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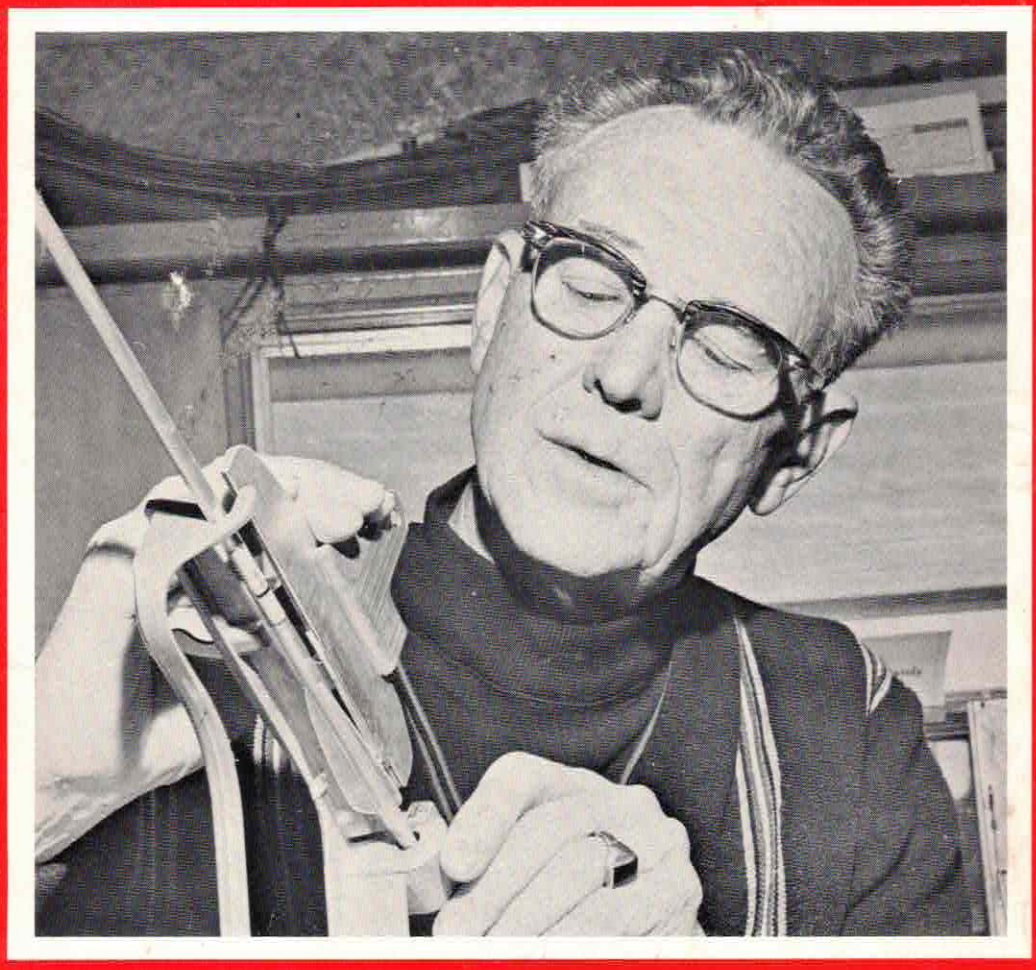
Plastifacts



by Max Hamilton

All of the best articles written by Max over the years compiled into a handy reference book.

Many illustrations showing modern bow tuning, interesting stories, and techniques. A lifetime of archery study condensed for your convenience.

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THE ORIGIN OF PLASTIFLETCH

IT ALL BEGAN several years ago in Phoenix. My arrows would not group. At first I was using wooden arrows with large feathers. By constant shooting I became acquainted with the arrows and learned where each would strike. Arrow number three would shoot low, number seven, high right, and so on. By making allowances for these vagaries, and holding accordingly, my scores shot upward, and once at 60 yards I made a 6-gold. I still have the faded photo.

Later, with aluminum arrows and practicing 4 to 6 hours a day, the groups improved. But still, each arrow would strike within a certain area on the target, and they had to be "clocked" every couple of days to learn where they were shooting. By reflecthing the arrows, the grouping characteristics were changed completely. Also by selection from many arrows, I assumed that a dozen could be picked out that would group within the capabilities of my shooting. Indeed, this is what the National champions were doing at that time. The shooting was at 60 yards and no conclusions were drawn until each arrow was shot a dozen times, and its points of impact recorded. I still think that arrows should be numbered to identify any that seem to go astray. Trimming the feathers down improved the grouping, but after a while the dispersion was again in evidence. This was apparently due to fraying and fuzzing. I learned that two arrows with seemingly identical feathers would not necessarily group in the same area at 60 yards. Since aluminum shafts were perfect in every respect, it had to be the fletching, and I reasoned that the feathers, subjected to the extreme wind pressure of flight, were folded down on the shaft to a certain extent, causing a slight pucker, and that no two feathers puckered the same.

The first experiment with synthetics was the employment of one celluloid vane – the cock vane, imbedded in cement. The arrows seemed to fly well but looked unbalanced. Then the inside feather was changed to celluloid. The top vane did not strike the bow, which surprised me greatly, because at that time I had never heard of the archer's paradox, whereby the arrow snakes around the bow, and the nock end kicks out. This clearance discovery led to the introduction of Plastifletch, although I later learned that experiments had previously been conducted with celluloid vanes, and that flight shooters had been using them for years. At first we recommended that Plastifletch be used with one feather – the lower one – so that it could ride over the shelf without disturbing the arrow flight. But this was not commercially successful because the arrow seemed unbalanced, and often the feather took more of a spiral set than the vanes. One day three vanes were tried. To my amazement the arrow flew perfectly, and the lower vane cleared a ⅛ inch arrow rest. I was very excited about this because my arrows hit higher on the target, and no amount of clocking would reveal any grouping tendencies of individual arrows, nor have I since been able to distinguish any stray grouping tendencies of individual arrows, unless a vane was visibly damaged. (Assuming the arrows were perfectly straight and the nocks in good alignment with the shaft.) In other words, the arrows were better than I was. That year at the National in Los Angeles, we placed 1st, 2nd and 3rd in Men's clout, using Plastifletch. Next year at Jackson, Michigan, Bob Larsen won the National Championship and I placed 2nd. In clout it was 1st and 2nd also. Vanes began to get attention. I shot with left twist to the bow handle and assumed that everyone did. Then the special arrow rests came on the market, the first of which was by Larry Walsh. No longer was it necessary to twist the bow to the left to throw the arrow clear of a wide shelf.

Now virtually all the men's national and international target records have been set with Plastifletch as well as most of the records in the ladies' division. Last year, Caspers, Kadlec, Neely and Rhode won the World shoot in that order. All used Plastifletch.

Despite the fact that vanes are more vulnerable to damage than feathers, many archers are using Plastifletch for field. Actually, there is little difference in damage, but feathers are so much trouble to change that few people do. Unfortunately, few archers realize the points it costs them to use damaged feathers on the longer shots. Caspers shot a 506 field round at Bend, Oregon using 3 vanes, 2⅝" length. An objection to vanes for field has been that they are more difficult to see than feathers. This is true, and we have been experimenting with flourescent paints. One such spray, made by Krylon, Inc. (Norristown, Pa.) will make the vanes glow like a Christmas tree, but thus far, we have had little success in making it hold to the smooth plastic.

No one should enter a field shoot without a full dozen arrows, a fletching jig, and extra vanes. A vane can be replaced in about a minute and an arrow entirely refletched in 5 minutes. A chip out of a vane makes little or no difference, but one that has been knocked loose at the base so that it can be wiggled out of line, will make the arrow cut up. Also, if the angle of spiral is not the same for all three vanes, the arrow will not fly well.

Even the beginner may start with vanes, but he must know how to use them. Virtually every member of our club in Flagstaff, Arizona, uses Plastifletch for every phase of archery, from indoors to hunting. Of course, they understand how to use vanes. The arrows must be carefully matched to the bow, and the handle MUST NOT be twisted in drawing. Either will cause vanes to slap the bow, especially if the twist is to the right, that is, in the direction of moving the string away from the bow arm. Also, the proper nocking point and fistmele must be found and NOT varied thereafter. And, of course the special arrow rest is a MUST.

After a certain degree of skill is attained, many archers find that they are unable to make further improvement. This can be the fletching. Or it can be shafts that are kinked. Somewhere in an archer's climb up the ladder of progress – as he gets better, his arrows may get worse, until he reaches the point where it may not be possible to shoot any better. There is only one way to learn if your ability has exceeded your arrows. *Number them and clock them at 60 yards.* At 180 yards, the clout distance, the errors will show up in feet instead of inches, but it requires more walking. Therefore, the fletching and shafts must be kept more perfect, according to ability. At every tournament, you will see all kinds of fine, expensive bows. From these beautiful bows many archers will shoot arrows that are shockingly disreputable. Accept the arrows of those who win. Notice this.

The most frequent question concerning Plastifletch is adhesion. New arrows, either glass or aluminum, should be washed with detergent before fletching the first time. Sand and fletch. After that, clean sanding has been quite satisfactory, but don't be stingy with the cement. Robin Hood's F.N.W., Easton's 24SRTX and Pliobond, have been excellent, and there are others that I have not tried. Pliobond, although it sticks to anything, dries a brown color and sets slowly where humidity is high.

Perhaps the biggest advantage of Plastifletch – one that is difficult to measure – but recognized by all top archers, is the reduction of wind drift. Last year at Stockholm, with a strong side wind, Jim Caspers set a new world record at 90 meters! He set another at 30.

The flatter flight and reduction of drift is a marked advantage in field, as the penalty of a misjudged miss is less.

If vanes are used indoors, such as at 20 yards, each archer should have his own target, as at the Ben Pearson Open. The cost of faces might be few cents more per night, but much less damage is possible to the vanes – as well as to the nocks and to the shafts themselves. We have been unable to tell any difference in the dispersion of vanes and good feathers, up to about 40 yards, except when a side or head wind is prevalent. The dispersion can, of course, be reduced by a stronger bow. Indoor tests are almost worthless in determining arrow dispersion because the arrow strikes before the fletching and the wind have had time to affect it.

The trend of Plastifletch users seems to be toward 3 vanes, with a helical spiral. The theory here is that the wind pressure does not spill off the smooth surface of the vanes so much, and that a better "bite" is secured as the arrow bores in. This steady pressure keeps the arrow from "loping."

Shooting machines have long since proved what we discovered in Phoenix, but the World's greatest archers are themselves "shooting machines," and to consider their fantastic scores, is to be convinced. Now, as better technical knowledge is shared by all, it becomes apparent that those who win, are those who have an advantage in their tackle.

