

# Aiming the Arrow

by Jim Ploen

Aiming the arrow is the most important aspect in shooting a bow. The arrow must be aligned from the string, to its tip, to the target, and have a trajectory to match the distance. This is regardless of the shooting style, be it with a sight, bare bow, string walking, shooting three fingers under the nock, or from any anchor location. The arrow must be aimed at its intended target. If the arrow missed its mark and the next arrow was a match to the first, an adjustment in the aim must be made for the arrow to hit its mark.

To support accurate aiming, an archer needs the following basics:

- a solid stance
- a comfortable grip that allows the archer to hold the bow with the proper string
- arrow alignment to match the amount of build out in the sight window
- solid bow arms with a steady draw
- a solid anchor from which to align the arrow
- proper trajectory-based on the distance to the target
- an efficient in-line release that does not disturb the alignment of the aimed arrow.

There are many ways to aim an arrow, but there are set basics that are the same for every shooting style—the pointing of the arrow with vertical and horizontal alignment combined with a trajectory to match the distance. This includes the use of a fixed or moveable sight, snap shooting, trick shooting, bare bow, or shooting by feel. Each method has a learning curve that takes practice to develop the tech-

nique of aiming the arrow to match the shooting style. Shooting style refers to the location of the anchor that is used, the stance, snap shooting, trick shooting, gap shooting, etc.

Once an aiming technique is learned, very little conscious thought or awareness is needed when shooting bare bow (that is without the aid of a fixed or movable sight). This class of shooter is often referred to as the Instinctive Class. A definition for the term “instinctive” in many archery circles is almost like a religion, in that shooting the arrow by feel is a natural phenomena that ignores the basic physics of aiming. That has come to mean, when shooting “instinctive” you do not see or use the arrow as part of your conscious effort in the act of shooting the arrow. To many archers, any use of the arrow is frowned upon as cheating and not very macho. Therefore, the idea that if you are conscious of the arrow, you are not a true “instinctive shooter,” has become a belief.

To some, it's ok to miss the target if the arrow was said to be shot instinctively. When a good score is turned in that was better than the true “instinctive” score it was because the archer

aimed his or her arrow, he or she used the point in setting a gap for a trajectory, or shot three fingers under so the arrow was easier to see and aim, or multiple anchors were used to set a trajectory as opposed to raising or lowering the bow hand.

I see no difference as to which end of the arrow is moved in elevating it for a trajectory. It seems as though a lack of understanding the basic principles of the physics that are needed to align the arrow to hit where we are looking, is an excuse for writing rules. This type of thinking just confuses the common-sense approach that makes the best use of all of our senses when aiming the arrow, either in a hunting situation or playing a target game. I feel it would be more appropriate to rank archers by their ability to score, rather than trying to create so many classes based on variations in shooting styles.

Archery is a shooting sport, and in all shooting sports aiming is of prime importance. Most archers are familiar with the shooting of a rifle. The rifle has a front sight and a rear sight, which are used for alignment and for a trajectory. In archery, the arrow is like the rifle barrel, the point is like a front sight, and the nock and string is like the rear sight. If the rifle barrel is canted, the shot will hit wide of its mark because the sights are mounted above the barrel.

In archery if you cant the bow from a pivot point using the center of the grip as a fulcrum or axis, the arrow will go wide of its mark. But if you cant the bow using the arrow as an axis point, it will be less likely to cause the arrow to go wide of its intended mark. So when you cant your bow from the grip's pivot

point, remember the arrow is about 3/4" to 1" above the pivot point of the grip, and that results in an arc that moves the arrow out of alignment.

It is felt by some that canting is a solution to shooting arrows to the left, and the cant to the right will move the arrow to the right for a right-handed shooter. This is true only if the string/arrow alignment places the arrow more in line under the dominant eye when canted, or moves the arrow tip to the right of the spot, adjusting for the misaligned arrows that went left.

This article is about using the arrow to aim in bare-bow shooting, and not about an instinct that is generally referred to as an animal behavior, whereas human behavior is mostly a product of learning. The fact that you can shoot the flame off a candle in a dark room is a learned behavior. It's the same for being aware of your surroundings, closing your eyes and then picking an object from your memory to point at. If you had the right feel, you were able to point right at the object. Shooting that hat out of the air or a rolling disk on the ground is felt by some to be an instinctive gift. I wonder how many who have learned this technique hit the first four out of five moving objects they tried to hit. If they did, I have to admit that their hand/eye coordination is remarkable. It does not take the brain very long to recognize the need to lead a moving object—and that is a learned behavior.

