

Special Feature: **BASICS OF BROADHEAD SELECTION**

BOW & ARROW

The World's Leading Archery Magazine

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OCTOBER 1977

Blair Peterson:
**MASTERING THE
ART OF AIMING**

Fletching Dilemma:
**WHICH TYPE FLETCHING
FLIES THE FASTEST?**

Back To Basics:
**CONVENTIONAL
BAREBOW ARCHERY**

Sure Cure?
**HOW TO STOP
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Bow Test:
**INDIAN'S GOLDEN
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Colorado:
**WHERE THE
BIG MULEYS
COME TO
THE HUNTER**

Something New!
READY REFERENCE FILE FOR ARCHERS
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ART KRAGNESS TELLS WHY HE SHOOTS A DAMON HOWATT BOW

I'm writing to tell you about the bow I took my first deer with. I bought the bow nine years ago, and since that time I have mistreated it in every possible way. The bow has spent most of those nine years strung, propped in a corner of my garage at all temperatures, thrown in the rear of pickups, and in car trunks, dumped in creeks and dropped out of trees. Since I've owned this bow, I have tried many others, but cannot get any to shoot quite like it.

Although there does not seem to be anything wrong with it, I'm beginning to worry that someday it will have to give out. I've begun to take care of it lately, but I think I'd better get one exactly like it for a backup bow.

The bow is a 65#, 58" Diablo. It has sure served me well these last nine years. Since that first whitetail, I have taken 11 more whitetails, four mule deer, including the biggest buck in the 1972 National Bowhunt in Douglas, Wyoming, one bull elk, one good buck antelope, two black bear, the #5 Cougar P&Y, the World Record Barren Ground Caribou, #36 Barreu Ground Caribou, #4 Alaska Moose, #6 Grizzly, as well as bobcat, fox, many many game birds and almost every small game species, countless rough fish, sharks and rays.

The great times I've had with this bow have caused me to recommend it to all my best bowhunting friends.

Regards,

Art Kragness

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BOW & ARROW

ON THE COVER

Judd Cooney pauses mid-hunt to enjoy the spectacular scenery of a fall day in Colorado. For more about hunting Colorado, see "Colorado...Where The Big Muleys Come To The Hunter" on page 24. Photo by Judd Cooney.



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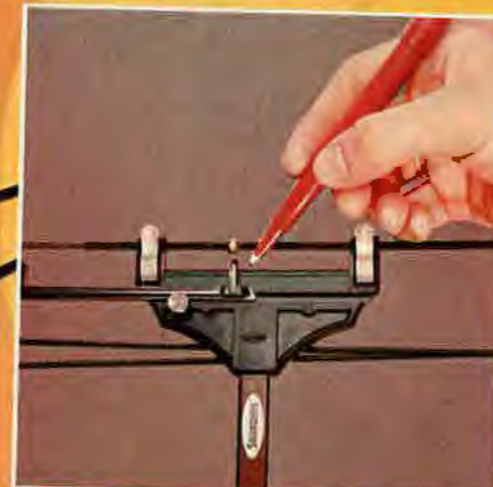
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BOWHUNTER'S ANNUAL

I'm a big fan of Fred Bear, Jim Dougherty and Judd Cooney. I hear that your magazine's Bowhunter's Annual contains stories by all three of these fine bowhunters. Where can I get a copy?

Leonard Jackson,
San Diego, California

(Not only does the 1977 edition of BOW & ARROW Magazine's Bowhunter's Annual contain stories by Bear, Dougherty and Cooney, but Doug Kittredge, Jack Howard, Midge Dandridge, Steve Gorr, Sam Fadala and many more. Plus pages and pages of accessories and hunting info. You can get a copy at your favorite newsstand. If you can't find it, order direct from us. Send \$1.95 to BOW & ARROW, Box III, Capistrano Beach, California 92624.)

AUGUST ISSUE UPDATE

With reference to the Dynabo test in the August issue, the inventor, Len Subber, reports that some Dynabos now meet the NFAA requirement of two flexible limbs. Martin Archery offers a flexible limb kit to convert the M-10 to a Mark II tournament model and Graham's Custom Bows' DynaBo is designed with two flexible limbs. Recent prototypes by the inventor (see photo) conform to NFAA rules, and are designed to protect the crescent from thick brush.

Setting the record straight: The Baker Climbing Tree Stand (five hundred-pound capacity) listed in the Bowhunter's Discount Warehouse advertisement in the August issue (page 44) was incorrectly priced at \$23.95. The correct price is \$28.95. We're sorry for any inconvenience this might have caused.

And one other mix-up: The bow pictured on page 34 of the August issue is a Bear Victor Kodiak Magnum Takedown and not a Wing Competition II, as the caption read. The broadhead in the same photo was also incorrectly listed as the Pearson Switchblade. It is actually a CatClaw by Rancho Safari. *Continued on page 21*

DynaBo prototypes



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CAMP COOKING

CAMP COOKERY to many of us spells WORK in just so many capital letters! We load our outdoor camp larders with cans of this and dried chunks of that. The whole idea becomes one of whipping together something to eat as fast as possible with the least amount of effort. Flavors don't mean a thing. Filling up the belly is the important thing. Some character either volunteers to take on the cooking job or, more likely, the cook becomes the man least likely to resist. Past experience counts for little — he who argues least, gets the job. Complaints about the food quality only lead to the offer, "Can you do better?" So even when half-poisoned, no one lets out a peep.

But camp chow needn't be like that. The ability to whomp up some good vittles in camp can be easily learned. There are no mysteries about how to cook mighty good-tasting food. And believe me, nothing makes a camp seem warmer on a dark, blustery evening than sitting down to a hot, savory meal — a meal that often tastes better in the outdoors than anything fetched up at home!

Camp cookery can be whatever you wish to make of it — steak and potatoes, meat loaf, bacon and eggs or a whole spectrum of gourmet dishes running from Smothered Grouse Ondine to Veal Picata Varios. Over the years I've taken a keen interest in seeing what new approaches can be taken to make camp cookery better tasting and easier to prepare. I've browsed through cookbooks like you wouldn't believe. I've tried every kind of cooking utensil, from antique Dutch ovens to Chinese woks. Reading recounts of old settler's travels have brought to light ways they used to handle foods when far from modern conveniences, and by using my pidgin Spanish, Basque shepherds have taught me about sourdough breads. Bit by bit I put together the ways and means of eating well in any camp.

Start out with a small notebook you can keep with your camp gear. In this notebook I keep my favorite recipes and a listing of the basic supplies that I try to have in camp. Before I head out, I inventory what I have on hand and make up a shopping list of what is yet needed. I keep the items that are not subject to spoilage in a metal box from camp to camp. I'm well aware that many of these things

Continued on page 10

Nothing makes a hunting camp better than a well-stocked larder and a hunter who knows how to use it.



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KITTREDGE

Continued from page 8

may not fit into your ideas, so use this only as a guide from which to develop your own listing.

BASIC FOOD STUFFS — Onions, garlic, lettuce, carrots, potatoes, fresh or canned mushrooms, apples or oranges, lemon, radishes and other fresh vegetables that the particular group might like. Also bacon, eggs, ham, chicken, beef, lunch meat, cheese, butter, coffee, dry cereals, powdered milk, sugar, flour, mayonnaise, cooking oil, vinegar, canned vegetables (peas, corn, string beans, tomatoes, sliced potatoes), tomato paste, dry soups, pickles, black olives, nuts, crackers, bread, cookies, syrup, baking soda, baking powder, yeast, sour cream, noodles or rice.

SPICES — Salt and pepper, garlic powder, dry mustard, Hungarian paprika, bay leaf, basil, dill weed, fine herbs, rosemary, oregano, marjoram, thyme, tarragon, curry powder.

Quantities and actual items vary widely, depending on who I am with and how long we plan to be out.

I have another list of my supplies, including soap, wash pads, paper towels, etc. To this group I add my cooking utensils, trying to keep these as simple as possible. Most of my cooking is done in a cast iron Dutch oven. I have two — one being a shallow skillet type with a rimmed lid that will hold coals, called by our pioneers a "spider" and the other a rather deep, fairly large "Meat Oven." I think the old-fashioned camp-type Dutch oven with the little legs to hold it up off the coals is about the most versatile cooking utensil ever devised for the outdoorsman. I can use mine over the fire or on the Coleman Stove equally well, and I don't really know of much that can't be successfully cooked in one and often easier and better than in a conventional cookery ware. Learning how to use a Dutch oven in camp is easy — buy a copy of Don Holm's fine book, "Old Fashioned Dutch Oven Cookbook."

Along with my ovens I throw in a couple of regular pots for heating water, a small coffee pot, bread bowl, spatula, large fork and spoon, a couple of good butcher knives, a pair of gloves, can opener, measuring spoon set, measuring cup, some aluminum foil and a 12x8-inch piece of birch plywood for a cutting board.

So with all the materials and utensils, where do we go from here? Simple enough — there's a need for some recipes. Start out by making a list of the meals you like most at home. Maybe you start with bacon and eggs, expanding to other breakfasts — pancakes, French toast, hot cereal. Then try the lunches, which probably include sandwiches, perhaps soup, or maybe you are one who just snacks on a chunk of cheese and piece of salami. Dinner is frequently the main camp meal and you'll no doubt consider spaghetti, meat loaf, stew, steaks and hamburger. But if you are seriously thinking about what meals you like best when you are home, rather than doing your own cooking in a distant camp, you may find yourself listing various chicken dishes, more complicated types of vegetables, perhaps foods with a Mexican flavor, or pies and other desserts.

Here is where your little notebook comes in, for you should now start writing down the recipes for preparing all of the dishes that appeal to you and that appear to be simple enough for camp preparation. As you become more skilled in adapting home cooking to camp cooking, you'll find that there are few, if any, recipes that can't be prepared outdoors. So get on with it! If you like to eat well, learn to cook. If you want another phase of camp fun, learn to cook. If you're tired of taking bromos to settle the tummy rumbles resulting from old Joe fixing the meals, learn to take a whack at it yourself. Should you have any doubts about what you can do, just give your creation a try at home first, because when you like the taste of your efforts in the warmth of your kitchen, you'll be crazy about it in the piney woods! *Continued on page 51*

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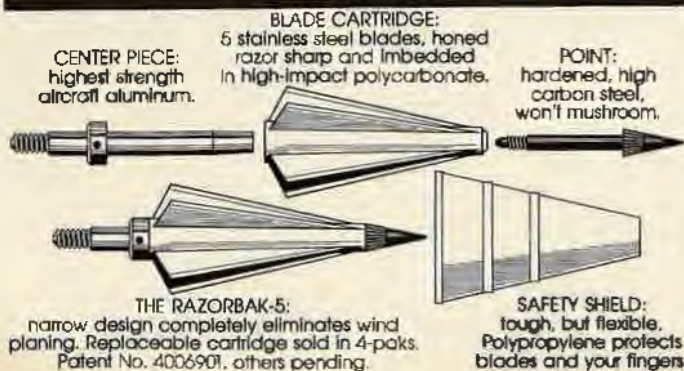
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TACKLE TIPS BY EMERY J. LOISELLE

GRIPES ABOUT ARCHERY

IT IS NOT my usual nature to gripe, but over the years I have jotted down things that irk me in the sport of archery. Perhaps the abrasiveness of my name will permit airing a few here.

Without a doubt you could add a few items to this list from your own experience. Did you ever buy a new bow and find you could not completely screw in a cushion plunger until the threaded hole was retapped? Or, in the case of a compound, perhaps you have found loose parts and screws that were not completely tightened. Some of the accessories you purchased had inadequate or even no instructions enclosed.

PROVISIONS FOR MOUNTING A SIGHT — Years back it was rare to find a bow on which was provided a flat base for mounting a sight. All surfaces were curved, mostly compound curves. Many of the metal-handled bows of today provide a flat surface on the side opposite the window for mounting a sight extender or sidemount hunting sight. Some bowhunters prefer to mount the sight directly to the back of the bow so there is less to catch on brush. It would be practical if bow manufacturers designed into their bows a flat surface at both locations for sight mounting, and perhaps even a third location on the face of the riser, a position that provides maximum protection for the hunting sight.

SCREW-IN POINTS — Did you ever buy a set of hunting arrows with threaded inserts installed and find that a mounted broadhead may be horizontal when screwed into one shaft, but vertical or some other angle when screwed into another? This is because the arrow manufacturer simply epoxied the inserts into the shaft without regard for broadhead position. In a way, you can't blame him since it would be too time-consuming to screw a mounted broadhead into the insert to position and index the rotation before final installation. As a result, you must rotate your heads on the broadhead adapter for each individual shaft and mark them for correct mating. This nullifies the advantage of being able to easily switch a dull broadhead for a sharp one in the field.

I made a simple tool for personal use to consistently align threaded inserts when shafts are purchased full length with inserts loose. It consists of two nuts on an 8-32 screw between which is jammed a paper clip. Just enough of the screw is exposed to catch a couple of the insert threads, and one end of the clip is straightened out to act as an indicator. The insert is screwed onto the tool, and then an indexing mark is made on the insert shoulder. After all are marked, the inserts are epoxied and rotated into the shafts to align the index mark with the cock feather. With this method all broadheads on adapters will be truly interchangeable on all shafts.

So why don't the manufacturers of interchangeable point systems put an indexing mark on the threaded inserts that could be aligned with the cock feather by the arrow maker?

CLAIMS AND SEMANTICS — Almost any bow

Continued on page 14



Our adjustable eccentric wheel.

Wing introduces the first compound bows with adjustable eccentric wheels.*

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TACKLE TIPS

Continued from page 12

manufacturer will tell you his bow is the best. The same applies to arrows, rests, plungers, bowquivers and other accessories. Which IS best? Can only one be best? Perhaps no particular bow is best in all areas of comparison, and who knows which is best for you in particular. The best bow for John may not be the best bow for Joe. Both men don't have the same feel for a certain grip. And John's smooth-drawing bow stacks badly during the long draw of big Joe.

New arrow materials are advertised as being lighter than aluminum. Is the comparison being made against heavy thick-walled aluminum shafts or light, thin walls of the same spine?

Some highly touted accessories actually do little or nothing for you and may even be detrimental to your shooting.

Product descriptions in some catalogs and brochures are truly a play on words. Sometimes you can see that an advertised item is almost an exact copy of one simply and accurately described by another manufacturer, but from the write-up on this particular version you would think it is an altogether different item, superior in every way with capabilities way beyond the other. This, of course, is modern marketing, but sometimes these extremes are misleading.

STABILIZERS — It seems that each bow manufacturer has his favorite thread size for the stabilizer slug. Thread sizes commonly used are 1/4-20, 1/4-28, 5/16-18, and 5/16-24. When you want a stabilizer for your bow, you must know the thread size of the bushing in your bow and find a stabilizer that has a matching thread. Now, the amazing thing is that most catalogs and brochures might give you the length of the stabilizer and possibly the weight of the ball, but few state the thread size. Likewise, bow descriptions seldom give the bushing size. If you purchase a stabilizer without actually trying it in your bow, you may end up looking for an adapter as well.

BROADHEAD FERRULES — Some shaft materials boast a speed and penetration advantage because of small diameter. Broadheads with ferrules of plastic material defeat this advantage as, compared with metal ferrules, plastic ones must have thicker walls for strength with an outside diameter larger than even the largest shafts. Did you ever try to remove a broadhead of this type from the broadhead adapter? Applying heat to soften the hot-melt glue distorts or melts the ferrule as well.

AWARDS — Medals (and trophies on rare occasions) are nice to win at tournaments, but after awhile you just accumulate them in a drawer. Small useful items with an archery motif (not necessarily equipment accessories) that the archer will use and display daily are most appreciated and do more to promote archery.

EQUIPMENT COST — Why does a little archery item containing only a few cents worth of material cost \$5 to \$10? That used to be one of my gripes until I learned a few things from personal experience. Perhaps I can help you see the other side of this.

The high cost of manufacturing and marketing (printing, advertising, distribution, mailing, etc.) and the high risk on whether the product will sell — especially when aimed at a small, specialized market like archery — requires that a high price be put on the product. Considering items of metal or plastic, the cost of a die for molding or casting the item runs into thousands of dollars. Diecasting and injection-molding firms talk in terms of 50,000 to 100,000 castings, and if a small run will even be considered the price per unit rises sharply.

Archery equipment, like guns and ammunition, carries

Continued on page 20

HERE IT IS...



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TECH TALK

CORRECT ARROW CHOICE

I am having trouble finding the right arrows for my bow and draw length. My draw length is twenty-six inches and my bow is a Mark I made by American Archery, with a draw weight of thirty-five pounds. My hunting arrows are twenty-nine inches and my target arrows are twenty-eight inches. I couldn't find any smaller arrows at the time I bought them.

What I would like to know is why are all of the twenty-six-inch arrows made for bows of fifty and sixty pounds? Also, should I have my arrows cut down to the right size? The right size would be twenty-six inches for my target arrows and twenty-eight inches for my hunting arrows, right? Jeff Wood, Crivitz, Wisconsin

(With a draw length of twenty-six inches measured from the back of the bow, your target arrow could be a little less than twenty-six inches while your hunting arrow should be about twenty-seven inches to assure that the broadhead will not touch the back of the bow even should you overdraw slightly. Cutting down your present arrows should give you a better setup and flatter trajectory, although this will change spine and arrow flight a bit.)

(Proper arrow length for you should not be difficult to get in lighter weights. Many dealers stock a variety of spines in full-length uncut arrows. The appropriate arrow spined for the individual customer is cut to his draw length and the point system of his choice is installed.)

CUTTING RAZOR BLADES

There is a handy tool selling for under ten dollars that will cut razor blades to fit any style broadhead. It is called the Nibbler and is manufactured by the Adel Tool Company. In seconds you can custom shape razor blades so that they neatly mate with the ferrule of the broadheads. It sure beats the old bend-break-cut-and-curse method of shaping razor blades to be glued on broadheads.

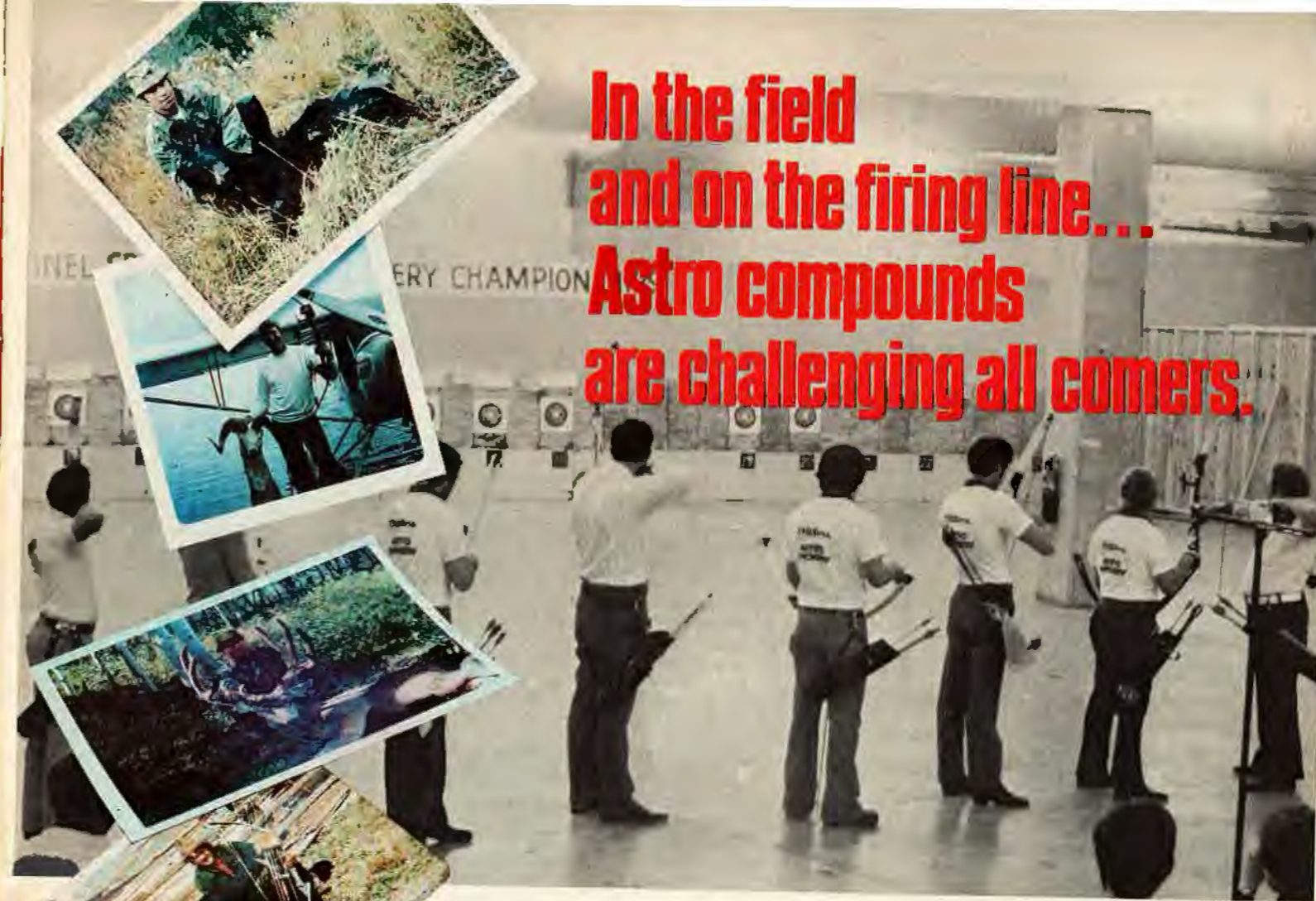
Jim LaSalle, Baden, Pennsylvania
(Thanks for the tip. Write to the Adel Tool Company at Dept. BA, 4640 North Ronald, Chicago, Illinois 60656.)

