Firearms

Introduction

No one really knows who invented guns and gunpowder. History books credit the ancient Chinese with making the first explosive powder; a 13th century English doctor with discovering gunpowder ingredients in the Western World; and an Italian chemist with combining several different chemicals to produce powders which would ignite and explode.

In a very short time, man learned the possible uses of gunpowder. By putting this powder and pieces of metal together in a long tube and igniting the mixture, the metal was "shot" from the tube at great speed.

The development of guns and gunpowder grew with mankind's progress after the Middle Ages, evolving from this first "fire-stick" to the rifle and the handgun—the firearms which the pioneer used to feed and protect his family.

The pioneer learned to understand his gun, to know what it could do and what it could not do, and he learned the limits of his own ability. The man of that era was judged on his word, his way of life and his ability to shoot well.

Today, people are far less dependent upon shooting firearms to provide food and other necessities for survival. Shooting has become a form of recreation for many people.

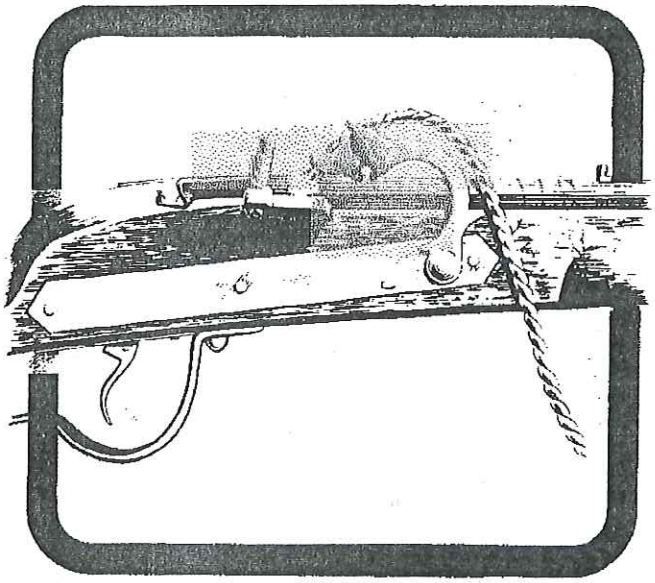
History of Firearms

Matchlock

The matchlock was the principal firearm used by early explorers as they ventured into the wilderness. The matchlock was named after the manner in which the firearm was set off. A match ignited the powder to set off the charge.

The first match was a twisted rope of hemp which had been soaked in a solution of saltpeter and wine. It burned slowly and steadily.

Before match was invented, the shooter fired his gun by touching the powder with a red hot wire or a glowing coal. He could never stray far from a fire. However, a match would burn for hours allowing the hunter more freedom to pursue game at greater distances.



The matchlock had a simple S-shaped piece of metal called a serpentine fastened to it which held the smoldering match in one curve, away from the priming powder. When ready to fire, the shooter pressed the opposite end of the serpentine. This automatically moved the lighted match, bringing it into contact with the priming powder in the pan, thus setting off the charge. When the pressure was removed, the end of the serpentine holding the match moved back to its former position.

This serpentine mechanism was the first trigger. With it, the shooter was now able to hold the gun with both hands and aim more accurately.

Wheel-lock

The matchlock had many disadvantages. Weather was the worst problem. Rain or high wind would put out the match, making the gun useless.

The solution to this problem came in the form of a new kind of firearm—one that did not need a lighted fuse but produced its own fire for igniting the priming powder.

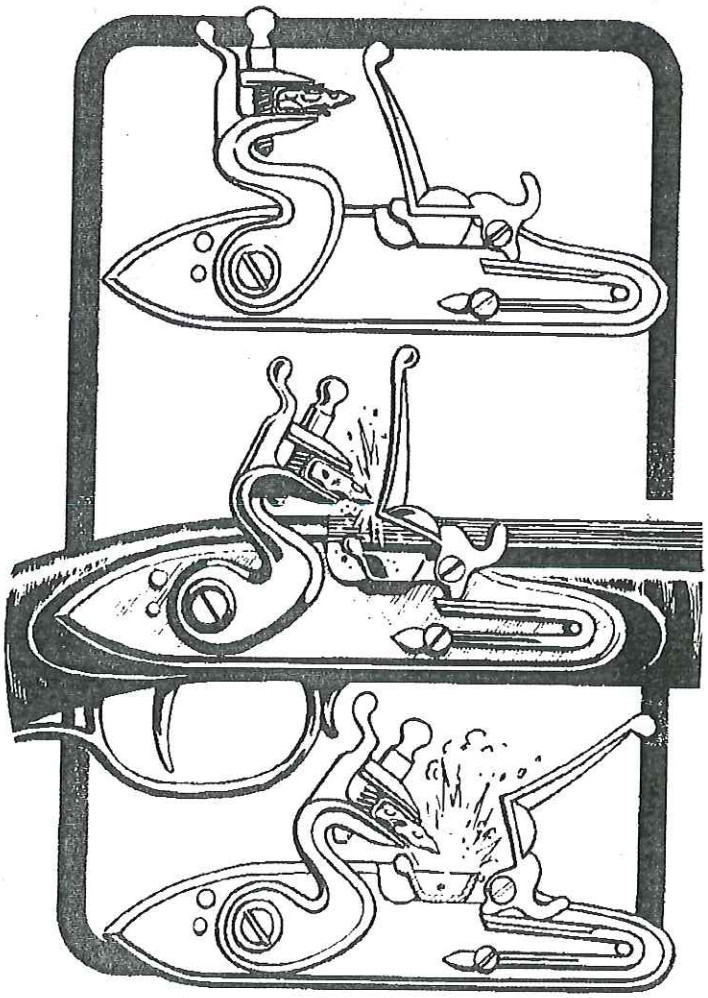
The device was called a wheel-lock and it worked much like the modern cigarette lighter. The wheel-lock mechanism was wound against the tension of a strong spring. When the trigger was pulled, a serrated wheel revolved against a piece of flint. This caused sparks to ignite the powder and discharge the bullet.

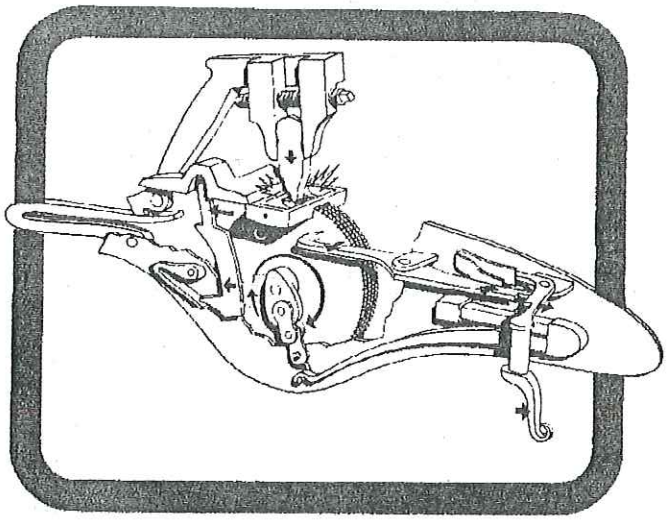
Flintlock

Although superior in many ways to the cumbersome and dangerous matchlock, the wheel-lock, too, had some serious disadvantages. Its lock was a complicated mechanism and therefore was expensive. It was slow because the wheel had to be rewound after each shot before the gun could be loaded and primed and ready to fire again.

A more practical ignition mechanism was needed. The answer came with the flintlock. The new lock was simplicity itself, producing its spark by striking flint against steel.

In the flintlock, the flint was clamped to the cock. The steel

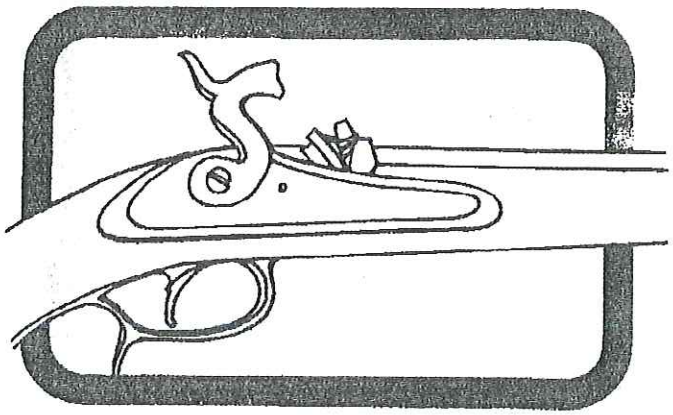




was directly opposite the cock. When the trigger was pulled, a strong spring snapped the cock down, striking the steel with the flint and producing sparks which fell into the flashpan below.

Percussion Cap

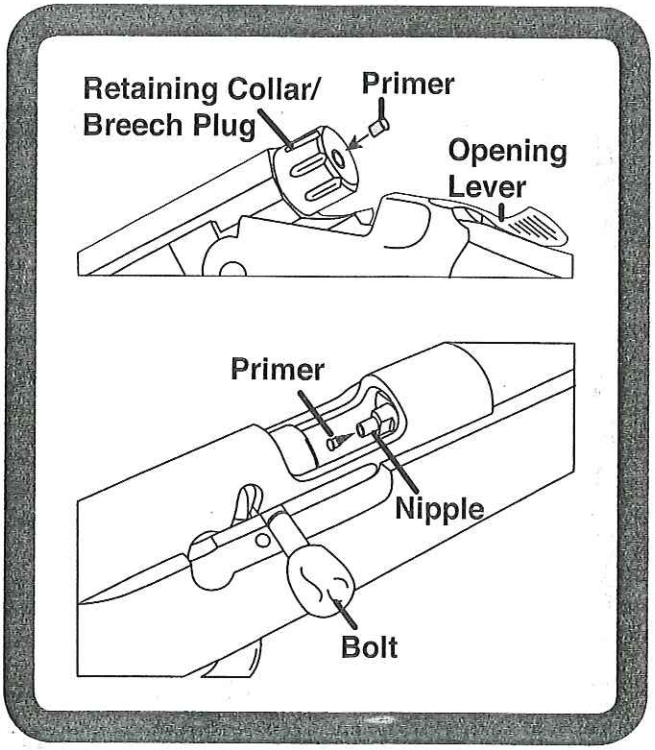
For almost 300 years, firearms were based on the principle of producing a spark by striking flint against steel. Then in the early 1800's, a powder which would explode when struck a hard blow was discovered and a new means of ignition was invented.



The percussion cap firearm used a separate self-contained primer called a "cap." The cap, which contained the new explosive powder was placed on a cone. When the hammer hit the percussion cap, the powder exploded, igniting another powder charge which propelled the bullet. This new ignition system led to the development of today's modern ammunition.

In-Line

In-line percussion rifles have become very popular. They get their name from the fact that their percussion lock mechanism is placed behind and in line with the barrel's bore, rather than alongside it. This arrangement provides faster and more reliable ignition than the other lock types. They are especially popular with hunters because the nipple and percussion cap are covered and thus are more



protected from moisture, rain, and snow. In-line rifles are often equipped to use standard shotgun shell primers for the percussion cap as an aid to quick, dependable ignition. Although they usually look like modern rifles, they function like any other percussion muzzleloading rifle.

Modern Firearms

All early firearms were loaded from the muzzle. The major difference was the way in which the gun powder was ignited.

The next major advance in firearms design was the development of the cartridge. A cartridge is a container or case made of metal or cardboard which combines the ignition system, the propellant, and the projectile into a single unit. All modern firearms are based on the development of the cartridge.

Today's hunter has a wide and varied choice of firearms and ammunition designed to give excellent performance in specific situations.

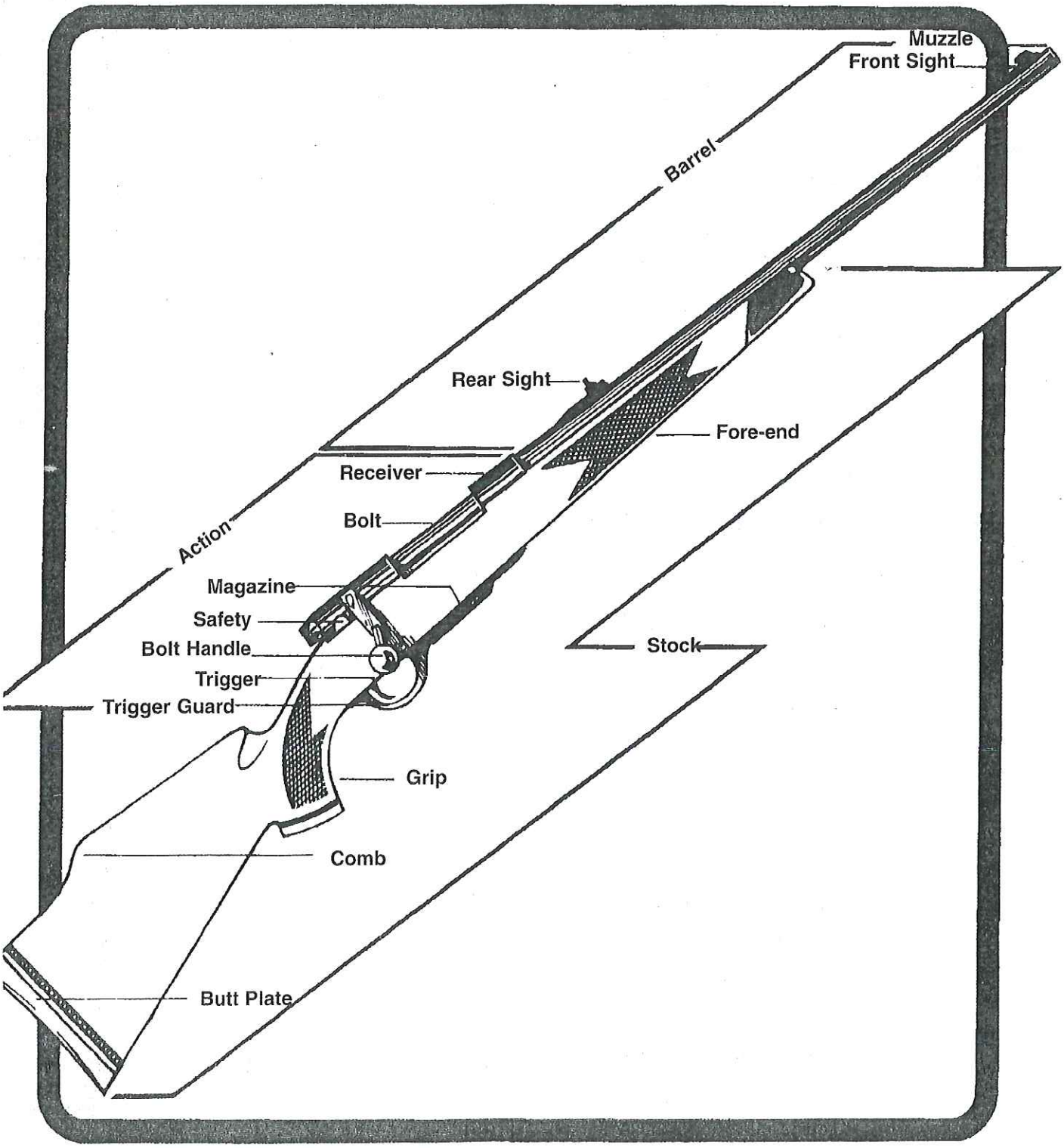
Before deciding which firearm is best for you, you should understand how each type of gun works and which is best suited to your needs for the kind of game you intend to hunt.

Firearms Characteristics

Before you can use a firearm safely, you must know the names of its parts and how they work. The mechanisms of most firearms are basically the same and so are their names.

Every gun has three major sections: the stock, action and barrel.

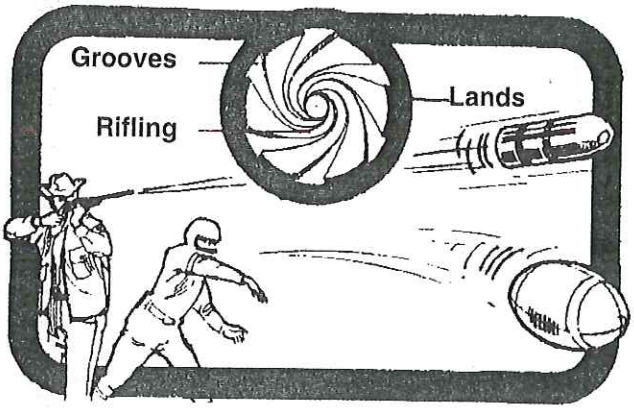
The stock assembly is the handle of the firearm. It is usually made of wood or synthetic material. The action assembly is the heart of the firearm. It contains the moving parts which load the gun, fire the ammunition and extract the empty shell case. The barrel assembly is the metal tube through which the bullet or shot travels when the gun is fired.



Rifling

Rifle and pistol barrels have a series of spiral grooves that twist through the "bore" or center of the barrel. The ridges of metal between the grooves are called "lands." The lands and grooves together make up the rifling.

