan fried meat strips in the simplest fashion and were pleasantly surprised by the mild, veal-like flavor. Had our wives been present with their honed culinary talents surely something splendid would have been created!



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THE UNITED STATES NATIONAL

WORLD BROADHEAD FLIGHT RECORDS

(Traditional Bows)

October, 1996

The following distances are recognized by the United States National Archery Association Flight Committee as National Male and National Female bow type and weight Broadhead Flight Records irrespective of Amateur or Non-Amateur categories. These listings also include age group categories. United States Flight Rules restrict Junior Competitors who are thirteen (13) years of age and under from competing in Broadhead Flight. (They may compete if they will be fourteen (14) within the calendar year.)

MALE BROADHEAD FLIGHT NATIONAL RECORDS

BOW TYPE	YDS.-FT.-IN.	METERS	NAME	DATE SET
Unl Recurve Field Bow	526-0-5	481.10m	Don Brown	06/26/88
70lb Recurve Field Bow	402-2-0	368.20m	Don Brown	00/02/92
50lb Recurve Field Bow	254-1-9	232.79m	Ike Hancock	10/06/96
Unl Longbow	332-2-0	304.19m	Don Brown	08/02/92
70lb Longbow	253-2-0	231.94m	Don Brown	06/27/87
Unl. Primitive Self	244-2-7	223.81m	Daniel Perry	06/24/90
50lb Primitive Self	201-2-9	184.64m	Dewayne Smith	10/09/94
Unl. Simple Composite	240-0-2	219.52m	David Hayes	10/06/96
50lb Simple Composite	209-2-2	191.77m	David Hayes	10/08/95

(ADDITIONAL PRIMITIVE CLASSES WILL BE LISTED UPON ESTABLISHMENT - SEE RULES)

FEMALE BROADHEAD FLIGHT NATIONAL RECORDS

BOW TYPE	YDS.-FT.-IN.	METERS	NAME	DATE SET
Unl. Recurve Field Bow	364-0-4	332.95m	April Moon	06/28/87
50lb Recurve Field Bow	254-2-5	233.00m	April Moon	06/27/87
Unl Longbow	237-2-3	217.40m	April Moon	08/02/92
50lb Longbow	212-1-1	194.19m	April Moon	10/08/95
Unl Primitive Self	107-1-5	98.27m	Gwen Perry	06/24/90
50lb Primitive Self	130-0-9	119.09m	Gwen Perry	06/23/90

(ADDITIONAL PRIMITIVE CLASSES WILL BE LISTED UPON ESTABLISHMENT - SEE RULES)

FOR MORE INFORMATION ON FLIGHT ARCHERY, CONTACT:

Rulon I. Hancock, Secretary-Treasurer
United States National Archery Association
Flight Committee
2782 McClelland Street
Salt lake City, UT 84106-2238

Phone (801) 467-3084

ARCHERY ASSOCIATION (NAA)

FLIGHT CLASSES

REGULAR FLIGHT CLASSES

MEN

1. 25kg (55.1 lb.) Regular
2. 33kg (72.8 lb.) Regular
3. 40kg (88.2 lb.) Regular
4. Unlimited Regular
5. Footbow
6. Unlimited Footbow
7. Crossbow
8. 25kg (55.1lb) Compound
9. 33kg (72.8lb) Compound
10. 40kg (88.2 lb) Compound
11. Unlimited Compound
12. 50lb Recurve Field
13. 70lb Recurve Field
14. Unlimited Recurve Field
15. 50lb Recurve Target
16. 50lb Longbow
17. 70lb Longbow
18. Unlimited Longbow
19. 50lb Primitive *
20. Unlimited Primitive *

WOMEN

1. 18kg (39.7lb) Regular
2. 25kg (55.1lb) Regular
3. Unlimited Regular
4. Footbow
5. Crossbow
6. 18kg (39.7lb) Compound
7. 25kg (55.1lb) Compound
8. Unlimited Compound

9. 35lb Recurve Field
10. 50lb Recurve Field
11. Unlimited Recurve Field
12. 35lb Recurve Target
12. 50 lb Longbow
13. Unlimited Longbow
14. 50 lb Primitive
15. Unlimited Primitive

CADETS

(11 yrs. and under)

1. 18kg (39.7 lb) Regular
2. 18kg. Compound
3. 35lb Recurve Target
4. 35lb Longbow
5. 35lb Primitive

JUNIORS & INTERMEDIATES

(12-14 yrs.) (15-17 yrs.)

1. 18kg (39.7 lb) Regular
2. 25kg (55.1 lb) Regular
3. Unlimited Regular
4. 18kg (39.7 lb)
5. 25kg Compound
6. Unlimited Compound
7. 35lb Recurve Field
8. 50lb Recurve Field
9. Unlimited Recurve Field
10. 35lb Recurve Target
10. 50lb Longbow
11. Unlimited Longbow
12. 50 lb Primitive *
12. Unlimited Primitive *

BROADHEAD FLIGHT CLASSES

MEN

1. 70lb Compound
2. Unlimited Compound
3. 50lb Recurve
4. 70lb Recurve
5. Unlimited Recurve
6. 50lb Longbow
6. 70lb Longbow
7. Unlimited Longbow
8. 50lb Primitive *
9. Unlimited Primitive *

(* See Below)

WOMEN

1. 50lb Compound
2. Unlimited Compound
3. 50lb Recurve
4. Unlimited Recurve
5. 50lb Longbow
6. Unlimited Longbow
7. 50lb Primitive
8. Unlimited Primitive

JUNIORS & INTERMEDIATES

(12-14 yrs.) (15-17 yrs.)