When shooting bare bow, there are two basic methods which all other aiming techniques are based upon. The eye is the window to

the brain and we can use all or only part of the information from the picture seen with the eyes. When we focus on the target and pick a spot, we can learn to move the bow, draw the string, anchor, and release with little conscious awareness of the bow or the arrow. That is one of the basic techniques and is referred to as shooting pure instinctive, but it is really just a learned behavior and not a great gift such as being a descendant of Robin Hood. With a lot of practice it may become like an instinct. Think of it as learning to ride a bicycle. When we start, we are aware of the handle bar, the front wheel, and the street. As our balance and muscle memory goes through its learning curve, we become less aware of each component until we can actually look over our shoulder and hold a fairly straight course, like an instinct to a learned behavior.

Archers who like to be conscious of where their arrow is being aimed do the same thing. They look at the target, but are also conscious of the bow, the arrow, and the arrow alignment. That is the only difference between the two basic techniques. You can expand your awareness of the arrow and use it as a reference point to match the distance if known, or be aware of the arrow's full length when anchoring below your dominant eye (the eye the brain pays the most attention to).

How you use the arrow will vary regarding the anchor point or the game being played. If you have marked

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Pick your spot or target, and align the arrow so that you can see the full length of the arrow aligned to hit the spot, then set the trajectory. . . being aware of the arrow in your peripheral view.

yardage and known distances it's only natural to develop a gap system. This is simply being aware of all of your senses and making use of them, rather than relying on nothing but feel to direct the hand/eye coordination while you focus, being only conscious of the spot. Another way to compare the two styles would be to look at the target, close your eyes, then by feel, draw, hold, and release. Or look at the target, draw, anchor, and pause (being conscious of the alignment and trajectory), then close your eyes and release. Which basic technique do you think will be the most accurate? Or the easiest to learn? I personally would like to know where the arrow is pointing with some degree of accuracy before I close my eyes and release.

There are many techniques that can be used for aiming when you are conscious of the arrow, and I will describe one that is being used by a lot of archers who are shooting very well. It is also a very good way to pre-aim in hunting situations that require very little movement of the bow that could alarm the game being hunted.

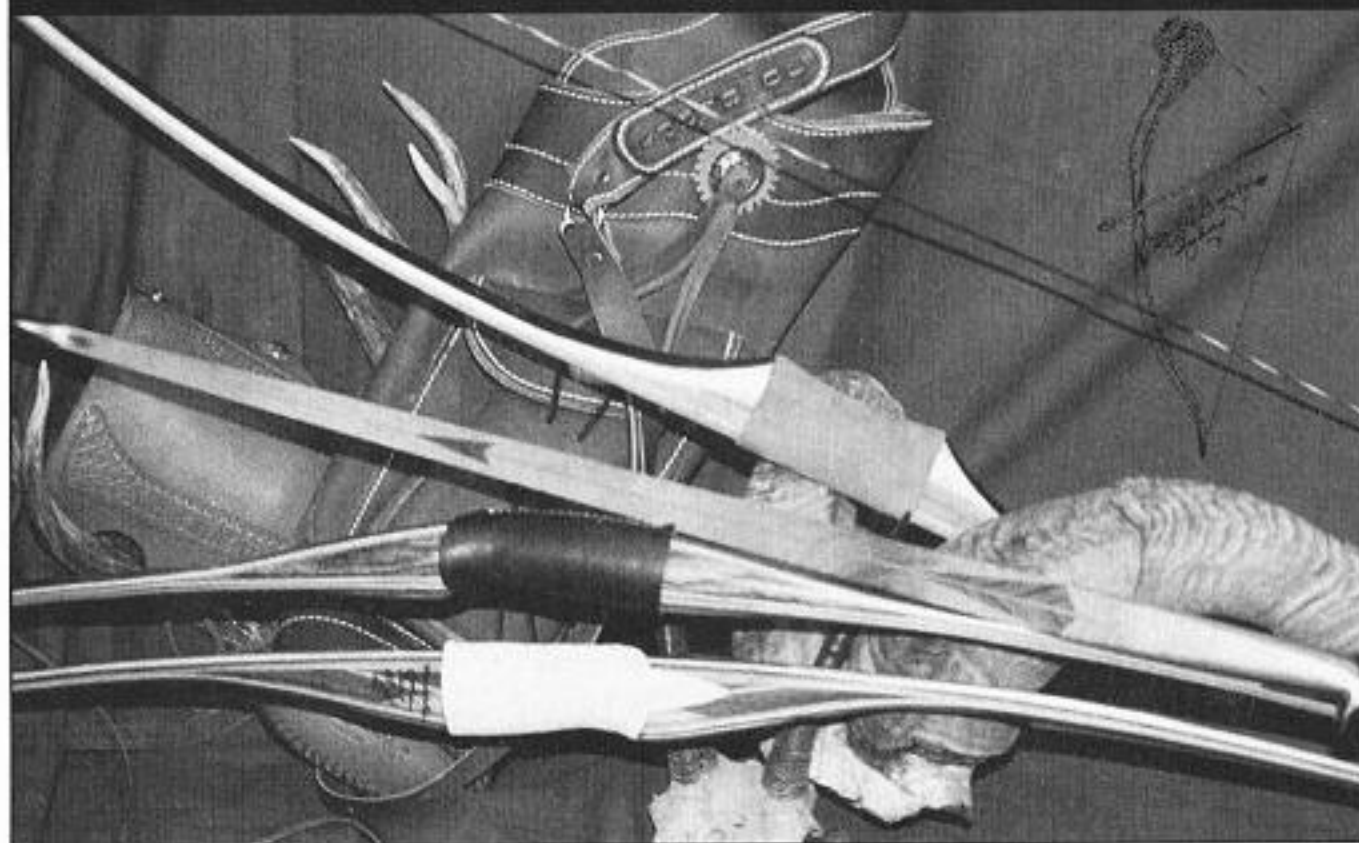
- Start with a comfortable stance and with the bow in a pre-draw position, arms at shoulder height with a slight draw. You will be able to hold this