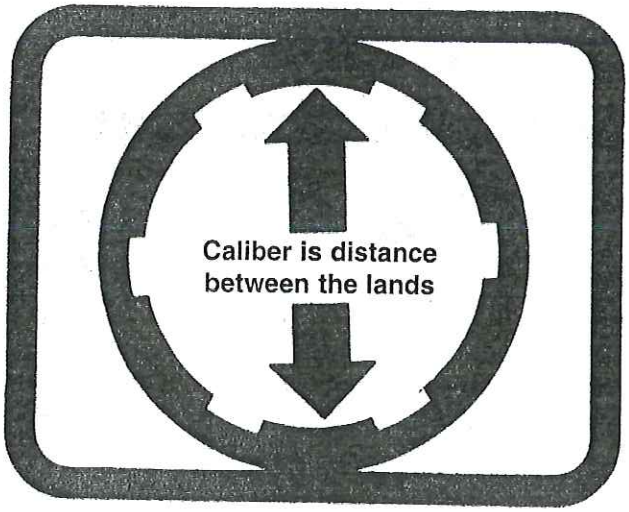
Rifling makes the bullet spin as it leaves the gun so it will be more stable in flight. Rifling gives the bullet greater accuracy.



Caliber

The caliber of rifles and pistols is the inside diameter of the barrel before the rifling has been cut.

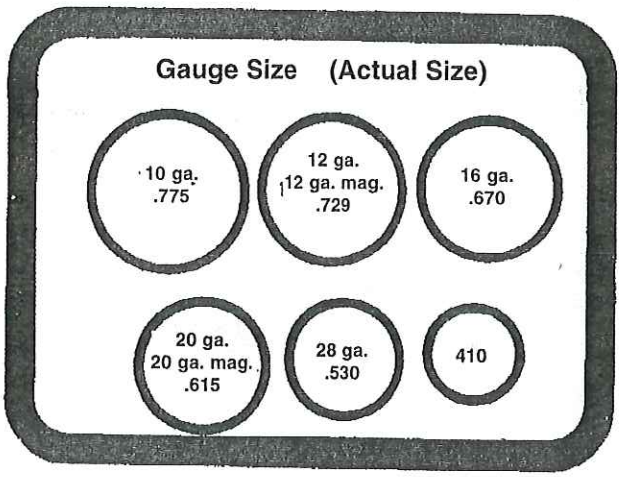
Caliber is usually expressed in hundredths of an inch or in millimeters. For example, a .22 caliber barrel measures 22/100 of an inch in diameter. Calibers vary all the way from .17 to .600 caliber.



Shotgun Gauge

Shotgun barrels are classified by gauge instead of caliber. Gauge is determined by the number of lead balls (each having the same diameter as the bore) that weigh one pound. For example, find a lead ball that is the same diameter as a 12 gauge shotgun barrel. It will take 12 of these balls to make one pound. This is what we know today as a 12 gauge shotgun. One exception to this rule is the .410 shotgun which is actually measured in caliber.

The most common sizes of shotgun gauge are 12 gauge (the largest in practical use), 16 gauge, 20 gauge and .410 (the smallest).

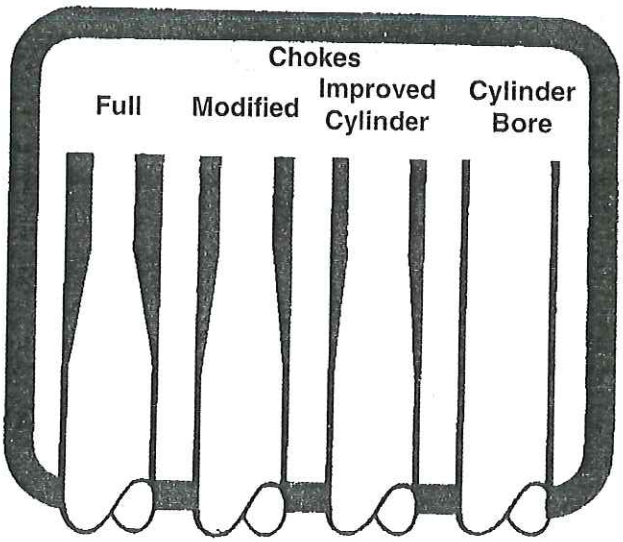


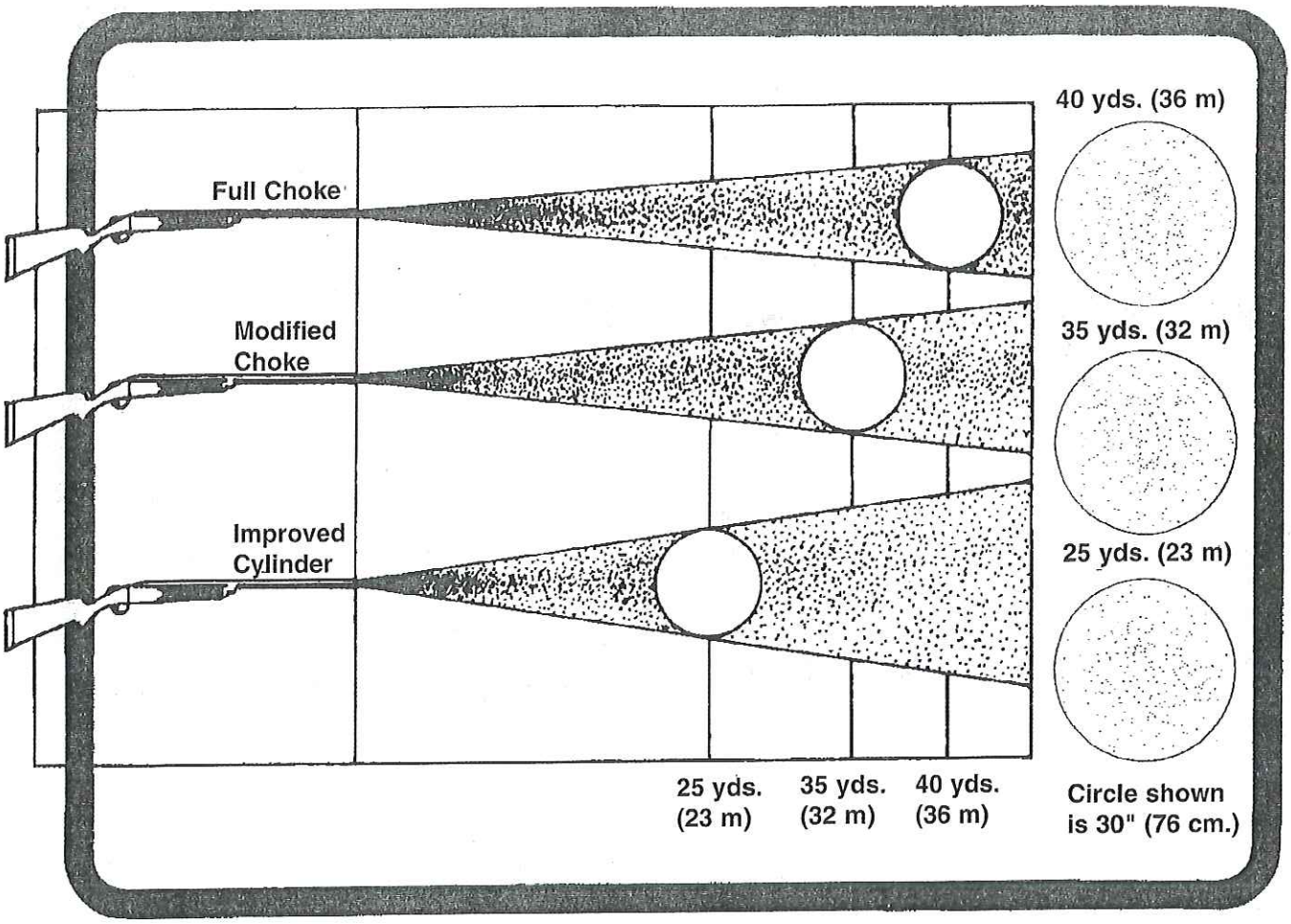
Shotgun Choke

The narrowing found at the muzzle end of most shotgun barrels is a choke. The choke controls the shot pattern and determines at what distance the shotgun will be most effective.

Just as the nozzle on a hose controls the spray of water, the choke of a shotgun barrel controls the spread of the shot. This shot spread is called the "pattern."

From the tightest to the widest spread, chokes are described as "full," "modified" and "improved cylinder." A gun barrel which has no choke is called a "cylinder bore."

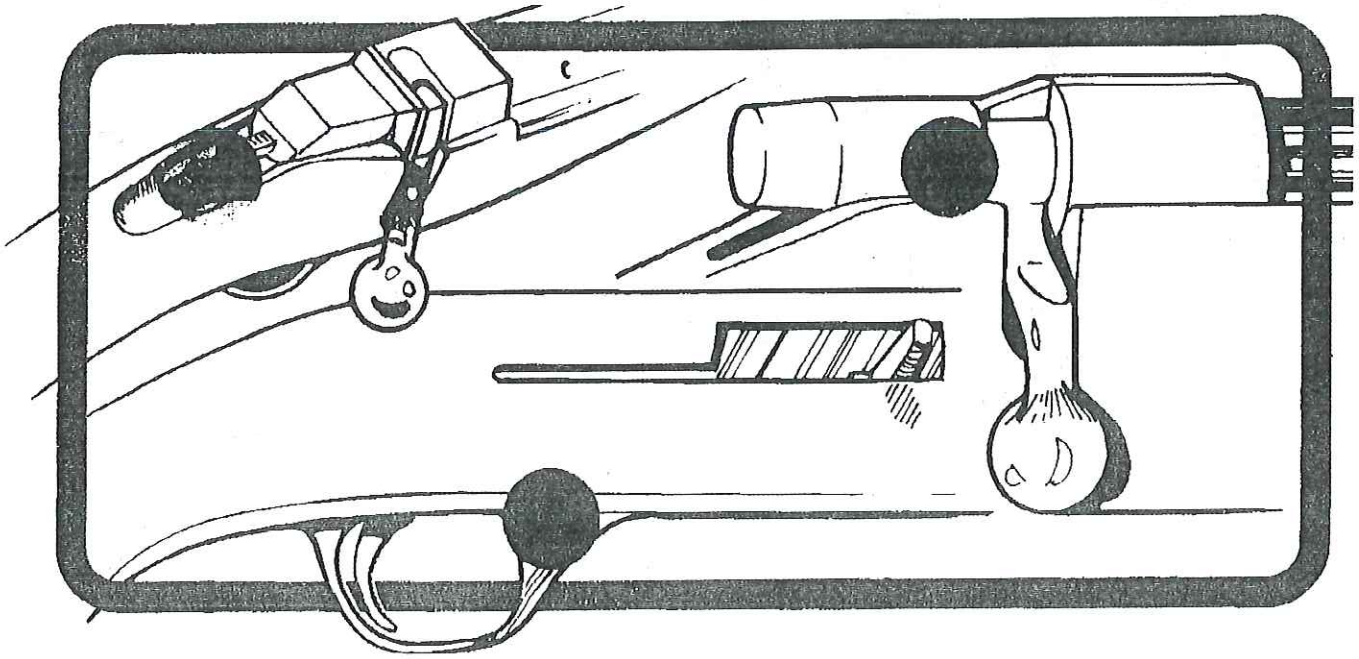




Safety

The safety on a firearm locks the trigger and blocks the gun's action so it cannot be fired.

In order to fire, the safety must be in the "off" position. Located near the trigger, it can be released easily and quickly immediately before shooting.



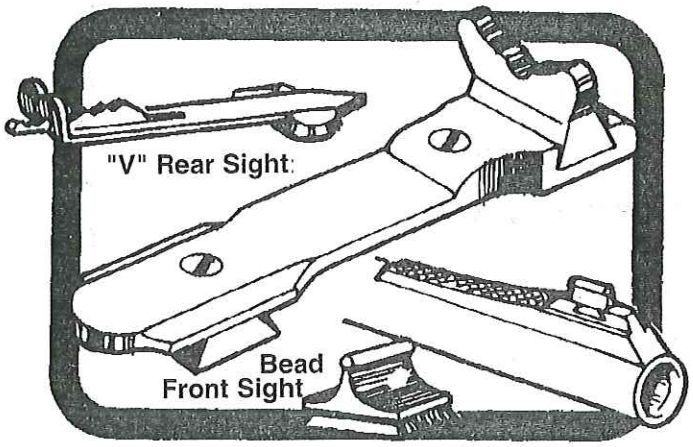
Sights

A sight is a device used to aim the firearm. There are three basic types of sights—open, aperture and scope.

Rifles may have any of these three types of sights. Handguns usually have open sights. Most shotguns have only a front sight called a bead although some may have open sights.

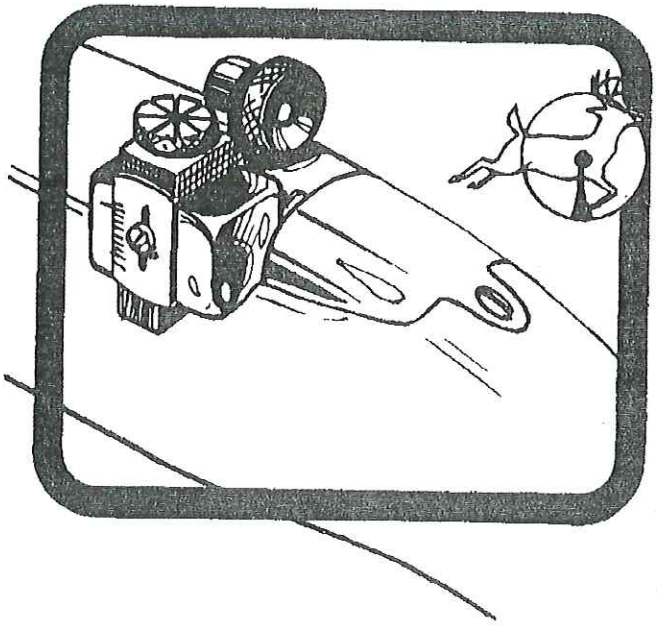
Open Sight

Most factory-issued rifles and handguns are equipped with an open rear sight and front bead sight. To aim, the shooter must line up the front bead with the rear open sight and with the target. This type of sight requires time to aim accurately and may be used with success when speed is not a factor.



Aperture Sight

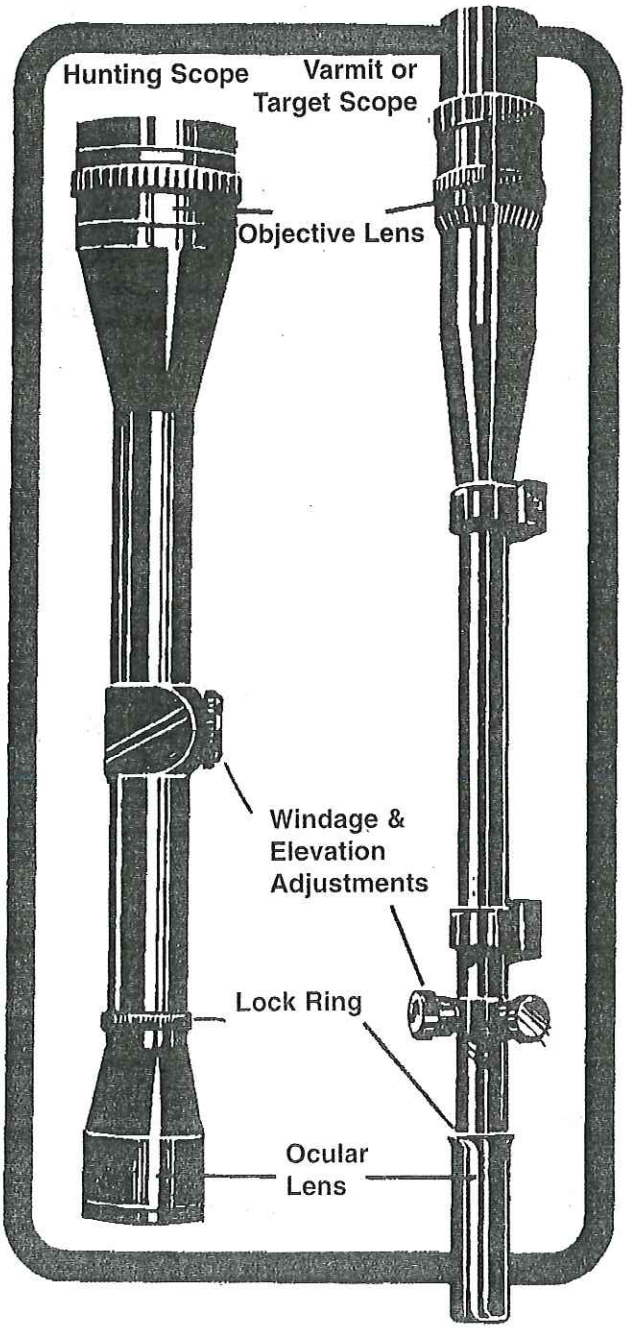
The aperture is called a "peep" sight because it has a small hole that you peep through to aim at the target. All the shooter has to do is look through the peep hole at the front sight, then hold the front sight on the target.