1. 50lb Compound
2. Unlimited Compound
3. 50lb Recurve
4. Unlimited Recurve
5. 50lb Longbow
6. Unlimited Longbow
7. 50lb Primitive
8. Unlimited Primitive

THE N.A.A. FLIGHT COMMITTEE DOES NOT SANCTION BROADHEAD FLIGHT CLASSES FOR THE CADET DIVISION OF ELEVEN (11) YEARS OF AGE AND UNDER. JUNIORS MUST BE OR BECOME FOURTEEN (14) YEARS OF AGE THE CALENDAR YEAR THEY COMPETE. ALL CLASSES SHOWN ABOVE MAY BE SCHEDULED AT U.S. NATIONAL ARCHERY ASSOCIATION FLIGHT CHAMPIONSHIPS

* NOTE: Four (4) styles of Primitive Bows are allowed:

- SELF BOWS
- SIMPLE COMPOSITE
- COMPLEX COMPOSITE

A Guide to *Bow Tradin'*

By Gary Altstaetter



"What's your bottom dollar?" Anybody who has ever bought or sold a bow recognizes that phrase. It's the first four words in the preamble to the "Bow Traders Bill of Rights." To the un-anointed in the crowd, let me explain what the "Bow Traders Bill of Rights" is all about. It is a number of catchy phrases that we crafty old bow traders use to shave a few dollars off a bow when we are buying or to justify our price when we are selling.

Here's how it works. You find a bow that you would like to buy. You look it over "reecal" good, and as you hand it back to the owner you say; *"Too bad about that twisted limb, I don't know if that can be straightened."* Here's another sure fire winner—*"The last bow that blew up on me had checks in the glass just like those on the bottom limb."* Or here's my favorite—*"Last time I had to have a bow refinished it cost me a hundred bucks!"*

Of course when you're trying to sell a bow you have a much different approach. You say things like—*"Except for that tiny scratch on the handle. She's pretty much cherry!"* or, *"I saw one advertised in the Footed Shaft last month and they wanted \$25.00 more than I'm asking."* And here's my favorite. *"This bow was only shot by a little old lady on sunday afternoon."* When Rik Hinton called to suggest I write an article about bow prices, I was elated. I thought it was my chance to become the Jim Parker of bow tradin'. For anybody who does not recognize the name Jim Parker, let me tell you about his part in the knife-collecting business. Jim started collecting and selling antique knives back in the 1960s. He saw the need for a collectors price guide, and he set about the task of individually pricing knives for most of the various brands. The guide became so successful that you could not attend a show without it. Each year a new guide came out, and each year the

PHOTO (left to right): Early 1960s US Archery Texan • 1967 HF Black Widow • 1970 Tice & Watts Spartan Hunter
• 1960 Grimes Super Chief • 1958 Pearson Cobra • 1965 Bear Kodiak • 1967 Bear Super Kodiak • 1959 Bear Kodiak, 64"

prices went up. That created a demand for the guide and anything that he had bought the year before increased in price. Not a bad idea! of course, the down side for collectors was that every Tom, Dick, and Harry had the guide. Every time you found a knife, the owner would always say, "Well it books for 'x' number of dollars." Most people did not understand that the book prices were for a knife in mint condition. They thought if the book price was \$100.00, they should get that amount no matter the condition. It did not take too much thought on my part to decide that a pricing guide like Jim Parker's would not be in our best interest of bow collecting.

Finally, Bernie Levine developed a system of determining the value of a knife. He gave a base value to each pattern. Then he rated the companies from low to very high value. You added percentage to this price for certain extras like maybe a stag or bone handle. After adding in all the extras, you would increase the value by 50% if it was mint condition. If the knife was worn, you subtracted 50%, and if broken you would subtract as much as 90%. This is not the full method, but it will give you a rough idea of the process. I thought a system such as this would not only have some value, but would be very simplistic. After all there would only be two patterns to remember—hunting bows and target bows. But just think of the mind boggling array of differentials. Would you classify a 33-pound 56-inch bear grizzly as a hunting bow or a target bow? Who would justify having a 1960 Kodiak Deluxe in the same category as a Ben Pearson Mustang? It might be possible to come up with a system similar to Levine's, but it would take more space than there are pages in this magazine.

So how does one know what to pay for a bow? First, ask yourself if you would like a bow to shoot or do you want to start collecting vintage bows? If you want a bow to shoot for your own relaxation, find something in the \$100.00 to \$150.00 range that you like and buy it. If you pay \$25.00 more than it's worth and you use it for a year, you have had a lot of fun for only \$25.00. Who knows, maybe it will increase \$25.00 in value and you will have had that fun for nothing.

If you want to start collecting bows for a hobby, you must decide what you want to collect. Start by focusing only on a narrow segment at first. You can collect bows from just one maker like Bear, Wing, Howatt, Pearson, etc. Or, you might limit your collection to short hunting bows of less than 56 inches. I like to collect target bows, and I am beginning to like those straight, thin profile recurves that were made prior to 1960.

The next step in collecting is to educate yourself on what to pay. The only way to do that is to subscribe to a traders paper such as the Footed Shaft, and to send for every list that you see advertised. If you see a bow advertised, and you think the price is too high. Take note of how long it is advertised. If it is on a list for the full six months, the bow was too high for the market. But, if the bow does not appear the next month, then it priced right for the market. Take note of those bows that only appear for a month. Those bows were priced according to their market value.

If you decide to purchase a bow that is listed in one of the traders papers, make sure you get a full description of what you are buying. Ask about the condition of the bow, and

request a 5-day return privilege. Ninety-nine percent of the people who advertise bows are good, straightforward people. But if you cannot get a return privilege, just say thanks and don't buy!

Attending a large regional traditional shoot like Denton Hill, or the Great Lakes Longbow Invitational can also be an educational experience. It will give you first-hand exposure to a variety of bows and prices. Most of the people who are selling used bows are only too happy to answer any question you might ask.

I have gone through a year's worth of lists and I have pulled prices that I think are fair market prices of bows. The prices below will give you a jump start on collecting, and the right to say "What's your bottom dollar?"