BOW WEIGHING METHOD

In his June 1977 Tackle Tips column, Emery Loiselle described a bow-weighing method. The variant of it used locally requires a piece of wood

Continued on page 18

In the field and on the firing line... Astro compounds are challenging all comers.



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TECH TALK

Continued from page 16

- a broomstick, etc. - with a string groove cut on one end. The bowstring is placed in the groove, the other end of the stick is put on the bathroom scale, like an oversized arrow. Push the bow handle down to draw the bow. The scale gives a direct reading. Of course, this wouldn't work for a heavy-draw crossbow, but it is fine for an ordinary bow.

I generally take two or three readings to be sure I get the correct reading, as bathroom scales aren't always accurate as, say, a beam scale.

Clayton Baldrey,
Olympia, Washington

(Emery Loiselle says: "Literature Tom Jennings released eight or so years ago concerning his compound bows also showed a bow-weighting jig consisting of an upright stick on a pedestal for use in checking the draw weight of a compound on a bathroom scale. A photo and description of this are included in my book, 'Doctor Your Own Compound Bow.' The jig you suggest sounds similar to this, but the method I explained in the June issue of BOW & ARROW is probably simpler and safer. Your thoughtfulness in writing is appreciated as we welcome ideas we can relay to our readers.")

MAKING ARROWS

I am seeking information on the

making of arrows. I use an aluminum shaft - 1716 at 27 1/2 inches. I use No. 260 plastic vanes. My bow is a thirty-six-pound recurve. Could I use No. 320 vanes or longer? What would be the result? If I was to use an 1816 shaft that was 27 1/2 inches long out of the same bow, what would be the proper fletching to use? What would be the result? Is a ten-strand string better than a twelve-strand string? Is helical fletching superior to straight fletching?

Jim L. Lalonde,
Quebec, Canada

(Length and angle of fletching and number of strands in a bow string are largely a matter of preference for an individual archer. Very small vanes are suitable for an archer with consistent form using a release aid, and almost-straight fletching can be used on light arrows shot from a high-speed compound. Other archers should use larger fletching applied with enough angle to rotate the arrow in flight. Helical is good to rotate heavy hunting arrows and to avoid planing of the broadhead - for more information about fletching, see "The Fletching Dilemma" in this issue.

(A ten-strand string is adequate for bows of up to thirty-five pounds. A light string creates less drag, but some archers prefer a heavier string for smooth, more forgiving action.

(Your choices of variables for your thirty-six-pound recurve are in the ball park.)



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MAIL POUCH Continued from page 21

Two weeks ago I had a problem with my Pearson Rogue bow. Today I received a new bow from the factory... how's that for fine service? Great!
Edward R. Collie,
West Memphis, Arkansas



James Bushong and his nine-pointer.

SUCCESS STORIES

This is a picture of the buck I shot October 27, 1976. He was a nine-point and weighed 153 pounds. I've enjoyed reading your magazine for the past four years. Keep up the good work.

James H. Bushong,
Lancaster, Pennsylvania

Continued on page 41

Browning builds the best bows for your buck.

What about price?

Browning bows are as reasonably priced as we can make them, without sacrificing high grade components, design and craftsmanship. Even the Browning Compound Cobra (suggested retail \$77.50), has limbs made of the best fiberglass and maple laminations, a strong, warm hardwood handle riser and v-slot limbs to hold the eccentric cams.

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Photo by John Lamica, Jr.



Welch, from Binghamton, New York, and his trophy muley.

Photo by John Lamica, Jr.



Ben Swan, also from Binghamton. His first Colorado hunt was in 1975.

Photo by John Lamica, Jr.



Joe and Sandy Hildreth of Potsdam, New York. She got hers last year.

COLORADO...WHERE THE BIG MULEYS COME TO THE HUNTER!



Bill Brust of Canajoharie, New York, is all set for a backpack and overnight stay in Colorado's back country.

And Where An Easterner Finally Realized His Western Dream

By Ed Welch as told to Roy Hoff

THE ONLY ADJECTIVE in my limited vocabulary that can adequately describe my 1975 bow and arrow deer season at John Lamica's is outstanding! We, the "Boys From New York," scored four for six during the two weeks of our hunt. After two rather dry years for myself at Lamica's, dreams of a record muley finally materialized.

For background music, my bow-hunting experiences date back to 1946 when I arrowed my first whitetail at

ten yards with a fifty-three-pound homemade recurve. Since that time, I have scored on over fifty whitetails in both New York and Pennsylvania.

After this rather impressive record, and with confidence at a high level, my bowhunting partner Ben Swan and I decided that 1973 was the year to hunt with John Lamica in "Colorful Colorado."

Swan took a nice buck in 1973, drew a blank in 1974, and scored again in 1975 with a typical four-by-four. My first Colorado muley came suddenly on the second full day of our 1975 hunt.

Nelson Harrington, Swan and I

were planning a stalk near upper Four-A — which is a section of high-timbered ridge — early in the afternoon of the second day of the hunt. It was August 18, with temperatures in the eighties. My plan was to still-hunt just below the rim of the ridge, meeting Harrington and Swan under an outcrop of rocks at about 3:30 p.m. part way along the hogback. They, in turn, would hunt the opposite side of the ridge to the prearranged spot.

Having hunted this area in previous years, I was alert for bedded deer just under the rim. It seemed as if I had hardly begun my stalk through the sage and scrub oak when I raised my

John Lamica, Jr., at an 11,600-foot stopping point during a pack-train elk hunt he led in the White River National Forest, near Aspen, in 1973.



Photo by Bill Brust



Photo by John Lamica, Jr.

Kenneth Hotchkiss (above) from Columbus, Ohio, and David P. Anderson (below), of Connellsville, Pennsylvania, pose with muleys.



Photo by John Lamica, Jr.

If the title sounds like the writer is stretching the truth, don't you believe it! All you have to do is feast your eyes on the accompanying photos of rocking-chair-antlered beauties which were bagged by bow and arrow hunters in Colorado — all during a five-day hunt with John Lamica, outfitter and guide in Grand Junction, Colorado. I have hunted with Lamica on several occasions. He is impressive not only because he knows his way around in the high country, but also because he is a doggone good archer and knows his clients' limitations. He provides each hunter with a tree stand or ground blind near a waterhole or deer trail. Lamica tells his gang: "Let the deer come to you!"

A couple of years ago I followed my guide's advice and now, hanging on the wall of my "Braggin' Room" is a near-perfect set of mule deer antlers measuring thirty inches from tip to tip and 29½ inches high. For awhile my trophy ranked near the top of the list in the Pope & Young book. Take a look at the accompanying photos and you will see why my prize beauty has

been relegated to page two of that record book.

All of us old-timers know when we go big-game hunting with a bow and arrow that we win some and lose some. In other words, we are hunting the hard way and sometimes we can look forward to returning home to our one-and-onlies with a slight smell of skunk!

Before I get around to the highlight of this storytelling, I want to say that there is more to a trip like this than just the hunting. It is a trip the whole family can enjoy. If they are not too eager about seeing frost on the punkin' early in the morning, they can find most any type of good accommodations in nearby Grand Junction.

If you, the hunter, fly in, your guide will pick you up and escort you to camp. The road is not what you'd call a boulevard, but it provides many beautiful views of the Rockies for picture taking. Though your outfitter will provide tent-camping facilities, many of us prefer to take our own duffel so we can join others in around-the-campfire get-togethers and

storytelling. Mrs. Hoff and I do our roughing-it in our camper. There is much fun to enjoy in hunting camp and you won't find nicer companions guys and gals — anywhere.

Before turning to the good part of this article, I should like to explain why I must write this in the form of an "as told to me." Here's what happened...last Spring I fell out of a tree! No, it's not what you think! I was standing on the top rung of a seven-foot ladder picking some citrus for a friend of mine. Guess what? I reached a little too far for a big, juicy grapefruit. One leg of the ladder went thataway — I went the other way. There still is a big dent under the tree which just fits the size of my shoulder. Besides lacerating my bow arm badly, nothing else of importance happened.

At this moment, I am shooting one of my wife's old hunting bows. I am, as they say, hanging in there with a promise that I will be at John Lamica's come opening day of deer season this Fall armed with bow and camera. — Roy Hoff



Photo by John Lamica, Jr.
This was a 20-yard tree-stand shot for Oklahoma hunter Tommy Biffle.



Photo by John Lamica, Jr.
Dave Hassel, of San Carlos, California, and his muley.



Photo by John Lamica, Jr.
Minnesota hunter Paul Oppegard got this muley from a tree stand.

head to scan a long, narrow, grassy area directly on top of the ridge. To my surprise, heading toward me at a trot with nose to the ground was the largest-antlered and biggest-bodied mule deer I have ever seen!

I suddenly realized that I was stand-

ing in the open and entirely exposed to this monster. Not only did I feel inferior and inadequate to cope with such an animal, but it was also immediately apparent that I was standing directly in the middle of the very same deer run he had chosen. My only

recourse was to drop down onto one knee and try to hide myself behind a small blow-down consisting of one three-inch-diameter branch of aspen with no leaves.

Imagine my feelings when he continued at a trot, pausing only long enough to raise his head and test the wind. Fortunately, the wind was in my favor so on he came! At fifteen yards the impossible happened. He stopped, raised his head and decided to change direction ninety degrees.

His new course took him directly behind a small pine tree, screening him entirely from my view. Now was my chance! Raising on one knee, I brought my forty-four-pound custom recurve to full draw and held at his approximate point of reappearance. It seemed like ages, but probably only a second or two passed when he stepped from behind the pine tree, offering me a perfect lung shot. As my arrow left the bow I knew I had him. His heavy-antlered head swung in my direction with his eyes and facial expression appearing to ask, "Where in hell did you come from?" The arrow buried itself in his huge body directly behind the scapula, penetrating completely through the lungs and exiting between the first two ribs on his right side. With an excited lunge, he bolted over the edge of the ridge and down the canyon wall.

Suddenly, all was quiet. Needless to say, I was shaking like a leaf with the excitement and anticipation of finding my once-in-a-lifetime trophy. After taking a moment to calm down, I descended the canyon wall and scanned the area for the direction he had taken.

A short walk brought me within sight of him, sprawled precariously in the middle of a large scrub oak which had retarded his plunge toward the bottom of the canyon.

After taking pictures, I glanced at
Continued on page 28



Hunters have often been heard to say: "My deer was bigger 'n a horse!" This camera angle seems to prove it.

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Ted Ekin, owner of Howard Hill Archery Co., together with the Great HOWARD HILL, Mrs. Hill, Gus Demos, Rory Calhoun and his wife, on a 17-day hunt in Utah. Ted made numerous trips with HOWARD HILL (hunting trips, exhibitions, sportsman shows, etc.) and has been with HOWARD HILL since 1960 at which time Ted Ekin, Dick Garver & HOWARD HILL organized the Howard Hill Productions, Sunland, Calif.

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BIG MULEYS

Continued from page 26

my watch — exactly 3:30 p.m., August 18. I had finally realized a life-long ambition — to hunt Colorado and successfully take a trophy mule deer.

The remainder of this story is rather anti-climactic. As any dyed-in-the-wool hunter knows, when the kill is made, the work begins. After completing the field dressing, I made my way to our prearranged spot, only to find Harrington and Swan heading in my direction. Their stalk had been fruitless, but as they approached me, I could contain myself no longer. The excited look on my face together with my bloodied hands had them begging for the story.

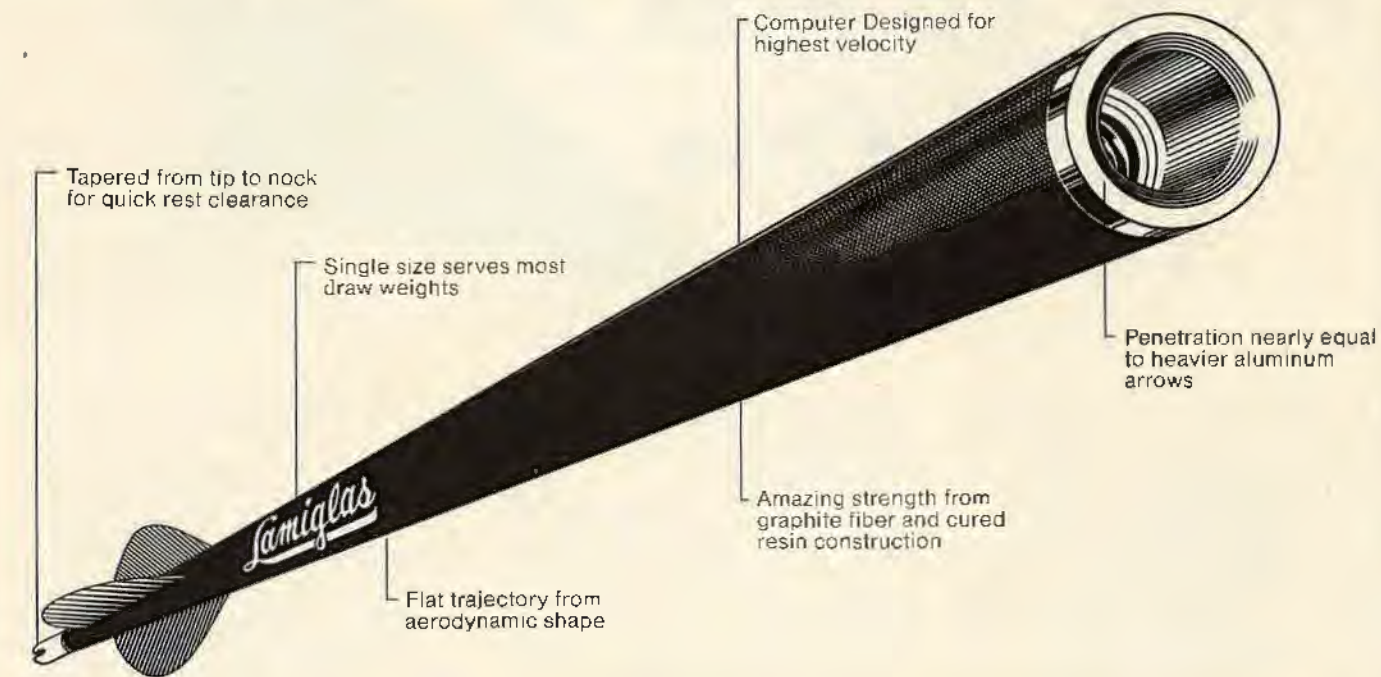
As we made our way to the kill, I still found my good fortune hard to believe. The deer had fallen in a tangle of scrub oak on a steep shale slide, making it nearly impossible for three people to drag it up to the top of the ridge. In addition, my pickup was still about two miles away, parked near Lamiglas's narrow dirt road.

With the deer, estimated at about 250 pounds, field dressed, we had no recourse but to quarter it and backpack it out. Three trips were necessary to gain the top of the canyon with the cape and meat.

After arriving at Lamiglas's and more picture taking, the story was told again. Some friends of ours from Florida, Cecil Hatcher and his family, were overjoyed at our success as their luck so far had been rather lean. The next day required a trip to Colscotts Locker Plant in Grand Junction to package and freeze the meat and a stop at the taxidermist to make final arrangements for mounting my muley.

The next week was to see a repeat of this story when Swan connected with a fine, typical four-by-four. His story will be arriving by mule deer, as well it should, because that, as you know, is the "name of the game"! ←

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SPEED CHART*

arrow/type	muzzle velocity	200 f.p.s.
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50-yard velocity		
2796 Graphite	196.3	
Al2117 Aluminum	176.5	

In penetration, the graphite is within a fraction of the heavier aluminum arrow:

PENETRATION CHART*

Arrow/Type	Styrofoam Penetration at 50 yards
160GR/Graphite	9 3/4"
Al2117/Aluminum	10 1/4"

*Using a 2-wheel, 65-lb compound bow with 30-inch draw, virtual mass 229 grains. 2796 Graphite weight in grains: 385. Al2117 Aluminum weight in grains: 566.

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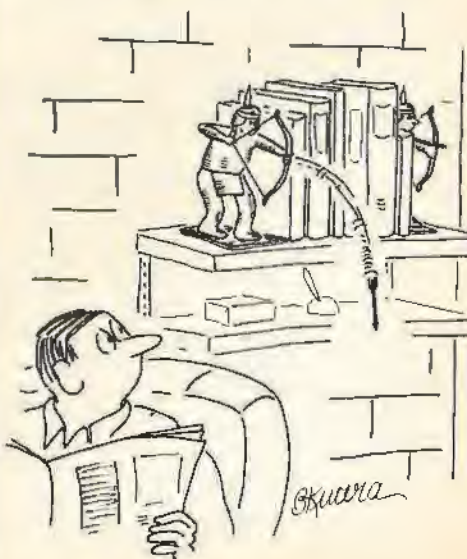
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SPECIAL REPORT:

BROADHEADS — How To Pick A Good One

By Sam Fadala

Sam Fadala is an outdoor writer specializing in hunting, fishing, conservation and natural history.



Sherwin's Satellite

CHOICE IS A wonderful thing, except when there is too much of it — then it is confusion. Given a selection between vanilla and chocolate, the youngest child has a fairly easy time of it. But when the choice widens to over thirty flavors, I have watched grown people fidget at the counter until they finally pointed at one flavor of ice cream out of sheer frustration. The same predicament occurs with broadheads. There are so many on the market today, with new ones popping

up like weeds after a rain, that opting for one over another is often finally decided by the best magazine ad or the flip of a coin.

This isn't really so bad, because most of the current heads are good ones. But for the archer who wants to select a head by choice instead of chance, there are some criteria to turn to. One point has to be kept in mind: there just may be no best head, but rather a best head for the job. A broadhead whose design may not be

the ultimate for big game may be just right for smaller stuff, and may be priced accordingly.

