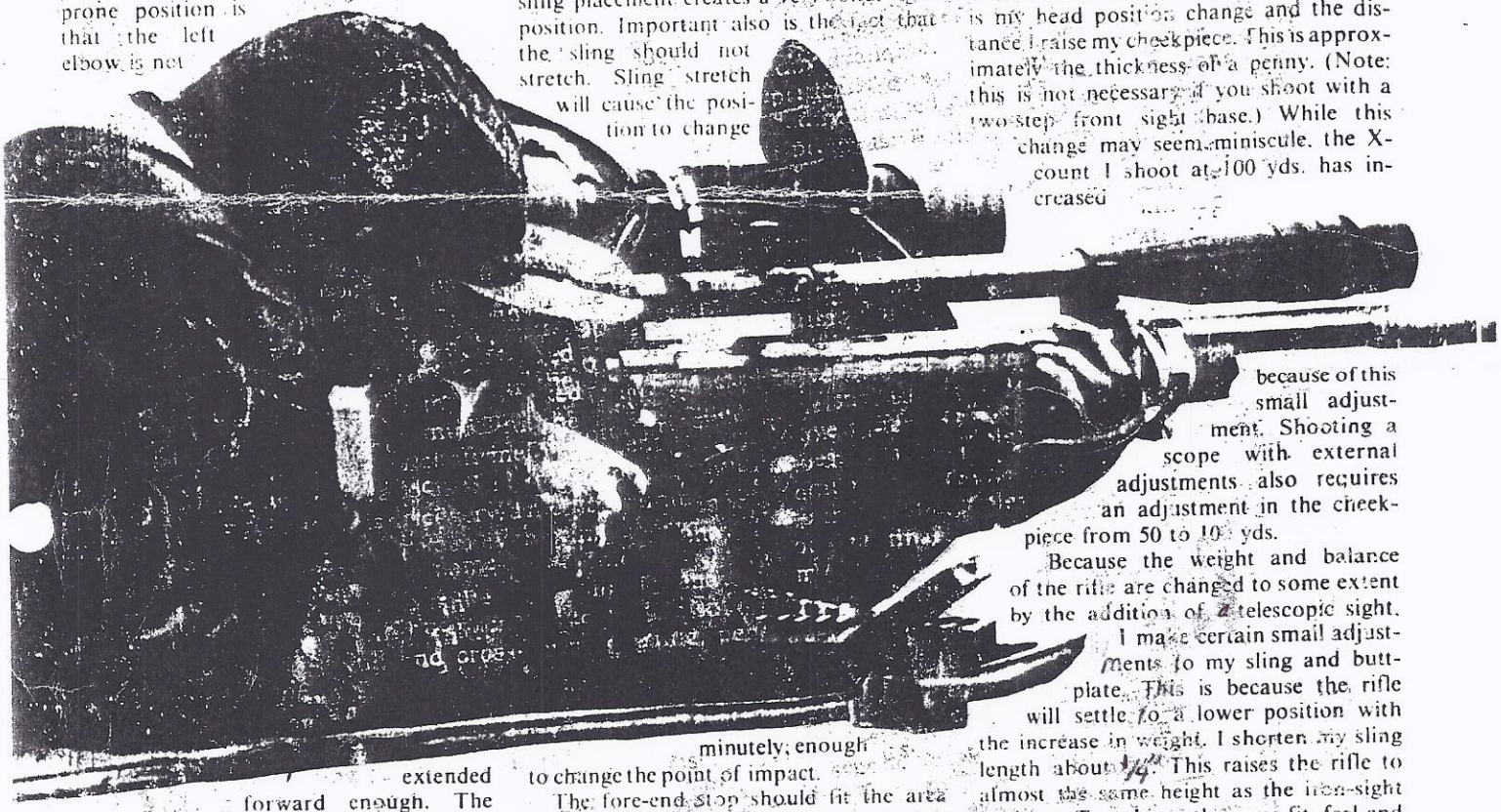
PRODUCING winning prone scores literally requires that hundreds of details fall correctly into place. Here we'll discuss some primary areas of importance that hopefully will point you in the direction of the winner's circle.

First, the position itself is the most important aspect of prone shooting. The shooter must be able not only to maintain a 10-ring hold, but a hold in which the front aperture and rear iris system appear to be motionless. To acquire this hold, the position itself must first be examined.

The most common error found in the prone position is that the left elbow is not extended forward enough. The elbow must be fully extended toward the muzzle and should also be placed slightly to the left of the rifle in order to achieve stability. The rifle must fit tightly into the shoulder and the buttplate under the collarbone. My experience with the best prone shooters has taught me that this tight fit is very important and rather universal. In fact, after a prone match the best shooters will have a red spot on the skin of the shoulder where the rifle has been placed. This spot may be present for a few days.