<u>TYPE OF BOW</u>	<u>WEIGHT</u>	<u>PRICE</u>
1962 Bear Grizzly	42#	\$100.00
1955 Bear Grizzly	45#	\$175.00
1966 Bear Kodiak	55#	\$185.00
1966 Bear Mag	42#	\$125.00
1956 Bear Cub	40#	\$65.00
1955 Bear Kodiak	45#	\$300.00
1964 Tamberlane	35#	\$150.00
1970 Super Kodiak	45#	\$225.00
1970s Kodiak Hunter	55#	\$155.00
1965 Pearson Mustang	50#	\$95.00
1965 Wing Presentation II	48#	\$225.00
1967 Wing Presentation I	39#	\$175.00
1970 Wing Thunderbird	45#	\$125.00
Shakespeare Necadah	40#	\$75.00
X99 Black Widow	35#	\$200.00
Staghorn Badger	50#	\$110.00
Pearson Silencer Td	45#	\$175.00
Wing White Wing	35#	\$150.00
AMF Red Wing Hunter	45#	\$70.00
1972 Bear Super Mag	50#	\$150.00
Pearson Mercury Hunter	50#	\$180.00
4PM Hoyt Pro Medalist	39#	\$175.00
Blackhawk Chief	45#	\$135.00
Damon Howatt Super Diablo	60#	\$160.00
Damon Howatt Coronado	40#	\$65.00
1963 Bear Kodiak	40#	\$160.00
Amarco Target	43#	\$85.00

Here are two lists that you can write for:

The Footed Shaft

5510 North Highway 63

Rochester, MN 55906

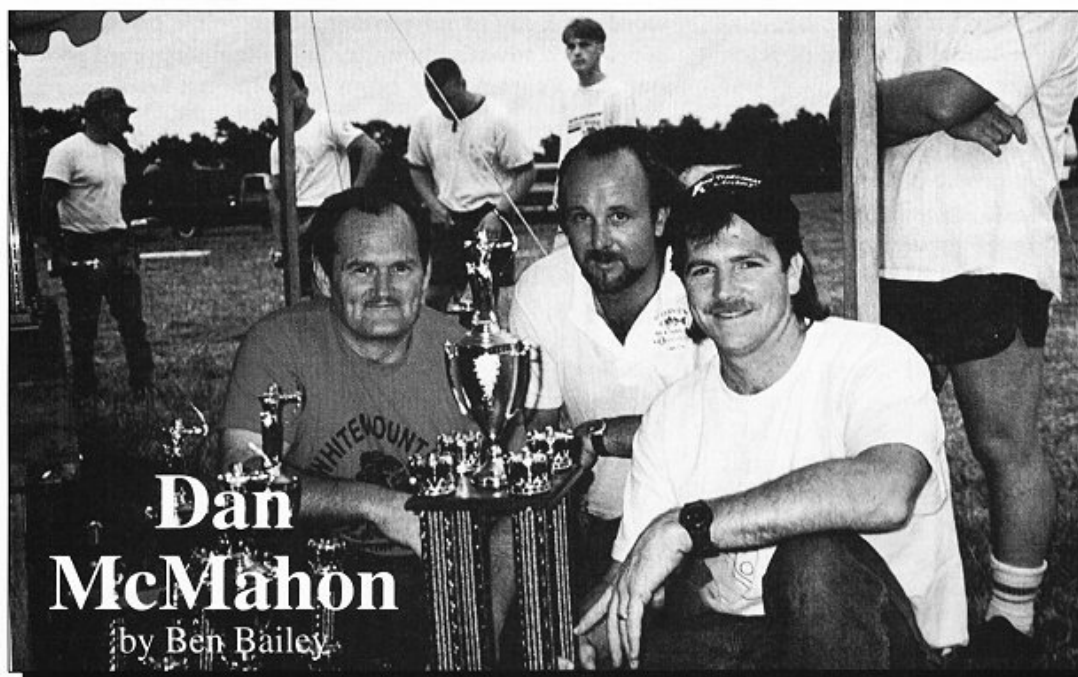
\$1.50 for single issue or \$15.00 for 12 months

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\$1.50 for single issue or \$10.00 for 8 issues



"Do your daughter Michelle, and son Keith own bows?"

Michelle does. She is 6 and enjoys shooting for 10 - 15 minutes at a time. When you bring young children into archery, you have to keep it fun. Keith is 2 1/2 and he shoot's Michelle's bow very well. He'll be ready for one of his own this year.

"Any advice for parents?"

Kid's want to do what they see parent's do, so if they show an interest, get them some inexpensive equipment

Dan McMahon is a name familiar to traditional archers in the Northeast. He has been shooting at local tournaments for over 10 years and winning most of those. He recently gained national renown as the IBO World Champion and first winner of the Easton Eagle Eye. Dan's entire life has been changed by his love for the longbow and hunting. He is cofounder of the McMahon Eagle Eye challenge, a contest that raises money for bowhunter defense and promotes a grand prize for traditional archery only. He is in the final stages of launching McMahon Traditional Archery, a manufacturer and distributor of traditional archery and hunting equipment. I caught up with Dan over lunch at McMahon Traditional Archery's headquarters in Middleboro MA to ask him about his beginnings in archery, and what advice he has for competitive archers.

Dan, when did you get your first bow?"

A fiberglass bow at 8 years from Jack & Harry's. My dad took me down one Saturday and we picked it out. I shot it at paper bags.

I purchased my first real bow at 14. It was a Bear Grizzly recurve my next door neighbor sold me for \$20.00. I went over several times trying to buy it, but he would not sell it to me until I could draw it back to his satisfaction. I still have it. It pulls 50# at 28". I hunted with that bow for woodchucks on my Dad's farm. I'd set up a 16' step ladder over the den hole and wait for them. Then I would do my best to shoot them. I got quite a few that way and that pleased my dad.

"How did you learn to shoot the recurve?"