position for a long time in a hunting situation.

- Pick your spot or target, and align the arrow so that you can see the full length of the arrow aligned to hit the spot, then set the trajectory so that you can see the arrow pointing at the target, being aware of the arrow in your peripheral view.
- Draw the bow string to a solid anchor and tip your head over the arrow so that your dominant eye can align the full length of the arrow with a trajectory that is aimed at the target or game.
- Maintain the feel of drawing in line with the shoulders and back.
- Concentrate on the target but also be conscious of aiming the arrow.
- When it feels right, relax your fingers to release the arrow. The tension of the draw that is felt in your back muscles will be your in-line follow through.

You can use a mirror to help you to visualize arrow alignment. Pick up an arrow (you don't need your bow for this exercise) and place the shaft in the V of your thumb and index finger of your bow hand. Hold the arrow nock between your index and middle finger of your drawing hand and simulate the

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... set a trajectory, and release the string without disturbing the alignment or the trajectory. That becomes the challenge of aiming—getting the picture right and then executing the release so that it does not disturb the aim.

draw. Hold the arrow at full draw and point at a spot on the mirror. Does the image in the mirror and the actual arrow converge into one straight line? Or do you see the point only in line with the spot, and the arrow pointing to the left? That is exactly where the arrow will go for a right-handed archer, to the left, unless some compensation in the aim is made that places the tip of the arrow to the right of the spot. But this requires the

brain to make two calculations—one for vertical placement to set alignment, and one for trajectory.

Look at the arrow in the mirror and adjust the nock at anchor so that you can see the arrow in the mirror converge in line with the arrow in hand. You will also be able to adjust your shoulder alignment to help with the arrow alignment and this is the alignment you should be looking for at full draw with your bow.

Hold the bow so that you can point the full length of the arrow at the spot using an anchor that places the arrow under your dominant eye, and not to the outside of the eye, using only the tip of the arrow and shooting more by association and feel, and calling it "instinctive."

A good aim is a very precise learned behavior from which we can learn, and a mistake in alignment or the execution of the shot is readily made aware to us with the conscious execution of the act of aiming and releasing. There is nothing wrong with making a mistake, but it's nice to know the cause and how to correct for it with the next arrow. This is easier to do with a conscious awareness of where the arrow is pointing. How often I have witnessed archers miss when shooting by feel, and try to correct on the next shot—only to have the second arrow go almost in the same spot as the first! This happens because it felt the same, and they have no other reference with which to correct their aim.