It would be enlightening to see more articles by those top archers, to be able to share their findings and their theories. Perhaps many of them fear of stepping on someone's toes, and are reluctant to state their frank opinions.

There is no doubt but that better accuracy is enjoyed by all today. This results in less wounded deer, better scores, and gladdening of the hearts of all who shoot the bow and arrow. We hope that Plastifletch has been in some measure, a help.

Northern Arrowzona

By Max Hamilton

The main reason for this article is to reveal a method of deer hunting that has worked very well for me here in the Southwest. Under certain conditions it nearly always gets me a shot at deer that otherwise I would not have had. I prefer to hunt with one or two other hunters, and we spread out about a hundred yards apart, or just so we can see each other through the trees. We move along upwind as quietly as possible and, of course, the deer nearly always see us first and spook out ahead, dancing through the cedars with a glimpse of legs or antlers, as they bound away. Then, instead of trying to sneak up on them for a shot unobserved, which is next to impossible, I light out after them as hard as I can go, taking a short cut, if possible. At a hundred yards or so, I stop dead still and listen. Above my heart pounding I will hear the deer or see them, and usually much closer than you would expect. About here they always seem to stop to look back, listen, and try to get the scent of whatever it was that spooked them. They may turn around and curiously peer through the bushes for a final look-see. Then is when the best opportunity for a shot presents itself. The deer may have spotted one of the other hunters and leave himself wide open to someone that is much closer.

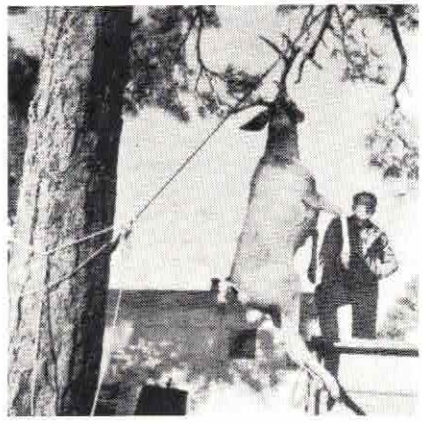
That is exactly what happened to the nice buck shown here. Tom Weems of Flagstaff and I were poking along through some cedar country west of Flag. I had just returned from bowhunting in Oregon, and had missed the pre-season near the Grand Canyon for bowhunters, so—and this I hate to tell you—in self defense we had donned our red caps and were hunting like the other half hunts, with rifles. As it turned out, however, the shot would not have been too bad with the bow, as it was only about 60 yards, and in the clear. I could be reasonably certain of getting a buck every year with a rifle, but I don't get my jollies out of that kind of hunting.

Anyway, we were poking along upwind through fairly thick cedars. We always hunt the cedar flats because by the time the hunting season opens, most of the deer have left the pine timber, and have moved down to the lower elevations where they feed on cliffrose, cedar (juniper), chaparral, and other browse. It seems that they take off fairly early for the low country, especially the bucks. Once in late August, on the Lake Mary Road I counted thirteen he deer as they crossed the highway, moving downhill toward the cedars. Another time in September I saw seven huge bucks crossing a small cultivated valley South of the lofty San Francisco peaks. They were leaving the spruce and aspens — some of the most beautiful country you can imagine—and were heading for the relatively colorless lower country. Rather than go around the fields, they were clearing the farmer's fences without breaking their stride. I watched the magnificent animals until they disappeared into the timber far across the last pasture. I believe all these deer were starting their Fall migration.

Tom and I were in a heck of a good place and we knew it. Fresh sign was everywhere, and we had already seen a herd of a dozen does. All at once from somewhere came five big bucks. They had come from my left and were angling across in front of me to the right. Before I could shoot they were out of sight, but seeing their direction I took off right after them, and excited by all the antlers, I ran like a scared rabbit for perhaps a hundred yards. I had only heard them kick over a rock occasionally, and had not seen them anymore at all, but no sooner had I stopped than this big buck stepped out in a clearing only sixty yards away. He apparently thought I was still where he left me. Well, the shot was simple, nothing to brag about, but I was elated at the beautiful specimen that he was. Tommy walked up a minute later. Poker faced as a commode salesman, I told him I had shot a nice doe!

If I had tried to cautiously approach those deer after they were once jumped, I would never have seen them again. They would have had time to see me, hear me, or to have scented me, and would have vanished, but somehow the noise of your running does not disturb them too much. Maybe they are making too much racket themselves to notice, and of course, they don't get the man scent going into the wind. If they did, they really would leave the country. So that only leaves vision, and if they don't see you pretty good they may think you are one of them. Now, in open country, where the deer can see you running it won't work, obviously. But scattered glimpses do not seem to bother them. I usually wear tennis shoes and run as quietly as possible. Many times I have jumped a muley near the top of a ridge, whereupon he disappears over the crest. I take off here again with all speed, and don't stop until just before I peer over the top. Often he will be standing somewhere below within arrow range, sometimes feeding unconcernedly.

One thing I never do is hunt deer where they are not. Not if I can help it. If deer are around they've got to leave sign, and I do not kid myself into getting enthused over a month old track even if it is as big as a Jersey bull's. By now he may be miles away. So if I do not see fresh sign soon—the heck with it. I go to the pickup and drive several miles maybe, to try another promising looking place. Too many



A splendid specimen. Note the deep chest and well rounded haunches. Born here, my hunting podner, Tommy Weems, knows the country like a book.

times in this part of the country the hunter will be influenced by the fact that he has repeatedly seen deer at a certain place, perhaps near a water hole. All Summer they have been there. "Could have hit 'em with my fishing rod." But when the season opens they may have been gone a month. Where deer are fairly abundant in the stands of Ponderosa pine in Summer, it is one of the poorest bets in Fall and Winter because of the scarcity of feed and low cover. There is very little vegetation to be found on a carpet of pine needles.

One of the photos shows Gretchen Baby cautiously sniffing the buck. G. B. is the world's most "got it made" dog. She will run a chipmunk under a 10-ton boulder and then sit up and beg me to lift the rock for her. But she is an excellent

hunter, and will trail, find, and retrieve a wounded dessert quail, dove or pheasant. But a wounded pheasant gives her quite a tussle. Like the time I told her to chase our big old "dominecker" rooster out of the sweet peas. She got him by the tail feathers, and even with her brakes set, Mr. Rooster pulled her all over the back yard. She will also trail deer and antelope like mad, and it is really comical to see how they kick in the overdrive with that tiny little dog in hot, but futile, pursuit. But you dassen't hunt deer in Arizona with dogs. To us, Gretchen Baby is people, but a game warden wouldn't see it that way, and if he pointed out the similarity to a dog, we would both be offended.

A few years ago, up in the Kiabab forest, we were trailing a wounded deer. The arrow had struck too far back and the blood trail, after being at first plainly visible, had petered out until only a small speck would be found here and there. On hands and knees we followed until it went across a carpet of loose pine needles and that did it. We eventually had to give up. I have often wondered, if we had had G. B. back in the car, and would have been allowed to let her trail the deer on a leash—if we would have lost the deer.

I like a 55 lb. bow for hunting. A lighter bow will kill a deer easy enough (the Everlovin' shot clean through one in the Kiabab with a 30 some-odd lb. bow), but I like the flat trajectory the extra power gives. Of course, I'm a crank on trajectory anyway, and I even use "plastic feathers" for more speed. The turkeys around here have plastic feathers and I use 4, four inches long. In fact, since Jim Waterman introduced 4 fletch I wouldn't use anything else, unless it would be a combination of vanes and feathers.

I like all kinds of archery. I have shot target for years, and for this reason I have better luck using a fixed pin sight for hunting. Purely instinctive, or where the arrow point is used as reference is very difficult for me. I could learn it in time, but I use a pin, set for about 40 yards and go from there, holding over or under according to the distance. If I'm lucky enough to get two shots I know almost exactly where to hold for the second shot.

The best hunting in years is expected this year in Arizona. A drought of about ten years' duration seems finally broken. The lakes are all full and the desert is green for a change. Deer will stay in the mountains longer as there should be a good crop of acorns, and much leafy growth on the scrub oaks and aspen. I suppose the Moqui district on the South rim of the Grand Canyon will be open to bowhunters again this year. Tommy said he saw lots of deer there last year, and had several opportunities for a doe. I understand that the hunters had plenty of shots, but very few close ones. This seems typical here, and the average shot in the Kiabab, if I remember correctly, was about 50 yards. This was on deer killed, not shot at. The National average is about half that distance. Here also it is taken on the deer that were hit, and not those that were missed. I wonder what all shots would average? Naturally, the closer shots scored more kills.

Yesterday, April 4, 1957, we went to Kinnikinick Lake, trout fishing, the results of which are shown. Five minutes down the road, a big golden eagle flew up from a doe a car had killed. We knew why the eagle was so bold, she had a young one to support. A few days before, we had unexpectedly discovered the nest high in a tall pine tree far up the side of the mountain. We were attracted to it by the loud chicken-like cries of the young at feeding time. By climbing higher up the mountain, we were able to look down into the nest and closely observe the eaglet. As big as a half grown chicken, he still was covered with snow-white down. Three miles farther on, five deer grazed peacefully and completely ignored us until I backed the car up and shouted at them. Beyond Mormon Lake, when we topped out on the mesa, six antelopes gave us a race. Three were exceptionally nice bucks. Why do they always run alongside, then cross over the road in front of you? To make you think they could run circles around you? The road was too rough for me to make much of a race out of it, but I did my best. Antelope are odd characters. When they put those 8x eyeballs on you, you have really been ogled. Yet sometimes they act plumb dumb, chum, and by sitting perfectly still I have had them walk up within easy arrow range to see what manner of varmint I was. I hope I get a permit this year, I will try to get one with the bow. They are wonderful eating, no trace of a gamey flavor, though I prefer elk to anything for top table vittles.

These are the things I love. When civilization moves the wild life farther back, I'll take my arrows and bow and move back with it. After fourteen years of living in Phoenix, we have moved to Lake Mary, 8 miles Southeast of Flagstaff. Here the nights are so quiet that your ears ring. Except that rarely a coyote may sound off far across the lake. Or a skunk may raid the garbage can. Last Summer, one visited us so often that we came to know him, and because he was always so intent on getting into the treasure chest of scraps, he never did "leave go" around the place. So we named him Petunia. He was sort of a character, and many times while shining the light on him through the window, he would unconcernedly go about his feeding, completely oblivious to Gretchen Baby's frenzied barking. Poor Petunia! One night a neighbor remorselessly shot him while he was innocently polishing off some blue gill bones.