I was self taught, aside from watching Fred Bear shoot on the American Sportsman. I just kept at it till I got it right. It was pretty natural because I shot the fiberglass one. At an early age when you love doing something you just learn to do it.

"Were you consistent at that age?"

Well, I missed more woodchucks than I hit but those woodchuck's were really quick also.

they can have fun with. The important lesson you have to teach is that a bow is a weapon, and to behave safely. After that, step out of the way. Don't emphasize hitting the bulls eye or try to push form or technique on them. If they have fun, they will someday ask you for help improving their shooting. Don't give any advice until they ask for it. Aside from how to hold the bow and nock the arrow.

"So after woodchucks, what was your first big game?"

Whitetail deer.

"With the recurve?"

Not at first. My girlfriend gave me a Bear Hunter compound bow with sights when I was 18. I shot three deer with it and probably missed 50; no exaggeration. It took me a while to figure it out, but the reason I missed these deer is that I would revert back to instinctive as soon as that deer walked in. On paper I could hit anything with that compound. A golf ball at 30 yards was a favorite lawn trick for friends. But hunting was another story.

"Was it buck fever?"

No! I missed those deer because shooting at targets after taking a moment to judge yardage is not like having a deer walk or trot up to you, by you, or away from you. When that animal comes by it is more natural to trust your instinctive shooting than to use sight pins. That realization brought me back to traditional equipment and I've shot nothing else since.

"What do you shoot today?"

A Matlock Predator X longbow, that pulls 55 pounds at 27". Chundu shafts from Twig and Zwickery broad heads. I make up my own arrows.

"Is that your hunting or target setup?"

Both. I like to shoot one bow year round, so I can stay familiar with it. I shoot target archery for fun and to prepare for hunting, so it's important to use the same equipment.

"Is 3D good practice for hunting?"

There are lots of distractions on the 3D course, people and noise plus walking up to the target as opposed to it walking up to you. It is important to practice alone, which I do, for that reason, this a lot better when you are by yourself.

"How do you practice?"

I shoot 3 times a week putting emphasis on one arrow at a time. I shoot one arrow, walk to the target and retrieve it thinking about the shot while I retrieve that arrow. I don't unload a quiver full of arrows into a target group. You have to learn to be aware of yourself while you shoot, from picking the spot, through the draw and follow through.

"Are you a snap shooter?"

No. I take 1-2 seconds at anchor but I do pull through my anchor at release. That helps me maintain tension on the bow string, but keeps my body relaxed. You see a lot of people who hold at anchor, then creep forward as they release.

"Are there any problems you struggle with?"

Yes. Sometime tipping my head down too much, you know, forward and into the string. But wearing glasses now has helped me break that for good. What I thought would be a hindrance (glasses) has helped my shooting. When I have not shot for several week's I catch myself with floating anchor, short draw, no follow through, you know, typical mistakes. The biggest one is incomplete focus on the point where you want that arrow to go.

"When you help others improve their shooting, is there one common fault you see?"

Number one is lack of concentration and lack of confidence. Everybody has the answer to their own shooting problems. If they just relax and trust their natural eye and hand coordination; listen to their body. That lack of self trust is the biggest problem for most people. Another big problem used to be too heavy bows, but better advice from bowers is helping to move people to bows suited for their strength.

"How about when a good shooter stops shooting well?"

Lack of confidence, of trust. Or some kind of personal distraction that



Dan with his 1997 Massachusetts gobbler, the result of a "very exciting" hunt.

prevents them from focusing. I experienced that one season.

"Although you view tournament archery as practice for hunting, you've had some notable accomplishments there. You won the Northeast Triple Crown three years running, the 1995 IBO World Championship, the New England Traditional Archery Association long-bow championship 3 years in a row, the 1997 Florida Traditional and in 1995 you stunned the archery world by taking the Easton Eagle Eye against almost impossible odds. That sure sounds like fun Dan!"

1995 was my most exciting year. In August we packed up the family in a motor home and went to Flatwoods, WV. for the IBO World Championship. In the toughest, closest shoot off I've ever been in. I won with a 183 out of 200, beating Keith Bain by 1 point. Keith had won the 3 previous year's so that was a real honor.

"That was also where you took the Easton Eagle Eye?"

Uh huh. (Big smile) I think a lot of eyes were opened that night. No one expected a traditional archer with a long-bow and wood arrow's to take that event. *"Did you expect to win it?"*

No! Not shooting against 22 of the country's top compound shooters. Qualification for the event was a novelty shot taken for a good cause; Bowhunter Defense. The novelty was held at the first leg of the IBO Northeast Triple Crown in Merrimack NH. My friend bought me the entry for fun. I never expected to hit a nickel sized orange dot on a McKenzie deer at 70 yards. But I

did, so there I was in Flatwoods squared off against 22 compound shooters for a \$1000.00 grand prize. My only advantage was that no one expected me to win. There was no pressure.