Because the human eye, when it looks through an aperture or small opening, is naturally drawn to where the light is brightest (which is the exact center of the peep), the peep sight is more accurate than the open sight.

Scope Sight

The scope sight is a mini-telescope mounted on the rifle. It simplifies sighting because the shooter needs to focus on only one object—the target. The scope sight helps the hunter see the target better because it magnifies, making the target appear larger and closer. It is designed to gather light so the shooter can identify a target even under dim light conditions.

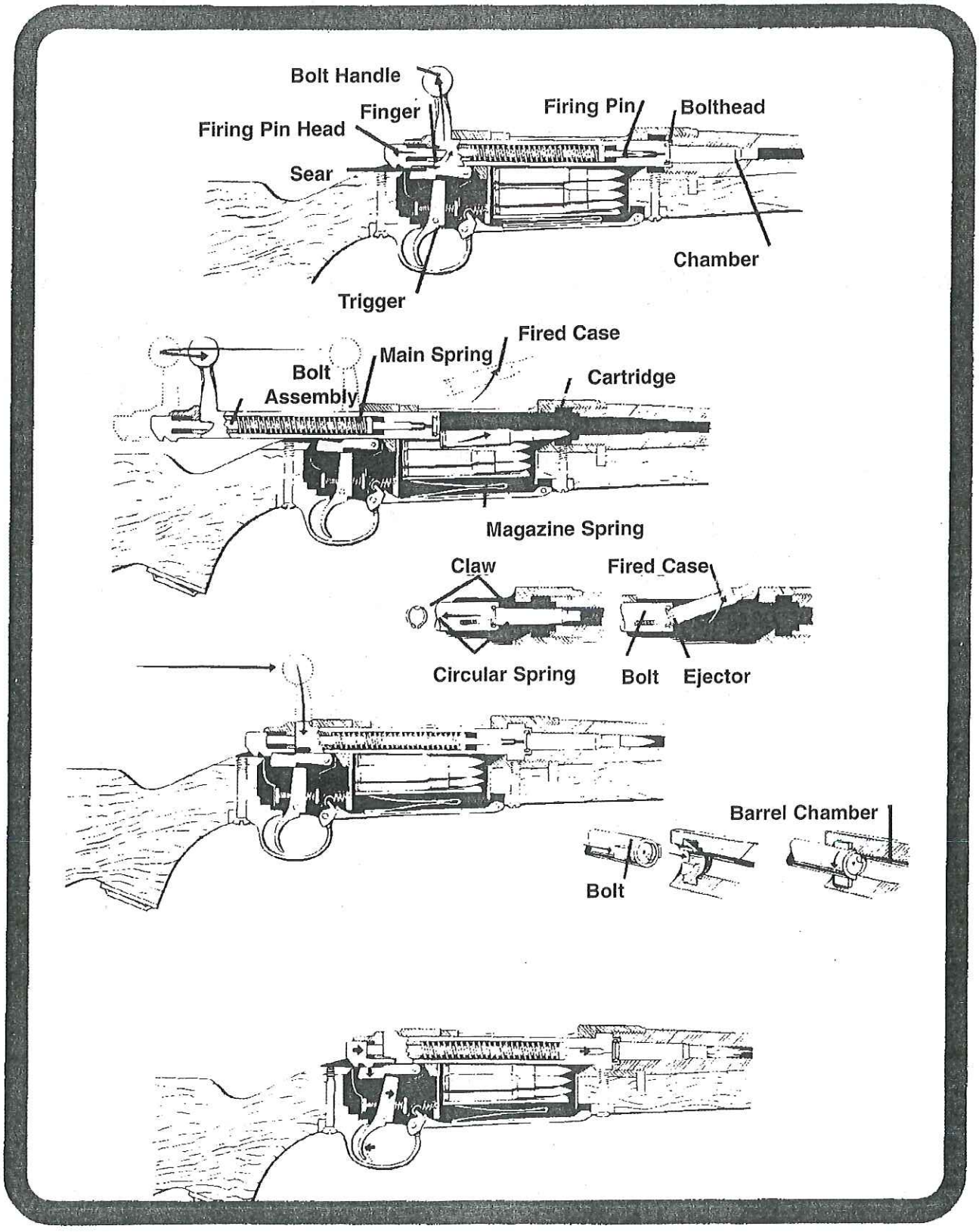


Actions

Firearms are generally classified by their type of "action." The five basic types are: bolt action, pump action, lever action, hinge action and semi-automatic action.

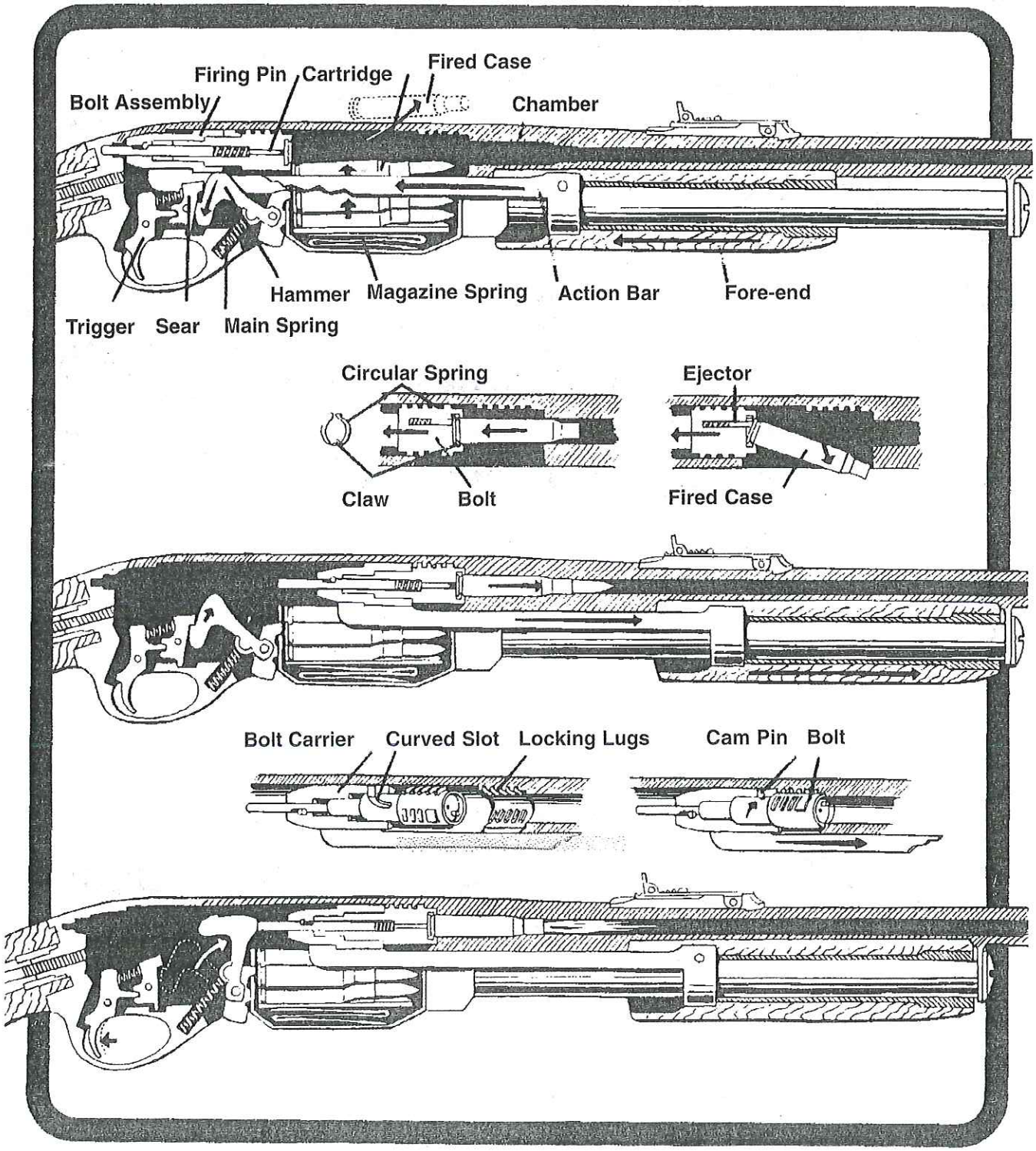
Bolt Action

A bolt action firearm operates on a lift, pull and push sequence similar to a door bolt and even looks very similar.



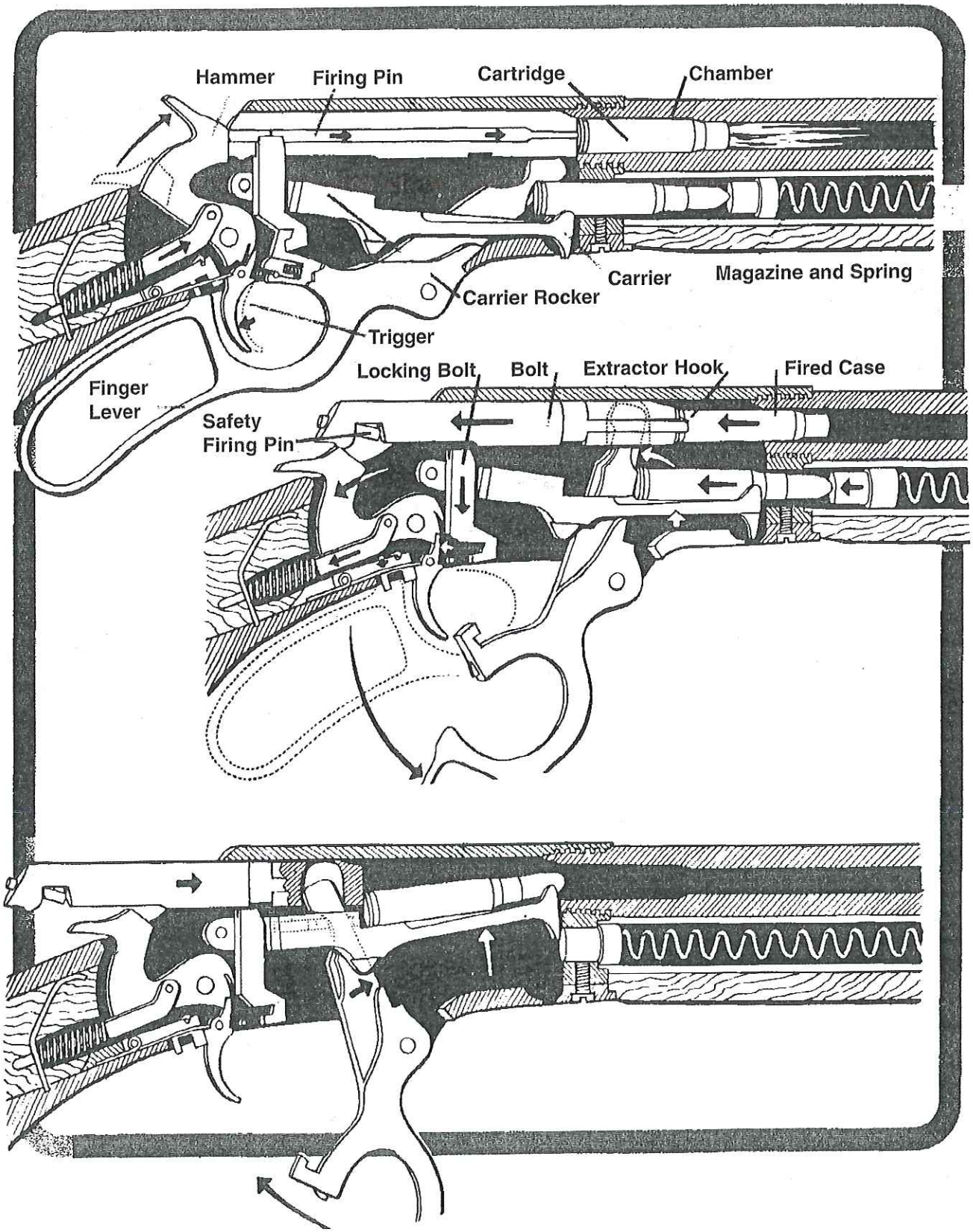
Pump Action

On a pump action firearm, the fore-end of the stock is pumped back and forth in order to open and close the action. The pump action firearm is sometimes called a "slide" or "trombone" action.



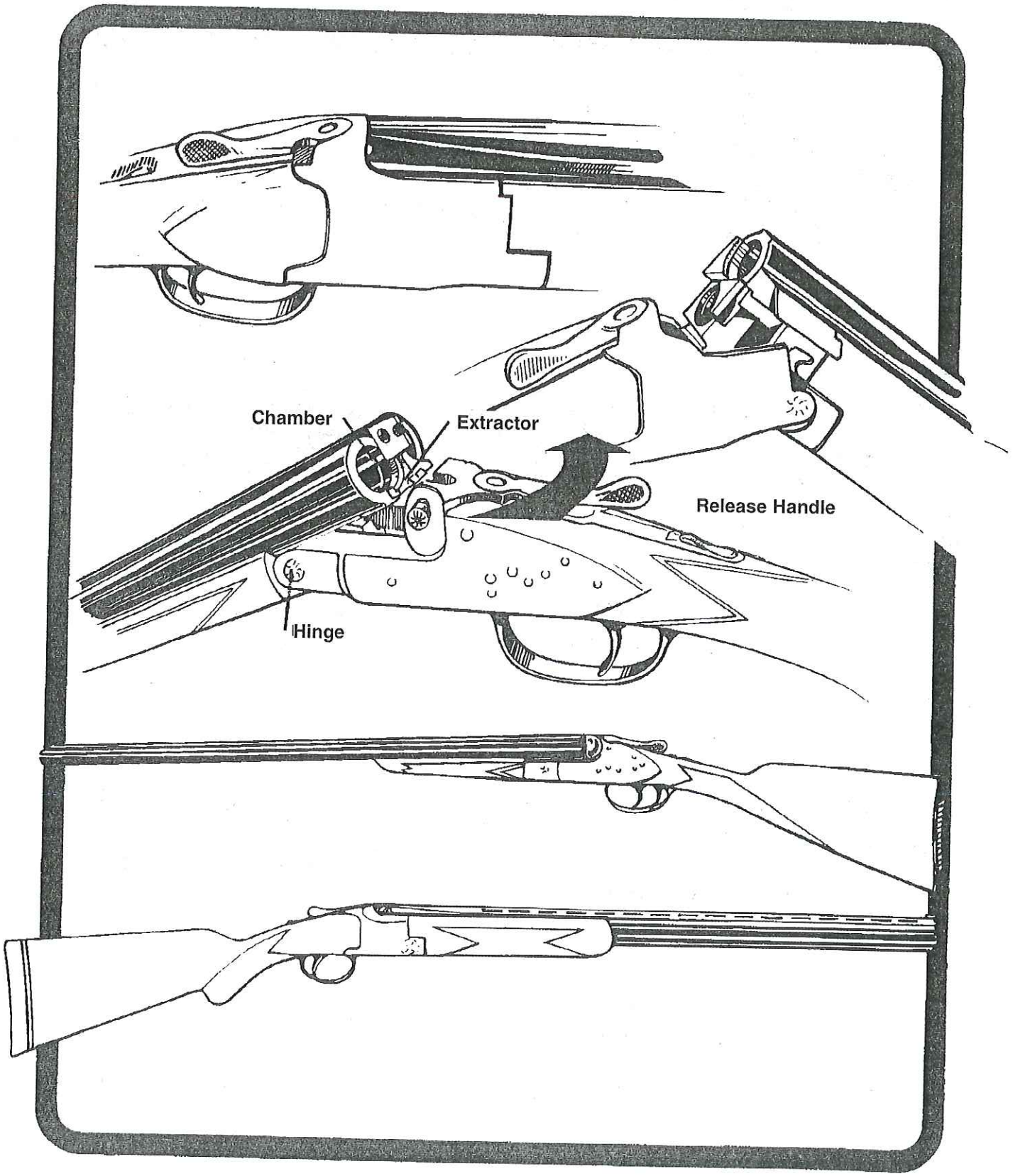
Lever Action

A lever action firearm has a metal handle which is located just behind the trigger. To open the action, the handle is pulled downward away from the stock.