When we stated that the rifle must appear motionless, some readers may have thought that this is impossible. The average shooter can achieve this stability if he is willing to significantly tighten his sling. This initially creates two challenges: (1) pain in the left hand/arm and (2) further restriction of blood flow in the left arm which causes the arm "to go to sleep" faster. Both challenges can be overcome with proper body conditioning through training.

The sling should be placed anywhere on the arm that allows the least possible pulse beat to be picked up and transmitted through the sling to the rifle. The sling should be the maximum legal width, which is 40 mm for international shooters. The purpose of the large sling width is to spread the weight of the rifle over as wide an area on the arm as possible. Using a sling with a smaller width will place all the rifle weight in a small area, causing increased blood flow restriction in the left arm. I personally prefer a high sling. A minimal amount of pulse beat is encountered, and the high sling placement creates a very solid, tight position. Important also is the fact that the sling should not stretch. Sling stretch will cause the position to change minutely, enough to change the point of impact.



The fore-end stop should fit the area between the thumb and index finger comfortably. If you look at your hand you will notice that it appears rounded between the thumb and index finger; the rounded type of fore-end stop seems to be the most popular. Normally, the fore-end stop is placed forward of the trigger at a distance equal to the trigger to buttplate dimension.

The shooter should lie 5 to 15° to the left of the line of fire, in an extended position with his back straight. The left leg should also be straight and parallel to the backbone with the toes perpendicular to the ground or pointed in toward the position. His right leg should be brought up so the upper part of the leg creates an angle of approximately 45° to the angle of the spine. The lower right leg should be parallel to the left leg with the toe pointed perpendicular to the ground or turned out away from the position. The force of the grip used by the right hand on the pistol grip is approximately equal to what you would use to pick up a quart of milk.

Now that the position is firmly set, we want to maintain the exact same feeling and placement — consistency. To accomplish this the spotting scope and ammunition must be placed very close to the position. The spotting scope is placed so close that the shooter need move his head only an inch or two to spot the shot and then assume the exact same head position. Regarding head position, I have found one adjustment that has helped increase my 100-yd. iron-sight scores. This is to raise my cheekpiece when moving from 50 to 100 yds. My Anschutz sight moves .0015" per click. Thirty-six clicks, or six minutes of elevation change, equal .054" which is my head position change and the distance I raise my cheekpiece. This is approximately the thickness of a penny. (Note: this is not necessary if you shoot with a two-step front sight base.) While this change may seem miniscule, the X-count I shoot at 100 yds. has increased because of this small adjustment. Shooting a scope with external adjustments also requires an adjustment in the cheekpiece from 50 to 100 yds.

Because the weight and balance of the rifle are changed to some extent by the addition of a telescopic sight, I make certain small adjustments to my sling and buttplate. This is because the rifle will settle to a lower position with the increase in weight. I shorten my sling length about ¼". This raises the rifle to almost the same height as the iron-sight position. To achieve the same fit, feel and contact area between shoulder pad and buttplate in the scope position as in iron, I also raise the buttplate ¼".

A consistent recoil is also important. Recoil is the movement the rifle makes when the round is fired. Because rifle movement influences the strike of the bullet, it is fundamental that this movement remain constant and consistent in direction. Since the rifle is held into the shoulder and the sling is also very tight, the recoil produced is small and consistent. Consistent recoil also affects follow through. Follow through is the mental and physical continuation of the act of shooting the shot until the bullet has exited the barrel. Proper follow through will assist you in correctly calling your shots.

About six years ago I came to the conclusion that I was just an average prone shooter who did not possess the skill necessary ever to become a prone champion. At that time the best-shooting rifle I had averaged .85" for four 10-shot groups

at 100 yds. What I did not possess was a rifle capable of winning. At the time I did not realize the importance of this fact. I decided to set a personal standard of .70". If my rifle did not meet this standard, I would vary the torque, the glass bedding or change the barrel, regardless of the number of rounds fired through the barrel, until I achieved this standard. Roughly six or seven barrels and many glass jobs later, I reached my personal goal standard of .70".

The first time I fired the rifle was at the Western Wildcats Match. I won the first match, a Dewar, firing a 200-20X iron sights at 100 yds. — the only one on the line. I immediately saw the distinct difference between the accurate rifle and the rifles I had been firing. My shots were much closer to call and my groups more consistent in their pattern. You may think the .15" improvement between .85" and .70" is too small to make a difference. However, the difference can be seen on the awards bulletin, and as long as you shoot with a rifle that groups large you will rather consistently be beaten — not by skill, but because you are out-gunned.