And so, here is peace and contentment far from the maddening crowds and the traffic's roar, and when the Phoenix city limits extends to the Grand Canyon (the way it's growing, it might), I hope that I'll be able to move just a little farther where, in Summer, I can wander through the forest, reading tracks, hunting bee trees, and scouting out new hunting territory. And in Autumn when the cool mountain air carries the spicy scent of pine and cedar, that I can live it up in the pursuit of that big buck that's always just three jumps ahead.

Max and Jewel Hamilton of Flagstaff, Arizona.

SO YOU CAN'T GET GOOD ARROW FLIGHT?

By MAX HAMILTON

"I can't shoot vanes." How many times have I heard this! And I always smile, because I know that anyone can shoot vanes—even beginners.

Usually it is some little simple thing, such as the nocks fitting the string too tightly, the pressure plate out too far, or an unyielding arrow shelf.

Many archers try everytning except reading the instructions. (When all else fails, read the information sheet.)

Formerly, twisting the bow was the principle fault, but since most archers now use a loose grip, this is decreasing rapidly.

Since all archers are using better form, it seems the equipment is mostly at fault. At the top of the list are the bows themselves. Some are not center shot enough to allow an arrow to come out straight, horizontally.

Regardless of the kind, or size of fletching used, it is *impossible* to get maximum accuracy and velocity from an arrow that does not come out of the bow straight. Correct this and you will gain as much as 4 or 5 yards on your sight readings. You can see your arrow flight best when shooting from a distance of about 25 yards and shooting in the direction of the prevailing light.

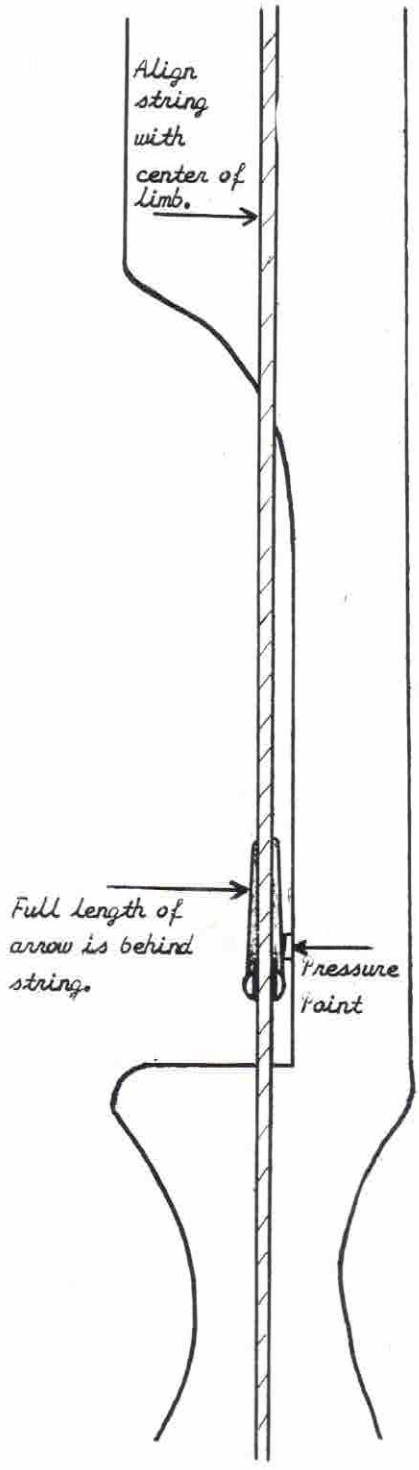
Tom Jennings of California recently published an article on center shot bows that exactly reflected our experiences over the years. We have found, as did Mr. Jennings, that the best flight was obtained when the arrow, in nocked position, pointed in a plane that was dead center of the upper limb. Let me explain: Take your bow, nock an arrow on the string in shooting position and stand the bow up so you can step back and observe it carefully. Shutting one eye, line the string up with the center of the upper limb. Now look down at your arrow. Does the string split the arrow from nock to point? It should, or come mighty close. If the front end of the shaft, or at least part of it, is not hidden by the string, your arrow will not come out of the bow straight enough to shoot vanes successfully. There are rare exceptions to this rule, but all the better archers in this area split the arrow almost equally with the string.

If the front end of the shaft falls to the left of the string the pressure point must be moved in to the right. Too often it is already in as far as it will go. A few years ago we had to take a wood rasp to every bow we bought. I'm sure this brought tears to the eyes of the bowyers, but we got to where we could make a pretty neat job of it. Fortunately, this has not been necessary in recent years with the bows we now use.

Why can't you shoot vanes? The reasons, in order of occurrence I would rate as follows:

1. Bow not enough center shot.
2. Nocks fitting string too tightly. The arrow must fit the string loosely. A tight nock will jerk the arrow loose from the string at the instant the shaft is bending around the bow. This may jerk the fletching in against the bow.
3. Using an unyielding arrow rest. It is imperative that the shelf the arrow lays upon should yield to the pressure of the vane when the arrow passes the bow. If it does not have a delicate action, the arrow may be deflected and fly with a horizontal wobble (yaw)
4. Nocking too high or too low on string.
5. Torquing the bow.

It is most unfortunate that many archers blame the release for not being able to shoot vanes. This is the very last factor to consider. When the tackle is set up properly, it is nearly impossible to make the arrows fly poorly. We have experimented with about every kind of release imaginable—one finger, two finger, three or four, it made no difference. If you pluck the string you may get a little wobble, but otherwise don't work on a problem that does not exist. Keep tension in the back muscles and let the release take care of itself.



Remember that no matter what kind of fletching you are using, observing the above will improve your score.

(all references are to right hand shooting and target arrows, not hunting tackle)

THE DOOM

The number one cause of drop-outs in archery just has to be target panic.

Call it what you may; gold fever, freezing, inability to aim, or as they refer to it in England—"the doom".

Those who have had it know only too well what it is, and let those who have not be constantly aware of its potential danger.

Thousands of archers are ruined every year before they have even shot their first major tournament. Eager to test their accuracy, they begin shooting for score far too soon. With muscles overtaxed, trying to keep the arrow on the rest, and trying to remember a dozen things at once—this is the beginning of the end. Cramped and straining, they let the arrow go the instant the sight—or the gap—is anywhere near the mark.

There is no worse way to start.

Eventually they may build up their muscles and be able to hold steady, but the impulse to release will stay with them the rest of their life.

They have done themselves irreparable damage the first few days of practice.

How can this be avoided? It's simple, but it takes patience. You are trying to learn too many things at once. Keeping the arrow from falling off the shelf is difficult enough. Then there is the finding of the same anchor point, the uniformity of draw, the alignment of string to the bow, learning to use the back muscles, and perhaps the most important part of all, learning to aim.

So put a temporary sight on the bow, or if you plan to shoot instinctively, use the arrow point for aiming and, DON'T SHOOT AN ARROW FOR THE FIRST TWO WEEKS! You have enough to think about without shooting, so come to full draw, find the anchor, draw length, etc., and aim until you begin to shake badly, then let down. Rest a minute or so and repeat. Monotonous, boring, YES!, but stick with it.

In two weeks you will have control of the bow and it will not be shooting you. The very foundation of your future in archery is laid in the first few days of learning. Don't destroy it.

When you see someone flinch and yet not release, compliment him. Knowing he was not on the mark he had the will power to hang on!

Let me give you a tip on how to really check an archer's ability. Like a doctor feels a pulse, it gives an insight into his basic technique and may reveal a flaw that he himself may not tell you, or may not know.

When he comes to full draw, sight across his arrow point on a stationary object so you can detect every little movement. It may go like this: The bow may move about aimlessly for a second or two while he checks his draw, checks the string pattern, etc. Then it may become dead still. Now we assume he is on the spot. If he holds this for a full 2 or 3 seconds, and releases without creeping forward he has executed a beautiful shot. If he does this repeatedly, he should be shooting top scores and if his scores are not tops, his tackle is probably at fault. This is the only way to shoot, yet not one archer in 20 does it. Just the champions.

If on the other hand he comes to full draw and starts moving down into the spot, never stops at all and lets go—he has the doom!

The doom—I like that expression—is caused by the impulse to release the instant you are on the target, and of course, you are playing with fire because you will start releasing just before you get on.

It seems that rythm shooters are the most likely candidates for "the doom". After aiming for a second or two the urge to release becomes overpowering. If it is possible to hold past this critical period, the urge is reduced and the archer can go on with the business of aiming. He is then less likely to be triggered off by the sight going across the spot.

When your sight first touches the spot, instead of releasing, go back and check your draw, or your string alignment. Anything to delay the first impulse to release. Then when you go back to the sight the panic has been reduced, the rythm has been broken and the final aim can be made in a more relaxed manner. This throws your "timing" off and you will shoot worse for a while. But you should not have any "timing". Ninety per cent of the archers are overbowed or "undermuscled."

When this delay is employed there is a noticeable tendency to lose tension after you pass the first panic impulse. Regain it by a steady pull into the anchor using the back muscles, and at the same time have the feeling of pushing the bow arm slightly toward the target. This gives you a beautiful follow through.

I have noticed that those I know who shoot with both eyes open have never had aiming problems. I don't know if this is a coincidence or not. I intend to study this further.

Think on every arrow.

Never allow an arrow to be shot automatically or with the mind on something else.

While aiming ask yourself repeatedly, "Where is that sight?" "Now where is it?"

Truthfully, where was it when you let go and how long was it there?

"Know thyself". Come out of that trance and take an impartial look at your aiming technique.

I believe that the bow arm should never be lowered slowly into the target. Nor move into it from below. I have seen far more archers freezing from this method than any other. When you have come to full draw, place the sight on the spot **immediately. Then** check your string alignment, draw length, anchor, etc. But don't sneak into it from any one certain direction.

As already pointed out, the best solution to freezing is to avoid it from the very beginning. But how about the thousands who already have it? We are losing far too many archers from this. I had the "damned doom" from 1954 to 1962 and tried everything on earth to whip it. Nothing worked.

Rather than give up archery I went left handed. This is virtually beginning all over again with one exception. You know how to shoot. You should know what to avoid and what to strive for.

How long does it take to get back to where you were before? This varies with the individual, but let me say that in one year I was shooting better than I ever had before. I won the Southwest Regional at Denver after one year of switching over. So when I think of the eight years I wasted, it makes me a little sick! Jack Claridge of Phoenix exceeded his right handed shooting in six months. He won the S.W. this year.

My wife, Julie, won the National Field amateur division last year at Lake Arrowhead. She switched over a year before I did. There are four archers in this area who have switched.