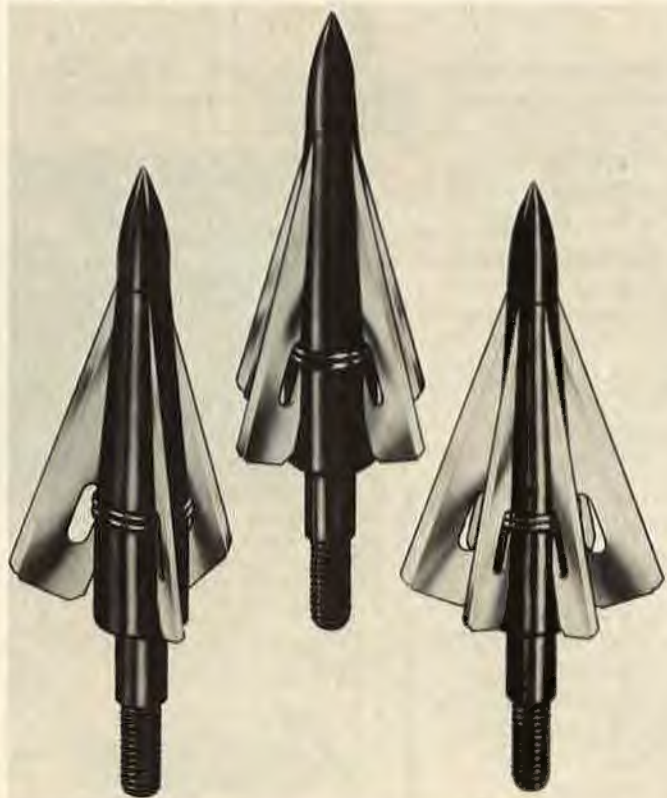
We have all heard it before, but it has to be mentioned again — sharpness is criterion number one. A head does have to be sharp, since broadheads kill by causing hemorrhage, not tissue disruption and shock. A head either has to come deadly sharp from the manufacturer or at least be designed so that it can be sharpened easily, safely and without having to spend a work week doing the job. After it has been sharpened, the head should be capable of staying that way, holding its edge at least through the penetration process and hopefully even after the arrow has evacuated the game and collided with the landscape on the other side. Some fairly sophisticated pathological things happen when a broadhead cuts through living tissue.

First, for all we have said about lack of shock, the truth is that there is indeed significant shock imparted by a broadhead-tipped arrow, and it does

Martin's Blue Streak 5

count for something. One brief and admittedly skimpy dictionary definition of pathological shock is, "Prostration of bodily functions, as from a sudden injury." Loss of blood can lead to shock. The disruption of tissue, even by clean slicing, can lead to shock. Because the animal system is susceptible to shock, the system also has a guardian reaction to it. The flow of blood, for example, is curtailed immediately following the striking of a broadhead, because the vascular sys-

Wasp Steel-Tipped Heads



Here Are The Criteria To Consider Before You Lay Your Money Down



Left: Longbow Manufacturing's Hunter's Head. Right: The Bod-Kin, made by L.C. Whiffin.



tem tries to partially shut down, and coagulation is chemically induced as well. In a somewhat paradoxical way, the more shock delivered by the head, the more reaction by the body and the less bleeding.

The very sharp head imparts less shock and at the same time leaves the vessels cleanly cut, so that automatic mending of frayed ends is less likely to occur, and frayed ends do have a tendency to come together. So the sharp broadhead works quickest and best — that's no news. But we may be surprised to find that there is more to clean harvests than sharpness. For one

thing, a sharp but flimsy-bladed head may fail to penetrate properly enough to do its job. If the blades are out of line, instead of working together as a single penetrating unit, the blades fight each other and try to take their own course.

A lot has happened to broadheads over the years. While the act of hand sharpening heads is both romantic and traditional, in our modern world of rush rush rush not every head that has gone into the field has been shaving sharp. This is why the razor-blade type of head came into existence. Not that long ago — and even now — some archers glued actual razors to standard heads, and there also were heads that accepted razor blades in fittings on the sides. Both worked all right, but the first could be misaligned and the second left protrusions that caused drag — and drag harmed penetration. In the late Sixties and early Seventies all-razor heads were on the market in numbers. They were good, but did have some faults: blades were sometimes too fragile for heavy penetration; some didn't stand up to the task of cutting rubbery vessels; others had poor flight characteristics; blades sometimes fell out on impact or even before; points mushroomed, or blunted up when they hit and again, penetration was poor. Replacing



Bear Archery's Razorhead

blades was often time-consuming and sometimes dangerous.

Before buying a lifetime supply of any broadhead, there are a couple of good tests that can be run to determine if any of the above drawbacks exist in the razor-blade-type head. In the store, in fact, the bowhunter can try to change blades himself and see how easily the task is accomplished. He cannot tell if the blades will stay in there at the counter, but using one head as a test, he can tell on the range by shooting various field targets. And he can use destruction testing. With a nonrazor head, visual inspection generally will show a person a lot about how easily a head can be sharpened, and destruction tests are run the same on both types.

Firing a broadhead into old car bodies at the dump or bricks will give a good idea of penetration possibilities, toughness and the mode of breakage. If a head snaps off on contact



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New Archery Products' Razorbak 5



with a hunk of wood, it probably won't do all that well on the shoulder blade of a bull elk. It may cost a little to test a head out before taking it on a hunt, but it is cheaper than losing a game animal.

If sharpness is criterion number one, then total head construction would be number two, with penetration an important and valuable third criterion. Again, it has been said so much that saying it again is redundant, but the sharpness of that blade has to get to the vitals and that means penetration. Even with a fairly poor hit, such as the midsection, deep penetration may save the day if a big artery is severed.

The mechanics of cutting can be placed into two categories: slicing and chopping. That is about all a head can do, slice or chop. The problem is that chopping takes up so much energy that penetration is forsaken, so we prefer a slicing action. What slices best? Long and narrow does. Short and wide chops. Andy Simo, engineer of New Archery Products, has come up with a formula he calls the Penetration Ratio. It is the ratio of length to width of a broadhead and it results in a number. The number two would be a head that is equally slicing and chopping, for example. As the figure goes over two, the head is mostly slicing, and when it is under that number, it is mostly chopping.

Here are some Penetration Ratios for various modern heads:

Hill-type broadhead 2.73, Razorback-5 2.34, MA-3 (large) 1.95, Bear 1.81, Wasp 1.76, Savora 1.57, Deadhead 1.45, Missile Spike 0.75.

The penetration figures, it must be understood, do not mean that nothing else matters. In other words, a flimsy, cheap broadhead that is long and narrow but dull as mush and ill-designed in terms of drag will not be a good choice. But used in conjunction with the other criteria, the penetration ratio is one way of helping to decide upon the best broadhead to get the specific task at hand accomplished. Heavy bows, of course, will drive arrows tipped with chopping-type heads through an awful lot of tissue.

Another criterion is surface friction. A nice, long head with all kinds of rough projections will not penetrate well at all. Cutouts in blades, rings, grooves and rivets impede the progress of a blade through flesh.

Of course, there is also flight to consider. No matter how nifty and sharp a head is, if it steers the arrow away from the target it won't do much good. Of course, it is true that a high-ratio head has little tendency to wind-plane and the Simo formula does have application here. Aerodynamic steering is mainly a function of blade width and whether or not the blades are in line with the actual shaft of the arrow or not. A wide blade has enough surface to act as wings, while an offset blade can actually have a screwing

Continued on page 34

David Hughes Talks About The Bear Tamerlane II™



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BROADHEADS

Continued from page 32

effect roughly like the propeller on an airplane. Therefore, the narrow-bladed head with the blades carefully lined up is the least likely to steer the arrow.

Just because I have spoken a lot about razor-blade-type heads hardly means that other types are no good. As a matter of fact, for the man willing to invest his time, as he should, the standard head can be sharpened to a honed razor edge and all manner of beasts from mice to elephants have been cleanly brought to bag with such equipment. I prefer the simpler type head when going to the self-sharpening type, something I can stroke down with a file first and then hone to an edge that will shave.

Is there any value then in the multi-bladed head, the fours and fives and sixes? Yes, even though I don't think it takes many blades to get the job done, there can be some advantage in the multi-bladed missile. First, the mathematical chance of encountering vital vessels is somewhat increased. But more importantly, the capillary system is better impaired by a many-bladed head, even though the two and three-blade types are sufficient in finding the major arteries and veins. The capillary system is important because it is widespread over the surface.

How much should a head weigh?

There is no rule of thumb, but a head should match up with the spine and weight of the arrow. A big, heavy broadhead on a light, whippy arrow

The Black Copperhead Slicer, manufactured by Hunters International.



Ben Pearson's Switchblade and Switch-On system.



out of a light bow will surely nosedive and fly poorly because the arrow is dominated and overbalanced by the head. Balance is the key. A good stout head on a stout arrow and more petite heads on less hefty arrows is the rule, but we have to remember that stiffness, or spine, is important here, not weight alone. For example, I have tried 160-grain broadheads on the superlight graphite arrows and the combination flew well, but the graphite is terribly stiff.

In the final analysis, what makes
Continued on page 36

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BROADHEADS

Continued from page 34

the good broadhead? All of the criteria we have encountered here, and even more, such as the materials used in construction and the cost. Some heads cost more per dozen than a night on the town, and appropriateness has to be the rule. When jackrabbit hunting, I like to use broadheads, but I won't take the most expensive types along. But when big-game hunting, hang the cost of the head. It is only a minute part of the total trip cost anyway, surely a lot less than the gasoline or tags.

The broadhead has a simple, yet vital task — to cause a leak in the closed-circuit vascular system, to render it an open circuit with life-giving fluids lost rapidly. As these fluids evacuate, oxygen to the brain is reduced and sleep is short in coming. Victims of attempted suicide by vascular system invasion have described the drowsiness and lack of pain brought about by profuse bleeding. The goal of the hunting archer is to speed a well-placed broadhead of good design and construction to the vitals, so that the game is brought down quickly and recovered for food. Each archer can decide what broadhead is for him by looking over the assortment available and deciding on a design to fit his wants and needs, checking to see that



Rancho Safari's CatClaw

the construction is really top-drawer quality. Then he can try the head in the field and also in destruction testing.

Finally, of course, comes the real proof of the pudding: performance in the field under hunting conditions. That experience will convince the

hunter that he has selected either a head to be adopted and touted, or one to pass by the next time. ←*

For more information about broadheads, see BOW & ARROW's Ready Reference File on page 71. Next issue's Ready Reference topic will be release aids. Watch for the December issue of BOW & ARROW — on sale at your favorite newsstand October 3.

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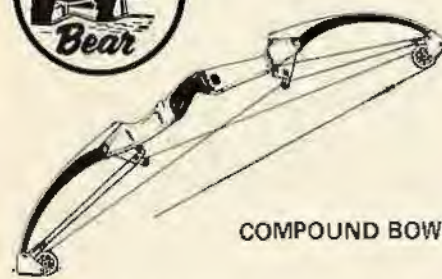
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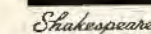
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THE BASICS OF BAREBOW ARCHERY

By Joe Henault

Joe Henault is a policeman in Bellingham, Massachusetts, and a member of the United States Bare Bow Association.

"What I Hope To Do Is To Explain This Old, Simpler Form Of Archery And Put It In Print Before It Is Gone And Forgotten...."

IN THIS ERA of sophisticated archery equipment and techniques such as elaborate sights, string walking, compound bows, release aids of all types plus mountains of other gadgets too numerous to mention, wouldn't it be refreshing to get back to a much simpler and more relaxing form of archery? The type of shooting I would like to introduce you to I will call conventional barebow, for want of a better name.

I certainly do not want to take credit for inventing this method of shooting a bow. Variations of this type of archery have been around for a long time, I am sure. On the other hand I haven't seen much information on this archery technique in print. What I hope to do is to explain this old, simpler form of archery and put it in print before it is gone and forgotten. I will be referring to the field or - more aptly named - forest round as I attempt to explain this system, but with adjustments in equipment setups it can be applied to any archery round.

You will be shooting with your fingers rather than with a release aid. I would recommend a tab rather than a glove be used for finger protection. I find that the tab allows a more sensitive anchor placement than the glove, but some bowhunters might still prefer the glove. The anchor used will be the old basic index finger in the corner of the mouth with the nock between the first and second finger.

For equipment you will need a smooth, soft-shooting recurve bow of between sixty-six and seventy inches in length. A draw weight of about thirty-two to thirty-five pounds should do for the average male target shooter. The idea of the equipment setup is to

get a point-on of about fifty yards. The point-on, for those of you who are not familiar with this term, is that distance where the arrow tip can be aimed right at the center of the target and when shot correctly will hit the center of the target. To accomplish this you will have to do a little experimenting with your equipment setup. I will list my equipment only as a guide - yours may vary due to variations in facial structure and shooting form.

I am shooting a seventy-inch Wing Presentation Two. The draw weight is thirty-four pounds at a twenty-eight-inch draw. The string is ten strand and I try for a brace height of about ten inches. I use a Hoyt Pro arrow rest.



The basic shooting form requires a smooth, soft-shooting recurve sixty-six to seventy inches long.

Arrows are X7 1816s with the extra-heavy target points. Fletching is three helical feathers each 3 1/2 inches long. This is what works well for me and gives me that desired fifty-yard point-on.

Aside from the bow weight itself there are several areas you can work on in order to gain or lose yardage. The arrow size, of course is a big factor but you are limited in that you must stay within the proper spine range for the bow weight you have chosen. The choice of regular or extra-heavy target points is a valuable aid in adjusting your point-on. Fletching is another item to be considered. The bigger the feather the slower the arrow will travel, lowering your point-on. A helical fletching is quite a bit slower than a straight fletching. Four-fletch will slow you down three or four yards as opposed to three-fletch in the same feather size. Stay away from plastic or rubber fletching if your need is to slow down the equipment. If you need more distance these might help.

Brace height and number of strands in the string also can be used to advantage. Generally the higher the brace height the slower and smoother the bow will shoot. Stay within the manufacturer's recommended brace height however. In the bow weights I have mentioned you will probably use either a ten or twelve-strand string - ten if you need more speed, twelve to slow the bow down a little. Generally, the problem will be one of slowing down the equipment. Try not to pick a bow that is super fast to begin with.

An exception to some of these equipment suggestions would be the bowhunter who prefers to use his hunting equipment year-round while

shooting the field course. I have found that the large helical fletching and 125.0 to 150-grain field points on the average hunting arrow keeps the point-on down pretty well, enabling the hunting archer to use pretty much what he likes in the way of bow length and weight. I have set up my equipment so that the point-on of both my target and hunting equipment is the same so that I have little trouble switching from one to the other except for the conditioning of the extra muscle needed to handle the hunting equipment. I find it only takes about two weeks to condition myself for my forty-five-pound hunting bow after shooting my target equipment all season. Contrary to popular belief even the compound and the longbow will fall into these same point-on areas and can be shot using this system.

That's about it as far as the equipment requirements go. Now, let's get to the actual shooting technique. From the bunny shot up to about the thirty-yarder this system will require the archer to employ pretty much an



An example of the release. Author recommends a bow with a weight of thirty-two to thirty-five pounds.

instinctive technique in order to hit the target.

What is instinctive shooting and how effective is it? Simply stated, instinctive shooting is shooting by feel. It's like throwing a ball - there's no particular system, you just know when it looks right. You hold for the elevation and line that looks good and shoot and adjust as necessary until your arrows start to group where you want them to. Like most other archery styles the key to success is a good, solid, constant anchor and good basic shooting form. As for how effective instinctive shooting is, I have seen good instinctive shooters pack in a group of arrows as tight as any sight shooter at twenty yards. It does take a few years, however, to attain this type of accuracy. Also, it is very difficult to be real consistent at much over thirty yards without some type of system. Once you feel comfortable with your shooting style and are grouping well at



Winter clothes won't hamper this system, says Henault, so an archer can shoot field courses year-round.

these closer targets you can go about determining your point-on. The point-on is the key to our system.

In order to determine your point-on, find a butt with nice soft turf both in front and behind the bales. Stand at the fifty-yard mark. Draw back and anchor. Aim the tip of your arrow right at the middle of the target and shoot a few arrows. If you're hitting paper, you're in good shape. Hold above or below the spot as you may find necessary in order to hit the five ring. If you're not on paper for fifty yards you will have to go back to the equipment suggestions described earlier and fool around a little until you are on paper. Fifty yards should be one of your easier targets.

When you have your fifty-yard point-on well established and are able to group well at this distance, move up to forty-five yards. Using an eighteen-inch face, draw back and hold. Concentrate your primary vision on the target with both eyes open but pick up the arrow tip in your secondary vision. Hold the arrow tip about two or three inches under the bottom edge of the eighteen-inch target paper. Shoot a few arrows. If they group high widen the gap between the arrow tip and the bottom of the target. If your groups are low raise the arrow tip right up under the target paper. Practice until you get your gap just right and can hit forty-five yards consistently.

Now move up to forty yards. You should be able to hold just about a full face under this one or eighteen inches and hit. Again adjust your gap as necessary. Remember to close the gap between arrow point and target to raise hits and open the gap in order to lower the hits.

Now, let's try thirty-five yards. Hold about a face and a half under the paper for this one. In other words, your gap will be a little wider than it was for forty yards.

Now let's go back to fifty-five yards. At fifty-five yards I use the little plastic finger that sticks up on the Hoyt rest and holds the arrow in position. If you look you will see that it sticks up alongside the arrow at full draw just far enough back from the arrow tip to make a perfect sight at fifty-five yards. Just hold the little plastic finger right on the middle of the target and you should hit. Hold above or below the center of the target as you find necessary in order to hit the nickel.

At sixty yards we will start using the shelf of the bow itself for our gaps rather than the arrow rest. You will be looking under the arrow rest. Draw back and aim, placing the bow shelf about two or three inches under the bottom edge of the twenty-four-inch target paper. Shoot a few arrows and adjust as necessary. Your arrow tip will be well above the target but you will have to keep an eye on it in order to maintain your line.

Move back to sixty-five yards when you feel confident in your sixty-yard gap. For sixty-five yards try holding the bow shelf right across the top of the five ring. Shoot a few arrows and adjust if necessary.

For seventy yards you will just about have to hide the top of the target with the bow shelf. For eighty yards it's back to good old instinct. You could change to an under-the-chin anchor for seventy and eighty but I'm

Continued on page 40



"Sighting" under the arrow rest at sixty-five yards. Try holding the shelf right across top of five ring.

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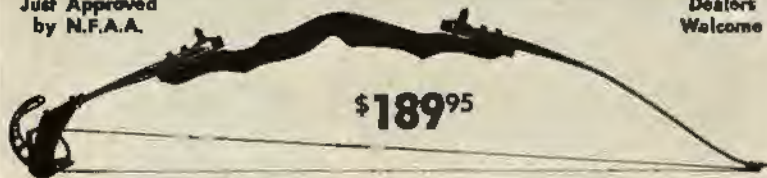
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BAREBOW ARCHERY

Continued from page 39

kind of a purist and would rather not. Since there are only two shots at eighty yards in a field round I wouldn't lose too much sleep over them but you can get to the point where you will hit them just as often as not.

I'm sure you have gathered by now that there are a lot of variables connected to this system. There are. But if you get that fifty-yard point-on the rest should fall pretty close to what I have described. If you increase your point-on you can gain some accuracy on your longer shots but your middle distances will suffer and as a result your total round will suffer. For uphill shots, if the hill is quite steep, you may have to tighten up your gap just a little. Open up the gap if the target is down a pretty good hill.

What type of scores can you expect from this system? That depends first of all, of course, on how good your basic shooting form is. I will not attempt to get into that at all. Keep in mind that this is not intended to be instant archery and score should not be the predominant factor. Full enjoyment of the sport and relaxation should be your primary goals. If its 560s you want, stick with the more regimented forms of archery. I would think that a 400 field score would be good and this should be possible in a season or two if the archer already has good shooting form. One fellow at our club started from scratch a year ago and has been able to maintain a 400 average this past season. I generally shoot about a 460 to 470 on the average day. My best official score is 501. I shot a 498 field round and a 452 unmarked animal round to win the 1976 United States Bare Bow Association Championship.

One of the biggest problems you might run into with this type of shooting (or any form of archery, for that matter, where the fingers are used to release and no clicker is used) is that old malady target panic. I prefer to call it lack of control. This problem can be handled, however, and some of you may never have it. In my opinion, the ability to draw a bow back, hold it, aim it well and then shoot when you want to without the aid of any gadgets is the challenge in archery. I can't always do it but when I can, "how sweet it is." The less you worry about score and the less you worry about missing the better will be your chances of maintaining good control. What I have attempted to give you is just a guideline. Once you get into conventional barebow shooting I'm sure you will come up with some variations of your own.

I hope some of you have found this interesting and will want to give it a try. If you do, I'm sure you will enjoy the freedom and relaxation that should be a part of field archery but that has somehow become lost. ←

MAIL POUCH

Continued from page 22



Doug Mace and his new bow.

In July 1976, I bought my first bow and one dozen aluminum arrows. I became quite proficient with the bow, being able to put six out of eight arrows in a pie plate anywhere from ten to fifty yards away. The week before I was to go hunting, the bow snapped in my face. Well, you know how that goes. I am 16 years old and cannot afford a new one.