What you focus on with the most awareness should be clear or correctable to 20/20 vision. Your peripheral vision will only be about 20/45, but with practice you can become very acute at using both, and with patience and practice, aiming can be very rewarding. This not only increases your enjoyment of shooting the bow and arrow but helps with target panic and "gold fever." That's for another article.

If you choose to use the conscious awareness of the arrow as seen in your scenic view, and you judge the distance correctly, you will have to set a trajectory, and release the string without disturbing the alignment or the trajectory. That becomes the challenge of aiming—getting the picture right and then executing the release so that it does not disturb the aim.

You will find that the challenge of shooting by feel has its own problems when you are only aware of the target with little or no conscious awareness of the arrow. If the feel that the shot is right comes while you are still drawing, you will not draw to anchor and will shoot low, or try to help with the bow arm on release and shoot high, or as the draw



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stopped an inch or two short of the anchor the string was plucked so the arrow went wide of its mark, or the bow arm softened in its alignment sending the arrow left for the right-hand shooter.

The above errors will also create the additional problem of not pulling your full draw weight, which could now be three to seven pounds less than what your arrow is spined for. The arrow spine will now be too stiff for the bow and send the arrow left for the right-hand archer. But if the string and arrow happen to be in line when you release, you could still get a good hit, but would have poor penetration.

All styles have the same problem—executing the shot. Just because someone else is using a different style of aiming or shooting from a different anchor is not the basis for creating a rule or another class. It simply means this archer has practiced more and is in control of his or her executing the shot. How long they can keep on winning will be based on their executing the act of aiming and releasing with control.

So don't be a sore loser to a person who wins or consistently fills their deer and elk tags using different shooting style or "aiming awareness." Practice "your" style, understand it, and perfect its execution. Remember, every arrow must be aimed with the correct

## Practice your style, understand it, and perfect its execution.

alignment and with the correct trajectory to match the distance, with the proper execution of the release, to be able to hit its mark.

Being so concerned about marks on the bow, or the use of one-color serving, or center-shot is just another excuse for a lack of practice or poor execution on the loser's part and not because the winner has a better system—just better execution of the shot.

Start your shooting sequence by holding your bow so that the arrow and your drawing hand are in a straight line with your anchor. Pick your spot to hit,

and focus on the spot. Be conscious of the arrow in your peripheral vision, and with your mind draw a straight line with the arrow to the spot that you want to hit and a straight line with your eye to that same spot so that the two lines intersect at the target. This is referred to as the "dead gun principle."

Draw to your anchor using your shoulder muscles and align your drawing hand with the arrow (you should be able to feel this alignment). With your focus on the spot, be

conscious of the arrow alignment and reference to the target. Envision a vertical line through the spot you are focusing on and somewhere along this line you will see the tip of your arrow in your peripheral view.

With practice, you will develop a feel for the distance and set a trajectory for the arrow. As you move back from the target, at some distance the point of the arrow will converge with your focal point. This is your "point-on distance." If you missed the spot, you will have a reference to refer to on the next shot. It's called aiming the arrow.