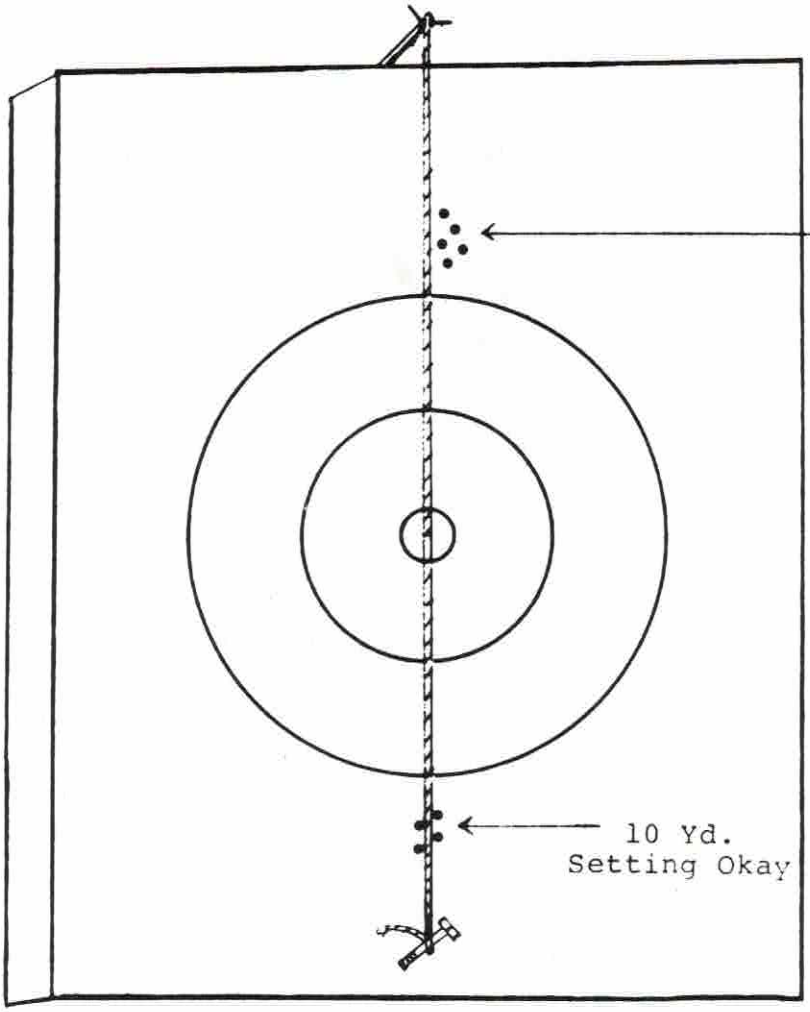
Oddly enough, about half of those who have "the doom" will not admit, even to themselves, that they have lost the ability to aim. Or else they claim it is no problem.

If you have the doom and honestly can not aim, I urge you not to fool with it and waste the years that I did, but to switch over immediately. Don't kid yourself into thinking you can whip it. The odds are 99 to 1 that you never will. And don't switch back and forth.

Get rid of your hight handed bow, get your new muscles in shape and really enjoy shooting again!!

SIMPLE CHECK FOR SIGHT ALIGNMENT
By Max Hamilton

If it is necessary for you to move your sight in and out for long and short shots your sight bar is not in alignment for your individual shooting.



For a simple way to check this, suspend a weight in front of the target as shown, and standing 5 yards from the target, and using your 10 yard setting, shoot at the lower part of the string. Adjust sight windage until you are hitting the string, or at least grouping neither left nor right.

Then set your sight on 80 yards and standing in the same place shoot 5 or 6 arrows at the string aiming low so you don't shoot over the butt. You should hit about a foot and a half higher than the first group when using the same low aiming point.

Now, for example, if the center of your last group averages an inch to the right, move the top of the sight bar to the right until you are hitting the string regularly. You should now be lined up for all distances.

Not only does this method save a lot of walking, but it eliminates the wind drift factor. Also it can be used in your back yard when setting up a new bow.

Remember, however, that the error will be very small at 5 yards, and even if your group on the 80 setting is only ½" off line, your error would be sixteen times this at an actual 80 yards or 8 inches off.

THIS EXPERT OFFERS TIPS ON HOW TO IMPROVE NOT ONLY YOUR SCORE, BUT YOUR SHOOTING!

By Max Hamilton

"SET UP" is a term which Jack Sauls, the old pro from down Florida way, uses in reference to the preparation of archery tackle to achieve top potential. This includes finding the proper nocking point, the best fistmele and the right build out at the arrow plate.

Some bow manufacturers now are making a built-in adjustable arrow plate that simplifies this problem — a factor that in far too many cases has been ignored.

Most of us would like to see the day when all tournaments are won purely on individual ability, with the tackle so completely foolproof that all archers have the same chance to win. The situation is far from that state now, but progress is being made each day in that direction. That day can be hastened by learning more about the mechanics of shooting the bow and by taking advice from those definitely qualified to offer it. The best archers are not necessarily the best coaches, and you must be your own judge. There are many club champions, endowed with tremendous natural ability, who do not actually know why they shoot well.

Those clubs with a good coach in their midst are extremely lucky. A good and willing coach can practically eliminate the lower classes if the students really want to shoot well. One or two shots and his experienced eye may see something that would almost double the score. Left to his own devices, it might take the student years to find it.

To shoot championship scores, the set up must be perfect. To state the idea simply, the set up assures that the arrow comes out of the bow without any flirt. Few arrows actually do, and an archer may shoot for years and not be aware of having a flirt as it often is difficult to detect. Too often the archer is lulled into a sense of false security by resorting to large feathers, heavily spiraled. The enormous drag of this fletch straightens the arrow up quite rapidly in flight and the archer assumes that his set up is okay.

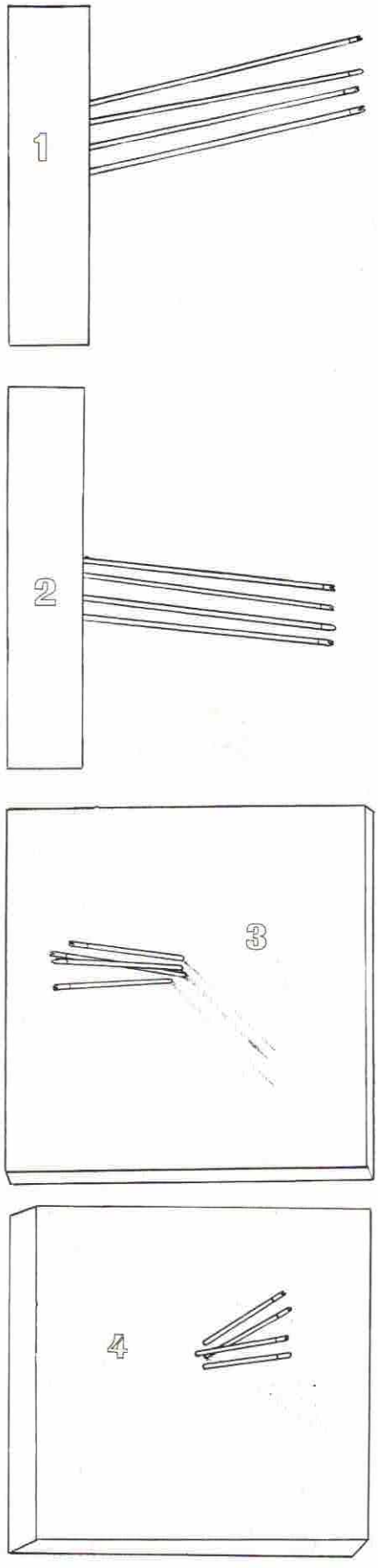
Of course, on longer shots, he pays the penalty of drift and dispersion, as the larger the feathers, the more difficult it is to keep them uniform. A rippled feather here, a frayed one there will spread the grouping.

If any archer requires fletching on target arrows larger than 3½ inches in length and three-eighths of an inch in height, he had better find out why.

If you must use feathers, by all means keep them within these dimensions, as a larger rudder area, like an obsolete aircraft, is a step rearward; the needless drag is a poor substitute for good arrow flight. Big fletching is fine for a beginner or for indoor shooting, but too many young archers with terrific potential will emerge from indoor shooting in the spring and be sorely disappointed at his outdoor performances.

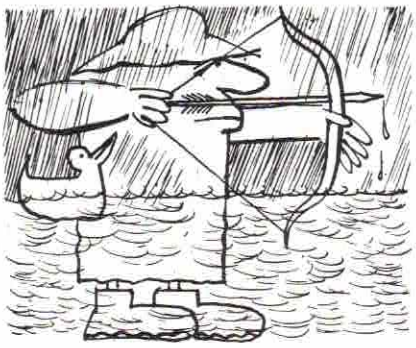
I have been asked many times: "Just what advantages do vanes have over feathers?" True, I'm interested in vanes, since I market the *Plastifletch* variety, but my answers are the result of ten years of reading and experimentation. Note that, when I make a dogmatic statement, I suggest you try it yourself.

To answer the question, I feel there are three advantages to plastic vanes for fletching:



(1) Arrows enter target with nock end up, you are nocking too high on string. (2) Arrows enter target with nock end low, you are nocking too low. (3) Nock end is to left, add to the build-out or spining point at arrow plate. (4) Nock end is to the right, reduce thickness at the arrow plate.

1. They are rainproof, which is self-explanatory and needs no further comment, unless you never have attempted to shoot a serious match in the rain.



2. They group better at longer distances. No two feathers can be identical, and even if they were, they would not remain so. A feather that has lost its stiffness, or one that has become frayed or rippled, will not group. Sight down an arrow shaft from the front end and observe the imperfections of feathers. Vanes, however, are identical as a result of close manufacturing tolerances.

3. Wind drift is greatly reduced. As there is less drag with vanes, they drift less. This is because they maintain their speed, and wind drift hinges directly upon loss of velocity. To use an exaggerated example, try to throw a wad of cotton into a cross-wind. It loses its velocity immediately, then is at the mercy of this cross-current. The slightest breeze will cause some drift; Bill Folbreth, who originated the cut out window on center shot bows, told me years ago that his shooting machine in his factory would not shoot the best groups unless the windows all were closed.

I recommend that, when an archer changes from feathers to vanes, he leave six arrows equipped with feathers to compare in a moderate cross breeze at sixty to eighty yards. These longer shots will show up the difference. If the above is all theory, there is concrete evidence in the fact that no feathered arrows have won the NAA men's title since 1951.

Some archers try to shoot vanes without using a special rest, which is, of course, impossible. This brings us to the types of rests. I use a Walsh rest, the original, because the shelf is delicate and will *yield* to the slightest pressure. A stiff brush never should be used unless it is so short that the lower vanes could not possibly touch it. A deflection of the shaft is found to occur if the bristles, extending out at a right angle, are struck by the vane. Worse yet, there is no noise to warn you of the impact. The horizontal feather rest is good but is not rainproof. The new magnetic rest also has a delicate response as do the flexible plastic types that angle forward. The rest, whatever type, should be sensitive and delicate enough that no deflection is possible.