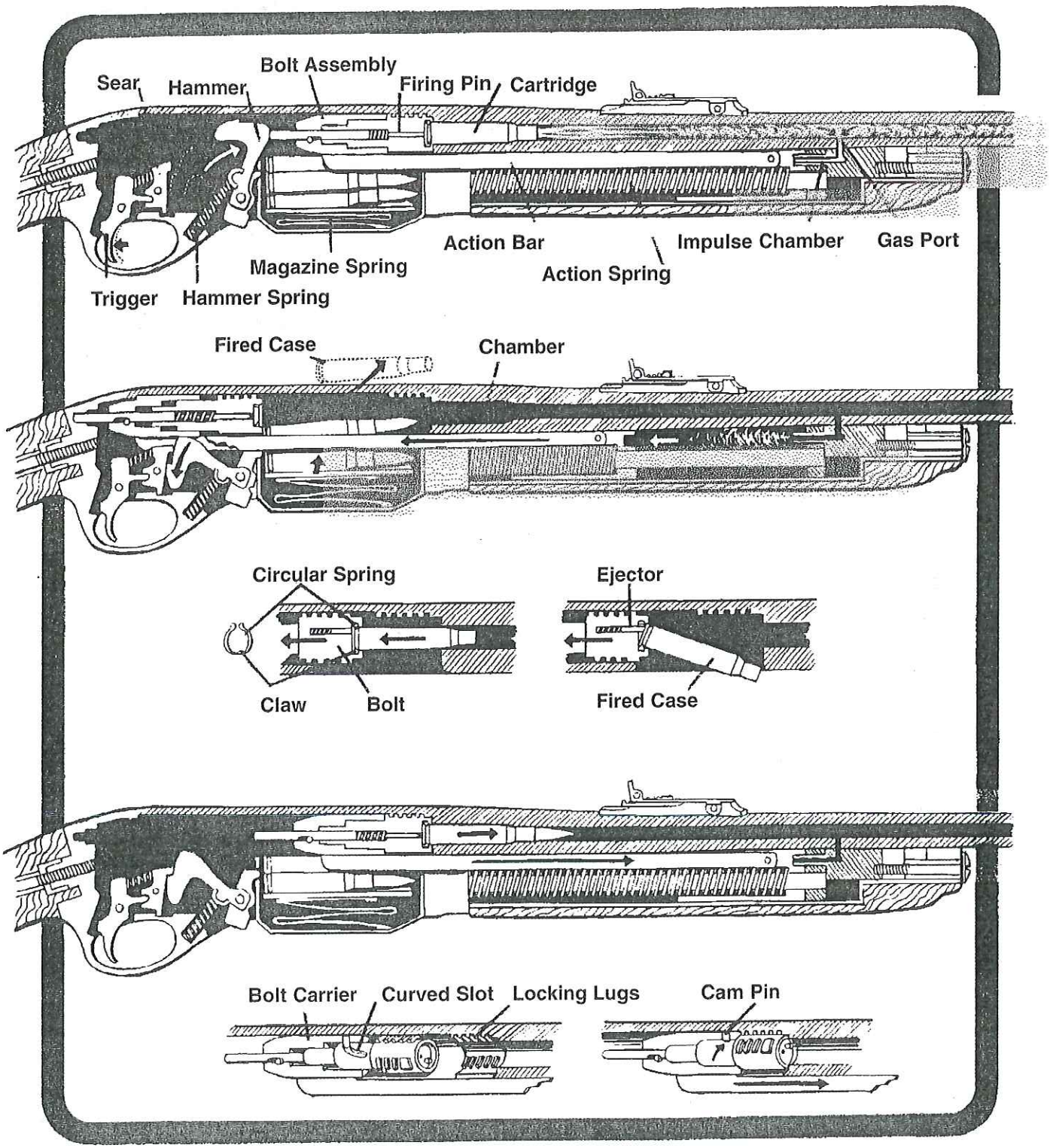
Hinge Action

The hinge action firearm opens, or "breaks" in the center similar to the movement of a door hinge. To open the action, the release handle is pushed to one side and the barrel or barrels are pressed downward.



Semi-automatic Action

The action of a semi-automatic firearm is opened by pulling back a handle. Most models of semi-automatics will stay open when empty. Others must be held open.

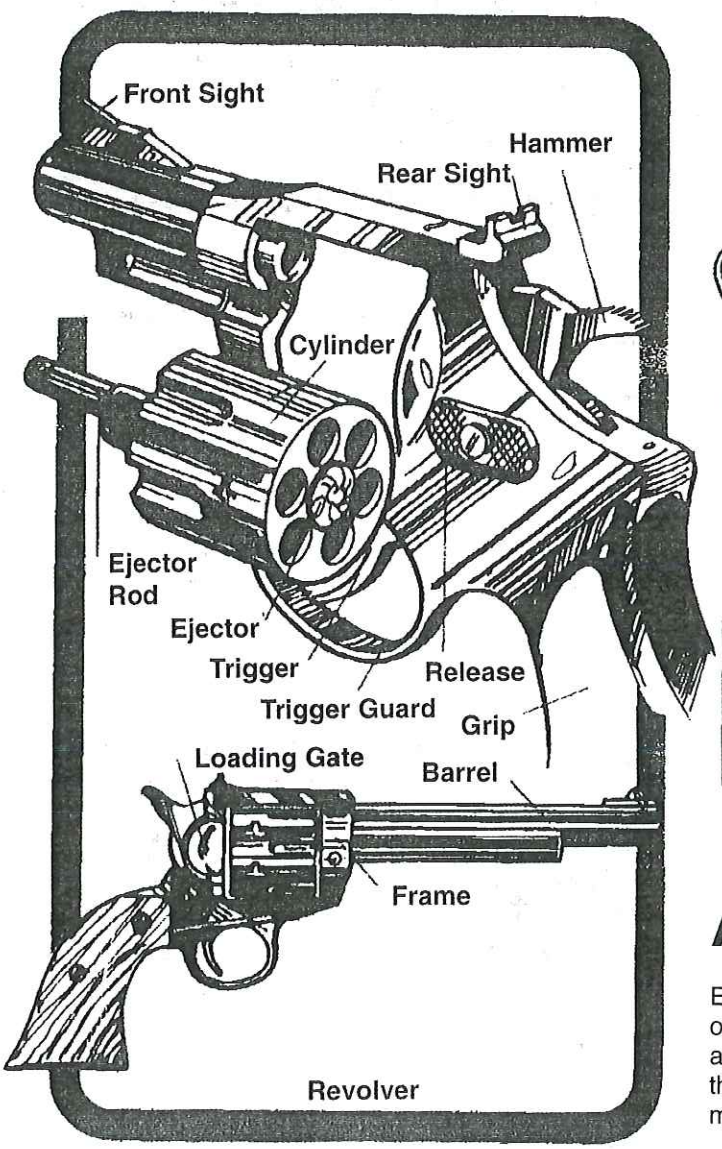


Other Action Types

Revolving Action

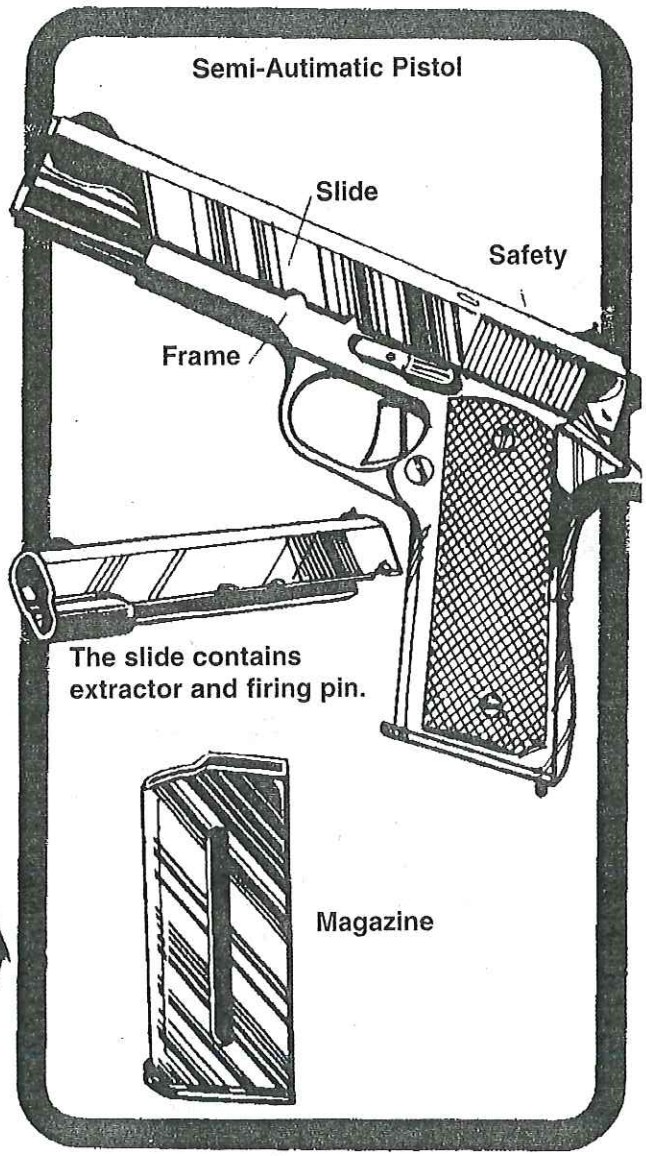
A revolving action is easy to identify because of its round cylinder. This cylinder is actually a magazine which acts as the chamber when properly aligned with the barrel.

The action release on a revolver is different on various models. Many revolvers have a latch type release on the side which allows the cylinder to swing out. Some revolvers have cylinders which cannot be swung out or lifted up and must be loaded and unloaded through a loading gate on the side.



Full Automatic Action

A firearm with full automatic action will insert, fire and eject all cartridges in its magazine with a single, continuous trigger pull.



Action Release

Except for bolt action firearms, most guns have some type of action release mechanism. These mechanisms allow an action to be kept either opened or closed. The location of the action release mechanism depends on the make and model of the firearm.

Before handling any gun, know where its action release is located.

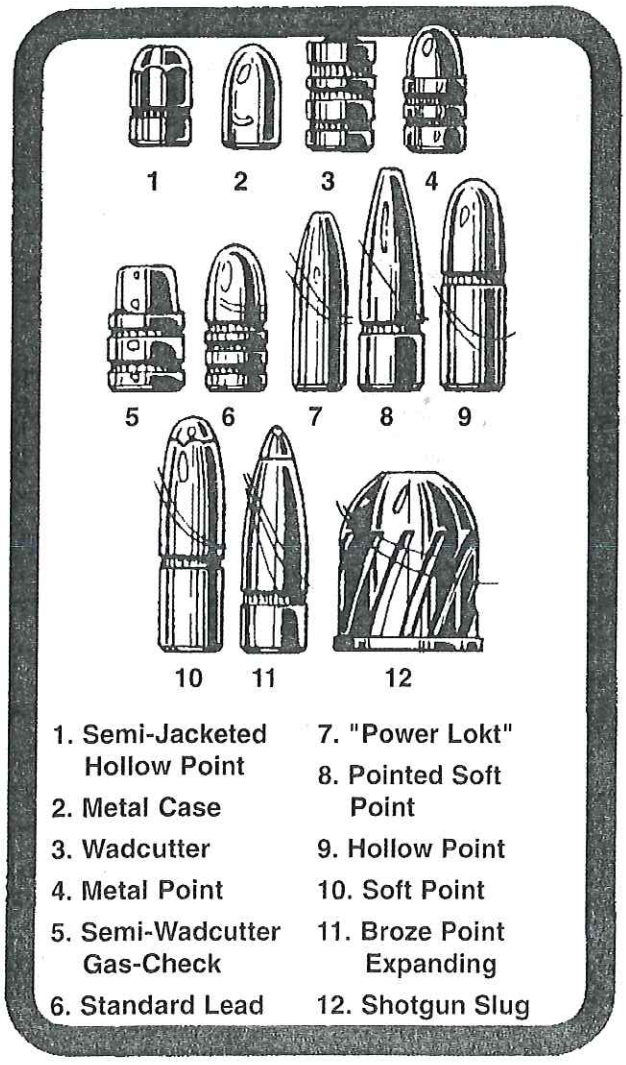
Ammunition

The ammunition used in rifles, shotguns and handguns varies in size, appearance and parts. Ammunition for rifles and handguns is made up of four basic components. Shotgun ammunition consists of five components.

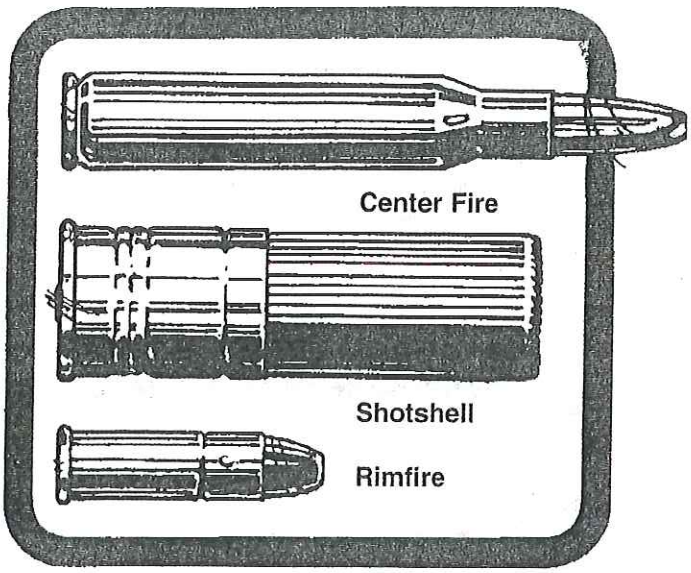
1. The "bullet" is the projectile that is shot from a rifle or handgun. The bullet is made of lead and may have a jacket of a harder metal such as copper. "Shot" is the projectile fired from a shotgun. The shot may be a single piece of lead or a number of lead pellets combined in one charge.

   Game or hunting bullets usually have a soft or hollow point. These bullets are designed to expand or flatten upon impact, thus expending all their energy upon entry. Target bullets often have solid points which make a small hole because they do not expand.

   Bullets and shot come in a variety of different sizes and weights.



2. The "case" is a container in which all other ammunition parts are assembled. The case is commonly made of brass, steel, copper, paper or plastic.

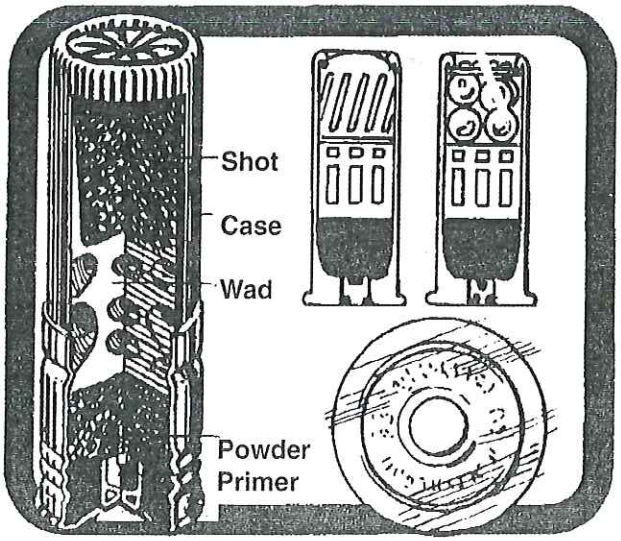


3. The "powder charge" is a chemical compound which, when burned, forms gases which propel the bullet or shot through the barrel.

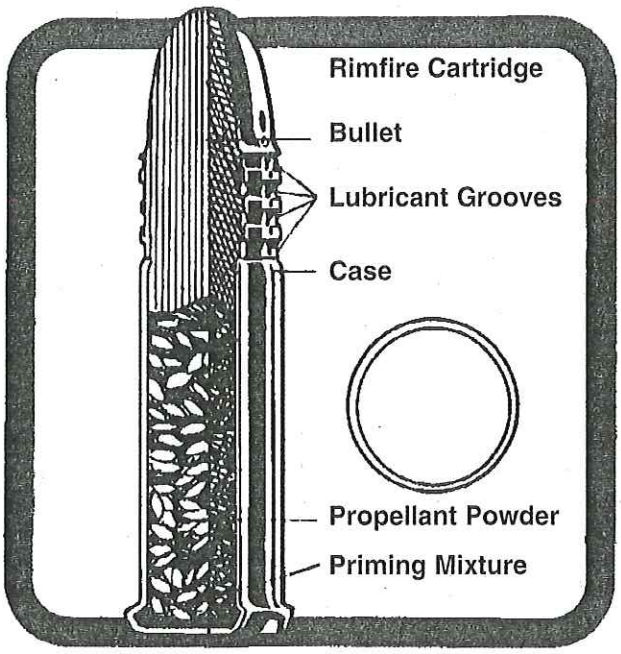
4. The primer is a chemical mixture which explodes when hit. The flame of the primer explosion ignites the powder charge.

5. In the shotgun shell, there is a fifth part called a "wad." Wads are used to separate the powder from the shot and also hold the loose shot together as it travels.