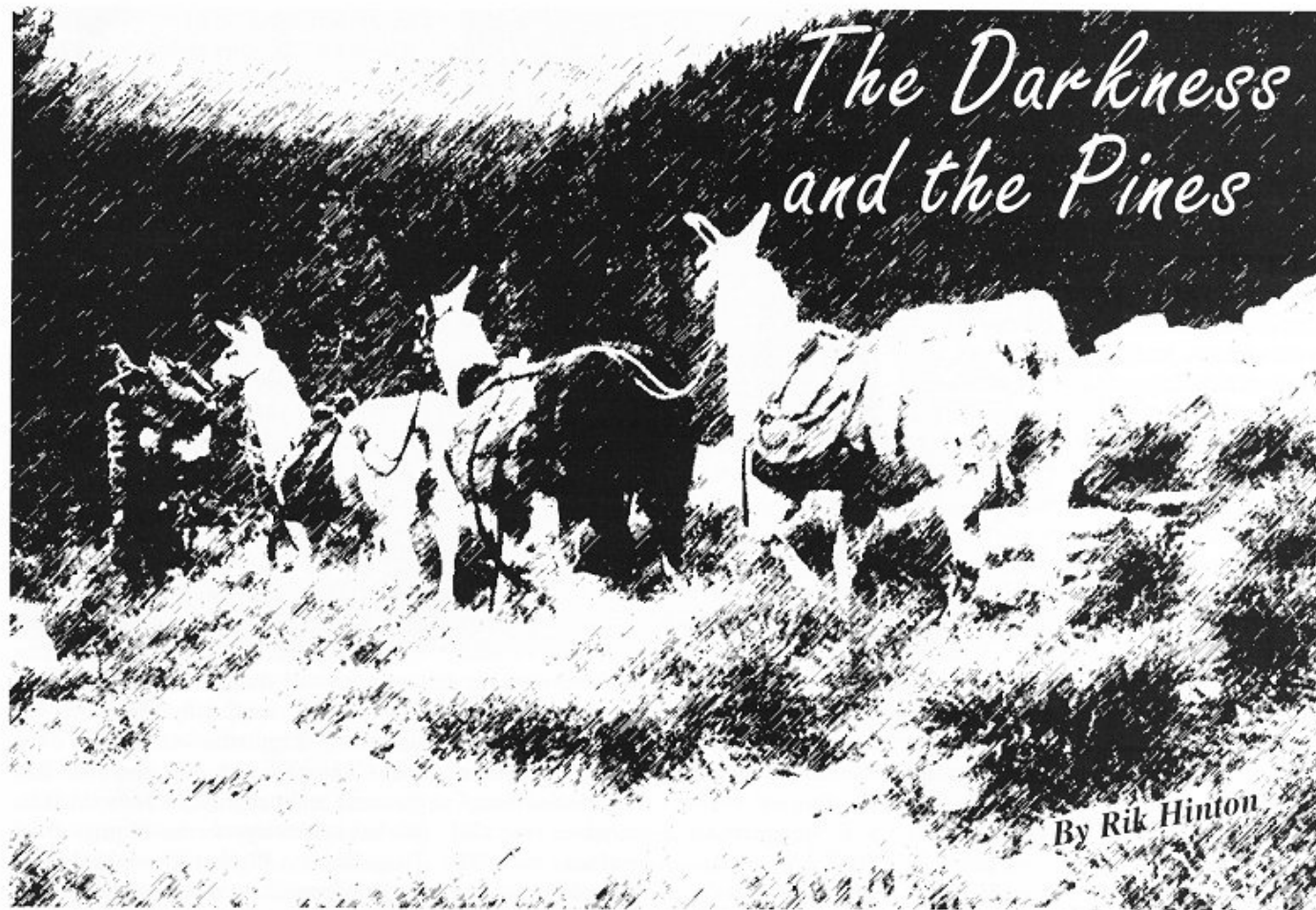
"That performance inspired the McMahon Eagle Eye, what is the McMahon Eagle Eye?"

After that win at Flatwoods some friends of mine got together and proposed an event similar to the Easton Eagle Eye but for traditional archers only. The goals are to raise money for the WLFA Bowhunter Defense Fund in the name of traditional archers and to create a fine prize for a traditional archer. Eagle Eye qualifications raised \$3,434 for bowhunter defense in 96 and in this, our second year, we expect to raise more. We awarded last year's champion over \$2,000 in cash and several fine merchandise awards. The nicest part of that prize was a bust of Howard Hill donated by Phil Cote, the sculptor. This year we are up over \$4,000 in prize money and Phil has given us another bust of Howard Hill. We have donations to the 97 prize from Twig Archery, Bighorn Bows, and King of the Mountain to name a few. I want to thank all the sponsors and those traditional clubs who have run McMahon Eagle Eye qualification events. They don't get paid for it and they are working to protect our heritage. Thank you all so much

"What does the future hold for archery and Dan McMahon?"

I feel strongly about traditional archery. It's a wholesome sport and promotes good hunting ethics. It has a good future. I hunt every year and will continue to shoot tournaments. This past year my partners and I got together and formed McMahon Traditional Archery. We manufacture and supply everything you need for traditional archery from tournament to tree stand. We have a catalog, a web page and we are out there at tournaments raising money for Bowhunter defense through the McMahon Eagle Eye. I will be at the Eastern Traditional rendezvous at Denton Hill, PA this year and I hope to see you there.





Three hours after sunset, just before midnight, I tethered the llamas to two lodgepole trees alongside the narrow mountain trail. I could sense their relief in the darkness as I removed the heavy panniers and let them feed on the moist grass at their feet. We could go no further in the dark with only the small flashlight beam guiding our way, as my planned camping spot was well off the trail, nearly impossible to find without the aid of moonlight. I unrolled my sleeping bag alongside the trail and crawled in for a few short hours of rest under a cloudy sky before the long-anticipated first day of elk season.

As I slowly began to drift off to sleep, I rolled over to check on the llamas one last time, and gazed at their dim outlines in the dark. It was then that I heard the sweet music I had waited eleven long months to hear: the first bugle of the season. The bull was much too far away to know exactly where he was bugling from, but that didn't matter. As his music echoed through the darkness and the pines, it struck a chord deep in my soul. His bugle, as had many others in past years, worked its unmistakable magic on me. An overwhelming, deep feeling of satisfaction and impending adventure surged through my body as it always does with the first bugle of the season. And this year, if anything, the magic it worked on my soul was stronger than ever. Those of you who have sought wapiti in the high Rockies know well of what I speak. Even the most calloused rifle hunters get misty-eyed and begin to talk with a far-off, wistful sound in their voices when the conversation turns to elk. For those of us who hunt with

bows, well, perhaps that feeling touches us at an even deeper level.