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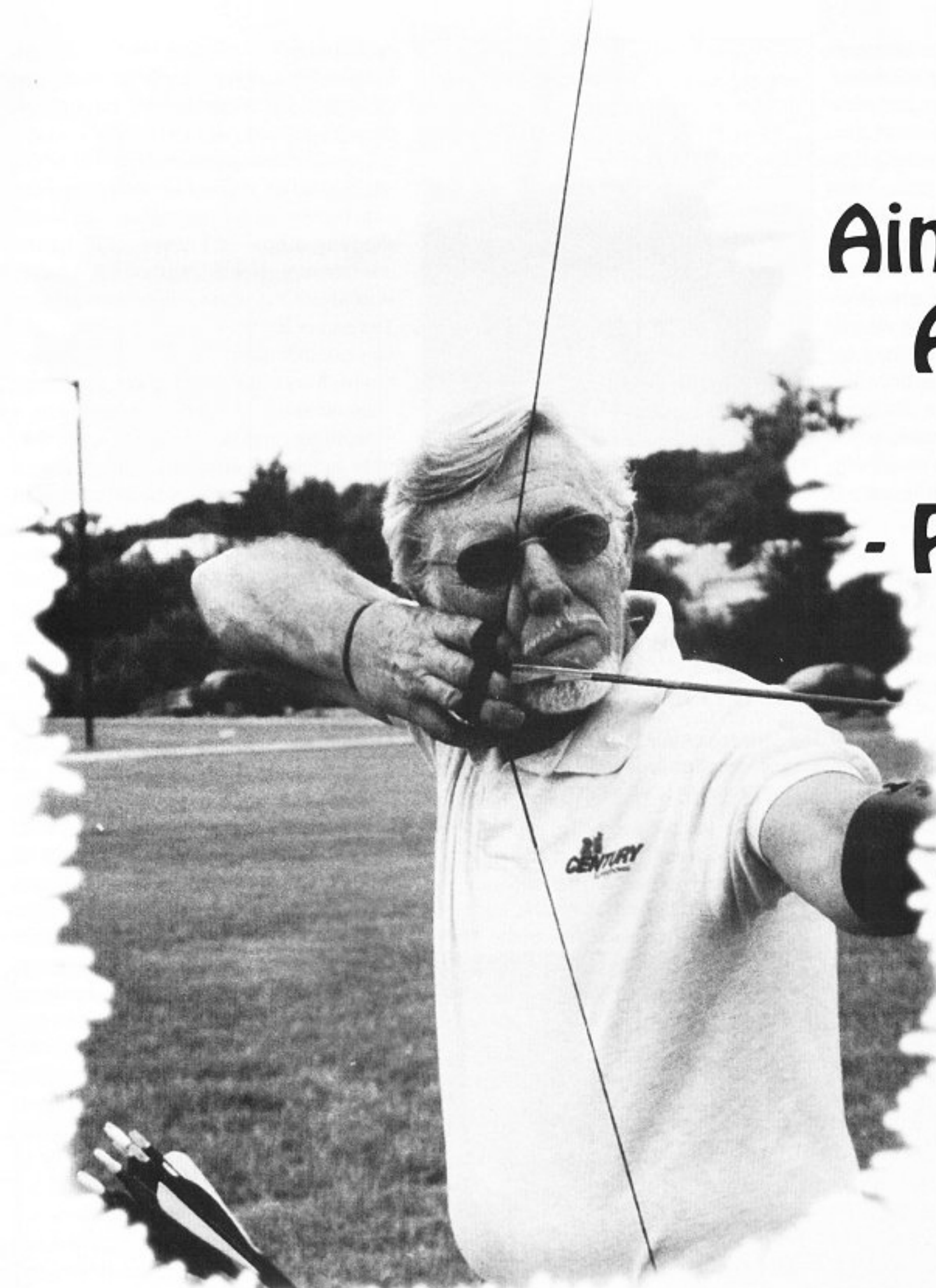
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# Aiming the Arrow

## - Part II -

by Jim Ploen



In *Aiming the Arrow, Part I*, we pointed out that shooting in the instinctive class simply refers to shooting without the aid of a fixed or movable sight. We also discussed that aiming is the most important part of shooting a bow and arrow, and that aiming is a learned behavior and not an instinct. You can “shoot by feel,” “look at a spot and have a feel that you are pointing the arrow at the spot,” “from any anchor,” or by “bow /arrow alignment,” and that is also a learned behavior.

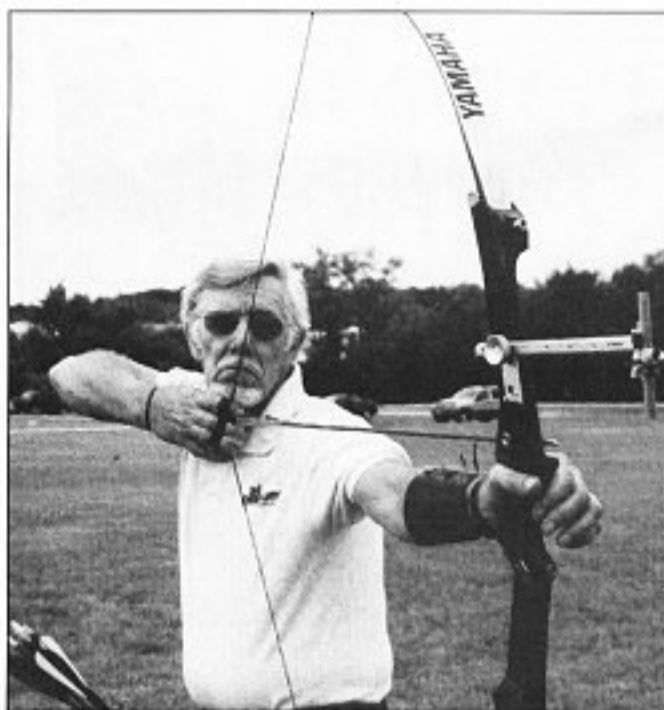
In order to have a better understanding of the act of “instinctively” aiming and shooting a bow and arrow, it may help to first look at the target shooter who uses a sight on the bow as a reference for aiming the arrow. The distance must be known, the arrow must have a trajectory to match the distance, and the arrow must be aligned so that its full length is pointed at the target.