About two months ago I started with an idea of a compound. I carefully studied all the popular compounds and devised my own. I picked up a

couple of car springs and sized them. I made the handle out of rosewood impregnated with epoxy resin. I made the eccentrics from impregnated oak. I secured some cable and was ready to go. That was over a month ago. I worked feverishly - redesigning, re-aligning and retesting the bow.

Now I am happy to say I'm finished with the bow. I've got to be as proud as Mr. Allen himself. The bow measures forty-five inches and is adjustable from twenty-five to seventy pounds, but I shoot fifty-five pounds at a twenty-seven-inch draw. My bow has to break the 200-foot-second mark and has to send a 2014 shaft nearly through a Saunders matt before I will go hunting with it this year. I sure hope you can publish this to show the readers what a little will can do.

Doug Mace,
Racine, Wisconsin

This year, with the help of a lot of practice and lots of good articles in your magazine, I bagged my first buck with a bow. He was a fine 4x2 pointer and dressed out at 165 pounds. Seconds before I got him I missed a candidate for Pope & Young, but that's another story.

I want to tell all novice hunters or those who give up the blood trail too easily to stay with the animal at all costs. After getting a solid lung hit at thirty-five yards, my brother and I followed only specks of blood for over seventy yards. Then there was a steady stream for five feet. At this point, the

blood trail disappeared. I remembered something I'd read about a dying deer throwing himself in his last effort to escape. So I looked over a bush downhill and there lay my buck!

Ronald Trousdale,
Las Vegas, Nevada



The Big John

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In addition to the boots you mentioned ("Boots, Boots, Boots" August 1977 BOW & ARROW), it might interest your readers to know that we have a boot made locally - the Big John. This boot is fully insulated, has a sole that can meet most conditions and is a shade of green that blends well with a camo suit as shown in the accompany-

Continued on page 50

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TECHNICAL REPORT:

THE FLETCHING DILEMMA:

Which Type Is Fastest?



The group thrown by the shooting machine during the tests was kept a bit wider than usual to prevent arrow and nock damage.

By C.R. Learn

ONCE UPON A TIME — that is the way most fairy tales begin. The idea of my ever finding a chronograph to test the speed of arrows seemed more like a fairy tale than a possibility. Over the years I have searched for a chronograph that would read low enough to give arrow speeds, but most of those on the market until recently read no lower than about 400 feet per second. The problem with that is that most bows on the market today, including compounds, read closer to the 200 foot-second range.

But there's a man in Boulder, Colorado, Jim Smith of Micro Motion, Incorporated, who is involved in electronics and also just happens to be an avid bowhunter. In 1974, Micro Motion developed a machine to measure hail velocity. It was modified in 1975 and it was from this modification that Smith came up with a pro-

duct called the Arrometer — for archers.

Shortly after I got my Arrometer, I called Chris Finnoff of Micro Motion and received further information regarding the development of the unit and some helpful hints about operating it. The Arrometer is a very compact and well-made unit — it fits neatly into the trunk of my compact car. Its case is made of plastic — which means that you better not hit it with an arrow — but the plastic makes it light and portable. The unit comes boxed with a good extension-legged tripod for adjustable height and a cord that makes it possible to operate it by plugging it into a car's cigarette lighter. There's also a converter unit for using the Arrometer on household current. Included is a pair of cardboard baffles to shield the light window in direct sun conditions. The directions for

The cardboard baffles were put in position and the AC power unit was used for the Arrometer tests.

operation are simple and straightforward, so I was ready to begin testing immediately.

The possibilities for conducting tests with the unit are infinite, but my



first priority was a test of the various fletching styles available — straight, spiral and helical. Which is fastest? Could I determine which steers the best or which is best for the bowhunter?

Several years ago, Jim Faston helped me conduct a test on the various fletching styles. We used his shooting machine, a bale of straw and three sets of Easton arrows fletched by Pacific. Each set was fletched differently — the first was fletched straight, right down the middle of the tube; the second was fletched spiral style, a bit offset to the right for right-wing feathers; the third was fletched helical-style with the curling clamps. At that time we had no chronograph and the final results showed that the straight fletching flew the highest at thirty yards, the spiral a bit lower and the helical lower still.

That long-ago test showed that the straight-fletched arrows were the fastest, but, while they were tipped with Black Diamond heads, the test does not necessarily mean that this type of fletching would be the best under bowhunting conditions. This is because our test location was in a completely protected area — there were no crosswinds or other variables one is likely to encounter on a hunt. I felt,

For testing, the bow is pulled to full draw on the machine, the arrow is placed on the string and released by the Cornachero release.

even then, that a straight-fletched broadhead-tipped arrow does not give as much steerage under bowhunting conditions as a bowhunter could achieve with a different fletching type.

This time, there were two things I wanted to determine — muzzle or

right-from-the-bow velocity, and thirty-yard velocity. The first was simple to undertake. I set up the Arrometer, placed the baffles on the unit so that the sun didn't shine into the window and strapped my Bear Alaskan four-wheel compound into my home-made shooting machine. The bow was kept back from the edge of the baffles to allow the arrow to be completely free from the bow and string when it passed through the light window.

I dug back into an old arrow box and found the arrows we had used on those first tests. These were Easton 24SRT-X 2016s with 5x5/8-inch feathers fletched in the three fletching types for the purposes of the test. I made a few test shots to be certain that the shafts would hit the Saunders mat and not my new fence.

The Arrometer was moved into position and the first arrow through it gave a direct reading on the digital display. This is easy to use, even in bright sunlight, and makes testing fast and simple. You must measure your arrow from tip to tip, including the nock tips and the very end of the point. To get the best results, your measurement must be accurate within .1 of an inch. You can measure with a yardstick and an engineer's ruler or you can take advantage of the forward thinking of Micro Motion and use the measuring markers built into the front of the Arrometer. The arrow measurement is then dialed into the Arrometer on a three-digit counter — two digits for full inches and the third for the tenths. This remains the same as long as all the arrows are the same length. When changing arrow length, merely adjust the dials to the right numbers.

My arrows measured 30.6 inches and I set this on the dials. There were three arrows of each type of fletching and I shot each arrow through the unit

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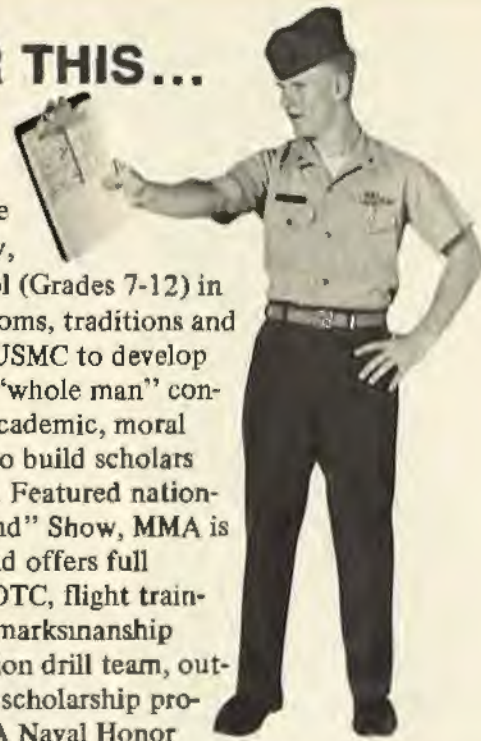


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FLETCHING DILEMMA

Continued from page 43

three times and then averaged the figures obtained.

The straight-fletched shafts weighed in on the grain scales at an average of 475.0 grains and their average velocity from the bow — 184 feet per second — was almost identical for each shaft. The spiral shafts weighed in at 475.0 grains and averaged a bit higher at 185 fps. The helical shafts also were 475.0 grains and averaged a bit lower in velocity at about 183 fps. This concurs with the fact that because the helical is a twisted feather on the shaft it should be slower.

This first series of shots through the Arrrometer proved that there was little difference in the speed of the differently fletched arrows from the bow. The tests did show the helical to be a few foot-seconds slower, but I believe that with feather fletching the helical is the best for broadhead hunting shafts. This is because the helical gives the best guidance, it won't allow the broadhead to overcome the stabilizing factor of the feathers and it definitely



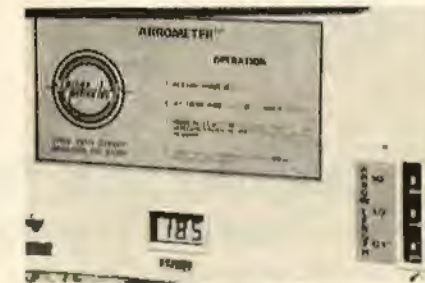
Learn setting up one of the fletching test arrows. The tests showed that the helical fletching was a few foot-seconds slower than the other types.

holds an arrow in truer flight in a crosswind compared to the other types of fletching. To make another statement: Speed never did kill anything but air; it is how the arrow gets there and what happens when it gets there that really count.

Since the Arrrometer isn't an inexpensive unit — it is currently selling for about \$330 — I made a baffle of plywood and two-by-fours to protect it during the following series of tests. I

cut the hole for the window from heavy plyscore, sizing it larger than the housing on the Arrrometer and placing it on a two-by-four, upright, to cover the Arrrometer for distance testing.

Most hunter kills fall in about the thirty-yard range, which is why I chose that distance. I set up the Arrrometer



Bottom of the Arrrometer includes operation instructions, reset button (left), digital display (center) and arrow measurement dials (right).

behind the plyscore baffle protector and shot the same set of arrows through the light window to find out how distance entered into the speed factor. The results again proved frustrating, because shot from thirty yards all arrows clocked an average speed of 160 fps, showing that at a given distance all were passing the electronics at the same speed. This blew my former theory that the helical would be slower at a given distance than the straight fletching. But now I know that the arrow speed is not relevant to the type of fletching — at least those with right-wing feathers fletched straight, spiral and helical. The wind was not a factor here although all shots were made outside.

When I had finished with the first set of figures from the Arrrometer, I felt that maybe the unit was off a bit. The read-outs were very consistent with little variation. That showed that the Bear Alaskan is a consistently speedy bow. But maybe the Arrrometer was giving a bad reading by a light reflection or something. To find out, I put my Groves recurve on the shooting machine, drew and shot it at different draw lengths to see if there was any variation. There certainly was! A partial draw gave a low reading as it should, a full draw gave a better reading and an overdraw gave an even higher reading, proving that the Arrrometer was functioning in great shape.

As a matter of curiosity, the fifty-one-pound Groves bow drawn to twenty-eight inches registered 181 fps. The fifty-five-pound Alaskan had been drawn to the same distance each time. This might be considered an average bowhunting weight for compounds.

Maybe I didn't prove that the helical fletching is the best choice for bowhunting. But I believe it is, and someday I'll prove it. For now, though, it's apparent that if you don't get as much speed as you would like to, it's not the style of fletching on your arrows that's to blame. ←

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Squirrels Are For Skill Sharpening



"Squirrels Offer The Perfect Training Ground For The Bowhunter Who Is After Deer. This Is For The Simple Reason That The Same Techniques Used On Deer Must Be Applied To Squirrels."

By Loring D. Wilson

Loring D. Wilson is a full-time freelance writer who has published 305 articles, 14 short stories and 3 books. He loves bowhunting and concentrates mainly on small game and bowfishing.

A PAPER TARGET is not a deer. That fact should be obvious to anyone with half a grain of sense. And yet year after year countless archers prepare for deer season by pounding broadheads into a bull's-eye on a bale of hay. Well, if deer constantly stood broadside to the archer, at measured ranges, and remained motionless while the bowhunter took his time, mentally drew an imaginary bull's-eye just behind the shoulder, drew back, and let the arrow fly, there would be less wounded deer in the forest, and less anti-bowhunting sentiment, which we are having to face simply because there are a few "archers" who don't take the time to really learn how to use their equipment on live game.

The problem is not as great as it seems, however. Any archer can get in excellent practice with his rig long before deer season begins (in some states all year long with the exception of a two-week grace period), practice on actual game animals, acclimatize to shooting through brush and trees, and develop pinpoint accuracy that will assure a solid,

vital hit on a deer when the opportunity finally presents itself.

All of this training can be carried out on squirrels. Squirrels, aside from being the most prevalent of all small-game animals in the United States, and the first game, generally, that a beginning shooter takes, offer the perfect training ground for the bowhunter who is after deer. This is for the simple reason that the same techniques used on deer must be applied to squirrels when taking them with the bow and arrow.

Squirrels react to sound in the forest in much the same manner as deer will, and the only means of getting within bow range is to take a stand in a good location, or to carry out a perfectly quiet stalk. The stand is the most popular method, just as it is for deer, and, as in the case of deer, the area should be scouted in advance to determine the best location for the stand. This means taking a few days before you are ready to hunt and spending them in the woods just walking and looking.

The best place for a stand for squirrels, if you can find it, is a tall oak or hickory tree, surrounded by beech, maple, or other shorter trees, and with little or no underbrush surrounding the base of the tree. The other trees should not intrude too closely upon the feast tree, as I call it, or they will hinder shots — nevertheless, they should be close enough to provide the squirrels with some cover in

approaching the tree. Squirrels are hesitant about crossing large expanses of open land, especially in hunting season.

Once you find such a tree, you must then find another tree with a fairly clear view of the target area. The second should be at least as wide as you are, but a tree with underbrush or large rocks around its base will suffice. This tree will be your stand tree, where you will either sit, squat, or stand — depending upon your proficiency with the bow and arrow — and await the coming of the squirrels.

While you are in the woods, you may find it advisable to locate two or three of these feast tree stands. If, once on the stand, you have found no activity within an hour or so — as sometimes happens with even the best of trees — you will have someplace else to go. Holly trees are especially good, especially those growing close enough together so that a good berry crop develops. Squirrels flock to these trees throughout the season, and if you are lucky enough to find a stand of berry-bearing hollies your squirrel shooting is assured.

Camouflage clothing is not necessary in early season if you follow certain precautions. Always watch for signs of activity from the moment you come in sight of the tree — and start listening before that! If you see a squirrel, or hear one working, freeze until the squirrel has put something between itself and you. Then move as quietly as possible, feeling for sticks with your feet before putting them down. Keep moving slowly and freezing at any sign of activity until you have reached your stand tree. With the tree, rocks, or underbrush to break up your outline, you can sit in plain sight of the squirrels if you remain motionless, and you won't disturb them.

In my opinion, early-season squirreling — from late August through October, if your state allows it — is the best of the year. The squirrels are generally not used to hunters, who don't hit the woods in force until late in October, and so are not as wary. There is also a greater variety of natural food available at this time, and the hunter's chances of finding squirrels are considerably greater than later in the year when the squirrels have become scarcer and more localized.

The chief disadvantage to such early-season squirreling, where available, and the reason that so many hunters take to the woods in the later, colder periods, is that the foliage of the trees makes target spotting difficult. A squirrel can vanish in a leafy oak or beech much more rapidly and much more completely than in a tree which the coming of cold weather has denuded; and a squirrel that ducks out of sight in a leafy tree can suddenly appear far from its vanishing point without the least apparent sign of its movement.

But while the foliage makes hunting far more difficult in regard to target spotting, there are still certain advantages to the hunter in going out while the leaves are still thick. The very foliage that prevents the hunter from ready access to the squirrels and limits his visibility also cuts down on the squirrel's visibility. And, while a squirrel can readily

Author's gear includes a 40-pound Shakespeare with Pearson silencers; Feline arrows, Pearson shoulder quiver with a pocket for spare string; accessories; and 10-X camouflaged clothing.



disappear in a leafy tree, if the hunter is silent and unseen, the squirrel will be less wary. This means that, at least on still, calm mornings, the motion of the leaves will reveal the presence of the target in the general vicinity, if not its exact location.

Naturally, no self-respecting bowhunter is going to fire an arrow blindly into a tree at a sight of motion, any more than he is going to drive a broadhead into a rustling bush during deer season. But the rustling leaves of the early-season squirrel trees let the hunter know well in advance that a squirrel is in the neighborhood, and thus enables him to prepare a careful stalk.

The early-season squirrel hunting offers another advantage to the hunter — it enables him to carry out a quieter stalk. Once Autumn has entered the woods in force, the dry, fallen leaves make it virtually impossible to carry out a stalk — or even to reach the feast tree — without alarming most of the squirrels in the neighborhood. This brings up a point about which I have long been concerned — in all the pioneer movies and Westerns, the Indians move through the forest without a sound. In moccasins, I can avoid breaking sticks, and can move like a wraith in Summer. But if anyone — and I mean anyone — can move through the fallen leaves of Autumn without alarming game, honestly, now, I wish you would let the rest of us know how you do it.

The greenery of the early Summer, late Summer, and early Fall permits a much greater amount of leeway in where to put your feet, and the result is getting closer to the squirrels — an absolute necessity in bowhunting an animal as small as the squirrel.

That small size of the target poses problems for the archer, since a squirrel is far more difficult to hit than a deer. But the problem with bowhunting deer is that too many part-time archers are only able to hit the deer as a unit. They aren't able to assure that the arrow will drive into a vital spot and drop the deer quickly. The archer who

Continued on page 48



Practicing tree shots when there are no squirrels to be seen will improve your ability to score one when they do appear!

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SQUIRRELS FOR SKILL SHARPENING

Continued from page 47

develops his proficiency to the point where he can consistently connect with squirrels — whose vital area is the size of a billiard ball or smaller and whose total size is smaller than the vital area of a whitetail — is going to be able to put the arrow into the basketball-sized target area of a deer.

Squirrel shooting with the bow and arrow also builds speed and coordination to a far greater extent than any other form of archery except bowfishing. Not only are the targets small, but they move very rapidly, especially if alarmed. And, while sitting targets are still excellent practice because of their size, the intervening branches, and the stealth required to get close enough to them to shoot, there will be times when running shots must be taken. The run-



For squirrels, use light-colored shafts — they show up better against deadfalls and underbrush.

ning shot is the finest, if the most humbling, experience that an archer can have. When you begin, any hit will be the result of far more luck than skill. But as you progress, you will develop the ability to "lead" a squirrel, much in the same way that a shotgunner leads a flying bird.

The best practice one can obtain in shooting running squirrels involves starting out with squirrels that are moving at a walk through the lower branches of a tree. The targets are closer, and the bowhunter doesn't have to lead as far. Nevertheless, this style of hunting develops the ability to shoot, not where the squirrel is at the moment, but rather where it will be when the arrow reaches that point.

This brings us naturally to the sort of archery tackle necessary for squirrel hunting. Obviously, shooting into trees, particularly at moving targets, poses some problems of both a safety and an economic nature. Safety dictates that broadheads not be used, since, in the event of a clean miss, there is no way of ascertaining where the arrow is going to land. Rest assured, if a broadhead can kill a whitetail, it can kill another hunter or a hiker just as easily. Economically speaking, with the cost of broadheads being what it is today — even if you make your own — an arrow that is going to stick in the upper branches of a tree, and thus make itself unretrievable, is a poor choice. From a sporting standpoint it is a poor choice too, since it has the

ability to pin a squirrel to the tree leaving both out of reach — a waste of not only the arrow, but the life of the squirrel as well.

Such disadvantages are relatively easy to overcome, however. Small-game blunts are available commercially, which eliminate the adherence of the arrow to either the squirrel or the tree, yet kill surely because of the shock value of the blow. These blunts shed velocity rapidly, especially after passing through the branches of a tree. And, while still capable of causing a painful blow should they land on someone, are not as deadly as the razor-sharp broadheads, which require very little energy to penetrate flesh. In the event blunts are not readily obtainable, they can be made quite easily by removing the point from a field or target arrow and installing, with epoxy cement, a spent cartridge case over the shaft. A few spent cases can generally be obtained from friends who reload ammunition or from large sporting goods stores which sell new or once-fired empty cases for reloading purposes. With a little experimentation with different-sized cases, it is possible to closely approximate the balance of standard broadheads; in so doing, you will have a better idea of where your broadhead will land when you have occasion to use it.