An hour before the first light of dawn began to creep over the mountain to the east, the cold from the granite-strewn ground had worked its way deep into the right side of my body. As I rolled over to lessen the chill, I opened my eyes to check on the llamas. Both Keeper and Dreamer were bedded down, contentedly chewing their cud in the dim, pre-dawn light. As I gazed drowsily at the llamas, the sound of another bull echoed quietly through the trees, and a wide, sleepy grin spread across my face: a distant bull was bugling his rage and lust for all the world to hear—it was time. . .

I quickly threw a frozen tarp over the panniers and my sleeping bag to keep them dry if the clouds opened up while I was hunting and, with the aid of my small flashlight, checked the gear in my day pack one last time. The logical part of my mind told me to wait until daylight, then hike to my camping spot and casually set up camp. But I wasn't listening. The spirit of adventure had already taken control of my mind and body. I could set up camp later, but for now, there was a bull bugling somewhere out there in the frosty morning darkness, calling me to the hunt. I could no more resist his challenge than he could resist the urge to bugle.

Icy cold water rushed into my boots and swirled around my knees as I negotiated the small creek at the bottom of the ridge. Several hundred yards above me I could hear a faint bugle over the sound of the rushing water. I fought my

way through the thick alder patch lining the far side of the creek, and with water still sloshing in my boots, crept closer to the bull. A small movement above drew my attention, and stopped me in my tracks. Well hidden by the morning shadows, a five point bull stood at the crest of the small finger ridge, looking down toward the creek where I had last bugled from. To his right, I saw just the last five inches of what later turned out to be a young spike's antler. Both bulls were hanging out together, and as I quietly mewed a friendly cow call to them, both began slowly walking toward me. The five point was in the lead, and at 18 yards he walked by broadside, winded me, and bolted to my left. The spike was fifteen yards behind him and kept coming. I came to full draw, fully expecting to let go of the arrow as the spike walked out from behind the tree fifteen yards above me. But I couldn't do it. Something drew my eyes to his face, and I realized that I couldn't shoot him. He seemed too young and inexperienced—the challenge just wasn't there. His inexperience didn't last long though, as he instantly crashed away through the timber the second I relaxed my draw. I have taken many five and six point bulls, and had always wanted to take a spike, mostly because I have never had the chance to do so. Now that I finally had the perfect opportunity, I let him slip away. . . . Another day and another spike may have seen a different outcome. But for this day, my sometimes sentimental heart took over, and a wiser spike now walks the woods. Perhaps we'll meet again when he has a mature bull's instincts and wisdom. On that day though, the odds, as they are with most bulls, may be in his favor. I wouldn't have it any other way.

For three days the elk drew me up and down steep timbered ridges, through creeks, and into alder patches where I'm sure the first human cuss words were uttered. And for three days, the elk stayed one step ahead of me at every turn. The last evening saw me leading two llamas down the mountain

toward the truck, and toward four long days of waiting until I could return.

Friday evening I was again climbing the steep trail into elk country. Keeper and Dreamer followed me patiently up the trail, and shortly after dusk we walked into a herd of feeding cow elk. Those of you who haven't hunted with llamas may find this a bit humorous, but Keeper and Dreamer have somehow decided that cow elk (all cow elk) are female llamas in dire need of "romantic companionship." The herd of elk was on both sides of the trail, and several of them were barking at us in the darkness. They didn't run off though, which made it very difficult to walk (drag) my two overly amorous studly llamas away from their version of the Swedish Bikini Team. An hour later they were still looking longingly over their shoulders toward what could have been.

The rut had escalated over the four days that I had been gone, but the bulls were as wily as ever. For three days I lived among them, smelled them, watched them, and hunted them, and for three days they eluded me. On the morning of the third day I was treated to a sight that I will never forget. As I moved in on a casually-bugling bull I looked across a small ravine before moving into the open, and 70 yards away, across the small creek at the bottom of the ravine, came a behemoth. Walking straight out of the sun, the shadow of his rack preceded him by about fifteen feet on the ground. The shadow of his rack almost took my breath away. When he slowly emerged

from the timber I realized that I was looking at a monster bull, wide, tall, and heavily beamed. He screamed and I grunted back as his cows milled around behind him. I softly cow called, trying to coax him across the creek, but he was content to stay with the cows he had, and slowly walked away, bugling and grunting for nearly two hours as I followed him across several steep drainages. I couldn't close the distance to make a good shot, and as the herd bedded for the day, I realized that I had to leave them in order to pack up the llamas for

the trip back to town. In four days my wife Tracy and I would return for the "Big Hunt," and if all went well, perhaps we could again find this bull who had nearly taken my breath away with the size of his rack. Until then, all I could do was wait—and plan.

Tracy and I walked down the steep ridge and into camp with three llamas shortly before midnight. Bright moonlight had allowed us to negotiate our way through the brush and trees to our tent. There is no trail to our camp, which makes it tough to find in the dark, but I like the idea that we are camping off the beaten path in no-man's land. A few short hours after we arrived, I finally convinced Tracy that the morning air really wasn't that cold and that leaving the warmth of her sleeping bag was a necessary thing. After all, we were "*here to hunt elk, not sleep all day!*" (Morning wit like that often results in a cold glare from my wife, but she was too tired to glare, she just groaned and reached for her clothes.) We had at least 45 minutes of darkness left as we began hiking though the forest toward the drainage I wanted to hunt. The cold morning air quickly chilled our sweat as we followed our small flashlight beams along the steep forest floor. By the time we crossed the first creek, it was light enough to see where we were going, and we began the steep ascent into elk heaven.