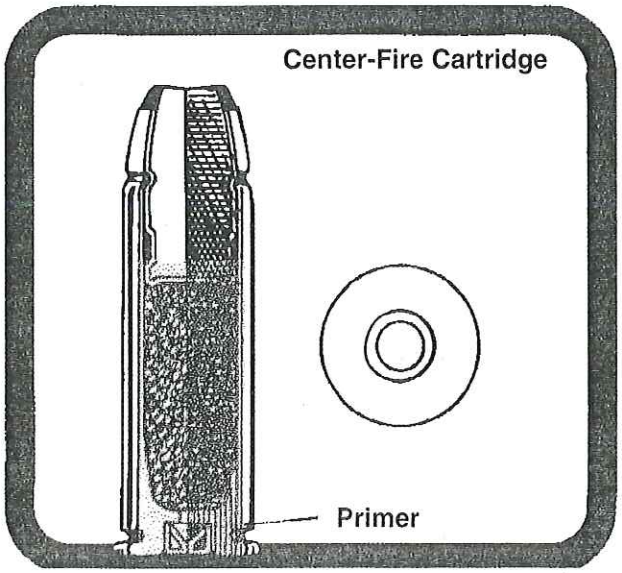
There are two basic types of modern ammunition—"rimfire" and "center-fire."



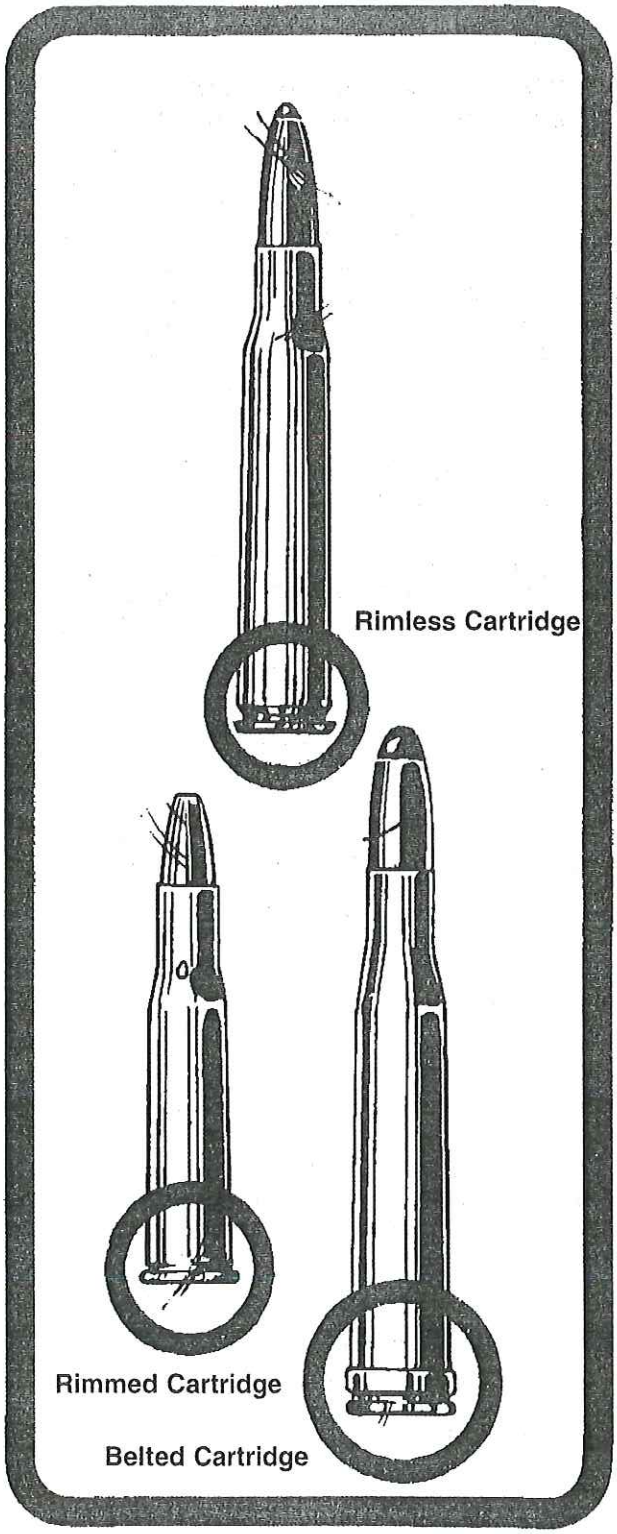
In rimfire ammunition, the priming chemical is around the inside bottom rim of the cartridge case. The rim must be soft enough to allow the firing-pin of the gun to dent the rim when it strikes. This crushes the priming compound, which then explodes, igniting the powder. Rimfire ammunition is used in low-pressure firearms.



In center-fire ammunition, the primer is located in the center of the case bottom. The firing pin strikes the primer, exploding the priming compound and igniting the powder charge.



Certain center-fire ammunition may also be classified as "belted" or "rimless." Belted ammunition is characterized by a raised ridge belt around the base of the cartridge.



Impact Energy of Bullets

The potential killing power of various bullets is argued pro and con amongst hunters. One of the most important factors in determining the killing power of ammunition is its energy upon impact. This may be determined from the chart.

Bullet Energy Table (Foot Pounds)

VELOCITY	BULLET WEIGHT — GRAINS																						
Ft. Sec.	40	45	50	55	60	87	100	110	120	130	140	145	150	160	170	180	200	220	235	250	275	285
1100	107	120	134	147	161	233	268	295	322	349	376	389	402	429	457	483	537	591	630	671	738	765
1200	128	144	160	176	192	277	319	351	383	415	447	463	479	512	543	575	639	703	752	799	878	912
1300	150	168	187	206	225	325	375	412	450	487	524	543	562	599	637	674	750	825	881	937	1031	1068
1400	174	195	217	239	261	377	435	478	522	565	609	630	652	696	739	783	869	956	1021	1087	1195	1938
1500	199	224	249	274	299	434	498	548	598	648	698	722	747	797	847	897	997	1096	1170	1245	1372	1420
1600	227	255	284	312	341	493	568	624	682	738	795	823	852	908	965	1021	1133	1248	1330	1418	1558	1613
1700	257	289	321	353	385	558	642	706	770	834	898	930	962	1026	1090	1154	1282	1411	1511	1602	1763	1827
1800	287	323	359	395	432	625	718	792	863	934	1005	1041	1078	1149	1222	1293	1437	1580	1689	1796	1977	2048
1900	321	361	401	442	482	696	802	882	962	1042	1122	1162	1202	1282	1362	1443	1603	1763	1882	2004	2205	2283
2000	355	409	444	488	352	770	888	976	1064	1152	1242	1286	1330	1418	1508	1597	1774	1951	2082	2218	2440	2530
2100	391	440	489	538	587	850	978	1075	1173	1271	1369	1418	1468	1564	1662	1760	1956	2151	2298	2444	2688	2786
2200	430	483	537	590	644	934	1073	1181	1288	1396	1503	1556	1610	1718	1825	1933	2145	2362	2520	2686	2948	3058
2300	470	529	587	646	704	1021	1173	1292	1409	1526	1644	1703	1762	1878	1996	2112	2346	2585	2755	2935	3225	3313
2400	512	575	638	703	767	1110	1277	1405	1532	1660	1738	1853	1916	2045	2172	2298	2552	2812	3000	3195	3510	3635
2500	555	624	694	764	833	1206	1387	1526	1665	1803	1942	2012	2081	2220	2358	2496	2773	3053	3260	3470	3818	3950
2600	599	674	749	824	899	1302	1498	1648	1798	1948	2095	2187	2248	2396	2548	2697	2997	3296	3520	3749	4122	4270
2700	647	728	808	890	970	1405	1616	1778	1940	2102	2264	2345	2428	2588	2748	2910	3232	3558	3800	4040	4450	4605
2800	696	786	870	958	1042	1511	1738	1913	2088	2262	2434	2521	2600	2784	2957	3131	3479	3829	4085	4349	4785	4958
2900	747	840	933	1028	1119	1620	1864	2053	2238	2426	2612	2702	2797	2986	3170	3358	3732	4101	4380	4665	5130	5315
3000	797	897	996	1092	1195	1730	1991	2191	2390	2590	2788	2878	2988	3188	3386	3586	3985	4380	4680	4978	5480	5680
3100	853	960	1067	1173	1280	1856	2134	2347	2561	2774	2988	3094	3202	3415	3628	3841	4268	4695	5015	5336	5869	6083
3200	909	1023	1135	1248	1362	1973	2270	2498	2728	2952	3180	3292	3410	3634	3861	4085	4545	5000	5332	5680	6250	6475
3300	965	1085	1204	1323	1446	2107	2413	5654	2893	3135	3375	3495	3616	3858	4100	4340	4820	5308	5660	6030	6635	6870
3400	1025	1153	1282	1410	1538	2224	2562	2820	3078	3332	3590	3718	3848	4105	4360	4618	5130	5642	6025	6410	7062	7304
3500	1086	1221	1357	1493	1629	2360	2716	2988	3258	3528	3800	3938	4070	4345	4618	4884	5430	5975	6380	6785	7475	7735
3600	1150	1294	1437	1583	1726	2500	2877	3164	3452	3740	4025	4165	4315	4600	4890	5178	5752	6330	6760	7190	7920	8200
3700	1214	1367	1517	1670	1821	2640	3035	3340	3644	3948	4250	4401	4555	4860	5165	5470	6074	6680	7144	7592	8350	8650
3800	1280	1440	1600	1760	1920	2782	3200	3520	3840	4160	4480	4645	4800	5120	5440	5760	6400	7040	7520	8000	8800	9120
3900	1347	1517	1684	1853	2011	2931	3372	3710	4045	4380	4720	4885	5055	5394	5730	6070	6742	7420	7925	8430	9270	9600
4000	1418	1592	1773	1950	2128	3086	3547	3900	4255	4610	4970	5150	5320	5674	6025	6380	7092	7800	8338	8870	9750	10010

All Chronographs read in ft. per second
I.M.V. (Conversion to meters x .305)

Once the energy of your ammunition has been determined, the following guidelines are suggested for judging its killing power for various game animals.

Energy Required at Point of Impact

Target Species	Minimum	Adequate	Preferred
Deer, antelope, sheep, goat	900 ft. lb.	1200 ft. lb.	1500 ft. lb.
Elk, bear up to 600 lbs.	1500 ft. lb.	2000 ft. lb.	2500 ft. lb.
Large bear, Moose	2100 ft. lb.	2800 ft. lb.	3500 ft. lb.

Safety and Firearms Care Introduction

Almost every young person is interested in firearms. There is something about a gun, old or new, that makes us want to pick it up, see how it feels, and try to work its mechanism. When this interest is properly guided, young people can benefit in many ways. From old guns they can learn history and an understanding of some of the hardships faced by men who relied on firearms for their lives. They can also learn mechanical principles from studying gun actions. And from target practice with modern arms, they can develop physical skills that will help them in many other activities.

But guns are not toys. They must be treated with respect. If you want to learn how to shoot a gun, be sure to learn from qualified instructors. They will show you how to do it properly and safely.

For the beginning shooter, a rifle or shotgun that is loaded with a single shell or cartridge is the best and safest choice. The most common shotgun of this type is the hinge action.

Primary Rules for Safe Gun Handling

The responsible shooter lessens the chance of an accident by following some basic rules of firearms safety. And these rules must be followed whenever and wherever firearms are being handled. Be aware that certain types of guns and many shooting activities require additional safety precautions. By following these rules you should ensure the safety of yourself and those around you.

The fundamental NRA rules for safe gun handling are:

1. ALWAYS keep the gun pointed in a safe direction.
2. ALWAYS keep your finger off the trigger until ready to shoot.
3. ALWAYS keep the gun unloaded until ready to use.

When using or storing a gun, always follow these NRA rules:

1. Know your target and what is beyond.
2. Be sure the gun is safe to operate.
3. Know how to use the gun safely.
4. Use only the correct ammunition for your gun.
5. Wear eye and ear protection, as appropriate.
6. Never use alcohol or drugs before or while shooting.
7. Store guns so they are not accessible to unauthorized persons.
8. Beware of fatigue. When you are so tired, hunting isn't fun anymore, go back to camp. Fatigue can cause carelessness and clumsiness which can cause accidents. Fatigue can cause you to see things that aren't really there.
9. When you have finished hunting, unload your gun before returning to your vehicle or camp.

PRACTICE SAFE GUN HANDLING ALL THE TIME.

Firearms Safety when Hunting

As well as the general rules of firearms safety, there are additional rules which must be followed when hunting.

Before Leaving Home

The responsible hunter learns before the hunt how to shoot safely and accurately. He practices regularly so he is familiar with his firearms and checks his equipment to see it is operating properly. He knows the range and effectiveness of his ammunition and ensures he has the right ammunition for the gun being used and the game to be hunted. His gun is accurately sighted-in.

Firearms Safety while Traveling

Whether your gun is being carried in a car, boat, on a horse, motorcycle, or in any other vehicle, these rules of safe gun handling must be followed:

1. Be sure the gun is unloaded.
2. Place it in a protective case.
3. Position the firearm securely so it will not move about during travel.
4. To transport a gun on a public transportation vehicle such as a bus, train or plane, check first with the carrier's agent concerning the regulations.

Firearms Safety in the Field

There are several ways to carry a gun safely and at the same time have your gun ready for quick use in the field.

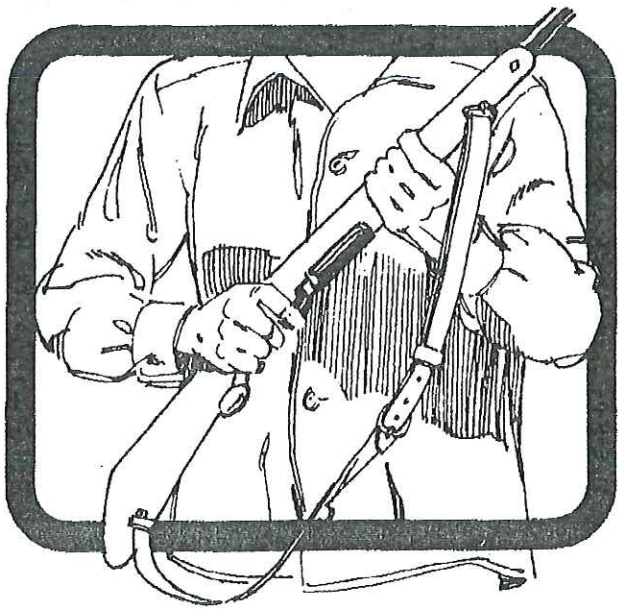
Whichever carrying method you use, these basic rules apply:

1. Keep the muzzle pointed away from yourself and others.
2. Keep the safety in the "ON" position when carrying a firearm.
3. Keep your finger outside the trigger guard.

Two-Hand or Ready Carry

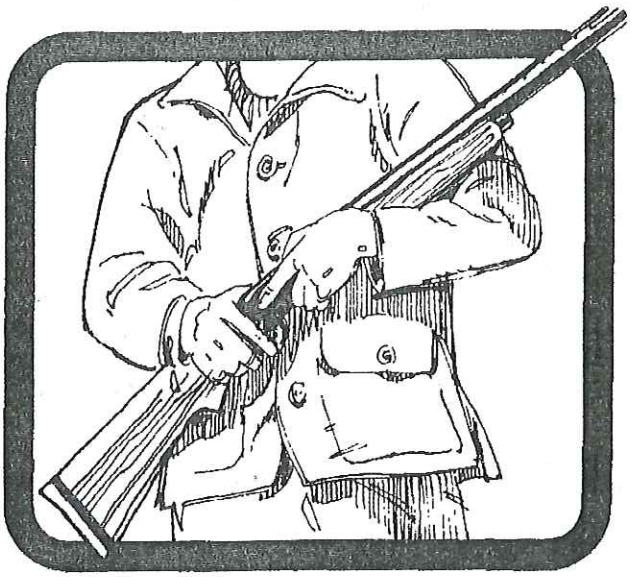
The "two-hand" or " ready carry" is the safest carry for hunters.

This carry gives you good control of the muzzle and allows you to raise your gun quickly for a shot.



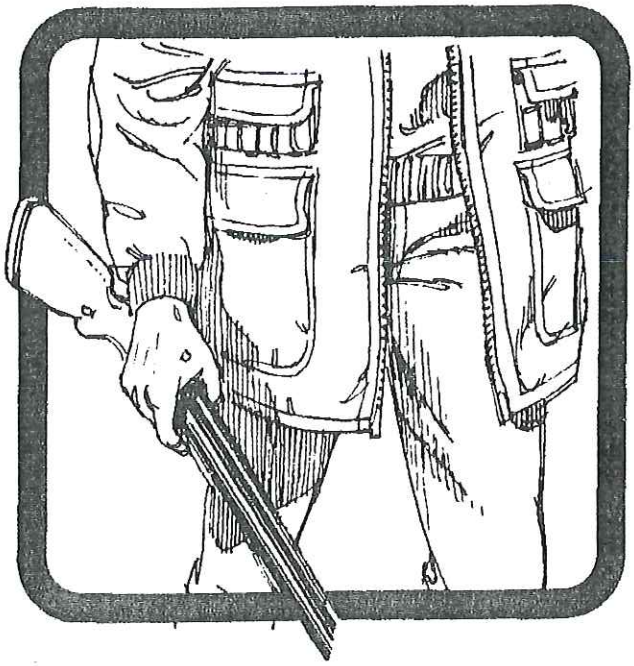
Cradle Carry

The "cradle carry" is another safe carry. However, because the muzzle points to one side, this method should not be used when walking beside anyone.