and the string and sight are in the same alignment. (This would be the ideal set-up, but not necessarily so when plungers or variations in string alignment are used.) The target archer accomplishes the act of aiming by (1) selecting an anchor low enough below and under his eye, so when at full draw the bow hand will not cover the view of the target, and (2) selecting the proper sight pin, thus setting the arrow's trajectory to match the distance. Drawing the bowstring to the center of the chin with the drawing hand under the chin gives most archers enough room to set their movable sight attached to the bow, so that it would not interfere with the flight of the arrow when shooting at 90 or 70 meters.

The ideal set-up for target shooting with a sight is to have the riser cut past center in the sight window and have the string, arrow, and sight align with the center of the limb when the sight window is cut past the center of the bow to allow for this set up. A sight-shooter's alignment should be checked in a pre-draw to be sure the bow is held without twisting or turning that would cause any component of their shooting/sighting equipment to be out of line. They can correct alignment error by twisting or turning at the grip or turning the bow in hand with the string to bring the components in line as needed to match the build out of the sight window.

When the string is drawn back to anchor with the string in the center of the chin, the chin will rest on the index finger, the nose will touch the string, and the head will be turned slightly over the bow arm shoulder to place the eye in direct alignment with the string and the sight pin. Tipping the head back over the bow arm shoulder also allows for a clearer path for the following through of the release hand after the release.

A peep sight in the string gives the archer a clear view of the sight pin and a positive string alignment. In some competitions, peep sights cannot be used and the archer has to make allowance for a clear view of the sight pin by aligning the string slightly off the sight bead. As this causes a slight miss alignment of the string, some compensation must be made with sight adjustment, arrow build-out, or plunger setting.



The requirements of making a well-placed shot are the same for instinctive archers as they are for archers who shoot recurves equipped with sights (see above). Those who rely on sights must align the rear peep sight and the front sight pin on the mark, or they will miss. Instinctive archers must align the rear of the arrow and the point of the arrow on the mark, adjusting for the proper trajectory, or they will miss. Good shooting, regardless of the type of bow or shooting style, requires proper arrow/target alignment. It is as simple as that.

The target archer relies on the sight pin for elevation. It also serves as the "front sight," as in shooting a gun. The string and its alignment are the rear sight, and good archers have little or no awareness of the arrow itself when a sight is used. This view of target shooting with a sight is to emphasize the importance of the eye/arrow/string alignment in any style of shooting.

Another shooting style that is being used today in target shooting is to anchor under the chin—at the side of the jaw. In this position, the string will be closer to the corner of the mouth, with the head being straighter or tipping slightly over the drawing hand to

enable better eye, string, and pin alignment. This style also helps with the clearance for the following through of the release hand.

Learning to aim the arrow without the aid of a fixed or movable sight can be the most rewarding style of shooting a bow and arrow. I feel bare bow shooting should be the introduction into shooting of any bow and arrow. The archer learns:

- eye dominance,
- which eye the brain pays the most attention to,
- depth perception,
- the judging of distance,
- Eye-angle as it relates to different distances,
- alignment and trajectory,
- balance and control, and
- hand/eye coordination,

Instinctive shooting also aids in developing upper body strength. The simplicity of just a bow, a string, and an arrow is basically all that is needed to enjoy archery.

Starting with a bow light enough in draw weight to draw and hold steady for three to four seconds is of prime importance. You will need this to learn the knack of drawing, anchoring, aligning the arrow to aim, settle, and release. Once aiming is learned, it can be applied to heavier bows for hunting. At that time you will be aware of your shortcomings when the aim is hard to achieve because the bow is too heavy to



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draw to a solid anchor, or it cannot be held long enough for the you to become comfortable with the aim. Too heavy of a bow leads to short draws, snap shooting, and a shotgun pattern of arrows on the target that no amount of bare-shaft tuning can correct for.