They were farther out than I had thought, but we located several bulls before the sun peeked over the ridge to

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the east. Three bulls were screaming at each other far to our left, and for another forty minutes, we scrambled across rocky hillsides and through alder brush until we were seventy yards below them. My first bugle brought a deafening silence to the mountain. . . Would they leave, or were they just surprised that another bull had arrived? A small chuckle echoed out of the dark timber above us—the challenge had been accepted. Tracy moved twenty yards off to the left side of the small, knife-edged ridge. I moved back ten yards into the cover of a brushy pine, knelt down in the shadows, and cow called. Two bulls screamed back, and one began to move in from the right. I could see the white of his coat moving between the black timber, and as I slowly turned to my right in preparation for a possible shot, I saw him stop, sniff the breeze, and trot around the side of the ridge away from us. He had come in on the downwind side, but the other bull was coming in on the other side of the ridge below Tracy, and the wind was perfect. I worked him for a long time, and watched him walk back and forth below us 60 yards away, bugling, grunting, and eventually barking because he couldn't see the bull who

twenty yards to the other side of the granite-strewn ridge and began working the bull. We bugled and chuckled back and forth for quite a while, then he quit answering me. Several minutes later I was still trying to get him to answer when I was startled by the sound of an entire herd of elk exploding across the hillside right below Tracy. I crawled to the top of the ridge and peeked around a tree just in time to see Tracy look back at me and start silently jumping up and down, waving her bow around and grinning profusely. I couldn't believe it, she had shot the bull! As she later told me, he had walked his herd across the small creek and up the hill right to her. She drew her bow as he passed behind some brush, and when he walked out quartering away 12 yards below her, she slipped a 600-grain feathered shaft into him and the entire herd crashed down the hillside and into the timber lining the creek.

I was a bit concerned because of the steep angle at which she said the arrow had entered the bull. Tracy had been kneeling directly above him on the steep ridge, and the arrow had hit him high in the ribs, angling down toward his far shoulder, similar to the shot placement from a tree stand. Normally, this is

was bugling at him. Eventually he and the other bulls we could hear on the mountain moved to their beds and quieted down for the mid-day siesta.

Tracy and I did the same, but less than an hour later, the closest bull was rested and bugling again. He was only 100 yards away and moving toward us. Tracy grabbed her bow and quickly moved up to the root ball of a fallen tree and nocked an arrow.

I moved back

the toughest type of blood trail to follow on a bull elk, but the Ribtek broadhead had done its job well. Even though he was hit high, I was able to follow his trail at a normal walking pace. 70 yards from where he first bolted I jumped across the creek onto the white sandy bank just as he had so obviously done, and promptly lost the trail. I looked all around me, and was gazing intently into the shadows on the other side of the creek when my eyes slowly focused on what I had previously thought was a small patch of white sand in the water. However, this patch of sand had a feathered shaft protruding from it. It was him, and he was almost totally submerged under the water. I mischievously called Tracy over and said *"Hey Tracy, look at this, I found your arrow."* She jumped the creek, looked into the water and said *"How did my arrow get stuck in the sand. . ."* and then she realized that the sand was not sand—we had found her bull!

The excitement of the moment lasted until we tried to pull the well fed five-point bull out of the deep pool. The harder we pulled, the deeper my legs sank into the soft wet sand, and I finally realized that I would be spending the next few hours standing thigh-deep in icy mountain spring water as I cleaned and quartered the bull. My skin was nearly as blue as my eyes by the time I was finished, but we were as happy as could be as we packed the horns and a light load of meat several hours back to camp.

The snow began to fall sometime in the night, and at dawn I opened the tent flap and beheld a white, snow-covered landscape. We had planned to pack the meat back to camp with the llamas, but decided to wait for a few hours until the snow stopped. Well, the snow did stop for a while, several times, as a matter of fact. It stopped just long enough to turn to freezing rain that melted the snow that had accumulated, and then turned back to snow. We spent the entire day inside the tent waiting for the storm to subside. Shortly before sundown the snow turned to freezing rain one last time before the clouds parted and we were rewarded for our patience with a spectacular sundown in the cold blue sky. As the sun slowly slipped from

view, I noticed that every blade of grass, every rock, and every branch on the mountain was covered with a thick glaze of ice. I smiled as I realized that we wouldn't have to worry about keeping the meat cold.

The dawn sky was deep blue and free of clouds as we led the llamas away from camp and through the ice-covered timber toward Tracy's bull. I carried my bow with me, but I promised my wife that I would use it "*Only in self defense—like against an attacking bull.*" I fully planned on sticking to my word, as we had a full day of packing ahead of us, but less than ten minutes out of camp we walked right into a six-point bull and a small herd of cows. (Well, he was only 50 yards off the crest of the ridge and I just COULDN'T walk by without trying). So I did what any red-blooded elk hunter would have done. I left the llamas standing on the ridge with my wife, who was grinning and rolling her eyes at the length of my self-imposed moratorium on elk hunting. The bull and I played cat and mouse for about fifteen minutes, and as he bugled one last time before slipping away into the trees with his small harem, I heard what sounded like a monster

bull roar back at him from the bottom of the drainage. He sounded huge, but, true to my word, I dutifully walked back up the ridge to my wife, fully planning on spending the rest of the day packing meat. The new bull kept roaring every few minutes as we walked along the top of the main ridge, and when we reached a small finger ridge leading down to the creek, I noticed that it actually met the creek quite near where the bull was bugling from. About half way down the ridge I couldn't stand it any more, and with my wife's urging (she actually had

to twist my arm fairly hard) I decided to go after him. Bulls with a tree-shaking roar like his are few and far between.