I have seen a real good archer here in Flagstaff, Arizona, with audible clicking of vane touching the Walsh shelf, repeatedly put the arrows in the gold at one hundred yards.

Another point in shooting vanes is to realize the importance of loose fitting arrow nocks. A tight nock jerks a light arrow severely at the very instant it is bending around the bow. If you want to see this try a tight nock on a lady's arrow with vanes, and watch it jerk them into the bow with great impact. On heavy field or hunting arrows I have not noticed this, however, but on target arrows this has given us lots of trouble as so many archers will not believe it matters until you prove it to them.

When I start to help anyone who is having trouble with vanes, I often let him shoot my tackle. If he has trouble with my set up, then I know it must be him. In a few shots, I usually can spot his trouble which is, in most cases, twisting the bow to the right (counter-clockwise as viewed from above) for a right-hand shooter.

Let me contribute this as one step to better shooting: See if your arrows are coming out of the bow perfectly straight. The chances are one hundred-to-one they are not. Strip all the fletching completely from five or six arrows and shoot them into the target at a distance of two yards. Yes, six feet! For best results, the target should be at eye level.

If they go into the target with the nock end down, you are nocking too low on the string. (See illustrations:) If they enter the target with the nock end up, you are nocking too high.

Having corrected this vertical phase, go to the horizontal. If they go into the target with the nock end to the left (for a right-handed archer), add to the build out or spinning point, at the arrow plate. If they go in with the nock end to the right, reduce the thickness at the arrow plate.

These horizontal corrections seem the opposite of what should be done, but this is how it works out for me. Be sure to make this test. *Don't put it off!* Your scores may increase tremendously. ●

Nocking Point Determination

Lately we have been using another way of determining if the nocking point is correct. If it is too high or too low on the string it can be immediately detected by the following:

Shoot from any distance, say between 30 and 60 yards. Have someone, preferably two or three archers, stand a yard or two to either side of you—not directly behind you. Have them stare at a point about 10 yards in front of you at a point where the arrow will pass.

If the nocking point is correct the arrow will zip by as a straight silver streak. If not, it will be immediately apparent that the tail either came out low—in which case you raise the nocking point—or came out high, in which case you lower it.

You will find that your observers will almost invariably be in complete agreement as to what happened.

As a result of years spent in watching arrow flight, I can spot these things a mile away (more or less), and at the risk of being called a busybody I always inform those that need the information. NOT during a tournament, of course.

It is most gratifiing to me that most of my suggestions are well taken and appreciated. This is one of the greatest rewards in archery.

Fine Tuning Your Bow

by

Max Hamilton

I believe that *tuning a bow* is simply the attainment of the best *arrow flight possible*.

There are 4 important basic steps in achieving this:

1. The Bare Shaft Test.

(Some of the following has been mentioned before but it bears repeating because your arrows *must* come out of the bow straight or reasonably so.) Shoot some arrows *without* fletching into the target at a distance of about 10 feet. If they enter with the nock end high, lower the nocking point. If the nock end is low, raise it. You must use a bare shaft since fletching, whatever kind, can bounce off the bow and give you a false impression. A dirt bank is better than a target as the shaft might follow the direction of a tight straw pack.

2. Establish Center Shot.

Place an arrow on the string in position. Lean the bow against a chair and back off a few feet. Now shut one eye and align the string down the center of the limbs. Does the string divide the arrow clear to the point? Move the pressure point in or out until it does. Your setup is now true center shot.

3. Adjust Pressure Point.

Now shoot some more shafts and see if they go in straight horizontally. They should not be very far off. If the nock end is to the right move the pressure point in. If it is to the left, bring it out. Only a slight adjustment here should straighten the arrow nicely. However, there are some archers who must have the arrow point a little to the left of the string, or to the right. (Remember that the arrow is vibrating rapidly in a horizontal plane for the first few yards of travel. Usually this does not show up in the target, but some arrows have a big vibration and give a different answer when the archer moves forward or back about 18 inches. This does not mean that his arrows fly poorly. It is a balanced vibration. If you stand near the line of flight you can hear this arrow ring. This seems to be associated with a hard pressure point.) Now, assuming that your shafts are entering straight, shoot a few more arrows *with* fletching from the same distance. If they still enter straight, you've got it made.

4. Check Using Fletching.

If they *don't* go in straight, it's positive proof your fletching is slapping the bow. In which case you probably are using the wrong spined arrows. But before you borrow your buddy's arrows, experiment with your hand position on the bow (left and right, not up and down.) Also check your arrow nocks for too tight a fit on the string. A depressable pressure point usually makes No. 3 much easier. Also when using a strap type release the nocking point is about all you have to worry about.

No matter how well you are shooting you should do the bare shaft thing occasionally, especially if you change string or any other part of your tackle. Be patient when tuning your tackle. Don't expect a new bow and new arrows to be already tuned to your shooting.

After an archer reaches a certain stage of proficiency, say about 520 filed and 770 American (old scoring on both) his tackle tune up may be the difference between winning a big shoot or congratulating the guy who does. He may be shooting as good as his tackle will allow him.

There is absolutely no substitute for a good coach and champions are made by those who have one. Equally important is natural ability and well tuned tackle. A top archer knows better than anyone why he shot bad arrow or a good one. It's when he *doesn't* know; that's when he especially needs professional help.

Although I have stressed perfect flight, there is little if any penalty to a small flip of the arrow when using vanes as long as it is consistent, and provided it is not caused by the fletching slapping the bow. You can prove this by checking your grouping.

Please bear in mind that all this pertains to target or field tackle only. It does *not* pertain to hunting bows, glass or wooden arrows. It may not apply to feather fletch as I have not used feathers for many years. Also I can not say that the center shot idea will work for all target bows because I obviously can not try them all. But I will say that it has worked for me and all my friends plus the present State target and field Champions both men and women in both Pro and Amateur divisions in Arizona.

In the final analysis the important thing is to find out what works best for you. This can only be done by a little experimenting on your part. Cut out these four important steps in bow tuning and keep them with you. I'm sure that sooner or later you will be able to help someone who is having tackle problems. Like maybe yourself.

BREAKTHROUGH?

By MAX HAMILTON
701 E. Zuni Dr., Flagstaff, Ariz. 86001

EXPERIMENT No. 1

It (only) took me 17 years, but I believe I have figured out the riddle of good arrow flight.

With the scientific help of Walt Anderson of Omaha I have arrived at the following conclusion:

The nock end of the arrow coming off the fingers kicks the tail end of the arrow to the left (right-hand shooter).

1. This points the arrow to the right.

2. A solid pressure point kicks it back to the left. These two forces **must be perfectly balanced for good flight.**

If you use a weak, depressable pressure point, preferably adjustable, No. 2 is eliminated. The arrows will fly to the right, but they will **group** because they fly true and straight and the **critical** "balancing" of No. 1 and No. 2 is eliminated. (The pressure point I used was made by Norman Pint, Route 1, Marion, Iowa. I believe Earl Hoyt made the first depressable pressure point).

Now the above might be over-simplified and roughly stated, but I am sure it is basically correct.

This all applies to **horizontal** vibrations only as the **vertical** is simply a function of finding the correct nocking point.

For about 30 years photographs have been taken of the arrow leaving the bow. All show the customary "swing to the left" of the nock end as the string rolls off the fingers. Almost at the same instant the arrow, which is buckling inward, exerts a sudden pressure with the front end, against the pressure point.

If the pressure point is solid the buckle is increased, and the point of the arrow kicks back sharply to the left a sort of ricochet. We then can only hope this kick back or "cast to the left" is exactly the right amount as to cause the arrow fly true.

If not, we must experiment with moving the pressure point in and out, and perhaps we might even have to go to another arrow spine.

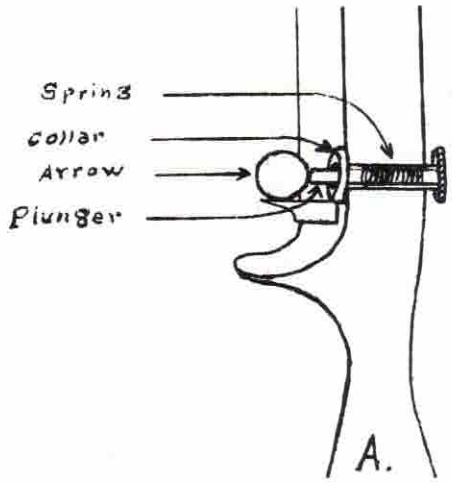
Now we have found that by using a soft pressure point, set to yield to a pressure of about five ounces I was able to shoot four different arrows from my bow. **All** flew perfectly, using vanes. The arrows were 1718's, 1816's, 1818's and 1916's.

More experiments will follow. I wish there were more experimenters, but it's a busy world. Few have the time. The top shots must practice. The poor shots have difficulty proving a theory, and even if it were beyond reproach no one would believe it. They would have to get a top shot to try it. And they are swamped with this sort of thing. And so it goes - - -

BREAKTHROUGH?
EXPERIMENT NO. 2

Perhaps the worse release ever devised is the one we all use and have come to accept as standard procedure. Any way you look at it the three-finger (Mediterranean) release is unbalanced, illogical and unscientific.

First of all the string, rolling off the fingers, kicks the nock end of the arrow out of line to the left. The arrow is already buckling, more or less,



depending upon the stiffness, so our release makes it worse.

Secondly, we use one finger above the arrow and two below. Here is another imbalance whereby a compensation is made by the nocking point location, also in the Bowyer's location of the handle. (Three fingers below is even worse).

Now we have three fingers carrying the load, any one of which can foul up the shot. Pull too much with the top finger and you go high; too much with the bottom finger and you shoot low. Pluck the string with all three fingers and you go right, and so forth.

About the only desirable features of our release is that it gives a feeling of power and of positive control. This Mediterranean release has been used for hundreds of years, and sorry as it is we seem to accept it without question. For many years I have thought, "There must be a better way. Why can't the string be released so it goes straight forward? And without using a fist full of fingers." Well, there **is** a way.

Recently Harry Drake sent me a strap such as he used in setting the many records he holds for flight shooting. It is the very essence of simplicity, yet the results were astounding. Not only did we obtain perfect flight from 1716's, 1816's, 1818's and 1916's, but we did it with 36-pound limbs as well as with 31-pound. And **never** have shot such groups.

Now I am reluctant to let my enthusiasm carry me away on some new discovery, as too often someone comes up with a flaw I have overlooked. But, so far, I honestly believe all the records will be re-written with the strap release.