Regardless of what type of blunt arrow is used, either commercial or homemade, the shafts should be white, yellow, or fluorescent orange. These eye-catching colors are necessary for retrieval of arrows. A bow and arrow combination is so quiet in use that often the squirrels in a feast tree will keep on feeding after the arrow is fired, or pause only momentarily. Their lack of reaction gives the bowhunter a chance for more shots, and sooner, than would be afforded a rifleman or shotgunner — as long as he doesn't leave his stand to retrieve the arrows. And, while it is possible to mark the fall of one or possibly two arrows for future retrieval, it is quite difficult to recall the location of a half-dozen or more. When the squirrels have moved on, the bright colors of the shafts show up against the forest floor, and make it possible to retrieve all of the arrows that would be too hard to spot were they painted in muted colors.

In the realm of bows, there is something to be said for a light bow devoted to the purposes of squirrel hunting. It is easier to carry and less fatiguing to draw when one considers the amount of shooting that will be done. However, the use of a lighter bow will not increase your proficiency on deer. Use the same bow on squirrels that you use on game. Admittedly, a forty-five to fifty-five-pound bow is overkill on an animal the size of a squirrel, but you will become used to the draw, develop the strength and skill to make that draw easily, smoothly, and accurately — and you still have to hit the squirrels.

For the American Indian, the bow and arrow provided everything from grouse to grizzly — but only because he used it constantly, and developed the skill necessary for its use. In this hectic age, few of us have the time to shoot enough to develop that sort of skill. But with the growing interest in primitive weapons and the long-term interest in the bow and arrow, more and more archers are taking to the woods. They are taking on more than an extension to their sport, however. They are also taking on the responsibility to use their weapons as effectively and as humanely as possible. Hunting squirrels with the bow and arrow is the best form of bowhunting practice. It builds stealth for the stalk, confidence and ability with the equipment, and much-needed accuracy on small and moving targets. It can make the difference between venison in the freezer and a wounded deer escaping into the forest — something that sickens any sportsman who sees it happen. If you can hit a moving squirrel, you can kill your deer. And you can increase your hunting time in the field at the same time. Squirrel hunting is a dimension of archery well worth practicing. ←

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MAIL POUCH

Continued from page 41

ing photo. Also, this boot is an inch higher than most boots of its type. I find the Big John very comfortable. This boot is made by Sunbeam Shoe Company Limited, 750 Elm Street, Port Colborne, Ontario, Canada. I have been through some rough country and found that they stood up extremely well.

Don Feduck,
Welland Junction, Ontario

STAMP COLLECTORS

I have recently retaken up stamp collecting as a hobby, only this time I'm concentrating on stamps with an archery theme or motif. So far, I've found there are over four hundred stamps throughout the world with pictures of bows and/or arrows incorporated in the design. I am hoping this letter will put me in contact with others having this interest.

Charles Swinford,
Silver Springs, Maryland
(Mr. Swinford's address is 1803 Belvedere Boulevard, Silver Springs, Maryland 20902.) ←

"Basic Bear Bowhunting: Bait Or Dogs"

Judd Cooney tells all in

BOW & ARROW'S

1977 Bowhunter's Annual -

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KITTREDGE

Continued from page 10

Here are a few things I've found to fix in my camps:
CHILAQUILES DE MEXICO - This dish from south of the border is a surefire way to warm the old body on a chilly fall evening, and is easy to fix in but a matter of minutes, too.

- ¼ cup cooking oil
- 1 clove garlic, minced
- 1 small onion, finely chopped
- 1 10-ounce can red chile sauce
- Salt, pepper
- ¼ teaspoon oregano
- 1 dozen corn tortillas
- 3 eggs, beaten
- 1 handful thinly sliced onion rings
- 1½ dozen ripe olives
- Grated Parmesan or sharp cheddar cheese

Heat oil in Dutch oven or skillet. Cut tortillas into eight triangles each. Fry these in the oil until crisp. Drain on paper towels and put to one side. Drain out all but one tablespoon of the oil. Add garlic and onion, cooking until onion is tender. Stir in red chile sauce, season with salt and pepper to taste, add oregano. Simmer sauce gently fifteen minutes. Pour sauce into a bowl. Add two tablespoons oil to the skillet. Heat, add crisp tortillas and beaten eggs and cook gently, stirring eggs into the tortillas until the eggs are no longer runny. Add sauce and toss with mixture until tortillas are evenly mixed in and heated through. Serve garnished with onion rings and olives and sprinkle with cheese. I like to also add a few hot jalapeno peppers.

DIJON MUSTARD SALAD DRESSING - Salad can really hit the spot in camp, but to me, the same old types of dressings get old pretty quick. Here is a whole new twist.

- 1 mashed hard-boiled egg
- ¾ teaspoon salt
- ¾ teaspoon sugar

Continued on page 76



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Super-S 4 Blade \$13.25 pk. of 10	Satellite 4 Blade \$11.50 per Dozen	Wasp 3 Blade \$9.50 per Dozen	Wasp 6 Blade \$13.50 per Dozen

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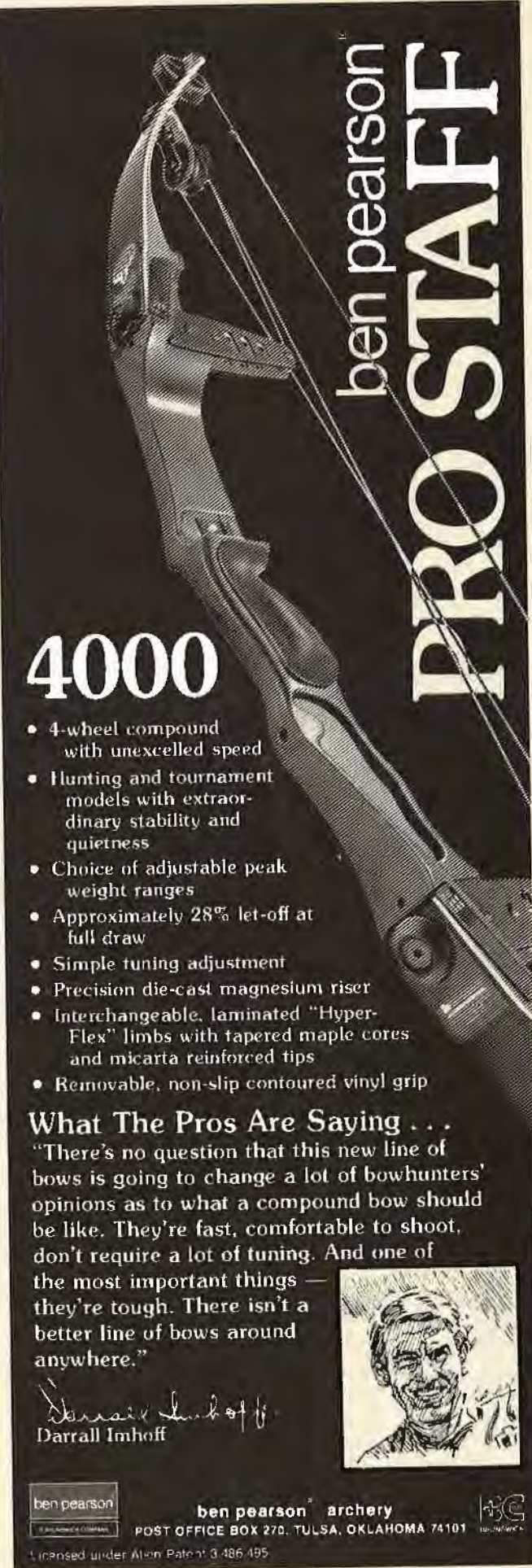
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How To: Make A Beer Can/Sneaker Bowquiver

A Quiver With Components Including The Sole Of A Sneaker And A Discarded Beer Can? The Result Is Inexpensive, Lightweight And Attractive.

By Archie R. Lowery

Archie R. Lowery is an outdoor writer from Lockport, New York, specializing in camping, hunting and fishing.

IT'S EASY for the do-it-yourself bowhunter to make a lightweight, inexpensive, serviceable bowquiver for under \$3. That, one must admit, considerably eases that start-up equipment cost as increasing numbers of outdoorsmen discover that hunting with the bow and arrow represents pure enjoyment.

The maker will need a bench vice, a few basic tools, a six-foot length of 1/8 x 3/4-inch aluminum bar (available

at the local hardware store), a discarded beer or soft drink can, a portion of the sole of an old sneaker-type tennis shoe, a dozen or so three-sixteenths of an inch stove bolts and nuts, a tube of waterproof cement, a 4x4-inch square of sponge rubber or similar material and any old bit of camouflage material that may be on hand or easily acquired. The waterproof cement and camouflage material can be exchanged for proper colors of spray paint.

Total time of construction — approximately two or three leisurely nights at the home workbench.

Total cash outlay, in my case, was \$2.13 for the aluminum bar and a few additional cents for the cement, nuts and bolts! Compare that to the usual \$20-plus retail price for a store-bought rig.

My attachment method: I used the pretapped screw adapter hole on my forty-pound Bear recurve for the main lower support and one of the screws that hold the mounted three-pin Bear bowsight for the upper mount. Any similar bolt-screw or tape-on method would work just as well.

The accompanying photographs can be studied to show materials, tools and the basic means of mounting. The quiver can be fashioned to handle either four or six arrows.

Construction is fairly simple. First, measure and hacksaw two twelve-inch pieces from the aluminum bar for the quiver riser supports. These connect the arrow spine holder — to be fashioned from the shoe sole — and the arrowhead protector hood — built from the can. The cut edges, as well as all others that follow, should be filed smooth to remove burrs.

Next, cut one seven-inch and one ten-inch section from the bar for the lower arrow holder support. Then cut one four-inch piece and one seven-inch piece for the upper hood supports.

Fill the can, through the pouring opening, with tightly packed soil or sand to support the metal during sawing. Use a wax pencil or crayon to mark the following lines: (a) across the seam length; (b) one-half to one-fourth of the way down each circular end so that the uncut portion will serve as the hood end covers. This hood end can later be lengthened with an additional



This homemade bowquiver can easily hold six target-head arrows or four equipped with hunting broadheads.

piece of metal or medium-weight plastic container material (any jug type) if your hunting points require additional protection. Use a slant-type cut so that one portion of the hood will have a longer overhang for attachment to the four and seven-inch hood supports. After cutting, straighten the overhang by bending slightly outward.

Next, measure two inches from the end of the ten-inch bottom support. Place the support in a vice at the mark and bend slightly to produce the desired curve out from where the support will be threaded into the front bow attachment device. Drill a one-fourth of an inch hole one inch from the end of the ten-inch support to accommodate the mounting bolt. Make a similar curve or bend in the seven-inch upper support; determine mounting method, mark and drill screw hole.

Lay the two twelve-inch risers parallel to each other with the five-inch horizontal backing piece crossing at the top and the seven-inch piece at the bottom. A narrow-ended rectangle will result. Now, C-clamp, mark, center punch and drill three-sixteenths of an inch holes at each of the four corners.

Match and mark the corresponding top and bottom horizontal backing pieces. Center punch and drill to match the pieces outlined in the preceding paragraph.

Insert the short end of the hood

section between the two top horizontal bar pieces and drill corresponding holes in the hood. Insert bolts and tighten loosely. Set piece aside.

Cut off the canvas upper of the sneaker, leaving the sole and weld (upright edge to which the canvas upper was attached). Starting at the outside edge of the sole, mark an eight-inch line along the side, toe and heel with a wax pencil or crayon. Cut along the line with a sharp knife, leaving the weld along the entire length with a 1/2-inch-wide section of the sole attached to the weld.

Turn the sole piece upside down. Determine the desired number of arrow spine holes, space and mark each hole, leaving three-fourths of an inch of space at each end. Mark arrow shaft holes 1/4-inch on the center in the middle of the sole "shelf" for a six-arrow load, for instance. Drill holes through sole material first, then heat the reverse end of an old three-sixteenths of an inch machine drill bit red hot and insert carefully into each hole to melt out a clean-cut, round surface.

Now insert the weld portion between the ten-inch and seven-inch arrow holder bars, drilling three equally spaced, additional holes through both the metal and weld between the existing corner holes. Insert bolts and tighten nuts.

Cut "V" sections between the shaft holes from the outer edge of the sole directly to the center of the shaft holes.



You need a hacksaw, center punch, jackknife, file, screwdriver, crescent wrench, shoe portion, can, foam piece, aluminum bar and bench vise (not shown).

This will allow the necessary "give" in the material to permit arrow insertion.

Cut sized pieces of camouflage or other dull-colored cloth material and cement to all metal parts and the hood. If you wish, the parts can be spray painted with "woody" colors to reduce glare. Determine at this point if the protective edge of the hood should be lengthened as suggested above — drilled holes for small metal screws will do the trick. Cement sponge rubber to inside of the hood.

Your bow-mounted quiver is now completed — and you have saved about \$20. An extra bowstring can be taped to one of the twelve-inch risers for emergency field use.

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Carroll Holl gives you instructions for building cushioned bow holders for your pickup in the December BOW & ARROW.

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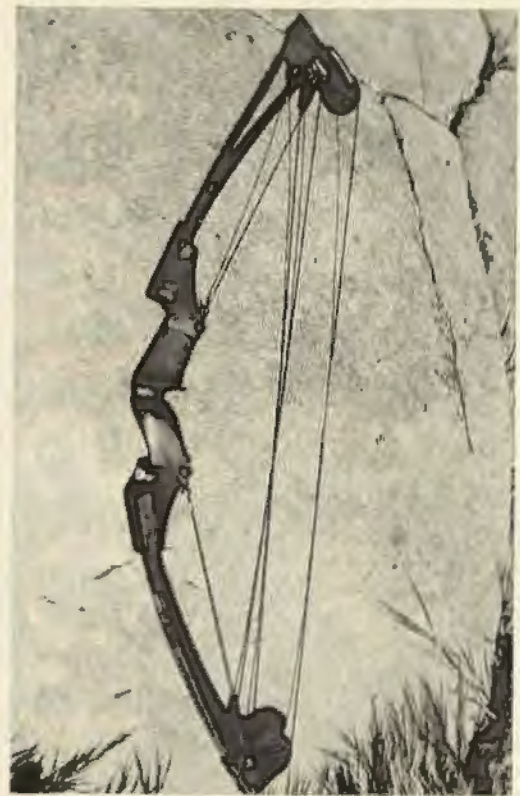
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The Golden Comanche on the rocks — clean lines and a single-unit cable.

BOW TEST: INDIAN ARCHERY'S GOLDEN COMANCHE COMPOUND

This Four-Wheeler Is Easy To Hold And Aim,
Requires No Tuning And There
Are Literally No Strings Attached!

weighed in at four pounds. Mine must have had an extra coat of finish since it trued my scale at four pounds five ounces.

The handle is a good fit in my hand. I like a solid grip and I can get it with the Comanche's handle riser. Since there was little else to check I put it on my bow scales to see how the peak weight and holding weight checked with those listed by the company. It trued right at the rated fifty-pound peak and dropped to a clean twenty-five pounds for a fifty percent let-off, allowing an archer to hold this bow at twenty-five pounds while he aims or sights or whatever hunters prefer to do while waiting to launch an arrow.

Another shocking thing was the price, which is under \$100. This can be compared to the several hundred dollars needed to buy most of the compounds currently on the market. Indian also offers a one-year warranty and parts for

Manufacturer	Indian Archery, 817 Maxwell Ave. Evansville, IN 47717
Model name	Golden Comanche
Suggested retail price	Under \$100
Draw force	50-pound peak/25-pound hold
Draw length	30 1/2" maximum
Eccentric wheels	Poly-molded fiberglass reinforced; dual-diameter pulleys deliver 50 percent let-off at full draw.
Bow length	38 inches, axle to axle; 42 inches overall.
Mass bow weight	4 pounds
String	None. Has one continuous black nylon-coated steel cable assembly with center serving.
Handle	Poly-molded steel and fiberglass-strengthened handle riser. Nonmetal contoured grip.
Cable clearance	Sight window cut 5/16" past center.
Limbs	Matched set of machine-tapered Glass-flex (fiberglass) limbs.
Finish	Solid black with black metal caps on limb tips.
Standard equipment	Threaded insert (5/16x24") for stabilizer or other attachments. Pro-type arrow rest.
Warranty	Limited warranty for one year from date of purchase against defects in materials and workmanship.

By C.R. Learn

SOONER OR LATER someone had to do it and it finally came to pass when Indian Archery of Indiana introduced their Golden Comanche four-wheel compound bow. You see, when the compound bows first came on the hunting field most of us were skeptical. For example, one of the first things I wondered when I took a close look at one of the physics-related units was why not make just one cable? I mean, who needs a string when you have a full-length cable that can't be cut by a broadhead or snapped by a barbed wire fence?

Indian Archery thought along the same lines and their Golden Comanche bow has just that — one continuous line of steel cable that runs from the attachment at the riser to the other end of the other riser section. There is no string — you shoot the arrow from a served center section of the cable. To me, this makes sense.

Compounds are usually accompanied by a series of wrenches, data sheets and tuning instructions. Not this Indian. You can't tune this bow at all — it is set at the factory and the way you buy it is the way you shoot it. This solves the problem of where to carry the tools needed because there aren't any. This sounded suspiciously too simple to me so I wrote a letter to the Indian Archery Company voicing my doubts and a few weeks later I held one of their fiber-limbed Comanches in my grasp.

The bow is just what they say it is. It is short — forty-two inches tip to tip — and the mass weight in the hand is not bad, and less than many compounds I've hefted. The literature supplied with the unit stated that the bow

repair at the owner's cost after that year is up. Not bad for a modest cost.

Before shooting a new piece of equipment I like to look at it before I bang it up in the field. I noted the caps over the limb tips instead of the usual slotted-limb method of attaching the pulleys. This does make for a stronger bow but will add tip weight. The shooting proved this later.

The riser is of a ply-molded material reinforced with fiberglass and steel. This makes it tough to destroy — even for me. The riser has an insert for the use of a stabilizer, bowfishing reel or other gadgets if you use them. The arrow shelf has a fingered cushion that holds the arrow shaft up



The handle riser is of poly-molded steel strengthened with fiberglass. Note cable attachments.

yet will allow you to nock the arrow without looking at the bow, which is something I do all the time in the field.

The cable ends — one upper and one lower — are attached to the riser below the shelf area and allow the vanes or feathers to clear the cables with ease. You can't take the cable off and there is no reason to unless you snip it with some wire cutters. The theory here is that if the cable should, for some reason, let go, the archer won't be hurt because the tips will move up to the pulley and stop there out of the archer's way. If something happened, the cable could be replaced, but it would require the use of a cable relaxer. If you are overly cautious you can order one from Indian along with a spare cable.

Enough looking, weighing and fussing — the true test of a bow is in the shooting. I grabbed two feather-fletched 2016s, a couple of 2020s and a couple of 2018s and took the Comanche to the backyard to see how these arrows would fly. I usually shoot the arrow that matches the peak weight of the bow, and especially with a broadhead, as I believe the head often takes over steering if you go too light in spine.

First, the 2020 Easton was nocked on the cable and

The elliptical wheel on the tip is housed completely in a metal plate to protect it from dirt and wear.



The arrow shelf is built into the riser section, allowing a bowhunter to place his arrow on the rest without looking.

brought to full draw. (I usually use a release aid, but with a new bow I start with three fingers, and most often bare, for best release.) The bow broke cleanly, held like a piece of cake and the 2020 zipped away — but with a decided wobble. The next shaft flew no better. The 2018s flew better but still had a decided wobble. The 2016 seemed to fly best of the three though it was lower-spined than I usually shoot. I shot these several times to see what the problem was. Most of us try to blame a bad shot on the equipment. Not so this time — it was the light holding weight of twenty-five pounds that was throwing me and my arrows off. With a weight as light as that you must have a very clean release or your arrows will wobble with any bow.

I took some four-inch feather-fletched Easton XX75s of 2016 size and shot them for a time. With my bow lock, I got a good release and my arrows flew where they should. The shorter fletching helped and the arrows looked like cotton balls going toward the target.

While shooting the Comanche I did note that the bow had a bit of a kick to it. When that cable came to a stop at the end of the release my left arm knew it held a bow. This might be due to the solid glass limbs, the weight of the overcaps on the tips or a combination of these things, but it did snap my head a bit on release.

I shot the bow periodically on the home stand but when our club had its monthly shoot I took the Comanche along to see how it would perform there. Our club shoots old style with no marked ranges and the bow proved equal to

The lower limb of the Golden Comanche shows the Indian logo, the stabilizer insert and the cable attachment used by that company.