The basic steps in leaning to aim should be started with the following:

- pre-draw,
- picking a spot, and
- assuring that the arrow aligned so that it is pointing at the spot in your scenic view of the target. This gives you the time to hold the bow so that the full length of the arrow is viewed having a trajectory pointed at the spot.

To do this, you must envision two lines: one from the eye to the spot, and another from the nock to the arrow tip to the spot. The fact that this line will actually have an arc in its trajectory to the spot is of little concern. We only need to be concerned with seeing the arrow as it would start its trajectory to the spot.

Remember to keep your concentration on the spot and aim the arrow using your peripheral vision for the alignment and trajectory. From your pre-draw and pre-aim position, draw the string and arrow back to anchor in as straight a line with little or no movement of the bow hand. This is also the time to be aware of any turning or twisting of the bow that would cause a change in the arrow's alignment at the arrow shelf. Once the anchor is reached, being sure you establish a firm anchor by pulling in line and not pressing into the anchor, maintain the feeling of drawing with your shoulders as well as with an equal push from your bow shoulder to your bow grip. (Simply feel the same muscle tension that is equal in both shoulders.) Note: If you press your string hand into your face at an anchor you will be using your biceps and triceps and upon releasing this causes a flip that results in an arrow flying to the right (for a right-handed archer). Pull into your anchor in

line and press with your head slightly to feel a firm anchor as you pick up the arrow shaft in your peripheral vision in the act of aiming.

The next step is to lean your head over, like placing your cheek on a rifle stock to align the rear and front sight. Remember: archery is a shooting sport and the same principle of aiming a gun applies to aiming the arrow. If you only see the front sight of the rifle and part of the barrel so that the rear sight is to the right, you will shoot left for a right-hand shooter. The same applies to the arrow, but the nock and the tip must be in line with the spot.

To achieve this string/arrow/spot

alignment, you must hold the bow so that the string will be to one side of the limb so that it will match the build out in the bow window. If the bow is held, or the anchor is located so that the nock is not under the eye, or the string is aligned with the center of the bow, the right-hand archer will shoot to the left of the spot with properly spined arrows. This alignment of the string with the center of the bow, instead of aligning with the arrow, makes it difficult to find an arrow with the right spine. Arrow tuning will be for another article, as all we have to compensate for is the inertia of the arrow that is matched to proper arrow string alignment. This is the very reason the short draw will work quite well as it is easier to align the arrow.

In canting the bow, it is not the canting of the bow, but the leaning of the head that places the eye over the shaft that really helps in aiming. The shape of your face can greatly affect anchoring, head cant, and draw length when trying to get your eye over the arrow shaft. The archers who shoot three fingers under

the nock are well aware of the importance of seeing the full length of the shaft under their dominant eye. It results in making better use of the full-length

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alignment of the shaft. The important thing is knowing how to aim the arrow from any anchor if you simply get your eye over the full length of the arrow shaft.

How far below the eye the nock is placed has always been a question. Find an anchor to match the distance to be shot. You do not want to use an anchor so high on your face that you would be shooting at game beyond your point on range.