We only failed on 1616's as (4) vanes would not clear the shelf. It seems the strap is more compatible to stiffer shafts since our stiffest arrows, 1916's, flew **absolutely perfect** using the 31-pound limbs. I draw 28". Of course they were too heavy for good velocity such as is needed on the longer shots. So we settled for 1716's although 1618's probably would be good also.

Regardless of how far the depressable pressure point was screwed in or out, the flight was the same. The arrows flew without any perceptible vibrations—a dead sort of flight. This led me to believe the strap release practically, if not completely, eliminated the buckle. If the shafts did buckle, a pressure would be exerted against the pressure point. How much pressure?

First I removed the fletching. Then I rubbed lipstick along the side of the arrow next to the bow so if it depressed the plunger all the way in, some red would show on the collar (See illustration).

The plunger was set at three millimeters (about 1/8") out from the collar. This is the best location when using a tap. Several shots showed no red on the collar.

I then screwed the plunger in progressively, taking more shots, until the shaft was only .010 from the collar. Still no red showed.

Then the tab was used. Red showed on the first shot. The plunger then was screwed back out a little at a time until it was back out to where it originally was. Red showed until the final adjustment.

This showed conclusively no pressure was exerted against the pressure point when using the strap. (Anyway less than five ounces the spring pressure setting). No wonder the flight shooters get such velocity! They get no side pressure against the bow and they get little or no buckle, both of which slow down the arrow.

Proof that the string goes straight forward instead of the customary "S" curve is the fact no arm guard is necessary. At least not for me. I **never** shall go back to the three-finger release. I believe I would quit archery first.

The strap is quiet and it gives no insecure feeling, but it requires a different anchor. A peep sight on the string will establish this location. Also you **must** place the arrow **below** the nocking point.

I urge you to try this experiment. If I have arrived at any false conclusions, I want to know about it. Also different equipment might give different results. So don't expect miracles the first end. It will take a day or two to get used to the strap. Actually it is a double strap. They separate to allow the string to go straight forward just by relaxing the hand. Please don't sent me any orders as I don't have any straps for sale.

SUMMARY:

1. If you use a tab or glove, a depressable pressure point is almost a necessity to lessen the "cast to the left."

2. If you use a strap release, a depressable pressure point is not necessarily required, but the in and out adjustment is most important.

The strap is acceptable to the NAA, the PAA and NFAA, but for FITA, we don't know. I hope it will be acceptable to every phase of archery for the reason it will make a difficult sport easier to master. Each year new innovations are introduced which help the average archer shoot better scores. The "bugs" are being taken out of the equipment.

Today's scores seem fabulous, but I don't believe we have scratched the surface. The biggest bug of all is the contortions the arrow must go through. When this has been solved, we can expect some terrific scores from nearly everyone.

Maybe Harry Drake's little strap has solved it.

"Plastifletch"

By

C. R. LEARN

This is the mini age. There are mini bikes, mini brutes and mini cars and to keep pace with the trend, Max Hamilton has come out with his Plastifletch in Mini-vanes. This may sound like a little thing and Mini-vanes aren't very big in size, but are proving very popular with the professional archers.

The plastifletch has become very well known on the target ranges. This came about as a slow process. When Hamilton first started making his Plastifletch he had problems getting archers to use them. There is one way to make them sit up and take notice and that is by winning tournaments with them. That is just what Hamilton proceeded to do along with other archers who had faith in his then-new product.

While the Plastifletch business grew Hamilton continued his job as a band leader in the Phoeniz, Ariz., area, making music by night and tuning his Plastifletch by day. This night work gave him the opportunity to work on his product during the day, a chance which many jobs wouldn't have offered.

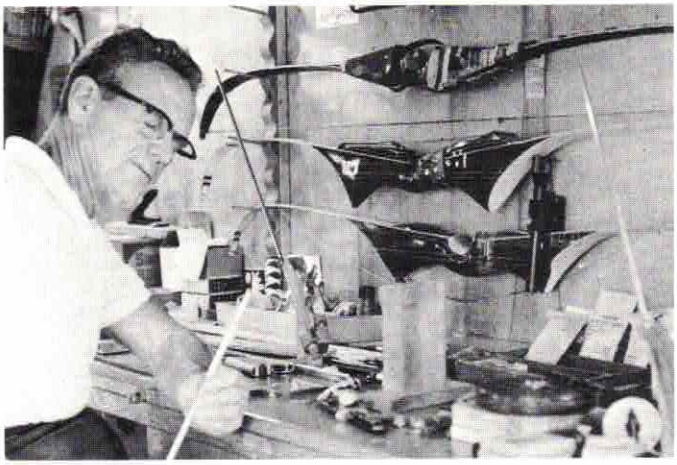
The idea of plastic vanes of some type came to Hamilton as he observed the flight of arrows in tournaments under different conditions. No two feathers have the same consistency or the same stiffness and therefore one might lay down along the shaft on one side while the others continue to hold up in their flight. The side which lets down might make the arrow deviate in its flight and cause that one shot, which would make the difference between winning and losing in a tight shoot-off.

The first plastic vanes Hamilton made were by hand with scissors and patience. After he had a chance to do further testing and had proven to himself the idea was feasible there still remained the problem of making them in production quantities. At first the demand by archers for Hamilton's new product was small, but then the Plastifletch, Hamilton's name for his vanes, started showing up on arrows of winning archers.

Hamilton has moved from his home in Phoenix and taken up residence in Flagstaff, a few miles to the north of the big desert city, among the pines and high, clean air of the Arizona high country. He has designed and had machines made which can produce his Plastifletch at the rate of a box of 100 every 21 seconds. With this type of production you might think now he would have all the time he wanted to pursue his favorite hobby of hunting. Not so. Since Plastifletch has become widely accepted by archers world-wide, he finds he spends more and more time at his machines just to keep up with his orders.

One of the problems encountered with the plastic vanes in the early days was that most archers claimed they couldn't shoot them as the arrow wouldn't clear the bow and the vanes went flying off. By fine tuning the tackle Hamilton proved by placing high in a number of tournaments that Plastifletch was practical and efficient. The big year, as Hamilton recalls, was 1963 when Charley Sandlin won the world title using the new Plastifletch. From then on, with new archers in the field and the advent of new tackle which allows center shot bows, it was easier to tune a bow to shoot the vanes which people scoffed at for so long. If winners could use them, anyone could if they tried and really wanted to.

For many years Plastifletch was offered in six different sizes for the target archers. These proved very popular and then some of the professional archers wanted to try some which were smaller, hence the birth of Mini-vanes. At first, Hamilton only made them for a few of the top archers. He tested them himself and found they did clear the bow better in most cases and when they were mounted at the very back of the shaft they provided a better rudder or guidance system than he had anticipated. The demand became great enough for Hamilton to have new dies made for his machines in order to keep up with the demand. They are now a stock item in his plant and on many dealers' shelves.



Hamilton does some checking on his target tackle, and eyes an experimental vane he is working on. He tests all products and had proven to himself the Mini-vane before producing it.

Hamilton is a very likeable gentleman in his own way. He always has a ready smile and is willing to poke fun at himself. He commented on the time he was in the hunting field and pulled a bottle of Dristan from his jacket and took a big whiff of it to find to his dismay he had picked out a bottle of Buck Lure by mistake. Hamilton and his wife Julie spend most of their time in Flagstaff, but when they do find the time they go to tournaments together. However, Hamilton states he just can't find the time for shooting and hunting he used to.

If the Plastifletch worked well for the target game, how about in the hunting field?

He made up some larger vanes and tried shooting broadheads with them. The big blade on the front made the arrow flight erratic, so with his friend and hunting companion, Charles Sandlin, they designed and made for their own shooting a broadhead which met the state requirements and flew like it should using the plastic vanes. Hamilton has five deer to his credit, including one whopper taken in the Kaibab area in northern Arizona who dressed out at 223 pounds. He enjoys hunting varmints and other game as well.

Not too long ago, while traveling through the high country en route to hunting areas, the author called Hamilton at the early hour of 8:00 p.m. Max was already in bed and for a night-type who used to play for the entertainment of dancers till the wee small hours it seemed unusual. It turned out he planned to be up and out at 3:00 a.m. for a session of varmint hunting, and wanted to get some rest. He has reversed his schedule from the early days to a great extent.

Max Hamilton is in his mid-sixties, an age when most men are either retired or thinking strongly along those lines. Not Max. He related a hunting experience from last fall which will make some young men envious. A friend wanted to hunt wild turkey. Max had been bitten by the jogging bug and was in very good condition from his daily jogs along the streets in the high altitude. They went into the area where Max had sighted some turkey roosts and he started calling them with a turkey call. They immediately got an answer from the tree they were under, only it was a hen.

A gobbler took up the reply from a nearby tree so they moved over slowly and out he came. The friend hit the gobbler who ran over a ridge. They sat down to let the big bird stiffen up, and when they went over the ridge there was the big tom by a brush patch, still on his feet. He was hit and wounded badly. They decided not to ruin any more meat and when they approached the bird he took off at a fast pace. Max took off right behind him and then literally ran him down. He mentioned that the bird was wounded, bleeding and not up to standard, but if you ever have taken off after a running turkey at over 5,000 feet and tried to catch them or even make them fly, you gain more respect for the Thanksgiving bird.

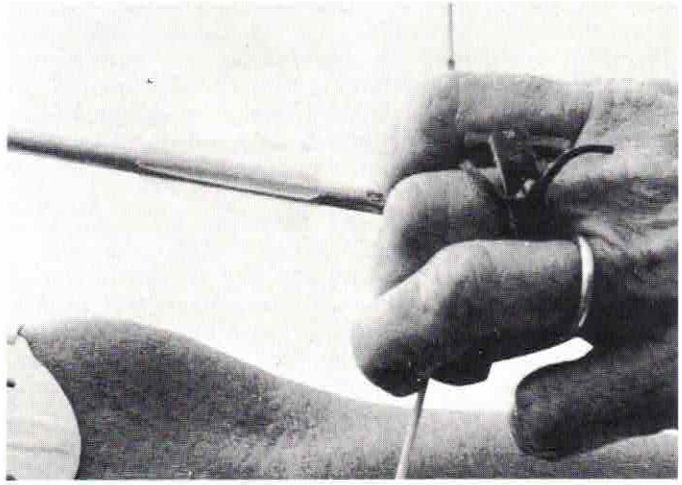
Max talked down his feat by adding he didn't run fast, but steady, and just wore the bird down by out-lasting him. This kind of antic from a man older than most sitting by the television set talking about yesterday while Max is still out doing.

When a big tournament comes up in different sections of the country you may see Max Hamilton and his wife Julie in the gallery if they aren't competing. Hamilton stated that he observed the World Championship and noticed a few Mini-vanes in the competition, but those which were being used were mostly the P26 for the men and the P23 for the women. He attributes this to the fact many of the foreign countries haven't had a chance to use the newer Mini-vanes enough yet and might not have them available in their area at the present time.