The small finger ridge we were descending was quite steep, which allowed me to half run/half slide 90 yards down the semi-frozen mud in just a few seconds. The darkly-timbered ridge



dropped off to both the left and right at a sharp 60-degree angle, so when I skidded to a stop at a small flat spot five yards wide, I decided to set up on the edge of it with my back to a sapling lodge pole. I cow called twice and before the second cow call fully escaped my lips he was screaming from only 80 yards away and running up the slope toward me. In the time it took to finish nocking my arrow he was thirty yards below me, out of sight below the crest of the ridge and screaming as he came. I know that several so-called experts are fond of saying

that you "*can't tell the size of a bull by his bugle,*" but in my experience, only a huge, heavy-bodied bull can seem to make the trees shake when he lets out a barrel-chested scream, and I could nearly see pine needles shaking off the trees as he groaned and screamed again at twenty yards. Two seconds later I saw

the ebony tips of his antlers rising above the ridge, pulled the string to the corner of my mouth, and followed him with my bow hand as he emerged from the brush and trotted by broadside, seven paces away. The 78-pound red elm limbs ripped the string from my fingers and imbedded the wooden shaft tightly behind his shoulder as he exploded to his right and crashed downhill through the timber. I screamed a bugle even as he bolted, and stopped him twenty-yards from where he had taken the arrow. I couldn't see him through the heavy timber, but I could sense him standing in the shadows below me, trying to sense an unseen danger. I remained motionless for a long time, then slowly and quietly walked back up the ridge to where Tracy was still holding the llamas. When she saw that I was returning without my bow, a warm smile

spread across her face. She knew. . .

We found him thirty-five yards from where I had taken my shot. His dark antlers were encased in a thick layer of ice from the freezing rain that had fallen at dusk, giving his rack a beautifully polished sheen in the early morning shadows. As I placed my outstretched hand on his thick wet coat and felt its coarse texture, I took my natural place in a long line of hunters stretching back through time to the dawn of history, and my heart soared with the clouds.



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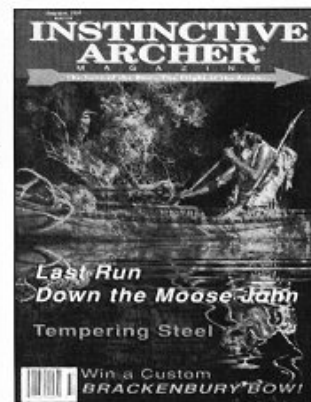
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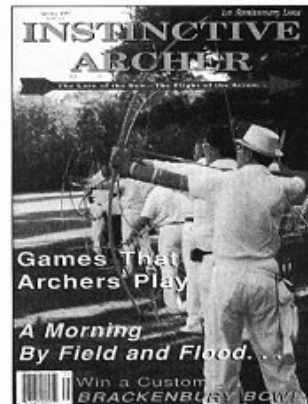
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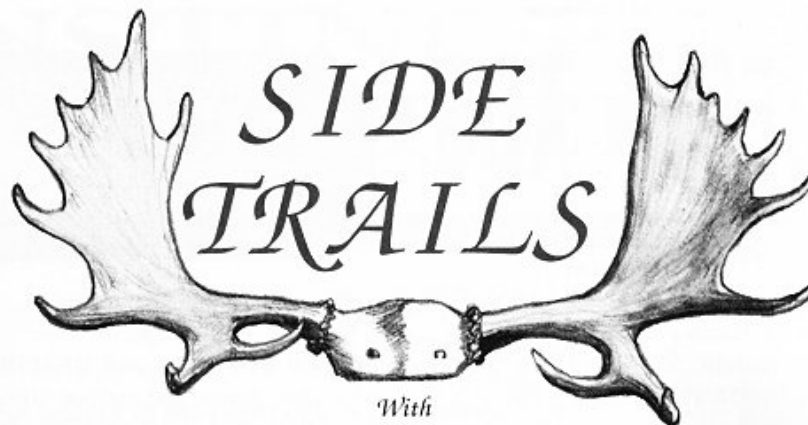
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With
Bob Martin

In the introduction to the book *Zen in the Art of Archery* (Eugene Herrigel 1953), Daisetz T. Suzuki wrote a memorable introduction which reads in part: "If one really wishes to be master of an art, technical knowledge of it is not enough. One has to transcend technique so that the art becomes an "artless art" growing out of the unconscious."

Mr. Suzuki was describing what those of us who have pursued the "art" of real archery, and have come to practice it in a dedicated manner, have found so alluring. Eventually one comes to the realization that the whole of traditional archery is greater than the sum of its parts. The subtle inclination which tells you when you're on and you can't miss no matter what, and it happens, and you can't explain it. Success becomes intoxicating in a manner not experienced in pursuits that do not share the basic elements and challenges of real archery. There are other pursuits or "arts" that one can take up but few have the lifetime appeal and ageless quality of archery.

Such concepts are often difficult to convey, especially to those who simply haven't experienced the spellbinding effect that such a discipline rewards its devotees. Some folks in our own sport don't even experience "real archery" even though they shoot traditional-styled equipment. They are lost to the real rewards which have been displaced by their own ego.

A concept I have come to embrace in regard to archery is what I call the "less is more" concept: there is a beauty and efficiency found in simplicity which produces performance and satisfaction far beyond what can be experienced by complex paraphernalia. This concept I believe rings true on many levels and many aspects of life in general and archery in particular. The rewards to one's endeavors are directly proportional to the challenges involved in the pursuit. In keeping with this "less is more" philosophy I'll end this and share a quotation which reflects an appreciation for some of the simple things which mean so much to those of us who have launched our hearts through azure skies...

"The long delicious trails and mountain paths are yours. The ecstasy of cool running streams I give you freely when athirst. And last of all I leave you the thrill of life and the joy of youth that throbs a moment in a well bent bow, then leaps forth in the flight of an arrow." —(The Adventurous Bowman by Dr. Saxton Pope)



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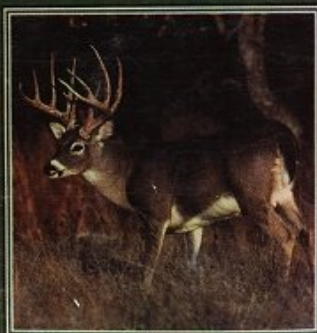
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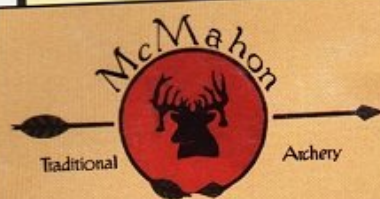
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