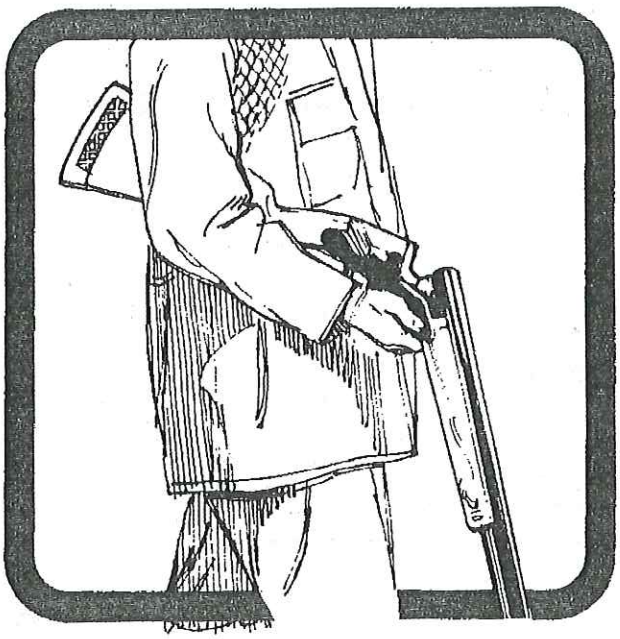
Trail Carry

The "trail carry" is safe when several people are walking abreast. It is also safe for the leader when people are walking single file but others in the line should not carry their guns this way.



Elbow or Side Carry

The "elbow or side carry" is safe when walking in open terrain. It should not be used when walking through bush because branches can get tangled around the gun and push the barrel downward. Do not use the side carry when others are ahead of you.



Shoulder Carry

The "shoulder carry" is safe when walking beside or behind someone. Special care must be taken to keep the muzzle pointed upward. Do not use this carry when others are behind you.

Sling Carry

The "sling carry" is often used by hunters who must walk a long way before taking a shot. The sling carry leaves both of the hunter's hands free. However, when walking in dense brush, it should not be used because the gun may get caught in brush and be pulled off the hunter's shoulder.

The carry you use will depend on where your companions are and the kind of terrain.

When hunters are positioned in a line abreast, the hunters at either end should use the cradle or side carry. The hunters in the middle should use either the side or two-hand carry.

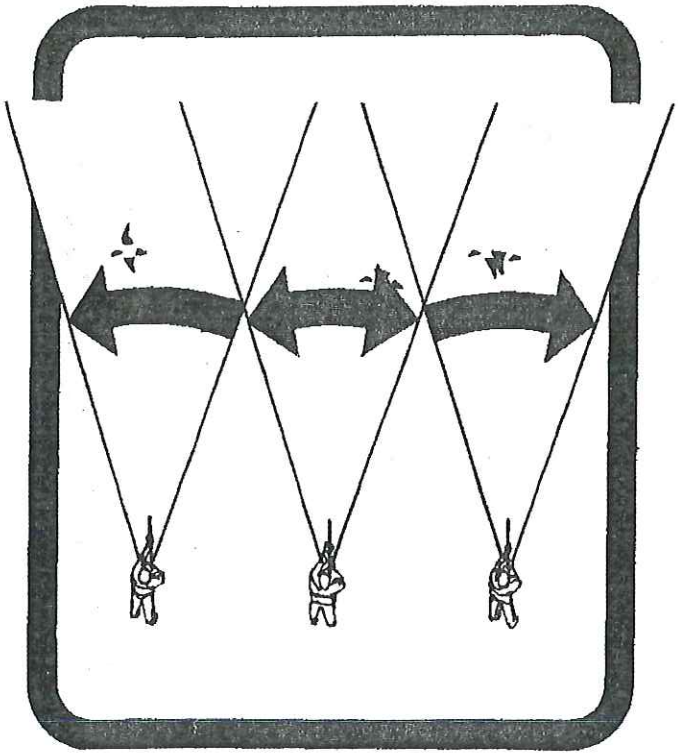
When walking single file, the leader may choose any of the carries except the shoulder carry. Center of the line hunters should use the two-hand or cradle carry. The last person in line may use the two-hand, cradle, sling or shoulder carry.

Zones of Fire

When hunting with others, "zones of fire" must be established so each hunter will not endanger others when he shoots.

If three hunters in pursuit of game birds were to walk across an open field, the middle hunter's zone of fire would be birds flying in the center of the field. The zone of fire for the hunter on the right would be birds flying in the area to the right side. The third hunter's zone of fire would be birds flying in the area to the left. The same zones of fire apply when hunters are walking abreast in pursuit of small game like rabbits.

After zones of fire are determined, each hunter must shoot only within his specific zone. If a hunter shoots out of his zone of fire, he could hit one of his companions.



Because a flock of waterfowl usually flies in one direction, hunters shooting from a boat or duck blind must determine zones of fire for each person in the group. Each person shoots only when birds are flying within his particular zone of fire.

Big game hunters often separate while hunting and unless zones of fire are established, a hunter could be mistaken for game by one of his companions. Before separating from the group, each hunter determines his planned location and the direction he will travel and this is established as his particular zone of fire. Every member of the hunting party must be informed of each hunter's zone of fire.

Firearms Safety in Boats, Pits and Blinds

When hunting from a boat, the firearm to be carried in the bow should be placed in first. It should be unloaded and pointed forward. After the first hunter is in the bow of the boat, the second unloaded firearm should be placed in the stern, pointing backwards. The second hunter can then shove-off and take his position in the stern. While the boat is moving, do not permit the front firearm to protrude past the bow or gunwales because it could catch on reeds or brush.

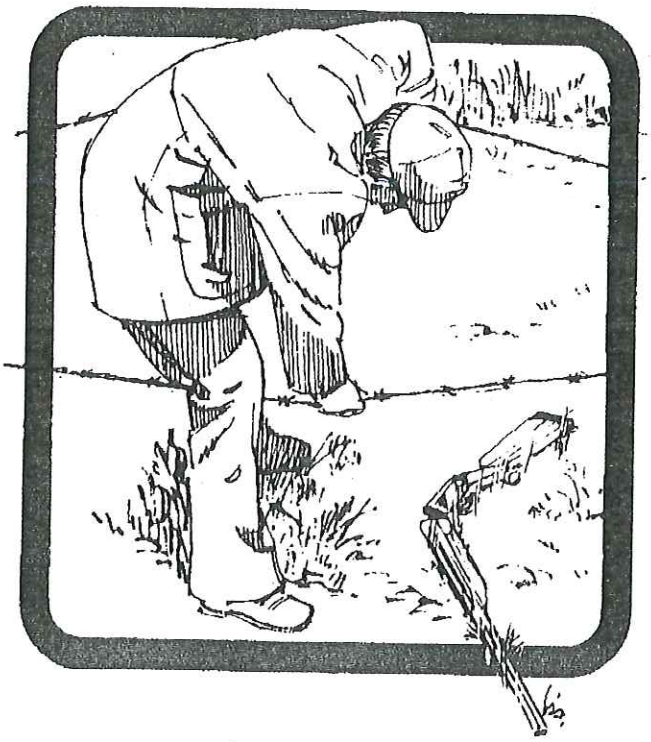
Before shooting, anchor the boat firmly. Both hunters should remain in the center of the boat with their firearms always pointing away from each other.

When hunting from a pit or blind, lay your unloaded firearm on the ground near the entrance to the pit. When you are in the pit, bring in the unloaded gun. Check your firearm carefully to be sure the muzzle has not become clogged with dirt or snow. Unload the gun before leaving the pit or blind. Lay it on the ground outside before you come out.

Other Rules of Field Safety

1. Be positive of your target's identity before shooting.
2. Take time to fire a safe shot. If unsure, if you must move too quickly, pass up the shot. When in doubt- don't! When you wonder whether you should shoot- don't.
3. If you fall, try to control where the muzzle points. After a fall, check your gun for dirt and damage and make sure the barrel is free of obstructions.
4. Unload your gun before attempting to climb a steep bank or travel across slippery ground.
5. When you are alone and must cross a fence, unload your firearm and place it under the fence with the muzzle pointed away from where you are crossing. When hunting with others and you must cross a fence, unload the gun and keep the action open. Have one of your companions hold the gun while you cross. When over the fence, take your gun and your companion's unloaded gun, so that he may cross safely.
6. Never use a scope sight as a substitute for binoculars.
7. When finished hunting, unload your firearm before returning to camp.

Rules are safe only when they are obeyed. If a companion doesn't follow the rules of safe firearms handling, you should refuse to hunt with him unless he is prepared to correct his behavior.



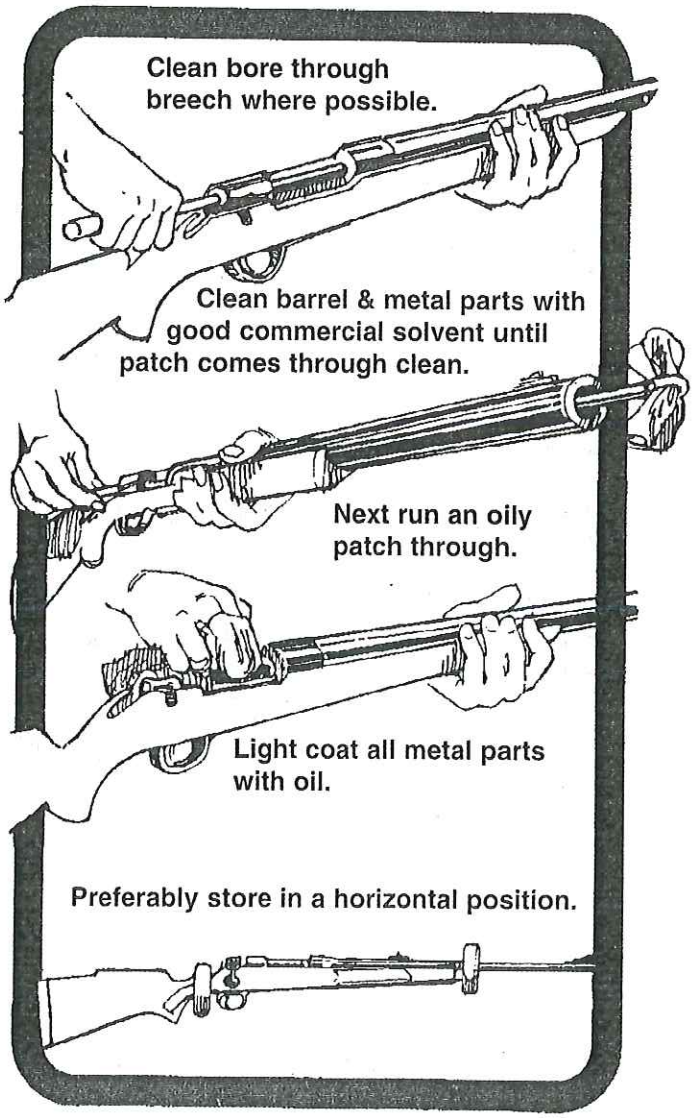
Care and Maintenance of Firearms

Regular cleaning will help keep your gun in good working order and will prevent it from rusting. Any firearm which has been stored uncovered for a long time or has been exposed to moisture or dirt, must be cleaned thoroughly before use.

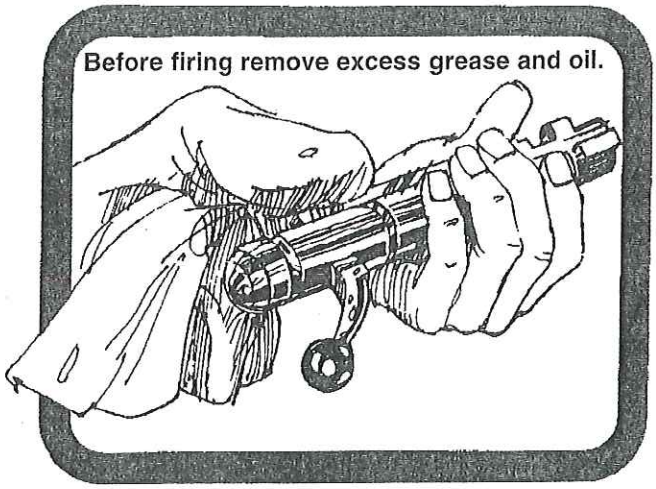
To clean a firearm you will need:

1. cleaning rod
2. patches
3. powder solvent
4. light gun oil

Before cleaning any firearm, check to be sure it is unloaded.



After cleaning the gun with rod and patches, apply a light coat of oil to the metal parts of the gun. Make sure to use the oil sparingly. Too much oil can clog the gun and prevent the firearm action from working smoothly.

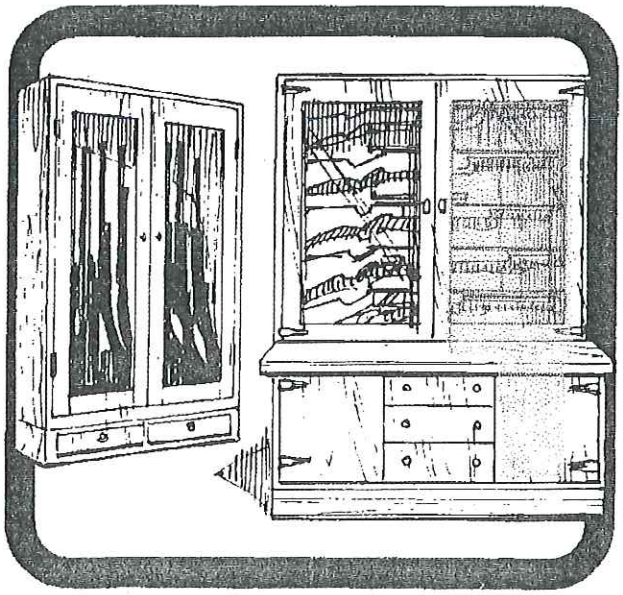


When the firearm is clean, store the unloaded gun, in a horizontal position, in a locked cabinet.

After storage and before you use the gun again, run a clean patch through the bore before firing. Remove all excess grease and oil.

Ammunition should also be kept clean. If sand or dirt collects in the bullet lubricant, it can damage the bore of the gun.

Firearms owners should always assume that anyone untrained in the use of firearms will not know how to handle them properly. To prevent accidents, always store firearms and ammunition separately in locked storage units.



Firearms are precision instruments. Guns which are not operating properly should be examined by a gunsmith or returned to the manufacturer. Even minor repairs should be made by an expert. Beginning and inexperienced shooters should never attempt to repair any firearm.

Fundamentals of Rifle Shooting

Marksmanship

Marksmanship is the ability to hit your mark or target. It is important that a hunter be a good marksman for two major reasons.

The first reason is safety. If you have the ability to hit your target, you will be self-confident. When you know you can shoot accurately, you will not need to spend time thinking about how to shoot, but can concentrate instead on where to aim. You will have time to think—is this shot safe? Is the path to and beyond the target clear?

The second reason is to make a clean kill. An accurate shot will kill quickly, cleanly and humanely. A good hunter practices marksmanship skills until his shots are consistently accurate and studies animal anatomy to know where vital organs are located.

Shooting excellence depends on several fundamental techniques which must be learned and practiced. They are aiming, trigger squeeze, breath control, follow through and shooting position.

Aiming

Master Eye

The "master eye" is the eye you use for sighting purposes. The master eye is the stronger of your two eyes. This eye will judge speed and range, and focus more accurately than your other eye.

Even though you are right-handed, you may have a left master eye. To determine which is your master eye, point your finger at an object with both eyes open. Then alternately close one eye and then the other. Your finger will remain "lined up" with the object when your master eye is open.