When archers compete in the FITA and other intercontinental events, where different countries compete, they don't stop for a little rain. They continue shooting, and that is one place where Plastifletch has more than proven itself. Hamilton is always testing and up-grading his plastic vanes, and when he finds something unusual or worth checking further, he does it. The demand for Mini-vanes has proven even a good product can be varied and still be better for some archers.

The only problem Hamilton claims he has now is he is right back where he started from. He has a good product and has proven it, and now, once again, the problem of finding time for his hunting and shooting is not available, because of more and more production time for his growing markets.

If you haven't tried the Plastifletch or the newer Mini-vanes on your target tackle, give it a spin, you might be surprised how it can tighten your groups. in our mini age it seems Hamilton has kept pace by offering an attractive package in a small form. Doesn't compare to some of the mini skirts, but for the serious archer it has proven it can raise his score.



The almost transparent Plastifletch is hard to see on this Easton aluminum arrow - - - but they are there. The little vanes have proven their value on the target ranges.

FLETCHING LOCATION

By MAX HAMILTON

I have always recommended the fletching be set so the rear end of the vanes are about 1 inch from the bowstring when the arrow is in nocked position. This gives clearance for the fingers upon releasing.

When a release aid is used, however, the 1-inch gap does not necessarily apply. The vanes can be set farther back.

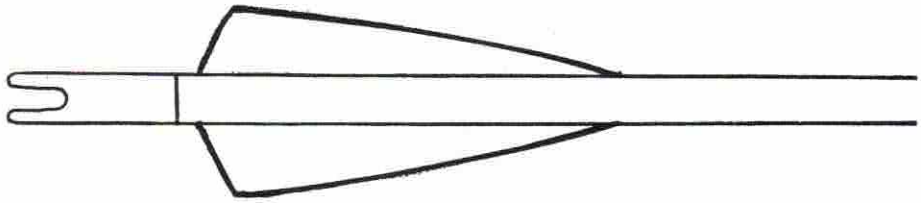
Actually, the farther back the more leverage you have for the rudder effect, and the more efficient the steering surfaces. Using any of the releases I have seen, the fletching can be set back almost to the nock.

BOWSTRING ROUNDNESS

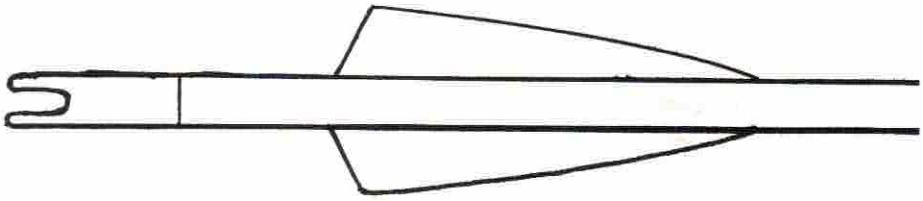
The bowstring should be perfectly round—no flat places. If a string is not twisted enough a flat place may occur which could be several inches in length. The total surface of this flat could add up to a square inch or more of surface. As the string rolls off the fingers this can cause a planing action which gives the string an abnormal path resulting in erratic arrow flight and poor grouping. The difference is very slight, but it's there. Careful observation of the arrow flight will show a difference.

I have used a "string roller" for many years. It is simply a 6-inch square of plywood sanded smooth with a handle on top. The bowstring, on the bow, is laid across the corner of a smooth surfaced table and the string is rolled with the "string roller." All the high places are thus pressed down and the string becomes perfectly round. Of course, the string must have been waxed previously and it should be rolled before the center serving is applied.

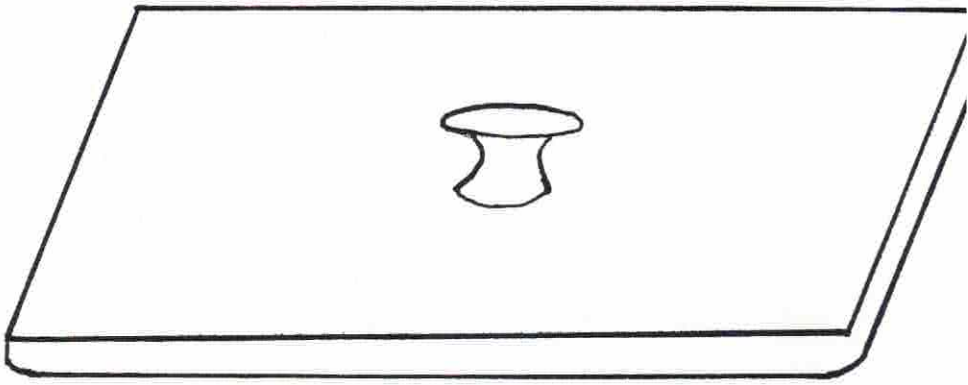
When a release aid is used I believe the planing is much less. However, I have found a large "string peep" will cause some planing with both types of releases.



Set fletching farther back for release aid.



Set fletching about one inch from bowstring for "finger shooters."



Above is what I use and call a "string roller."

USING VANES WITH RELEASE AID

By MAX HAMILTON

There is widespread belief vanes cannot be used with a plastic release. Don't you believe it.

I have experimented with just about every type of release available, and I have achieved perfect flight from all of them. There are two factors which MUST be observed, however:

1. The bow must be **truly** center shot.
2. A sensitive and adjustable pressure plate such as the Cushion plunger or Berger Button must be used.

Now what I mean by truly center shot is that when the arrow is in shooting position, and the string is lined up with the center of the bow limbs, the arrow point **must** be behind the string. If the arrow points to the left—forget it. Because that is the way it will fly—pointed left (for a right hander). Since there is little or no paradox with the plastic (and strap) releases the arrow flies exactly as it leaves the bow, and will hang sideways for several yards before straightening up if that's the way it started out.

Please try this and see for yourself: Use some shafts without fletching and stand about five yards from the target. With any kind of fletching material adequate clearance must always be provided to pass the bow and the shelf without making violent contact. The fletching, whatever kind, should straddle the pressure point and the arrow rest must yield. No material, not even feathers, can tolerate close rubbing of the bow without bouncing. It can only fold down so far. It can't disappear. No way. So the only thing to do is to bring your pressure point out far enough that the vanes can not touch the bow yet not cause the arrow to point to the left of the string. And to do this your bow must be truly center shot. Many of them are not, in spite of the stronger materials being used in the handle. I do not understand this. I think a bow should be made to shoot any fletch with any release. You can always bring your pressure point out, but you can only go in so far. Some bows are center shot if you place the arrow against the bare window, but when you add a pressure point which is perhaps a quarter of an inch thick, then your arrow is pointing left.

With the finger release, the clearance factor is not so critical because the contortions of the arrow causes the fletching to kick out away from the bow. However, it is a good idea to consider the above set-up for any method of releasing. With my tackle and using a finger release if I go **inside** of center shot my sight would have to be behind the bow and arrows do not fly well. This is also a function of arrow stiffness. However, with a release aid it is possible to use arrows of various spine.

The illustrated set-up shows the string aligned to the center of the limbs. This does not mean you must shot with this alignment. In fact, the string can be aligned with either edge of the bow window provided you do it the same with every shot.

It is not clear what the depressable pressure point does to make the vanes fly well with a release since there is very little pressure sideways. Perhaps it acts as a shock absorber to prevent the arrow point from

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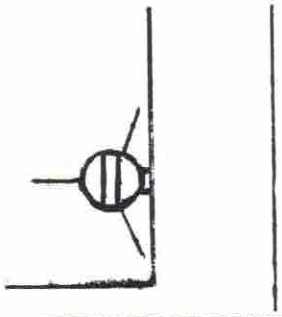
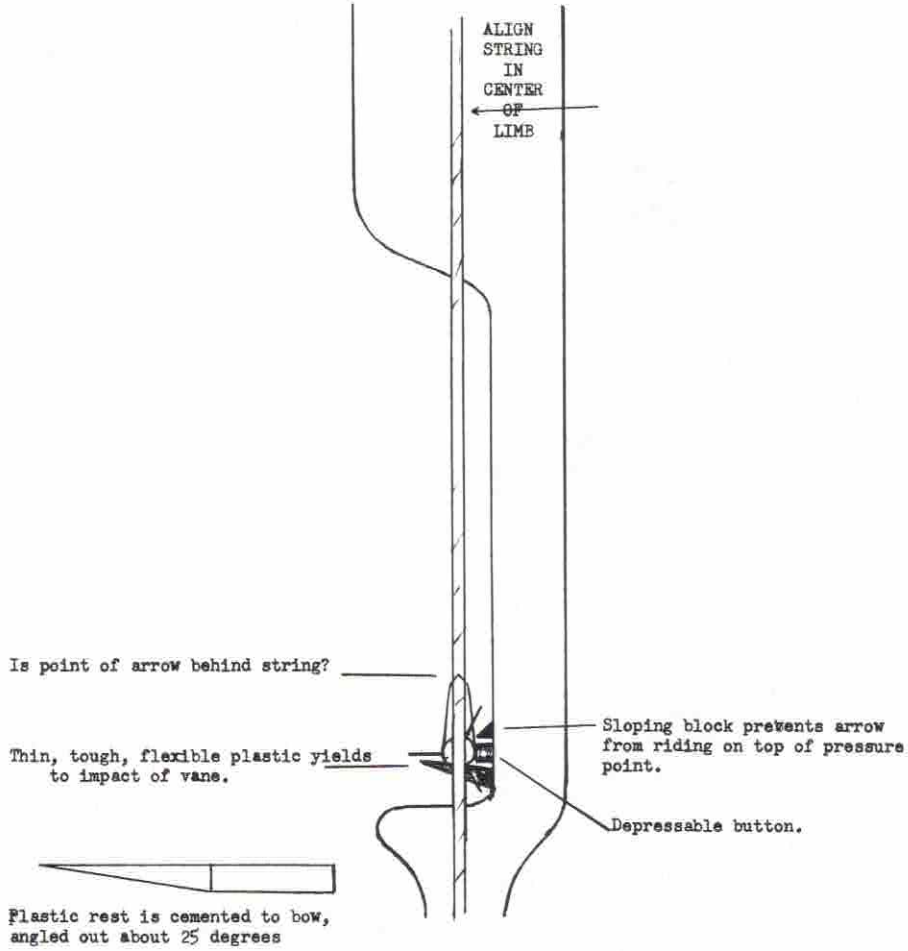


ALTERNATE FLETCHING ARRANGEMENT

Some people cannot bring themselves to cut on their bow to get it true center shot. Here is one way which may solve most of their problems in getting vanes to fly—and it is simply in the fletching arrangement:

Set cock vane in normal place, but readjust other two positions so that the outer edge of vanes and the arrow shaft are in line as shown above. Do not adjust more than is absolutely necessary as it will unbalance the spin of the arrow. This has no detrimental effect on the flight or the grouping of the arrow.