On the bow scales, the Golden Comanche peaked at fifty and let-off to twenty-five pounds each time.

the task. I always allow other archers to shoot new bows for a varied opinion and most of the club members who tried the Comanche agreed that the hold was great at the light weight but most also commented on the jarring release. It's not really a tremendous wallop but you notice it after shooting a recurve or similar bow. Some of the



A closeup of the bow scales shows the holding weight of the Golden Comanche at twenty-nine inches.

club's old-timers compared it to the old longbow kick of earlier days.

Kick didn't hurt then and doesn't now — the main thing is whether or not the bow puts an arrow where you want it. My Comanche did fine. I found I had to get used to it as you must with any new equipment, but I made some long shots that seemed much farther than I would shoot while hunting and it put the arrow there. It isn't as fast as many bows but it certainly is stable. I didn't try it but I believe you could drop it over a ledge and go after it in rough country and have no problems with the next shot.

The data sheet did mention a speed of about 180 feet per second. With my chronograph, Micro Motion's Arrometer, I found my Comanche only gave me an average velocity of about 165 feet per second. I might have been using a heavier arrow than Indian used for the testing — they didn't say what they used. Well, speed doesn't kill anything but air. You can't kill with speed but you can get flatter trajectory and so on with faster arrows.

You could take this little Golden Comanche up a tree, shoot your deer from the average deer-killing range of a tree-stand hunter and it would be just as dead just as fast. Furthermore, when you fall asleep and then fall out of the tree since you didn't tie yourself in, you could pick up your rugged Comanche and go right back up and fall asleep again if there is no action.

The Indian Golden Comanche is a rugged bow at a modest price in this age of high-priced compounds. The bow offers a fifty-pound peak and twenty-five pound holding weight and you get just that. At least I did. The mass weight in the hand offered no problem in the field — it was lighter than some recurves I have tested over the years but I did find that the light holding weight was no advantage for my snap style of shooting. I had to slow down my release, but maybe that isn't so bad either.

Learn weighed the bow to determine how heavy it would be in the field. It weighed in at a shade over four pounds.



An arrow with a high-parabolic fletching of at least five-eighths of an inch was put on the bow cable to show cable clearance.

After several months of casual shooting in ranges and on bunny hopping outings I still find the Comanche to true at the fifty/twenty-five weights. There has been no let down in the 9½-inch brace height so the bow is tough as well. After shooting for some time with just that one bow, the shock or jar — whatever you care to call the recoil — became unnoticed. You get used to it and it seems to disappear.

The Indian Golden Comanche isn't expensive, it isn't fancy and they don't give you a tool set when you buy it.



This side view of an arrow on the cable shows that there is no rippling of the fletching — which often occurs when there is cable involvement.

They do guarantee it for one full year unless you tamper and try to change things. You shoot it, hang it up and then take it down later to shoot again. There are no adjustments, no strings attached and it really shoots an arrow. All you need to do is adjust your shooting to the bow, pick the right-spined arrows and practice. This is really one bow I could shoot from a prone position. Not that I have any intention of hunting that way but with the light holding weight I could do it.

The next time you see one of Indian's Golden Comanche compounds hanging on a peg, draw it and you'll be surprised at the let-off. Shoot it and see how good the light release feels after all of those heavy bows. ←



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HOW TO

STOP

SNAP SHOOTING

**A Tried-And-True Method For
Breaking The Less-Than-Full-Draw Habit**



By Calvin J. Klein

Calvin J. Klein lives in Philadelphia and has 25 years of experience as a target archer/bowhunter.

IN THE APRIL 1977 issue of BOW & ARROW, there appeared an informative article written by Blair Peterson entitled "Target Panic." Peterson's thesis was that target panic "is a physical reaction or impairment that results from and is controlled by the subconscious. Through target panic the subconscious mind renders

the body incapable of performing certain actions."

Prominent examples of target panic cited by Peterson included freezing — the archer cannot aim where he wants to; snap shooting — the archer cannot reach a full draw and establish an anchor point; the opposite of snap shooting — the archer finds it difficult to release the bowstring when ready, and so on. Peterson concluded by stating, "The solution to a target panic problem is as individual as the problem itself. Each person must find his own ways to contend with the type of target panic he or she experiences."

In recognition of the fact that con-

tending with many target panic problems requires an individual approach, I would like to elaborate upon one such approach as it relates to snap shooting, in which the archer fails to reach a full draw. The method I advocate — one which worked well for me and others — requires nothing in the way of equipment other than that ordinarily used by the archer: a bow, arrows and a shooting glove or tab.

While there are other contributing factors to the problem of snap shooting, one prominent cause, no doubt, stems from the archer being over-bowed at some interval in the past. That is, utilizing a bow of such draw weight that it is too powerful in relation to the individual's muscular development at the time. By attempting to shoot over a period of time under such a condition, the less-than-full-draw syndrome becomes embedded in the archer's subconscious to the extent that even if he then switches to a bow of less draw weight the problem remains.

Undoubtedly, it is easier to develop such a problem when shooting a stick bow as opposed to a compound. The latter has the advantage of a relaxed draw weight after a certain point in the pulling process. Once this relaxation occurs there is usually no anchor point problem; if for no other reason than to come to a convenient, stable anchor point seems the easiest thing to do, consciously and subconsciously, under the circumstances. Nevertheless, the compound being a relatively new device on the scene, many archers may carry snap-shooting problems over to this type of bow upon making the transition from a stick bow. Or perhaps such a problem was developed by an archer first entering archery utilizing a compound, but doing so under the notion that because the draw weight relaxes after a certain point in the pulling process he or she could go for broke insofar as said weight was concerned.

Obviously, snap shooting from less

than a consistent, stable anchor point is a bane to the target and hunting archer. To the former, because accuracy is greatly affected from shot to shot by not utilizing such an anchor point; to the latter, because almost as important as accuracy is shock and penetration power. Shock is necessary when utilizing blunt-point arrows for hunting small game, while broadhead penetration is vital to proper cutting and hemorrhaging when hunting larger animals.

Being an instinctive shooter of all noncompound bow types — from the long bow through the short, full recurve — my method of overcoming the snap shot was developed on such bows. Nevertheless, it is just as applicable for those who use bow sights and/or compound bows. In fact, this method violates more instinctive shooting concepts than those applying to sight shooting. But my feeling is that if it becomes necessary to take one step backward in order to progress two forward at a later time, then so be it.

Simply stated, to break the snap-shooting habit, one must look at the arrow point when drawing! It must be visually ascertained that the arrow point has been brought back to the bow handle before aiming and loosing the arrow. Obviously, this violates the instinctive shooting maxim whereby the eyes concentrate on the target while simultaneously the arrow is drawn and brought into the sight pic-

ture. But it is necessary to violate this concept for a time in order to beat the less-than-full-draw syndrome.

Thus, with every draw in each practice session, be it with a stick bow or compound, the archer must look at the arrow point! When it is ascertained that a full draw has been reached, the archer then holds the arrow in this position and begins the aiming process. Obviously, in order to hold an arrow back at full draw, the archer must use a bow with a comfortable draw weight. Otherwise, the arm and chest muscles involved will not be up to the task. Needless to say, this method not only serves to insure a full draw each time, but it also involves ongoing exercise for the muscles. After only several weeks of this type practice, the archer will be surprised to find he or she can hold an arrow comfortably at full draw for an extended time. At this point, in light of increased muscular development, the need may be felt to go on to a bow of slightly greater draw weight.

Of course, it is more difficult to aim after the full draw has been visually assured — especially for an instinctive shooter. Usually, in drawing while looking at the arrow point, the tendency is for the archer to find himself or herself holding above the target. Thus, aiming will involve lowering the bow and arrow and forming a sight picture while holding at full draw. This process should prove less difficult for one who is used to a bowsight of one

type or another, because the archer is more accustomed to forming a sight picture after the arrow has been drawn. Naturally, it is also easier to engage in this peek-at-the-arrowhead, hold-and-aim process utilizing the broadhead hunting arrow. This is because the increased size of the arrowhead makes it easier to observe with the eye while lowering the fully drawn bow and forming a sight picture. Also, after a time one can dispense entirely with looking at the broadhead, because its dimensions prevent it from being drawn back beyond the front of the bow. Thus, the feel alone of the rear of the arrowhead touching either fingers curled around the bow handle or the bow itself may be all the notice the archer needs to substantiate a full draw.

After much practice in the manner described above, the archer will detect a new process taking root in the subconscious. That is, less and less time will be spent looking at the arrow point to verify a full draw. Gradually, drawing and aiming will again coalesce and become one instinctively. Only now the full draw will be there automatically. Eventually, the emphasis will be solely on aiming.

To overcome faulty procedures ingrained in the subconscious, one must immerse correct procedures in that same subconscious. For best results, the archer should concentrate upon one bad habit at a time until success is assured. Good Luck! <—*



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Members of the Bear State Bowhunters, author's club, thoroughly enjoy the speed round. Note that shooter on the right was ahead at the end of the end.



Above: Within fifty seconds, these eighteen shooters will shoot about 180 arrows. Below: After arrows are shot, the archers retrieve them and reset targets for another end.

SPEED ROUND!



The Saco Speed Round Has Catapulted From A Slingshot Novelty Event To An Exciting, Action-Packed Archery Sport...And It's Great Practice For Bowhunters.



Left: Speed Round shoots add extra excitement to Bear State Bowhunters meetings. Below: Author's homemade flip-flop target — it takes down and packs easily.



Heavy nylon woven netting is used as a backstop for blunts. Blunts are, from left, threaded aluminum rounded screw-on tip, H.T.M. rubber blunt, Saunders Slipover Saco plastic blunts. Shafts are wood, glass, metals.

By Jerry Gentellalli

Jerry Gentellalli is an outdoor writer/photographer living in La Jolla, California.

THE HUNTER IS walking through the woods when suddenly, out of nowhere, a big buck appears in close range. Startled, the hunter excitedly draws for an arrow tucked away in his quiver and fumbles with it trying to nock it to the bowstring. Alerted, the animal darts off and has vanished before the hunter can get the arrow off. Had he been faster, the hunter could have made his mark, and as a result the prize venison would have been his.

Most bowhunters have probably had a similar experience and will attest to the importance of speed and accuracy in hunting. Until now, there has been little chance for the hunter to practice the quick draw and keep himself in top form for that quick shot. However, there is an archery competition gaining popularity among bowhunters which not only develops speed

Chuck Saunders, the originator of the Saco machine, explains its mechanical workings to a new owner — Steve White, president of the Bear State Bowhunters.



and accuracy, but also is good hunting practice. And it is fun and exciting for competitors and spectators alike. The Saco Speed Round developed by Saunders Archery Company of Columbus, Nebraska, has catapulted from a slingshot novelty event to an exciting action-packed archery sport.

My first experience with the Saco Speed Round event was in the San Diego Yamaha Speed Round Shoot. I was feeling pretty confident at the beginning, certain that my many years of bowhunting experience had prepared me for shooting moving targets. Needless to say, coming in last in the event was a rude awakening as well as a severe blow to my ego. However, I had so much fun competing that I came away from the shoot hooked on Saco. I realized that my accuracy on rotating targets needed more attention. So, I decided to make a flip-flop target to simulate a moving target. With a stationary target that holds its position arrows can be grouped; this is not so with the flip-flop target, which changes positions when hit.

In the Speed Round competition two or more competitors shoot simultaneously on the Saco machine which is at a distance of fifteen yards. The machine has six exposed 5½-inch round target discs or cups, three on each side of the machine. Every time the competitor makes a hit, the target flips over and appears on his opponent's side. Each shooter can deliver as many arrows as possible within a fifty-second time period. The skill lies in developing the right balance of speed and accuracy in order to defeat one's opponent. If a player gets off too many arrows in a hurry his accuracy may suffer, but if he is accurate and too slow, he could be defeated also. The competitor with the least amount of targets left on his side wins the end. Two out of three wins the round. Winners advance through quarter-finals, semifinals and three out of five for finals. Team shooting is always heated, and arrows really fly. Both teams are still in close contention until the last few seconds of the round.

This competition really lends itself to handicapping, various yardages, and league play. The way in which the speed competition differs from conventional archery is profound. The flip-flop targets are fast paced and the competition can be compared to any

spectator sport. It generates excitement and involvement. The intensity of feeling with the competitors is similar to tennis and other head-on sports.

The archers can use both their target and hunting equipment in the Speed Round competition. For shooting, one can use bare fingers, tabs, gloves or whatever. Quivers may be side, centerback, floor cylinders, etc. In general, any type of shooting can be applied to this competition. All shaft materials like wood, glass or aluminum work well. Fletchings of any size or type can be used, but the tips must be of soft plastic, rubber, or round aluminum. The rubber and plastic sleeve blunts slip over a broadhead adapter or tip of the arrow. These blunts are available in sizes of 11/32, 5/16, and 9/32. The round tip threads into a standard insert. The use of field tips or broadheads is a no-no as they will penetrate and destroy the target and stop netting. The Archery Lane Operators Association (ALOA) and increasing numbers of archery clubs are adding the Saco Speed Round to their shooting events for more excitement and all-around archery involvement. The Bear State Bowhunters, of which I am a member, were so impressed with the heated action at the recent Yamaha Speed Round competition that the club purchased a Saco machine from Saunders Archery. It not only has generated greater membership participation and enthusiasm but was paid for within six months through the flip-flop shooting taxation. Our bowhunting club has developed some real quick-draw shooters and they are now looking for a challenge from other bowhunting clubs and their speed abilities.

Out of the millions of archers in this great land, ninety percent are bowhunters. An archery competition for bowhunters ought to grow in popularity. Without a doubt, the flip-flop targets are revolutionary additions to target archery. With the Saco Speed Round and Fred Bear's Bowhunter's Round, it is just the beginning for bowhunters' participation in organized competition.

With Speed Round practice, chances are that buck won't elude you the next time your paths cross. Perhaps you'll miss with the first shot, but the next quick-draw shot could very well give you a second chance.

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BOW POURRI

STATISTICS RELEASED

According to a recent announcement by the Department of the Interior, Americans spent a record \$318 million last year to buy hunting and fishing licenses. Sixty million Americans bought state hunting and fishing licenses in 1976, said Lynn Greenwalt, director of the department's U.S. Fish and Wildlife Service. California led the country in fishing license sales with 5.8 million sold.

OUTDOOR ADVENTURES

Precision Shooting Equipment, Incorporated, has launched an entirely new organization for the bowhunter called "PSE Outdoor Adventures," which will offer contacts with PSE-endorsed guides and outfitters through the PSE Referral Service, keep bowhunters informed and up-to-date on changing game laws and hunting conditions, and provide general bowhunting knowledge from PSE's bowhunting advisory staff. Different participation activities will also be offered for members, including bowhunting seminars and tournaments.

Annual membership cost is \$10, and members receive direct correspondence from Pete Shepley and the PSE Bowhunting Advisory Staff, including information booklets and general information concerning bowhunting skills. And there's much more. For full details and a membership application, bowhunters should write to PSE Outdoor Adventures, Dept. BA, Main Street, Mahomet, Illinois 61853.

FAVORABLE LEGISLATION

According to the Maine Bowhunters Association "Newsletter," Linc Frye, a fairly new member of the Maine Bowhunters Association, decided to go bowfishing a couple of months ago. "Now almost everyone knows that bowfishing is illegal in Maine except in tidal waters," reports the Newsletter. "So Linc look it upon himself to introduce a bill (to the state legislature) to permit the taking of suckers with the bow in Spring and early Summer. Well, without going into details, it passed." Congratulations to Mr. Frye, and, as the Newsletter puts it, "...Next Spring, look out!"

FITA RETIREMENTS

Mrs. Inger K. Frith recently retired from her position as president of FITA after sixteen years of service. Taking her place is Francesco Gnechi Ruscone of Italy. The secretary-general of FITA, D.M. Thomson, also is retiring. His replacement is Bernard Boulens of Switzerland.

SEPTEMBER JAMBOREES

The Eleventh Annual White River

Bowhunters Jamboree will be held September 10-11, 1977, halfway between Bedford and Mitchell, Indiana, on Indiana 37 South. A Coon Shoot will be held September 10 with trophies awarded. A thirty-animal silhouette shoot (target) will be held on September 11, with trophies awarded for the first three places. The fee for five-member teams for the animal shoot is \$10 per team; regular registration is \$5. Plenty of door prizes will be awarded and plaques will be given to the club with the most members attending; to the longest-traveled individual; and to the oldest shooter. The only equipment restriction is that no hunting points will be allowed. Camping with water and electricity will be available free of charge. For more information, contact Bob Sipes, President, White River Bowhunters, 1915 Seventh Street, Bedford, Indiana 47421.

The Three Rivers Bowhunters Fall Jamboree will take place September 10-11, 1977, at Busching's Archery Range, six miles northwest of Fort Wayne, Indiana, on U.S. 33. A Coon Shoot will be held Saturday night, along with round and square dancing with band and caller. Sunday features a deer shoot - twenty targets each, unmarked yardages, in natural hunting conditions. Field points only. Trophies will be awarded for four classes and there'll be plenty of door prizes. Hot food, snacks and beverages will be available all weekend along with free camping and games and rides for children. Contact Dave Weiner, 1706 Kroemer Road, Fort Wayne, Indiana 46808 for more information or a free poster for your club.

The Square Circle Sportsmen of Gibbsboro, New Jersey, will host the New Jersey State Field Archery Association Bowhunting Jamboree on September 11, 1977. The shoot will consist of fifty-six three-dimensional animal targets which will be shot under hunting conditions with moving targets and tree stands. The only equipment restriction is that no broadheads will be allowed. Casual registration will run from 7:30 a.m. through 1:30 p.m. Registration fees are \$4 for adults; \$2 for youths. Breakfast, lunch and dinner will be available at the clubhouse. All registered participants will be eligible for the drawing of over one hundred door prizes. In addition, the club's indoor range will be set up with dealer displays and equipment sales. The range is located on Cleinnton Road in Gibbsboro. For more information, contact Frank P. Adams, 324 Carnegie Avenue, Wenonah, New Jersey 08090.

ARCHERS VS. BOWLERS

John Williams, AMF Voit-Wing Archery's consultant, and Luann Ryon, newly crowned Women's 1977 World Champion, recently met professional bowlers Mike McGrath and Virginia Norton for a unique exhibition in the Riverside, California, Bowling Center. An archery target was placed at the end of a walkway in the middle of the alley. The bowlers were just a few feet away on their own



Pro bowler Virginia Norton and archers John Williams and Luann Ryon.

lanes. When it was over, Williams and Ms. Ryon won three out of the four scheduled matches. In scoring, a ten to seven point system was used for the archers while the bowlers threw at a ten-pin set each round. Both groups were guaranteed a minimum score of seven.

LENGTH OF SEASONS

Dick Lattimer, National Director of the Fred Bear Sports Club, recently released a list of the length of each state's 1976 deer-only bowhunting seasons. The average for the fifty states was sixty-seven days of deer bowhunting per year. The state of Washington had the longest season with 147 days while the states of Utah and Nevada rank at the bottom with fifteen days each. The total number of deer bowhunting days in the United States last year was 3156.

STUMP SITTERS

The Stump Sitters Whitetail Deer

Study Group is now inviting deer hunters who hunt with bow, gun or camera to join the study group. Deer hunters from all over the United States will have the opportunity to share their ideas and experiences through monthly data reports and a specialized magazine. The study group is designed to be a tool to add more quality to deer hunting. In-depth subjects about deer and deer hunting will be the subject matter pertaining to current conditions afield.

During the past ten years The Stump Sitters have disproved many old myths and handed-down beliefs about deer hunting through actual field experiments with deer. Study group members will have the opportunity to participate in field research assignments if they wish. Applications and jacket patches are available. For more information, contact The Stump Sitters, Dept. BA, P.O. Box 1302,

Continued on page 66

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The PRO SCORE



John Kleman

PAA TOP PROS

The Professional Archers Association recently announced the 1977 Top Ten Professional men and women archers in the nation. The rankings are based on three years' money winnings. The top ten men, ranked in order, are: John Kleman, Ligonier, Pennsylvania; Steven Robinson, Richwood, Ohio; Chuck Bigelow, Cedar Rapids, Iowa; Ed Rohde, Muscatine, Iowa; Richard White, Muncie, Indiana; M. Hugh Shaw, Redfield, Iowa; Darrell Dixon, Manchester, Missouri; Greg Shumaker, Hartsville, Ohio; Tim McKinney, Muncie, Indiana; and Al Lizzio, White-stone, New York.