How should you test your rifle? I don't know a patented method, but I'll share mine with you. I place the rifle in a test cradle and fire four different 10-shot groups. I repeat this test with many different lots of ammunition, i.e., 10 lots. I then change the torque on my action screws from 15 in.-lbs. to 20 in.-lbs. and repeat the test. I continue to repeat the test at 25 and 30 in.-lbs., but not until all lots have been tested at the previous torque. I clean the rifle, which remains clamped in the cradle, approximately every 120 shots. After all the test groups have been fired, the shot groups are then measured in inches from the center of the two furthest shots in the pattern. This measurement is known as the extreme spread of the shot group. It is also important to look for lots with round groups as opposed to a lot that tightly groups nine shots, but has one wide shot to increase group size. After each test group has been examined, I select three or four of the smallest averaging lots. Then I fire the lots from the prone position, in the wind, to find which lots seem to best buck the wind. The best of the four lots is then selected as the primary match lot, and the second as a back up lot. *Do not* underestimate the value of a highly accurate rifle! It's worth the extra trouble and expense to develop one.

Correct stock fit is also important. I have often observed a shooter firing and noted his head jittering back and forth on the stock. This is a result of incorrect stock fit, and the shooter is using muscles to compensate. Just as in the other positions, the prone position requires that your muscles be relaxed. How do you determine if your stock fit is correct? A rather famous gunsmith and prone shooter, John Chapman, has developed a workable method. Set up your shooting gear just as if you are going to shoot a match, except leave your rear sight off. Now get in your normal prone position. The target will appear very fuzzy, but place it as best you can in the center of the front aperture. Shoot five shots without removing your cheek from the stock. Let's say for example that you have no shots in the black but all shots are generally grouped outside to the left and about nine o'clock. Therefore, with your head in a normal relaxed firing position, the cheekpiece needs to be filed in toward its three o'clock side. Doing so will place the windage line of sight in line with the line of sight that your front and rear sights make. If the shot group is high, filing would also be done toward six o'clock to correct the elevation line of sight. Now the shooter must again shoot five shots to find out how the filing has changed his shot pattern. If the second shot pattern continues to be outside the black of the target, repeat the process until generally all shots are hitting the black.

Remember when filing to take off a little at a time. It is easier to remove wood than it is to add it on later. When shaping the cheekpiece I recommend forming a dish. This aids the shooter in proper and consistent head position. Once the dish is fitted to the head position, any incorrect placement will provide a very different feel, and the shooter will be alerted to move his head to the normal placement.

Now that you have an accurate rifle and a good stock fit, you're ready to shoot Xs. However, occasionally these great guns don't always shoot where you want them to or expect them to. What's wrong? A number of areas could cause problems of which you must be aware, and aware of how they affect accuracy. Remember, if you want an accurate rifle, it is up to no one but you to insure you have one. Most shooters have their rifle work done by gunsmiths. Upon receipt of the rifle from a gunsmith, his work should be checked. This is not to criticize the work of gunsmiths. A gunsmith is human, and humans make mistakes and occasionally overlook things.

Check the action screws to make sure they are not bottoming. If one is bottoming it usually is the front screw. With the rifle in the stock tighten the screws until they are very snug. Then loosen the screws and count the revolutions or any portion thereof. Now take the barreled action out of the stock and insert the front action screw until the screw just starts to engage the first thread. Turn the screw and count

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Prone To Win

BY ERNEST J. VANDE ZANDE

Prone To Win

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the revolutions and any portion thereof until the screw hits bottom. The number of turns the screw makes when the barreled action is in the stock should be fewer than the number of revolutions the screw makes when the barreled action is out of the stock. If the screw does not do this, it is too long and can be made shorter simply by filing down a thread or two and then repeating the entire process.

The back action screw usually doesn't bottom. If it does you will know immediately because the bolt will not slide in or out. Make sure the screws do not bind in the glass. This can be checked by placing the screws in the action screw holes, without the barreled action. Turn the stock so the screw heads are facing the ground. The screws should easily and freely fall out of the stock. Also look at the action screws to see if there are any shiny marks on the sides. These marks indicate that rubbing is occurring on this spot. Check the trigger to make sure it is not touching the wood — front, rear or either side. The trigger should also be completely free of the trigger guard.

Another common problem is the bolt not closing all the way because it hits the wooden stock. This can easily be checked by putting a bit of grease on the underside of the bolt handle and closing the bolt. If grease appears on the stock you know the bolt touches the wood, and the wood needs to be filed for clearance.

If your glass bedding is a few years old and beginning to pull away from the barreled action, it may be time for a new glass job. This fault can be characterized by a wild shot outside the normal group from a rifle that has been fouled and the barrel warmed from use. For example, you have been shooting 50 yds. and you change to shoot 50 m. The first shot is usually in the five ring, but the remaining sighting shots, without changing your sights, are in the nine and 10 ring.

It is also important to clean your rifle. There are many ways of correctly cleaning your rifle, and I'll not attempt to go into this area. However, when you clean be very careful to keep all solvents and oils from running onto the glass bedding between the barreled action and the glass. This can happen by solvent seeping in through the action screw holes. If this occurs, wild shots will result and some types of glass bedding can be destroyed by the solvent. By placing the rifle on its side while cleaning, no solvent should run onto the glass bedding.