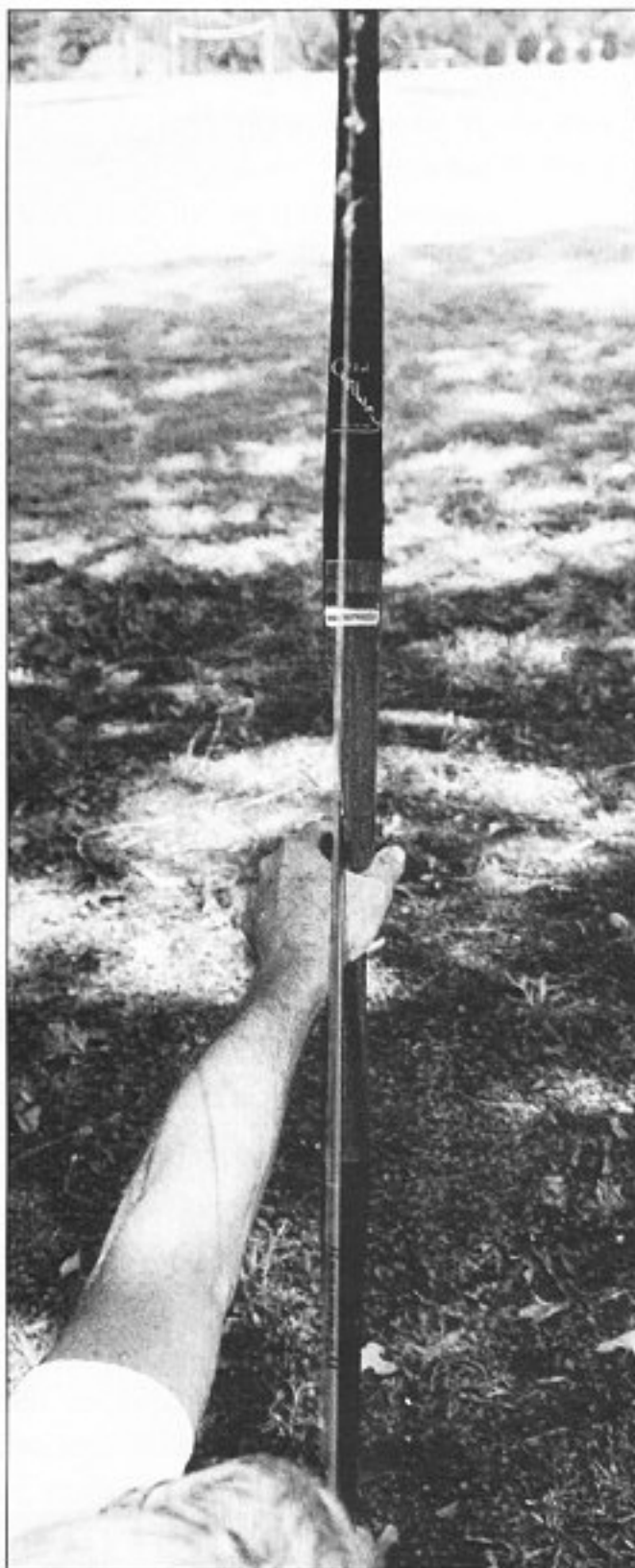
Point-on range refers to seeing the tip of the arrow on the spot, this occurs when the distance to the spot and the arrow's trajectory converge when anchored at a full draw. Some archers know the distance to each target and use multiple anchors. There is a good aiming technique, but it takes a lot of practice and a lot of concentration.

Once aiming is learned, depending on the game or round being shot, yes, the tip of the arrow can be used as a direct reference setting a gap to match a known distance. That is simply using your intelligence to master the art of aiming the arrow. Learning all of the different steps needed to aim the arrow will become automatic with enough practice, so little conscious thought will be needed, and that is when shooting and aiming becomes almost like an instinct. Any learned behavior can require little conscious thought with practice, practice, and more practice.

In closing, a simple approach to aiming will give you a basis that can be used for any shooting style and you will be able to use this basic style to see when making changes may help your aiming. Only when every arrow is aimed correctly and the execution of the release has the least disturbance to the aim, will you be able to make intelligent decisions regarding bare-shaft tuning, selecting arrow spines, and making changes to your equipment, such as tabs, gloves, and bow grips.

Here are some tips that will help your awareness of the arrow when aiming:

- Use light-colored arrows, carbon or dark stained arrows are hard to see in your scenic view on dark days or early or late in the day.



Arrow/target alignment is the key to accuracy!

- Use arrows that are one and a half to two inches longer than your draw length, you will find they are a lot easier to aim.
- Place Styrofoam cups at five-yard intervals at an angle to your shooting line then taking an arrow, place it in the "V"

of your thumb and index finger of your bow hand, then hold the arrow with the nock at your anchor and aim the arrow at the different cups to develop a feel for trajectory as viewed with your peripheral vision. When you are practicing your aiming of the arrow and looking at the cup with both eyes open to help with judging distance, pause and close your left eye if you are anchoring below your right eye and you will notice a clear view of the aligned arrow with your peripheral view. The brain can give undivided attention to the one eye being used and with this clear view of the arrow move the nock end slightly and you will become aware of how little movement at the nock end it takes and you will not be aiming inline at the cup. This is also the time to try moving the head to place the eye in a position that gives you the best alignment of the arrow. Then practice with the bow, aiming the arrow at each cup, being very aware of the arrow's aligned trajectory at each distance. This will help you to develop a feel for each given distance.

Now go to your target and shoot one arrow staring at five or ten yards moving back five yards at a time and put your aiming practice to use. Remember, these are training exercises to help you develop motor skills that will be used when we are finally ready for the perfect shot that feels oh-so-good.

In our next series on aiming I will give you insights into how aiming can help you master target panic—and the dreaded "short draw."



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