The top ten women, ranked in order, are: Ann Butz, Corning, New York; Denise Libby, Carmichael, California; Judi Webber, Danville, Indiana; Betty McKinney, Muncie, Indiana; Jody Holder, Greenwood, Indiana; Marilyn Nicholas, Warren, Michigan; Barbara Kale, Willard, Ohio; Maureen Bechdolt, Loveland, Ohio; Linda Marten, Granger, Iowa; and Mary Lou Heafy, Ravenna, Michigan.

OUTERS ARCHERS

The Outers Astro Archery team took first place among factory-sponsored teams at the Fresno Safari Archery tournament in Fresno, California. The team members were Stan Columbo, Frank Pearson, Tom Winters and Ray Waleszczak and each shot an Astro Regency tournament bow.

In the Men's Pro Division, Columbo placed first, Pearson placed second and Winters third. Waleszczak had also taken first place. Men's Pro Division, at the 1977 International Indoor Archery Championships held early this year in Las Vegas.

PROMOTIONAL DIRECTOR

Lance Hinatsu is the new promotional director at Hunters International. In his new job, Hinatsu will be responsible for coordinating advertising, marketing, educational and promotional programs. He attended Wayne State University and was active in marketing and direct sales programs for a local industrial automation company. He is an avid bowhunter and enjoys fishing.



From left: Ken Watkins, Joe White, Steve McClennahan, Jerry Podratz, Jack Head and John Cronin.

INCREASED SALES STAFF

According to a recent announcement by Larry DeMaire, vice-president of marketing at Bear Archery, the company has once again increased the size of its district manager staff. To the staff of twenty-three, Bear has added Stephen E. McClennahan (Arkansas and Louisiana), Kenneth R. Watkins (northeast Ohio, northwest Pennsylvania and West Virginia), Joseph J. White (Kentucky and Tennessee), Jerry L. Podratz (Minnesota, North and South Dakota), John J. Cronin (southeast Michigan and north-west Ohio) and Jack Head (Colorado, Kansas and Wyoming).

PLANT EXPANSIONS

Precision Shooting Equipment, Incorporated, has made two plant expansions. King Leather Goods, under manager Jim Hardesty, has moved to the Tucson facilities. King will take up part of the new 16,000-square-foot facility. The rest of it will house part of the Tucson arrow manufacturing and shipping and storage for the thirteen western states.

PSE has also purchased a 22,000-square-foot facility in Champaign, Illinois. This facility houses PSE

distribution and finished product storage along with arrow manufacturing.

YAMAHA SHOOTERS

According to the Yamaha Sports Group, a national ranking system shows that three out of four top men tournament shooters in the United States are currently shooting with Yamaha bows. Other statistics released by Yamaha show that archers placing first and second in the men's individual competition at the 29th World Archery Championship used Yamaha bows and the winner of the Intercollegiate National Championship in 1976 also used a Yamaha. Currently, the youth division National Champion is shooting with a Yamaha and has set nine national records with a Yamaha.

WALTON NEW AT PSE

Richard Walton of Miami, Florida, has assumed the position of director of communications at Precision Shooting Equipment, Incorporated. Walton received his BS degree in mass communications from Florida State University and his MA degree in advertising from the University of Illinois where he was also a Leo Burnett Scholar. He has had past experience working as an advertising representative with a Midwest newspaper. Walton will head all PSE promotions and is in charge of Precision Advertising, a subsidiary of PSE.

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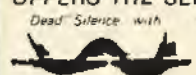
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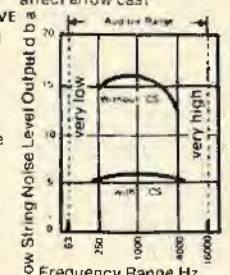
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BOW POURRI
Continued from page 63

Appleton, Wisconsin 54911. The Stump Sitters will also present their three-hour educational program, "The World of the Whitetail," to your club or organization free of charge.

POACHERS BEWARE

The New Mexico Department of Game and Fish has recently completed a study on poaching. The results of this study are shocking and indicate that poaching (illegal killing out of season) is taking a very large toll among our big-game herds. An interesting side-light of the research study, part of which included the placing of simulated poaching incidences, showed that the general public observed this activity forty-three separate times. Conscientious appeals to the sportsmen and the general public to report violations have fallen on deaf ears, so a new approach is necessary.

This new approach will be called "Operation Game Thief." In principle, it follows the "Crime Stopper Programs" used by various police departments throughout the country. The program will consist of:

1. Donations from the general public of funds to be used in the "Operation Game Thief" program.
2. The offering of substantial rewards for information leading to the arrest and indictment (not conviction) of any person involved in a game violation. The minimum reward will be \$250

for big game; \$50 for other types, birds, fish, et cetera. Information concerning flagrant violations will result in substantially higher rewards being given.

3. A citizen task force, consisting of individuals from all walks of life and all areas of the state, will be set up to establish the amount of rewards for flagrant violations.

4. Informants will remain totally anonymous and any monies due them will be given out in any manner specified by the informant.

5. A toll-free number will be installed exclusively for the use of the operation.

6. An intensive ongoing publicity program will be a vital part of the operation.

Those interested individuals, organizations and businesses who are concerned about poaching and want to stop the illegal killing and other violations of the game and fish laws, are encouraged to donate to the reward fund. The donated money will be used *entirely in the payment of rewards.* Other administrative costs of the program (telephone, printing, publicity, et cetera) will be carried by the Department of Game and Fish.

Send donations in care of the Department of Game and Fish, State Capitol, Santa Fe, New Mexico 87503, with checks or money orders made payable to "Operation Game Thief."

William O. Montoya,
Assistant Director,
Department of Game & Fish,
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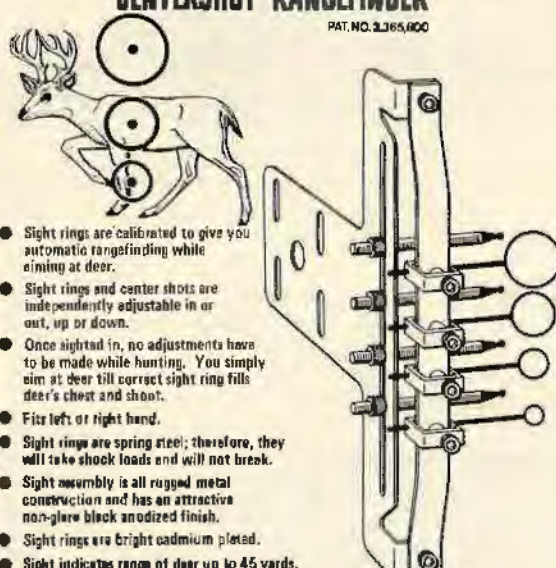


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THE ART OF AIMING

By Blair A. Peterson

Blair A. Peterson is a member of the NFAA Professional Division and a certified archery instructor.

IN THE LAST issue we discussed shooting slumps and how they develop. The mental aspect of shooting was determined to be the principle cause of the slumps. With the prime target-shooting season now at hand, it might be worthwhile to address another mental aspect of shooting.

Of all the different things that a shooter must concentrate on during the act of shooting, none are more critical or more demanding than aiming. The aiming process is in itself the single most important element in successful shooting. Although we must correctly execute the shot from the time we draw until the arrow is released, none of our prior actions are worth a salt unless we have aimed well. Unfortunately, most people do not aim well and this is one reason why it is so easy to miss.

The tremendous importance of aiming is actually understood by few shooters. Because good aiming is such a mental exercise it is seldom accomplished by most archers. This is not to say that we are not capable of thinking or that we are lazy, but rather that we have not learned to channel and maintain our thoughts on one single thing for a few moments. In other words, few of us have learned to concentrate to the degree required for truly successful shooting.

For the shooter, aiming is the most difficult of all the elements in the shot process to learn and for the instructor it is the most difficult to teach. The reason this is so is because aiming is purely a mental exercise that can never be learned to the point that it becomes an automatically executed action. Some physical elements of the shot process can, on the other hand, be learned and later executed through automatic response; releasing the bowstring upon the sound of a clicker, for example. Since aiming requires the same degree of applied mental effort each and every shot, it becomes very difficult to consistently do it well. Whenever we are not really aiming with all our full attention and concentration we have nothing to fall back on to carry us through. If our physical execution of the shot is poor from time to time we can continue shooting and very often it will just improve without any special effort on our part. Aiming, however, never just improves. We must cause it to improve through our applied mental effort.

To learn how to aim correctly I believe two things must happen. First, you must learn to look at your sight rather than the target. Secondly, you must know where you are aiming at all times. Now these two things may sound rather foolish to you at first but a closer look at what they mean might change your mind. To begin with, looking at your sight and not the target does not mean that you will not see



Learning to become truly aware of your aiming will be facilitated through an analysis of each shot after it's completed.

the target. Obviously, you must see the target if you hope to hit it but it is the manner in which you see the target that is important. Whenever we aim we experience two general types of vision: primary and secondary. The primary vision causes the image we are looking at to be vividly clear while the secondary vision sees things around us that we are not really concentrating on with the same degree of concentration. Most shooters will have their primary vision (concentration) on their target and their secondary vision will pick up their sight. It makes no difference whether you aim with a pin, scope or the point of your arrow, the same phenomenon occurs and the same principles apply.

In target shooting, the target is stationary; it does not move. Your sight, on the other hand, is constantly moving because no one can hold his bow arm so still as to prevent movement. If you can understand this underlying fact, it should be easy to understand why you must concentrate on your sight rather than on the target. You must be able to see the sight with your primary vision while the target is picked up in your secondary vision. The sight should always appear clear and stay as the main focus of concentration. The target should appear blurred or fuzzy because of your prime concentration on the sight. If this is not happening you are not aiming correctly.

The second point I mentioned for successful aiming was

Aiming Never Just Simply Improves.
We Must Cause It To Improve Through
Our Applied Mental Effort. Here's How.

the full-time awareness of where you are aiming. Obviously, to reach this point you must first be very much aware of your sight and the movements that occur while you are aiming. But it goes far beyond just looking at your sight. You must be thinking of that sight with all the concentration you can muster. This is probably the most difficult of all tasks because the mind does not like to concentrate completely on anything for more than just a moment. To understand this point, try this simple experiment. Sit in a chair and let yourself get very relaxed. Try to free your mind of any thoughts. Now begin concentrating on one particular thing in the room and attempt to block out any other thoughts except for ones concerning the object you have selected. Try to have complete and uninterrupted concentration on the object for fifteen seconds. You will probably discover that it is extremely difficult to retain complete concentration on the object and for most of us it is nearly impossible. The mind will wander and we will pick up thoughts of other things no matter how hard we try not to let this happen. Very often the harder we try to isolate our thoughts the more rampant they become. This same thing happens when we try to aim. We must, therefore, be aware that the mind will not automatically let us aim effectively.

We have to control our concentration as much as possible and try to keep it channelled to the aiming process. The best way I have found to do this is by repeatedly asking myself about my aiming while I am aiming. For example, you might ask yourself, during the aiming process, where you are really aiming. Try to be very objective and try to be honest with yourself. Remember, you want to learn what you are really doing so you can improve on your weaknesses.

Learning to become truly aware of your aiming will be facilitated through an analysis of each shot after the shot has been completed. In fact, such an analysis is an essential element for self-improvement in all aspects of shooting. The way this works is by mentally evaluating or critiquing what you did during the execution of the shot. Specifically, you are interested in aiming, so you try to analyze what occurred during your aiming process. You should ask yourself, "Exactly where was I aimed at the instant of release?" The answer to this question very often will surprise you.

Usually, you will find that you will be unable to honestly answer the question because you were not aware of exactly where you were aimed at the instant of release. This is a key point and it is worth your close consideration: Unless you know exactly where you are aimed at the instant of release how can you determine whether or not you have missed? If you think you missed simply because

your arrow did not hit the center of the target you are wrong. It is possible, often likely, that your arrow hit exactly where it was aimed. In this case you did not miss — you simply didn't aim for the place you expected (hoped) the arrow would hit. Often our misses are actually very good shots that go exactly where they are aimed. If you are not aimed in the middle don't expect the arrow to hit there — if it does you have missed! The point that you should understand is that the arrow should hit where it is aimed. Just because the arrow did not strike the center is no reason to yell "miss." We miss only when we don't hit where we are aiming.

If you can concentrate to the degree that you know where you're aiming at the instant of release this will do two significant things for you. First, it will force you to think about aiming with a degree of concentration that is probably more intense than you have previously experienced. This in itself is a tremendous advantage and you will find your groups are tighter and your scores higher as a result.

The other thing that knowing exactly where you're aimed at the instant of release will do for you is to quickly and more accurately identify the real reasons for your misses. Generally, we can attribute misses to one or more of three general causes: aiming, physical errors in form, and outside influences such as wind and terrain. If we are able to eliminate aiming as a source of a miss we have reduced by thirty-three percent the possible reasons for the miss. If we can also eliminate outside influences as a potential source we can then attribute the miss to an error in some physical aspect of our shooting. Since the correct identification of a problem is the first step in its ultimate resolution, the timely and accurate pinpointing of the

For aiming problems, having someone stand behind you to check your aim and release can be an aid in determining where the problem lies.

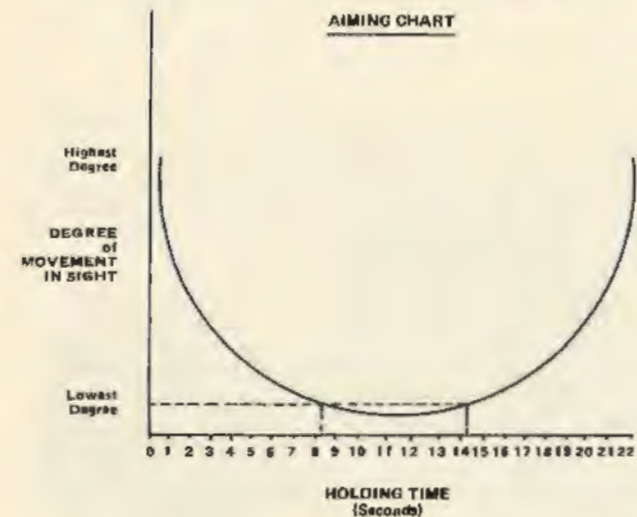


problem becomes very important. When we aim well and maintain concentration on our aiming we can easily determine if misses are the result of this aspect of shooting. Since misses attributable to the wind and so on are usually easily detected, we have thus greatly reduced the probable sources of a bad shot by eliminating aiming and outside influences. By approaching the problem in this manner we not only are able to isolate the problem more quickly, but we also avoid trying to correct things that are not in need of correction, a common occurrence in archery.

I have found that it is helpful if a shooter will try to "call" his shot each time he releases an arrow. For example, you may mentally say to yourself as you release, "Okay, I was aimed at six o'clock when that shot was made." Now, observe where the arrow struck the target. If it hit at six o'clock you didn't miss, you merely aimed poorly. If the arrow did not go where you were aimed you should try to understand why. Keep in mind that the vast majority of our misses are attributable to poor aiming — perhaps as many as seventy-five percent. If we learn to aim well we will certainly have taken a giant step in the right direction.

Timing is an important variable that will influence the success of your aiming. Timing refers to the time it takes to activate a shot or the amount of time a shooter spends at full draw prior to release. Since maintaining full draw requires physical effort, there is a certain amount of fatigue which occurs as a result. The longer you maintain full draw (hold) the more tired you become.

The Aiming Chart below is an illustration of bow arm movement in relation to time during the aiming process. The main point you should understand from the Aiming Chart is the fact that there is an optimum time or a low point in bow arm movement and this is the best time



for the shot to occur. From the chart you will notice that there is a lot of bow arm movement upon the initial drawing of the bowstring and during the time a shooter settles into his anchor point. Bow arm movement then begins to taper off as aiming begins and finally an optimum point is reached. Movement of the bow arm then begins to increase as the shooter tires under the stress of full draw. Shots which occur during the low bow arm movement cycle are more likely to be successful than are shots activated when movement in the bow arm is increased. For most shooters, the optimum time to activate the shot is eight to fourteen seconds from the time the bowstring is initially drawn. Shots which occur earlier or later than this oftentimes are made when there is an increased amount of bow arm movement.

Although the optimum time to activate a shot is completely dependent upon each individual shooter, you

should try to establish a rhythm in your shooting that allows you to release the bowstring at the most advantageous time during your aiming process. If you ever watch the top shooters you will notice that they usually have a well-established rhythm in their shooting and they activate each shot after about the same amount of time. This is critical for consistent shooting and you should work to establish a rhythm that is beneficial to your own shooting style.

Aiming is greatly influenced by the amount of relaxation we allow our body to attain during the time we are at full draw. Relaxation is an entire subject of its own and in a future article we will address this subject in detail. For now, however, let it suffice to bring out a couple of significant



Insuring your sight is properly installed can save many left/right misses. The level should show a plumb reading when the bow is suspended in the manner illustrated.

points that influence directly upon the aiming process.

In my opinion, relaxation of the hands is the most critical part of the body to relax as far as archery is concerned. At full draw the relaxation of the hands or the absence of relaxation will trigger the degree of relaxation the rest of the body achieves. If the hands stay relaxed, for example, the arms stay relaxed and vice versa. Relaxation of the hands influences movement in the bow arm, etc., which in turn effects the rhythm/timing of the shot. As was mentioned, timing affects aiming and through this relationship (relaxation-timing-aiming) the success of our aiming is influenced by the amount of relaxation we develop in our hands. A common example of this situation can be witnessed in shooters who maintain full draw for too long a period of time. What generally causes this condition is a failure to relax the drawing hand. As the shooter holds too long it becomes increasingly more difficult to make a release because the release hand becomes less and less relaxed. This situation applies regardless of whether the shooter releases with his fingers or uses a release aid.

Make a conscious and concerted effort to relax your hands while you are shooting and you will find your aiming is much easier because there will be less movement and better timing. As an added benefit you will also experience better back tension because there will be less tendency to develop stress in your arms.

Our attitude towards aiming is an important contributor toward the successful execution of a shot. Many people feel

Continued on page 73

BROADHEADS

BOW & ARROW READY REFERENCE FILE

TO PREVENT PLANING

If your broadheads have large flat blades that act as wings and the arrow is planing, check for the following:

1. Are the arrows matched and flying from a properly tuned bow? (Spiral fletching or angled vanes are a great help in offsetting planing.)
2. Is the broadhead installed properly? (The flats of the broadhead must be in perfect alignment with the shaft.)

METHODS FOR KEEPING 'EM SHARP

Put the head in a vise, use a file and move the edge back to make it more slanted, or slanted back toward the ferrule. The thinner, sharper edge left after filing both sides will be jagged and won't shave hair off the arm, but some bowhunters prefer this type of edge. As the pressure is applied, the head will cut deeply and easily. For a razor-sharp edge that will shave the hair off the arm, take the same head after filing and hone the edges. Then go on to a finer grit stone and a jeweler's rouge and leather stropping. A third method is to use a basic filing system to produce rough, jagged toothlike projections along the edge of the steel. Use a sharpening steel to align these edges — it puts them into a system that cuts efficiently and is easy to use.

BROADHEAD SPIN TEST

Spinning the broadhead arrow on its point to look for wobble is a good indication of whether or not the point of the broadhead is in alignment. But it does not prove that the flats of the head are/aren't in alignment and you could be fooled into thinking that the head is in line because the spin shows true. The flats, too, must be checked to ensure that they are not off-center, which causes planing.

GLUING ON RAZOR BLADES (Jack Howard's Method)

Apply a generous coat of Pliobond on the basic head blades. Then, looking at the two blades evenly, apply glue on the right-hand blade's surface down to the end of the ferrule taper. Let dry thoroughly overnight. After the first coat is dry, hold razor blade cutting edge in two fingers of the left hand, keeping the tip of the razor blade angling to the half of the blade toward the back. Press razor blade against dried glued surface of the basic head clamp. Blades will cure at room temperature in about one week, but an accelerated cure is to place clamped razor blades in a two-hundred-degree oven for one hour. Then place a small dab of Pliobond at the front of the razor blade end to prevent anything wedging under the blade when passing through the game. To remove old blades, wedge off with a small, thin-bladed knife, then scrape surface with a pocketknife or clean with acetone.