A shooter might have the world's most accurate rifle, but he'll never win a match if he can't see his targets properly. Good sights are a must, but what are good sights? Sights can be considered good if they allow you to see the target distinctly, and the movement is accurate. Most shooters use a blinder to filter out unnecessary images that deter from total concentration on the sight system and the bullseye. An adjustable iris with filters is a necessary piece of sight equipment. The iris is normally adjusted to 1.1 mm. However, the iris should be adjusted to the position on the scale that allows you to see the clearest and sharpest sight image. Filters also assist in determining the sharpness and clarity of the image. I personally use only the smoked filter and then only in bright light. Normally my rear sight is set on 1.1 mm with a light smoked filter applied. The front aperture size used for prone should be smaller than that used for other positions. The aperture should be large enough for you to determine a distinct ring of white between the black bullseye and the black ring of the front aperture. A large or thin flanged aperture may be used — whatever you believe looks best to you. I personally use a 3.2 mm thick flanged clear plastic front aperture.

The use of a spirit level on the front sight is extremely important. I refer to it on each shot to assure the cant of the rifle is consistent. Shooting at a distance of 100 yds., each degree of angle the rifle is moved to the right or left changes the strike of the bullet hole. The amount of change is equal to ¼" for each degree of cant the rifle is moved. The direction of cant change will determine in which direction the change of the bullet hole strike is made. When you take into consideration the rifle groups at .70" and add a 4° change, the result is a bullet hole strike change 1" off call. You have just shot a 10 and not an X. Add a small wind variation and that 10 becomes a nine. So it is obvious why it is extremely important for the cant to remain constant.

Accurate sights are a must, but how do we know they are accurate? Rear sights should be checked periodically with a dial indicator to insure that each click moves the sight the same amount, that there are no dead clicks or that there is not an excessive amount of play. If your sight does not check out, take a few moments to clean it. This will probably restore the overall accuracy. Cleaning should be done by first removing the iris and filter group. Place the sight in acetone, and while it is immersed, move the windage and elevation knobs to insure the cleaning of all portions of the moveable sight parts. Remove the sight and blow off excess acetone until dry. Now put a light coat of oil on all moveable parts and blow off the excess oil. Replace the filter and iris and repeat the sight testing process using the dial indicator. Should the sight adjustments continue to be inaccurate, replace it.

A game plan is as essential to dependable prone shooting as an accurate rifle. Most shooters that walk up to the line lay down and start shooting the match. This is done with no thought of what they want to do or how they will do it. Normally, these are not the fellows who will win. Long before the match, I outline all the variables that could possibly happen and the best way to react to each. When I walk up to the line I know exactly what I am going to do and what is the best, most logical course of action to take should circumstances change during the match. During the preparation period, I assess all conditions — wind velocity and direction, mirage, grass/weeds bending, or anything that will assist in determining the predominate conditions. I then formulate how I will fire that particular stage of the match. When the command to commence fire is given, I am already ahead of 90% of the firing line. I know what I'm trying to do, and in what type of condition to do it.

There are four basic methods of shooting in the wind: (1) pick a condition, (2) estimate wind velocity and make sight corrections, (3) a combination of these two methods, and (4) chasing the shot. The critical factor in all four methods is to know your zero and how the zero is affected by what goes on around you. It is of the utmost importance to know your zero. The most desirable method is picking a condition. This method has the smallest number of variables since you only shoot when all conditions are exactly the same as the one you picked to sight in. The one disadvantage of this method is that it can require a great deal of time. Estimating wind direction and velocity and correcting for their changes is also a popular method. The disadvantage of this method is that your estimation had better be correct. The only way to prove your estimate is correct is to shoot a lot of sighters. To learn this estimation normally requires a great deal of shooting experience. The combination, pick a condition and estimate the changes, is more complex and makes it a bit more difficult to know your exact zero. This happens to be my personal favorite, and I usually utilize this method. Finally, chasing the shot. This is a plan of desperation and normally utilized when you are running out of time and making adjustment only by the print of the last shot.

The game plan is a flexible plan. If you formulate your game plan and it does not work, go to a second plan. I have, on occasion, fired matches and stages of matches where I used three different game plans. This wasn't because I was wrong in my initial selection, but because the plan must be flexible enough to change with the existing variable wind conditions. I've often heard it said that prone shooting is a game of luck or chance. Luck plays an important part in all our lives. However, I tend to agree with the thoughts of Louis Pasteur, "Chance favors the prepared mind."

Everything that has been discussed here can be classified as homework. It has been said that the man who wins the match is usually the man who has done the most homework. In no other type of shooting is this so true as in prone shooting. ■