Sight Alignment and Sight Picture

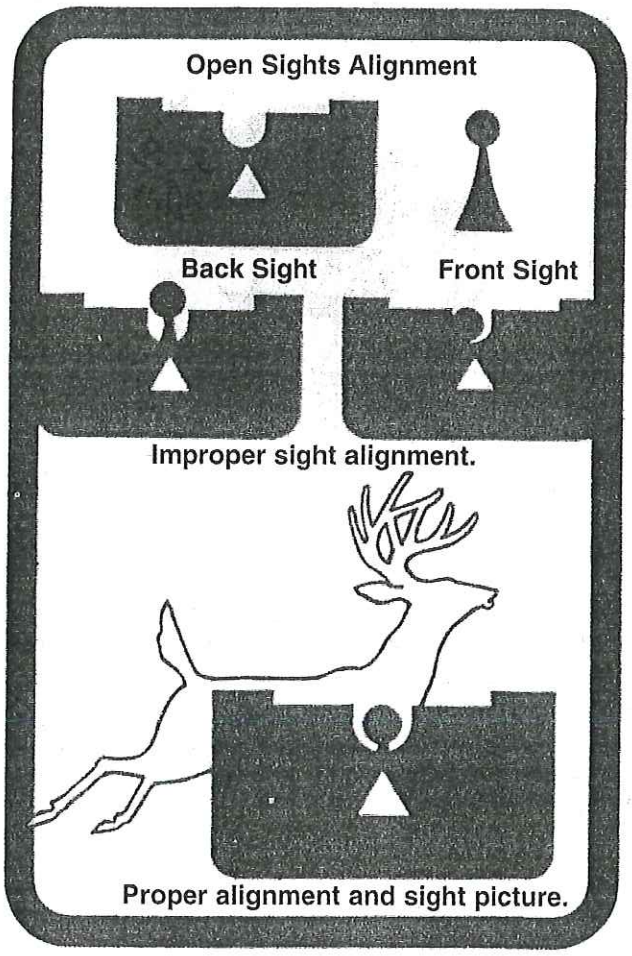
The correct use of gun sights is essential if your aim is to be accurate. Of the three types of sights, only the open sight requires you to physically line-up the sights. This process is called "sight alignment."

The advantage of aperture and scope sights is they do not require conscious alignment.

The aiming of any sight at a target creates a "sight picture."

The scope sight simplifies aiming. It magnifies, which enables you to see your target better. You don't have to line up a pair of sights. You simply look through the scope and hold the cross hairs on the target to aim accurately.

There are disadvantages to scope sights, however. Because they are precision instruments, they must be handled with extreme care to prevent damage to the delicate mechanism. Scope sights have a very narrow field of view which can make sighting on a moving target potentially dangerous. Because of the scope's viewing limitations, you might not see a person or object coming into the path of your shot.



Trigger Control

Correct trigger control is essential for an accurate shot. When the sights are aligned on your target, squeeze the trigger slowly and steadily. Do not yank. Do not pull. Anything other than a smooth squeeze will cause the sight picture to waver and will send the shot off target.

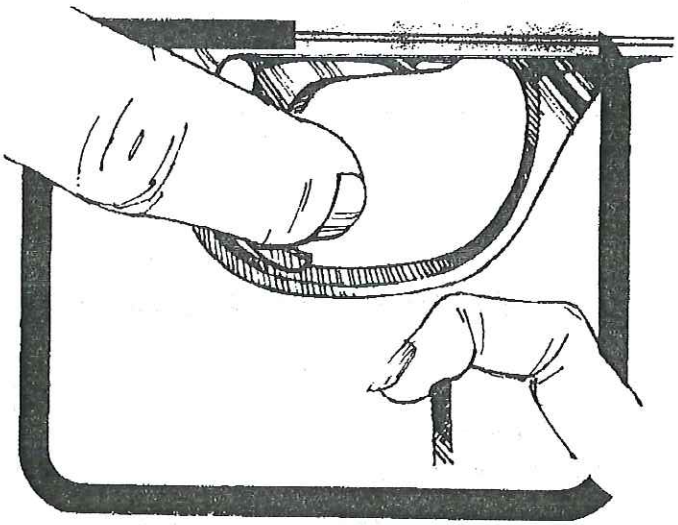
Do not tense before the rifle fires. You should be relaxed, allowing each shot to happen as a surprise.

Breath Control

Controlled breathing is necessary to shoot accurately. As you breathe in and out, it is normal for your chest to rise and fall and your arm to waver. So will your gun barrel unless you control your breathing at the exact moment you fire.

When you are in shooting position, with your cheek hard against the stock, take a deep breath, exhale a portion of it, and hold your breath while you aim and squeeze the trigger. This should allow you to hold the barrel and sights in perfect alignment on the target at the final instant when the gun fires.

If you hold your breath too long, you may lose control and your shot will be off the mark. If you run out of breath before firing, relax, take a deep breath and do it again.



Follow Through

Follow through, which simply means continuing to hold still until after the bullet has been fired, is important to accurate shooting. If the rifle is moved a split second too soon, your aim will be off target. Follow through will ensure the rifle isn't moved until the bullet is well on its way to the target.

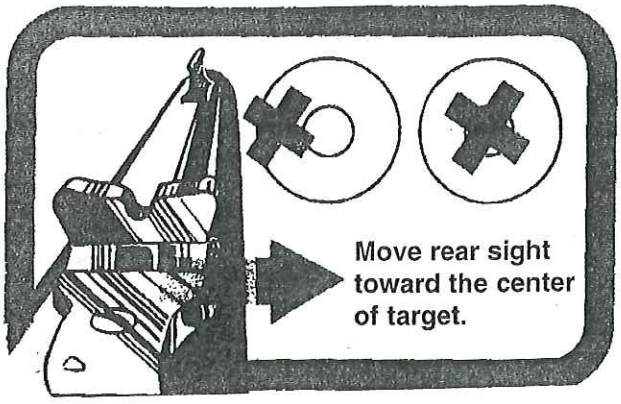
Sight Adjustment

When using iron sights on the practice range, if your shots are consistently hitting the target in small groups, but are off-center, then you must adjust the rear sight. The rule of sight adjustment is, move the rear sight in the direction you want to move the hits on the target.

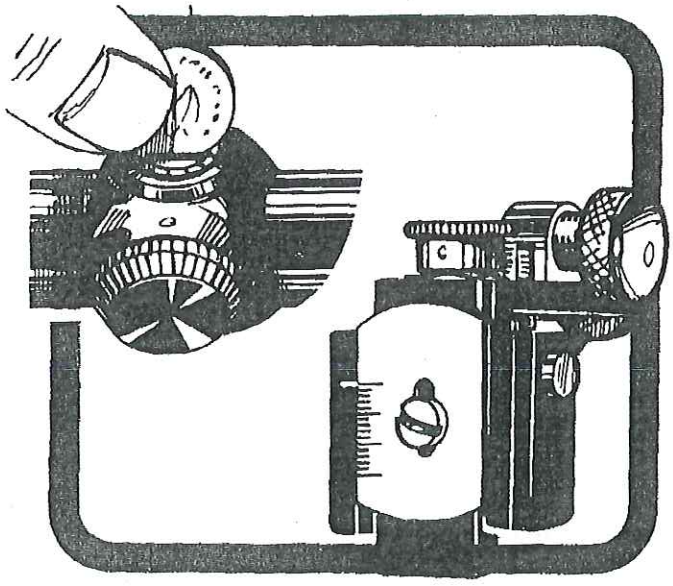
Aperture and scope sights are adjusted by turning the adjustment screws on them in the direction indicated on the sight.

Sighting-in

Before hunting, your rifle must be "sighted-in," which means the rifle's sights must be adjusted so that the bullet will hit the target at a specific range.



Set up a target with a safe back-stop at 25 meters and fire at least three test shots. Be sure to use the same type of ammunition you will use when hunting. Check the target. If the group of hits is not at the point of aim, correct the sight. If the shots are not together, it could be due to your technique or some other mechanical factor.

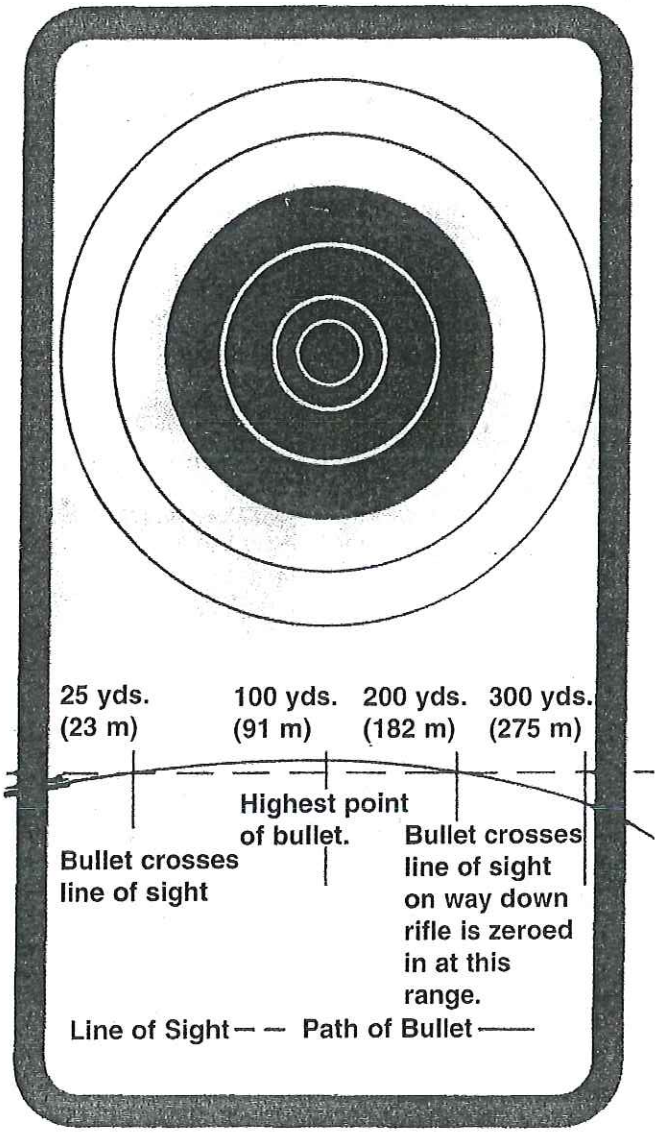


If your shots are on the point of aim at 25 meters, they will be on the point of aim again at approximately 200 meters due to the bullet's trajectory.

After the rifle is sighted-in, practice shooting under various light and weather conditions and at various distances.

Normally you sight-in your rifle for a specific distance by shooting across level ground. However, when shooting in the field, you must make some allowance for differences in elevation between you and your target. When standing on a ridge or in a gulley, you will need to aim slightly below the spot you would hold on if you were standing on level ground. This is due to the effect of gravity on the bullet.

If your rifle is sighted-in correctly and you squeeze the trigger with steady even pressure and remain relaxed, you will score a hit.



Shooting Positions

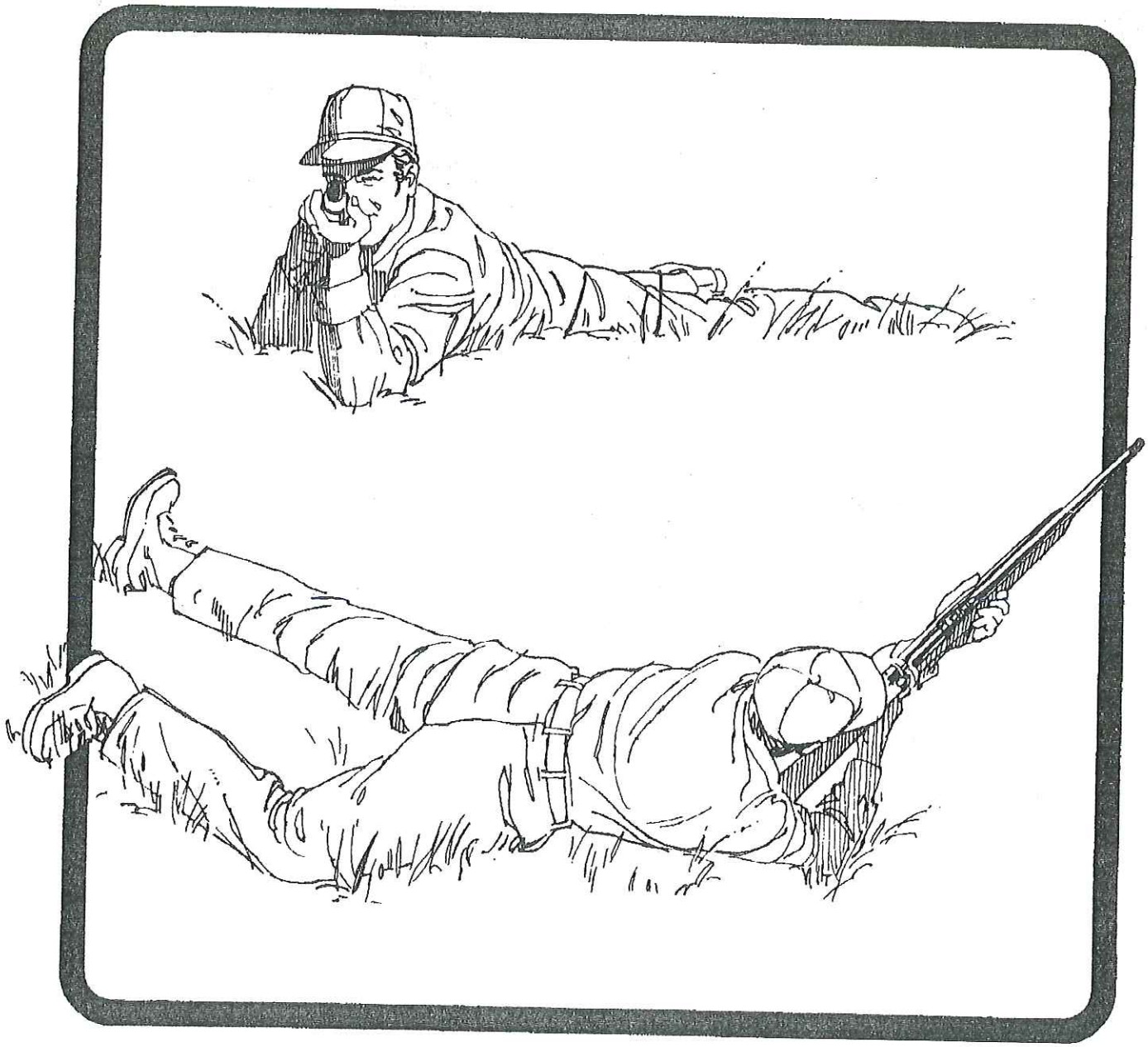
Prone Position

The prone position is the steadiest shooting position and the one from which the fundamentals of rifle shooting are best learned. It is a good position for firing accurate long distance shots. But it is usually not suitable when hunting in tall grass or dense brush which can obscure the line of sight to the target.

If you are right-handed, lie on your stomach with your body slightly to the left of the line of aim. If you are left-handed, reverse this position. Keep your back straight and legs in a relaxed position. Both elbows should be bent and your shoulders curved slightly forward to form a solid upper body position. The upper body and arms support the rifle weight.

When shooting, a sling should be used for extra support. Hold the rifle grip with the trigger hand. Place your opposite arm through the sling as far as it will go. Swing your arm in an outward circular motion ending with your hand under the fore-end of the rifle and the sling across the back of your hand.

With practice the shooter will learn to bring the rifle butt in to his shoulder correctly and quickly. The shooter should adjust the sling and practice using it before the hunt.



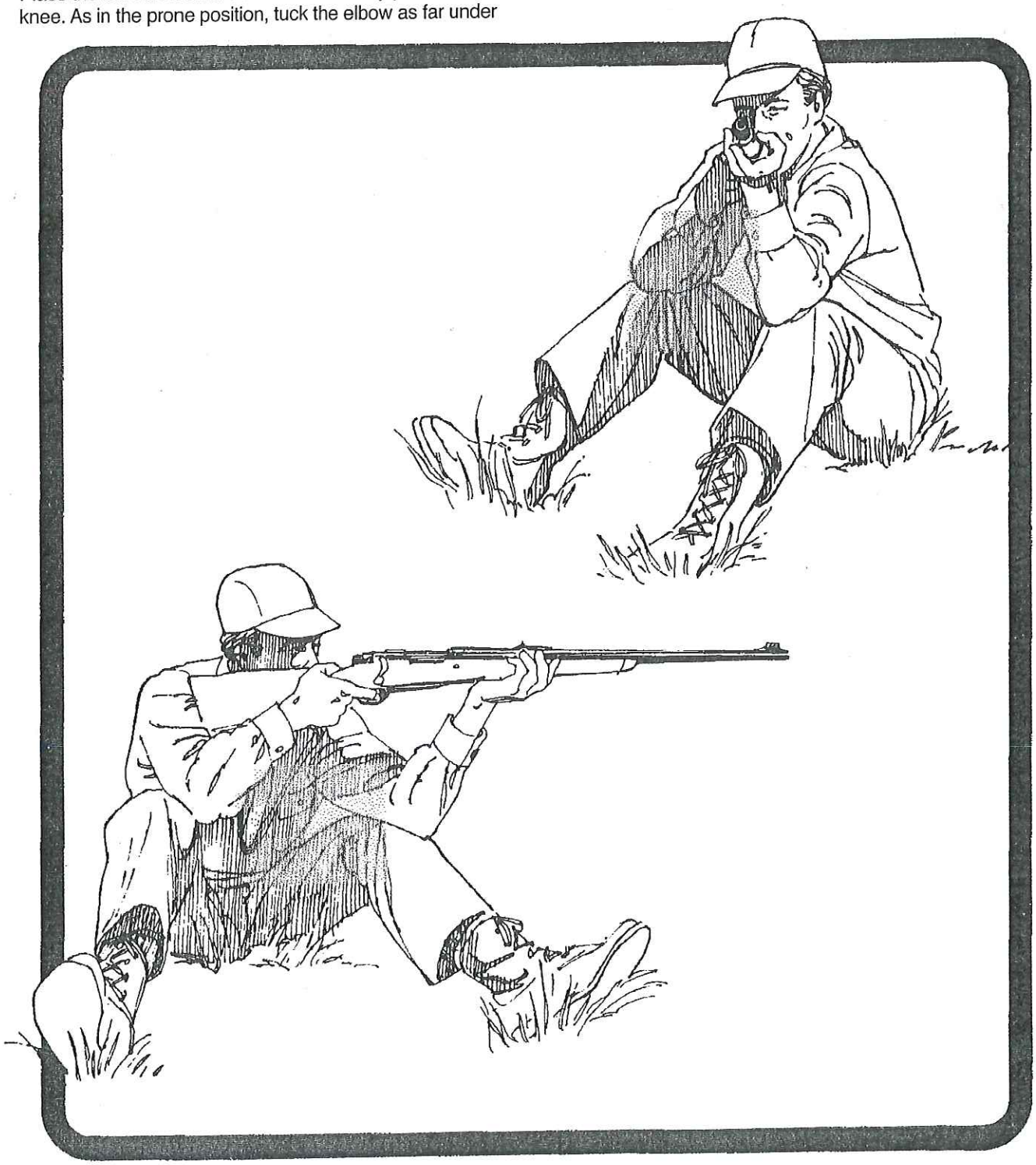
Sitting Position

The sitting position is the next steadiest shooting position. Both short and long range shots can be fired accurately from this position.