WITH INSERTS...

Removable inserts allow you to sharpen the head as a "flat" head, just like a knife blade; something that is impossible with any multiple-blade head with fixed blades. The insert is designed so that it does not hold up upon a hit involving tough bones, causing the head to cut the hide as a multiple blade so the hide opens for good external bleeding, yet having the head penetrate farther as a normal flat head which gives maximum possible penetration.

PROTECTING THE EDGE

Emergy Loissette recommends a wax coating to maintain the sharp edge on a broadhead and to protect the entire head from rust. Fill a can with water and drop in pieces cut from a cake of paraffin or candle stubs. Heat. Submerge broadhead mounted on its shaft and retrieve immediately. There's no need to remove the coating before shooting at game.

WHAT'S THE ROCKWELL C SCALE?

Metallurgists use the Rockwell C Scale to test steel hardness. The higher the reading on the scale, the harder the steel. If your broadhead has a comparatively low reading, you can probably sharpen it easily, but, at the same time, the tip of the head might curl easily on impact. An ideal hardness? Probably around 50C — hard enough to put a sharp edge on, but not so hard as to shatter on impact, as harder heads sometimes will do.

MOUNTING

Two or four-bladed heads should be mounted horizontally — main blade — to prevent planing from the archer's paradox, which is side-to-side snaking of the arrow upon release. Three-blade heads are usually mounted with the "V" up, or single blade down. This mounting is not so particularly important as the mounting of two or four-blade heads, but installation should be identical for all arrows in a set. A two-blade mounted vertically might fly accurately for an archer with an extremely consistent release.

SUGGESTED READING:

Back Issues — \$1.25 each from BOW & ARROW, Box HH, Capistrano Beach, California 92624.

- "Straight Flight Broadheads," Emery Loiselle, Tackle Tips, June 1973.
- "More On Broadhead Alignment," Emery Loiselle, Tackle Tips, December 1973.
- "The Subject Of Sharpness," Doug Kittredge, Hunting With Kittredge, April 1974.
- "How To Make A Paddle Sharpener," Steve Barde, April 1975.
- "Make Your Own Portable Broadhead Target," C.R. Learn, August 1975.
- "How To Build A Broadhead Wheel Sharpener," February 1976.
- "Broadhead Sharpness Test," Allen P. Bristow, August 1976.
- "Tune Out Broadhead Planing," Emery Loiselle, Tackle Tips, October 1976.
- "Hunting Arrow Tips," Emery Loiselle, Tackle Tips, December 1976.
- "Broadheads — How To Pick A Good One," Sam Fadala, October 1977.
- BOW & ARROW's Bowhunter's Annual No. 1 — \$1.50 each from BOW & ARROW, Box HH, Capistrano Beach, California 92624.
- "Broadheading The Proficiency Test Issue," by Jack Howard.

Books —

- "Archer's Bible," by Doug Kittredge; send fifty cents for postage and handling to Kittredge Bow Hut, P.O. Box 598, Mammoth Lakes, California 93546. See "How To Sharpen Broadheads."
- "Archer's Digest," edited by Jack Lewis; available for \$7.95 plus eighty cents postage and handling (California residents also add forty-eight cents sales tax) from Sportsman's Bookshop, Box HH, Capistrano Beach, California 92624. See "Rack 'Em Up."
- "The Bowhunter's Catalog," by Jack Howard; available for \$1 from Jack Howard, White Buck, Nevada City, California 95959. See "Aligning Broadhead Tips," "Broadhead Flight," and "Broadhead Sharpness."
- "Bowhunter's Digest," by C.R. Learn; available for \$6.95 plus seventy cents postage and handling (California residents also add forty-two cents sales tax) from Sportsman's Bookshop, Box HH, Capistrano Beach, California 92624. See "Tips On Arrow Points."

BROADHEAD SAFETY

- DO use care when sharpening or mounting broadheads.
- DO use a quiver; don't carry broadheads in your hand.
- DO use a quiver that covers the tips of the broadheads.
- DON'T carry the bow with a nocked arrow so that the broadhead switches back and forth a few inches from your leg.
- DO hold the bow so that the arrow points up and to your left or right if you absolutely must walk with an arrow nocked.
- DON'T climb up or down from a tree stand with your equipment. If you fall, a broken bone can be painful — but landing on a broadhead can be deadly.
- DO pull up or lower your gear from a tree stand with a string or rope.
- DON'T shoot a split, broken or cracked arrow or one that's too short — you could drive that broadhead right through your hand. For the same reason, don't shoot an arrow that's not stiff enough for the weight of the bow — the too-weak arrow could break.
- DON'T shoot an arrow (with a broadhead or not) into the air.
- DON'T just shoot at any movement. First make sure what caused the movement.

COLLECTORS:

If you're a broadhead collector or the hobby sounds interesting, contact Jim Ellis, Membership Chairman, The American Broadhead Collector's Club, 39 Highland Street, Paterson, New Jersey 07524.

Remove this page and file for future reference. Future issues will contain reference pages on other archery-related subjects. Start your Ready Reference File today.

WHO MAKES WHAT

(The following is a list of the manufacturers of most of the popular broadheads currently on the market.)

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> Bear Archery, Rural Route One, Grayling, Michigan 49738: Bear Razorhead. (See your dealer or order direct.) Bigame Products, 20551 Sunset, Detroit, Michigan 48234: Bigame Broadhead. (See your dealer or order direct.) Dynamic Sports Concepts, 1202 West Bancroft Street, Toledo, Ohio 43606: MBS. (See your dealer or order direct.) Geneva Sales Company, 28 South 8th Street, Geneva, Illinois 60134: Super Hillbre. (See your dealer.) Grampa, Specialty, 10801 Ridgcrest Drive, St. Ann, Missouri 63074: Missile Spike. (See your dealer.) Hertzer's Incorporated, Waseca, Minnesota 56093: Ram-MX; Razor Ram. (Order direct.) Hi-Precision Company, Orange City, Iowa 51041: Hi-Precision. (See your dealer.) Howard Hill Archery, Route 1, Box 1397, Hamilton, Montana 59840: Howard Hill Broadhead. (See your dealer or order direct.) Hunters International, 26422 Groesbeck Highway, Warren, Michigan 48089: The Slicer; The Magnum; The Ripper; Black Copperhead; Talon. (See your dealer or order direct.) Longbow Manufacturing Company, | <ul style="list-style-type: none"> Hamilton, Montana 59840: Hunter's Head. (See your dealer or order direct.) Make-All Tool and Die, 1924 South 74th, West Allis, Wisconsin 53214: MA-2; MA-3. (See your dealer.) Martin Archery, Route 5, Box 127, Walla Walla, Washington 99362: Eagle; Blue Strak 5; Bowlo. (See your dealer or order direct.) Midwestern Engineering and Manufacturing Company, 2737 Expressway, P.O. Box 444, Ypsilanti, Michigan 48197: Mark IV-4 Silencer Broadhead. (See your dealer or order direct.) Mohawk Archery Products, 228 Bridge Street, East Syracuse, New York 13057: Magnum I; Magnum II. (See your dealer or order direct.) New Archery Products Corporation, 370 North Delaplaine Road, Riverside, Illinois 60546: Razorbak 5. (See your dealer or order direct.) Nirk Archery Company, Potlatch, Idaho 83855: Ace High Speed; Ace Standard; Ace Express; Ace Super Express; Ace Rocket; Ace African; Ace Alaskan; Ace Jet 5; Ace Hunter. (See your dealer or order direct.) Ben Pearson Archery, P.O. Box 270, Tulsa, Oklahoma 74101: Ben Pearson Switchblade. (See your dealer or order direct.) Rancho Safari, Box 691, Ramona, Cali- | <ul style="list-style-type: none"> fornia 92065: CatClaw. (See your dealer or order direct.) Renson Sport Supply, 6307 Long Lake Road, Sterling Heights, Michigan 48037: Ex-Calibre. (See your dealer or order direct.) Robin Hood Archery, 215 Glenridge Avenue, Montclair, New Jersey 07042: Chisel Point. (See your dealer.) Savora Archery, Incorporated, 11039 118th Place NE, Kirkland, Washington 98033: Super "S". (See your dealer or order direct.) Sherwin Industries, P.O. Box 849, Port Richey, Florida 33568: Satellite. (See your dealer.) Utah Feathers, Box 396, Orem, Utah 84057: Spiral Killer. (See your dealer or order direct.) Wasp Archery Products, P.O. Box 760, Bristol, Connecticut 06010: Wasp Steel-Tipped Heads. (See your dealer or order direct.) L.C. Whiffin Company, Incorporated, 923 South 16th Street, Milwaukee, Wisconsin 53204: Bod-Kin. (See your dealer or order direct.) Zwickey Archery Company, 2571 East 12 Avenue, North St. Paul, Minnesota 55109: Black Diamond; Black Diamond Delta. (See your dealer or order direct.) |
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ART OF AIMING

Continued from page 70

that they can aim generally in the middle and it will be good enough. Of course this is only generally successful. Consider the shot that is made so as to result in the arrow hitting dead center at say sixty yards. Now that shot could have varied a few inches in any direction (360 degrees) and still have been a good shot, assuming the point of variation is centered in the middle of the target. This allows the shooter who is aiming, with intentions of hitting the dead center of his target, a small margin of error in any direction. On the other hand, the shooter who just shoots generally for the middle does not enjoy the same margin of error.

Another way of looking at this situation is by considering the shot as it leaves the bow. Again assume the target is sixty yards away. In order for the arrow to travel



Author shows the string-walking technique of shooting — it's usually used by barebow archers to reduce the gap in the sight picture.

from the shooter to the dead center of the target it must travel along a very exacting course. The slightest variation of that course in the beginning will result in significant differences once the arrow reaches the target. For example, a slight movement of the bow arm upon release may cause the arrow to miss considerably once it travels sixty yards to the target. The margin of error, therefore, is more advantageous if on that same shot the archer was aiming slightly but because he was aimed well his arrow may still have hit close to the center. If his aim was a little off, it would add to the degree of miss already caused by the error in his bow arm. How often, for example, have you made a poor shot and even before the arrow reached the target said to yourself, "There's a miss for sure"? After looking to see where the arrow hit the target you were surprised to find it went in the middle in spite of the error in your form. Very often this kind of situation is due to good aiming that counteracts the error in form and saves the shot from missing badly. The point is that your arrow must first be aimed well in order to score well and if it is aimed well you will increase the margin of error with which you have to work around.

Learn to aim with the goal of shooting for the middle of the middle and don't be satisfied with arrows that hit close to the center. Always push yourself for excellence because it is this type of drive that lends itself to self-improvement. It is the essence of competition to improve. Thirty years ago, who would have dreamed of running a mile under four minutes? And yet today it is commonplace. Competition brings out that extra effort to excel and to better what was considered the best. If you develop this kind of attitude toward your aiming you will improve and that is certain. Remember, there are no shortcuts to successful aiming and each shot requires the same degree of applied mental effort.

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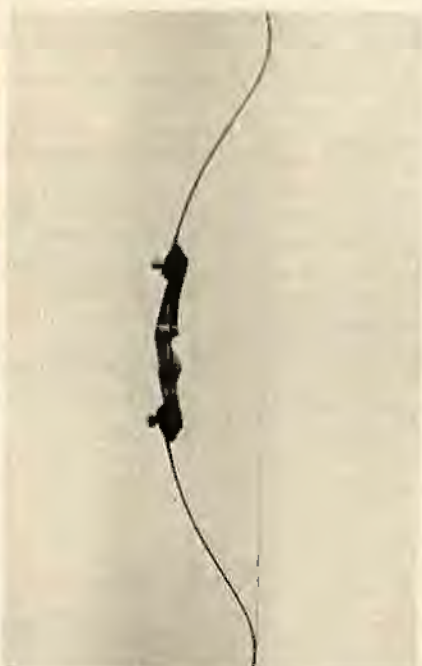
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Continued on page 77



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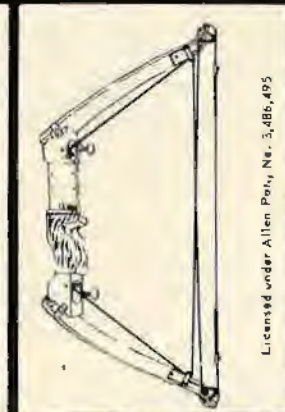
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Telephone 816 647-3125

Patent No. 2988300

KITTRIDGE

Continued from page 51

- ½ teaspoon coarse black pepper
- ½ tablespoon parsley (dry or fresh)
- ½ tablespoon Dijon-type mustard
- 1 clove garlic, crushed
- ¼ cup olive or cooking oil
- 2½ tablespoons heavy whipping cream
- 2 tablespoons wine vinegar

Mix all of the above together, starting with the egg and adding one ingredient at a time until well mixed before adding in the next. Serve on your favorite salad greens.

BEER STEW — Any mixture dish like this is great in camp, because you can make it up the day before, during your noon break or after dinner, holding it over to warm up when you come in late the next day.

Cooking oil

- 2½ pounds of any red meat (beef, elk, deer, etc.) cut into 1-inch cubes
- 3 cups beef stock, bouillon, canned or cubes
- 3 onions, cut into coarse pieces
- 2 tablespoons wine vinegar
- 1 cup stale beer (freshly opened will work if that's all there is)
- 1 teaspoon sugar
- 1 stalk celery
- 1 bay leaf
- 1 stalk parsley or 1½ teaspoons dried
- ¼ teaspoon thyme
- Salt and pepper to taste

Brown the meat in your Dutch oven using enough oil to prevent burning. As the meat begins to brown well, add the onions, lowering the heat so they saute until just tender. Drain off any excess oil. Season with salt and pepper. Add vinegar, beer and beef stock. Bring to a simmer, adding the celery, bay leaf, parsley and thyme. Cover and simmer two hours or until done. Fresh or canned mushrooms can be added one-half hour before cooking is finished.

STEAK AND MUSHROOMS — No camp cookery technique is complete without being able to handle a thick steak in a hot Dutch oven. I like to buy some top sirloin 1½ inches thick, allowing a pound a hunter.

- 4 - 6 steaks
- ½ pound fresh mushrooms, cleaned
- 1 clove garlic, minced
- ¼ onion, finely chopped
- 1/8 pound butter (½ stick)
- ½ tablespoon soy sauce
- ¼ cup red wine
- Salt, pepper, flour to taste

Put your Dutch oven directly over the fire, resting on the logs, or shovel out a heap of hot coals and rest it on them. Get the oven sizzling hot. Sprinkle in a teaspoon or so of salt. Pop in the steaks, cooking the first side six minutes and the second four minutes for rare, adjusting times according to how you like your meat. Meanwhile, prepare the mushroom sauce in a separate pan, melting the butter, adding the garlic and the onions. Saute until just starting to tender, two to three minutes. Then add mushrooms and simmer for five minutes. Now add ¼ cup of red wine, ½ tablespoon soy sauce and a little salt and pepper. Simmer fifteen minutes, thickening just before serving with a little flour mixed in a little cold water.

MARINATED MOUNTAIN BEANS — And to top it all off, one should never be without a big bowl full of flavorful red kidney beans to munch on during lunch or while dinner cooks.

- 1 eight-ounce can of red kidney beans, drained
- 2 cloves of garlic, minced
- ¼ onion, minced or sliced in thin rings
- 2 tablespoons lemon juice
- 1 tablespoon wine vinegar
- 1 tablespoon olive or cooking oil

Simply combine these ingredients and let marinate a few hours before munching. ←

BOW BITS

Continued from page 75



IT'S STRONGER

Hunters International Manufacturing Corporation, manufacturer of the Fur-Long Stainless Steel Arrow, announces a twenty-five percent increase in hardness and durability through a technical breakthrough. All Fur-Long Stainless Steel Arrows sold are covered by Hunters with a lifetime unconditional replacement guarantee against kinking, cracking or breaking. Fur-Long adjustable snap-on aluminum

Continued on page 78

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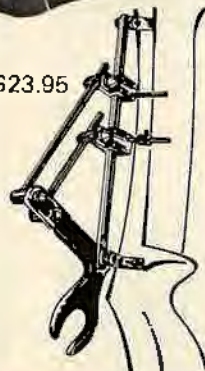
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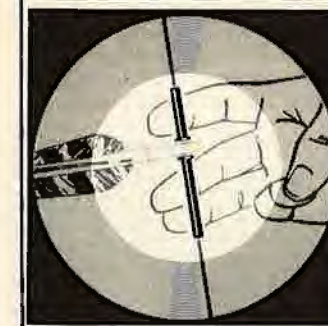
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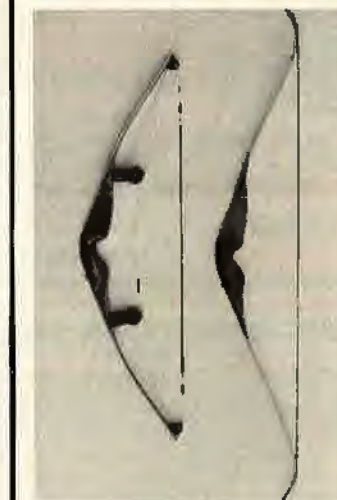
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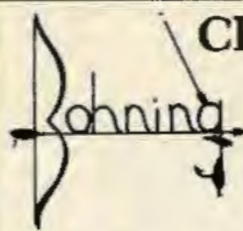
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BOW BITS

Continued from page 77

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Continued on page 80

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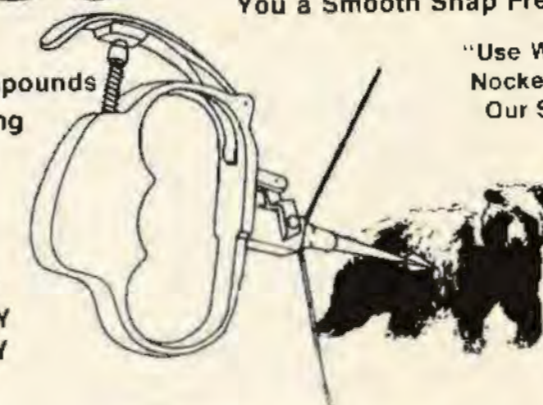


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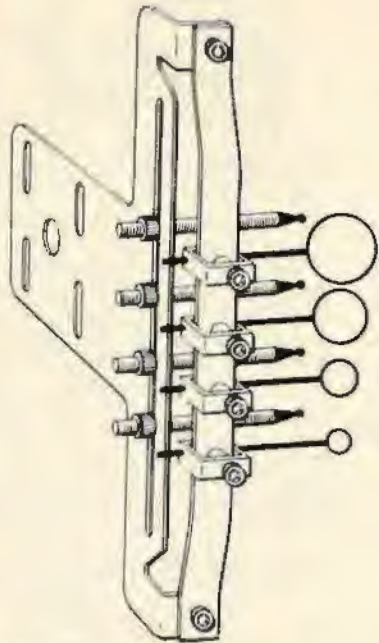
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BOW BITS
 Continued from page 79



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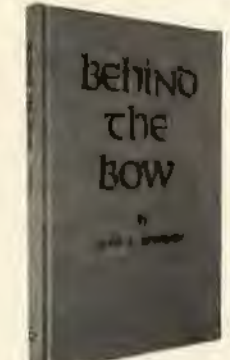
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Peterson is a member of the NFAA Professional Division, a certified instructor and a regular contributor of training and practice articles to BOW & ARROW Magazine. Trainer of four archery champions, his successful teaching method, detailed in the book, stresses that mental discipline is just as important a factor as equipment and form in reaching proficiency as an archer.

Chapter by chapter, his book delves into the total archery spectrum, beginning with selecting and tuning equipment, continuing with form and the five major parts of the shot sequence and ending with the mental aspects of archery and a special chapter on compound bows.

The book includes over eighty photos and charts and a complete glossary of archery terms. In his introduction Freddie Troncoso says: "I sincerely believe this work to be one of the most recent and up-to-date informative books on archery and mental control of our time." — JLF

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