SET-UP FOR RELEASE AID

This shows the set-up I am currently using. There are other good arrow rests however; Some thin metal, wire, magnetic or spring activated. The vanes are 1 and 5/8th" long and ¾" high. Note that the pressure point holds the vanes away so they can not possibly touch the bow. The only contact is made as the lower vane brushes the tapered yielding rest. This is a glancing blow and no deflection has ever occured. The small sloping block can be of any hard material and is cemented to the bow. With the conventional finger release the vane probably does not touch the rest at all due to the flexing of the shaft.

bouncing away from the bow. I only know I had to use one to get good groups. If you get left and right dispersion using a release your arrow might be coming away from the bow on some of the shots. A slight upward curl of the shelf such as Hoyt's rest will hold the shaft against the bow. Or a straight shaft can be angled upward.

Remember that large feathers, because of the drag, will straighten up an arrow very quickly. However, your arrows should come out of the bow straight, otherwise you lose velocity and accuracy.

So, if you're having trouble shooting vanes with a release, take a long hard look at the illustration, and compare it to your own tackle. That will solve your problem. ++

Work the wind your way

With practice, you can develop a "feel" for the wind that may add accuracy to your shooting.

by Max Hamilton

WIND — that old devil to new archers — is also a constant challenge to the experienced. Perhaps more tournaments are won or lost by the ability to cope with wind than any other factor of outdoor shooting. Some archers are natural wind shooters. I remember one, Dennis Anderson of Phoenix, who, although a good shot at any time, was almost unbeatable in a strong wind.

When you are shooting target archery with a side wind you will have to decide whether to set your sight for it — which you can do if the wind is steady — or to hold over (left or right) if the wind is changeable. Watch the flags on the targets and try to judge how much to allow. If you check this before you draw, don't check the flag on your own target. By the time you shoot, that breeze has passed on downwind many yards. Check the flags upwind. Always be on the alert for a sudden calm.

When the breeze is of such a degree as to blow the bow arm back and forth, perseverance is needed. You need the ability to hold over the correct amount and the patience to wait for that brief instant when the sight stops still. That's not all. The fellow who can control a stronger bow, and whose arrows maintain their velocity over a longer distance, has a distinct advantage. At the last World Shoot, the men's bows ran from about 40 to 50 pounds. Of course, if the wind is steady, you can set your sight for the correct windage and go on shooting. But if the wind stops — look out!

To shoot well in the wind, an archer must learn to watch and learn from the other archers as well as the flags. Watch the other arrows and aim off accordingly. Let us say the majority of the other archers' arrows are hitting at three o'clock in the three ring, it's time for you to aim at about ten o'clock in the three ring. When you are wind shooting, always aim opposite of where your last arrow hit, taking into consideration any wind changes as shown by the other arrows or a change in the flags. This system works exceedingly well in a bowl wind — the kind that is constantly changing. If you find your shooting partner tends to drift three rings and you drift two rings, adjust accordingly. Watch other arrows when you are on the line and when you are sitting down. This alerts you to any changes in wind conditions.

An archer does not have time between arrows to look at his feet or a pretty girl — alas — when he is shooting in the wind. He should be watching the other arrows and the flags. Flags are inconsistent. Do not watch just one flag; watch a series of flags. This way a gust or lull in the wind coming toward your target will show a pattern. So, with practice, you will be able to shoot with it instead of against it.

Stand behind someone and tell yourself, before he shoots, the number of rings of drift. This way you will train yourself to correct when you are shooting in the wind.

An arrow that is too weak or too stiff in spine for your bow may not show up at 20 yards indoors. But at 100 yards, in the wind, you will lose points. The best wind arrow is the one that is tuned to the bow and the archer. The following are the steps to consider when tuning a bow for outdoors: 1) Set the brace height in the middle of the manufacturer's recommendations. 2) Adjust the arrow plate so the string lines up down the middle. 3) Find the nocking point.

Now shoot your arrow at a distance of 6-10 feet from the target. If the arrow is straight, you are in "fat city" and should have a good wind arrow. If the nock of the arrow goes to the left, as you are facing the target, your arrow is weak for your setup. You could raise your brace height by using a shorter string. This may correct the leftness of the nock; however you will lose some efficiency of the bow as you will not be getting the full use of your limbs. The reverse of this would be true for an arrow when the nock goes to the right — the arrow is too stiff. (All releases in this article refer to fingers only.)

It is often possible to shoot two or three different spined arrows out of the same bow. Also, you see many different brace heights on the same bow make. The different arrows will group well at certain distances, but you will have a cross-over point where one will out-group the others.

In cool weather, when the bow is stiffer, set your brace height a little higher than the recommended height. When the weather is hot, lower the brace height for really fine tuning. For final tuning at different distances, I find an adjustment in my arrow plate at different yardages helps tighten the groups. In my tuning, there is a point where one turn either way on my arrow plate does not make much difference in my general grouping. However, in this leeway of about two turns, I have found that I group better at 100 yards if my arrow plate is farther away from the bow and better at 40 yards if my arrow plate is closer to the bow. So in moving over the different yardages on a target round, I move my arrow plate also. Of course, this would not be practical on field rounds.

Now let's say we are shooting a tournament where the wind is very strong from the left to the right. I find that raising my string — making the arrow a little stiff — helps my arrows start off into the wind sooner. This is

why a person with an arrow that is stiff for his bow will shoot better in a wind from the left than he does in a wind from the right. Of course, the reverse would also be true. You will not notice this in distances of 60 yards and closer unless the wind is extremely strong. In Arizona, the wind is nearly always out of the west, so that in shooting north — which is the official direction in target archery — the wind would be from the left. In a strong wind this can be a problem to lefthanders as the arrow may fall off the shelf. A clicker would help here.

You will find a similar leeway in nocking points as in string heights. This leeway can be put to advantage in head and tail winds. A higher nocking point will work better in a head wind — it puts the arrow in line with the wind sooner. The opposite is true with a tail wind.

Some archers who have trouble aiming off the gold might change their string alignment to compensate for the wind. This can also be used by someone who is aiming off and using string alignment changes for gusts in the wind. I definitely believe that an arrow's balance point should be at least two inches forward of center for 90-meter shooting. The archer with a shorter arrow has a problem because his arrow's balance point is more towards center. I think the new heavy points would help because they would move the balance forward. Some archers select the arrow they want first, then get a bow that will shoot it.

It is well known among ballistic experts that bullet drift is in direct proportion to the velocity loss. So if a projectile loses speed rapidly it drifts more. Now what would cause an arrow to lose its speed rapidly? Drag mostly. If you are using large feathers and a very light shaft, you have all the factors for lots of drift. Indoors, however, one would not be concerned with drift.

No matter how fast a bow is, if the arrow velocity is not reasonably maintained, you are in trouble with drift. Many tests have been made on the speed of bows. Invariably they are made at a distance of a few feet. This is okay for comparison. It is unfortunate that none are made of arrow speed at both the initial velocity and the speed at 60 or 70 yards. Much could be learned by the time of flight. The striking velocity at long range could have a considerable bearing on hunting arrow penetration.

I do not have the time nor the scientific equipment to conduct tests on velocity loss. Certainly there are many factors to consider. A top ranking archer should be used in such tests because, if poor flight existed, the results would be meaningless.

We are all assuming in all these discussions that the arrows are matched to the bow; if the arrows wobble (yaw), the wind drift is increased tremendously with accompanying loss of velocity. The importance, then, of careful tuning of tackle, is apparent.

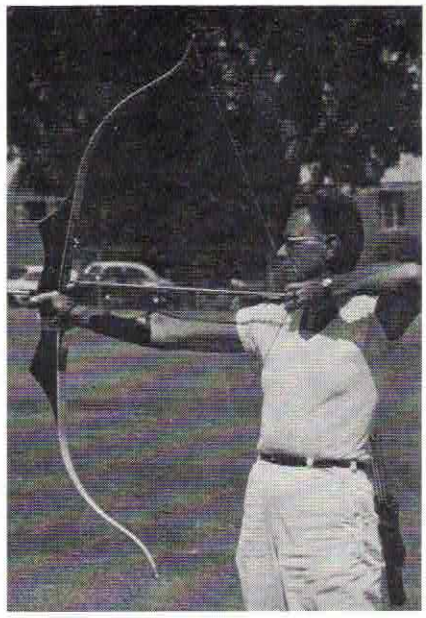
As an arrow loses speed it not only drifts but hits low when compared to being shot in no wind. It is well known that if you have a wind from the left, and you are shooting around 60 yards, you must not only hold to the left at nine o'clock, but you must also hold high — actually about ten o'clock.

Some arrows drift twice as far as others, hinging on wind speed, fletching, distance shot, etc. Suppose two archers are shooting the 65-yard field target with a good cross wind from left to right. One archer's arrows drift twice the distance of the other's. Then one archer must hold left in the three ring, while the other holds left also, but still in the five ring. At the instant of release, suppose the wind stops. The archer who held in the three ring will get a three, and the archer who held in the five ring will get a five. A tournament can be won or lost right there.

This is even more true in target archery, where the longer distances are shot in an open field. At FITA shoots, such as the World Tournament and the coming Olympics, probably no feathers at all will be seen, due mostly to the wind factor. By the same token, at all the indoor shoots, vanes have been a rare commodity.

This is not to downgrade feathers. Microscopic examination will reveal that the wing feather of a bird is one of the marvels of nature, and was a million years in evolving into its present efficient form. Feathers could never be built by man. For short shots, such as indoor, I can see no way to improve on this type of fletching Large feathers with much spiral will, of course, slow down the arrow, but at 20 yards indoors, this is of no consequence. Actually, the drag is an advantage since it forgives errors in releasing. The advantages of vanes are not manifest at 20 yards.

So there you have it. I hope that this will be of some assistance to you in the future. By experimenting with these ideas, you may gain some much-needed points for an important tournament. Most of the suggestions are for advanced tournament archers, but beginners may also learn from them. They are intended to help you get just a few more points — to make your groups just a little tighter at all distances. It is possible that what works for me may not work for you. But if you are a serious competitor, you owe it to yourself to find out.



Max Hamilton

Max has been a leader in archery for a score of years. In the very early 1950's he developed the plastic vane which is still the primary instrument of target shooters throughout the country. Max himself is quite an archer with several championships under his belt. He is one of the top authorities on the sport of archery and his comments are well worth reading and remembering.