Sit solidly on the ground. The legs may be crossed or open and the body should be positioned about 30 degrees to the right of the line of aim.

Place the left elbow near but not on the bony part of the left knee. As in the prone position, tuck the elbow as far under the rifle as possible. Place the right elbow on or near the right knee. You have now formed two triangles which make a firm support for the rifle. Reverse the procedure if you are a left-handed shooter.

Hold the rifle firmly but do not grip it tightly. Bracing your body against something stable such as a tree or rock will help steady your aim for a more accurate shot.



Kneeling Position

Because the shooting arm is free, this position leaves the shooting arm and elbow unsupported and is not as steady as either the prone or sitting positions. But with practice, the shooter can maintain control and shoot accurately.

Turn so you are approximately at a 45 degree angle to the target. Lower the body so the right knee touches the ground and place your left foot forward to steady you. Sit comfortably on the heel or the side of the right foot. Place the left elbow near but not on the bony part of the left knee, as far under the rifle as you can.

If you are a left-handed shooter, kneel on the left knee with the right foot forward and the right elbow on the bent knee.

Standing Position

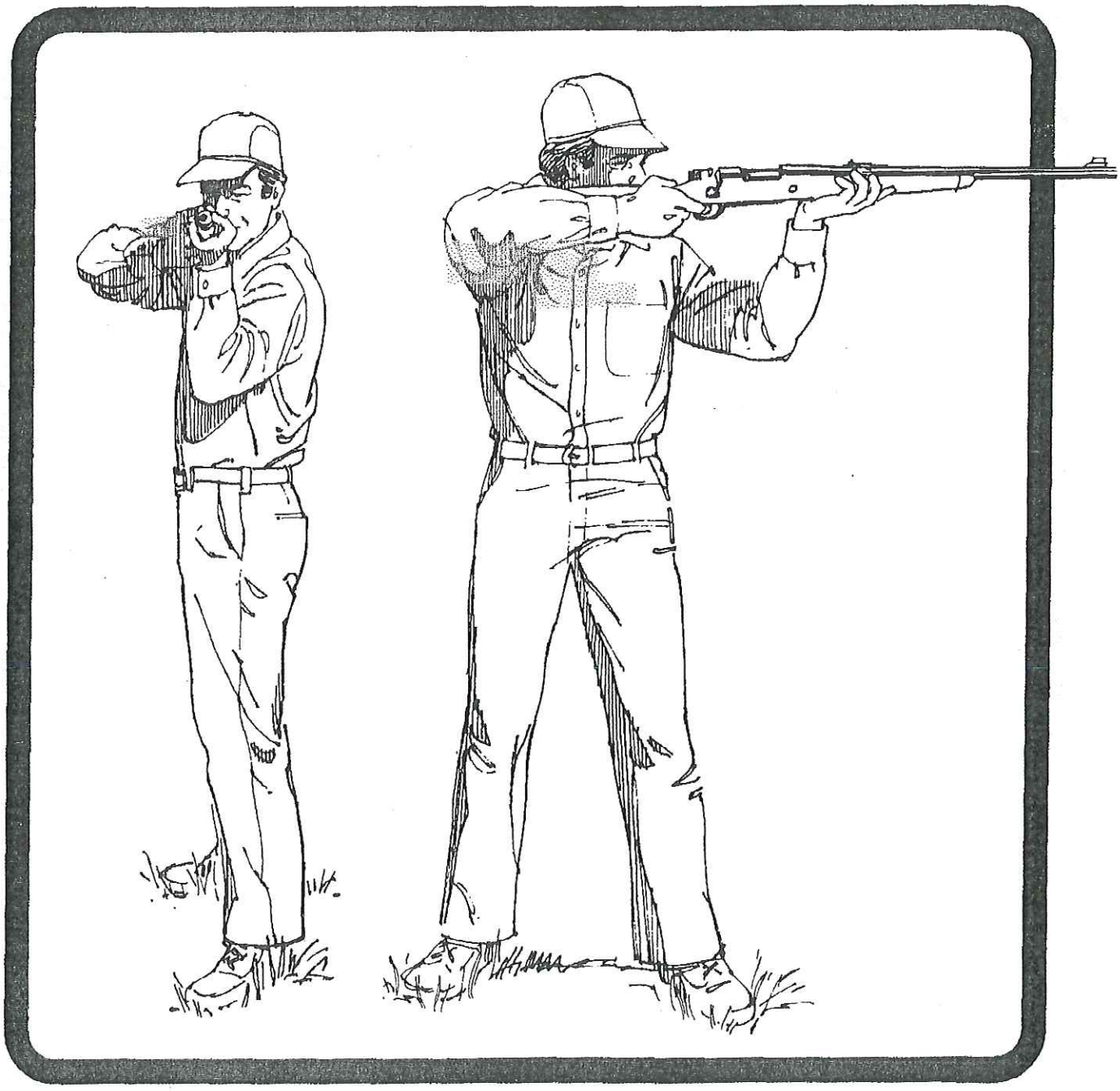
The standing position is the most unstable shooting position. It is also the most difficult position from which to fire an accurate shot.

It requires excellent control. The shooter must be skilled in all of the rifle shooting fundamentals—sighting, breath control, trigger squeeze and follow through.

Turn your body approximately 90 degrees to the right of the target. Place your feet shoulder width apart.

Support the rifle with your left arm. Hold the left arm against your body for extra support. Hold the rifle firmly against your shoulder with the right hand. Do not grip the rifle tightly. Reverse the procedure if you are a left-handed shooter.

If there is too much waver, do not shoot. Resting or supporting the rifle on a stable object such as a tree or large rock, or using a carrying strap as a sling, will help steady your shot.



Fundamentals of Shotgun Shooting

Shooting a shotgun is different from shooting a rifle. With the rifle you must aim precisely. With a shotgun you point at the target. Because of this, the fundamentals of shotgun shooting are different.

Accurate shotgun shooting requires a fast sequence of movements involving the body, gun and eyes. These movements need to be performed in one smooth, coordinated movement for accuracy.

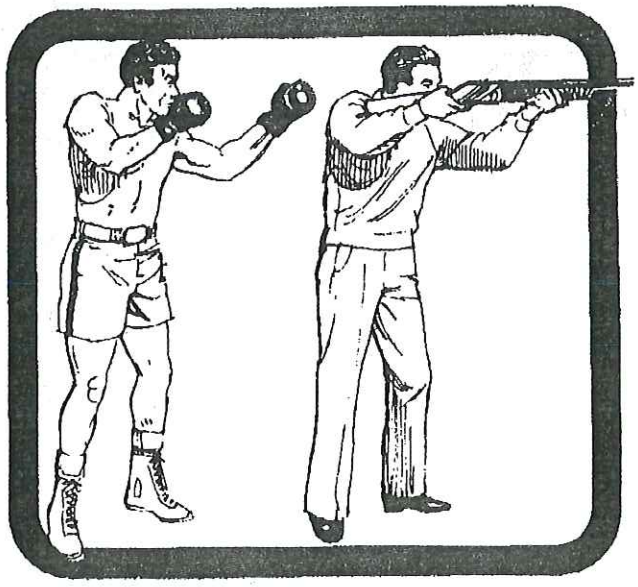
There are some shotguns which are equipped with adjustable sights and some models that fire slugs. These types use the same shooting techniques required for accurate rifle shooting.

Shotgun Shooting Stance

The shotgun shooting position, or "stance," resembles that of a boxer in the ring—feet spread apart, well balanced, arms and trunk free to swing to the right and the left of the target. This position must be comfortable and natural to allow quick movement in any direction.

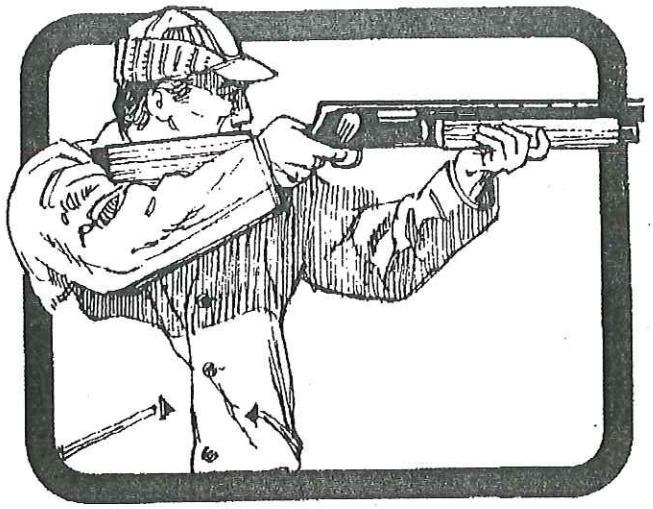
When shooting, the body weight shifts to the leading leg (left leg if you shoot right-handed, right leg if you shoot left handed). The leading hand holds the shotgun fore-end and points naturally to the target area.

You don't aim the shotgun—you point it at your target.



Mounting the Shotgun

The action of placing the shotgun to your shoulder is called "mounting the gun." You must place the stock against your cheek first, then against your shoulder. This makes sure the gun is in exactly the same position each time you shoot.



Do not make the error of raising the gun to the shoulder, first and dropping your head so the cheek rests against the stock. When this happens, you may make several shooting errors, which will likely cause you to miss the target.

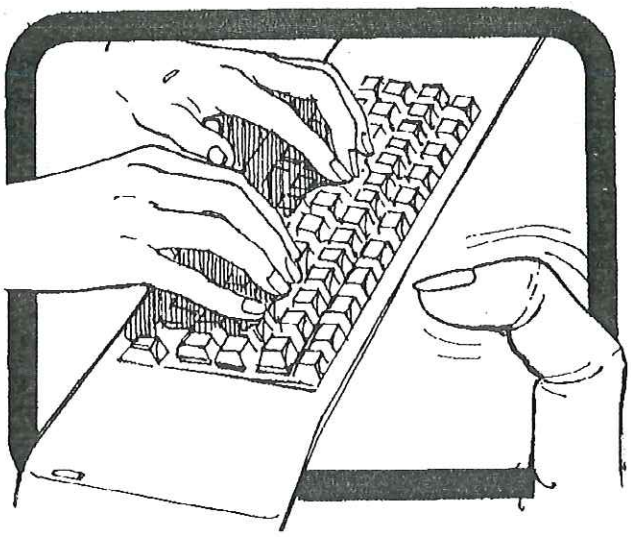
Eyes on the Target

Keep both eyes wide open and focused on the moving target—not on the gun barrel or the bead sight. While watching the target, mount the gun correctly and point it toward the target area.

Remember, you do not aim a shotgun, you simply point it.

Slap the Trigger

You do not fire a shotgun with slow, steady trigger pressure as you do a rifle. The shotgun trigger is consciously "slapped." The trigger slap is similar to the action of striking a keyboard key. Slap the trigger quickly, but not hard.



Leading

"Leading" means shooting ahead of the moving target. Leading is necessary when shooting at any moving target. If you shoot directly at a moving target, by the time the shot reaches that spot, the target will have already passed by. With correct lead, the shot and the moving target will reach the same spot at the same time.

With practice, this leading will soon become automatic, requiring no conscious thought on your part.

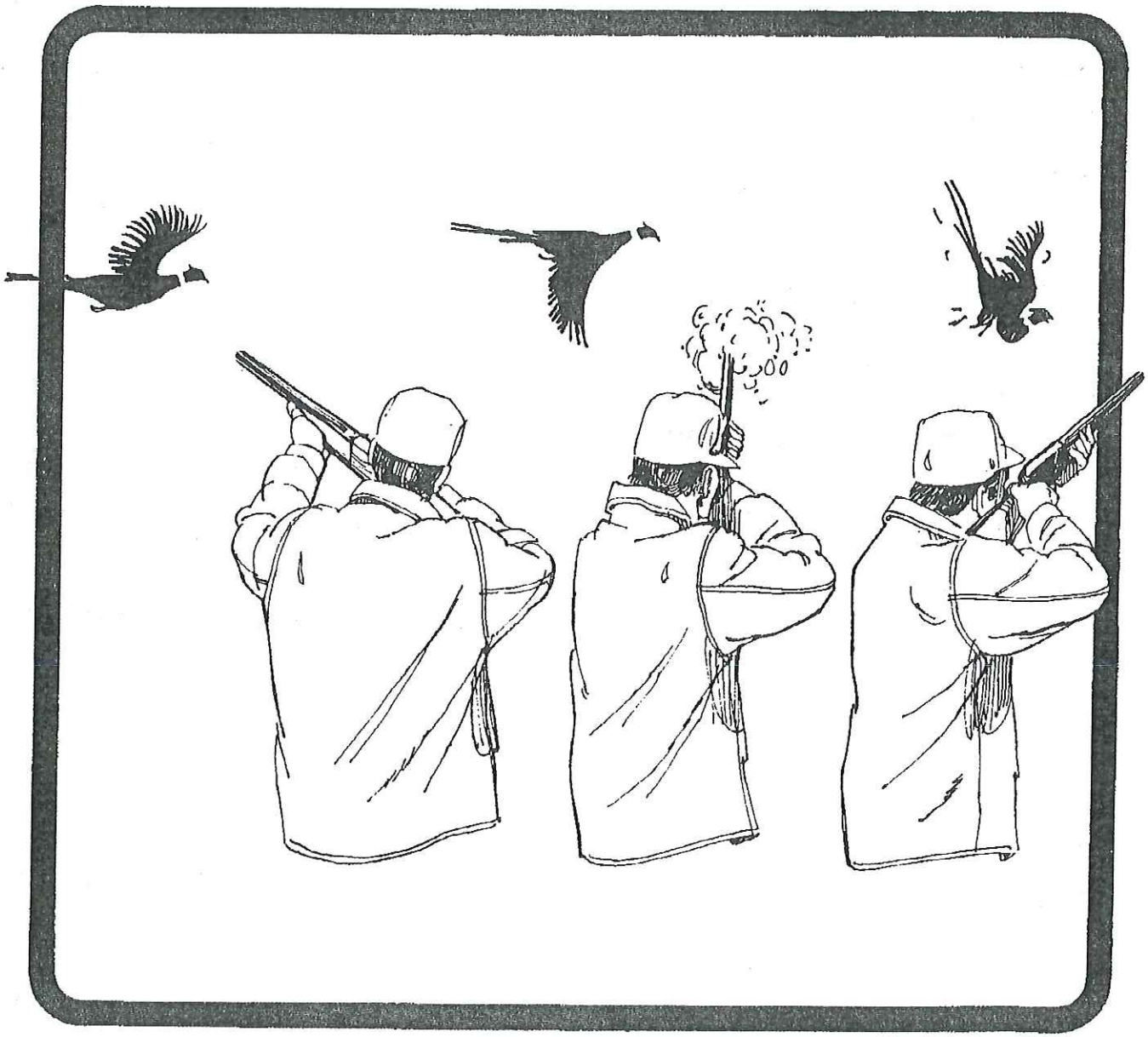
There are three commonly used methods of leading- "swing through," "sustained lead" and "snap shooting."

Swing Through Lead

For the beginning shooter, the swing through method is easiest to learn.

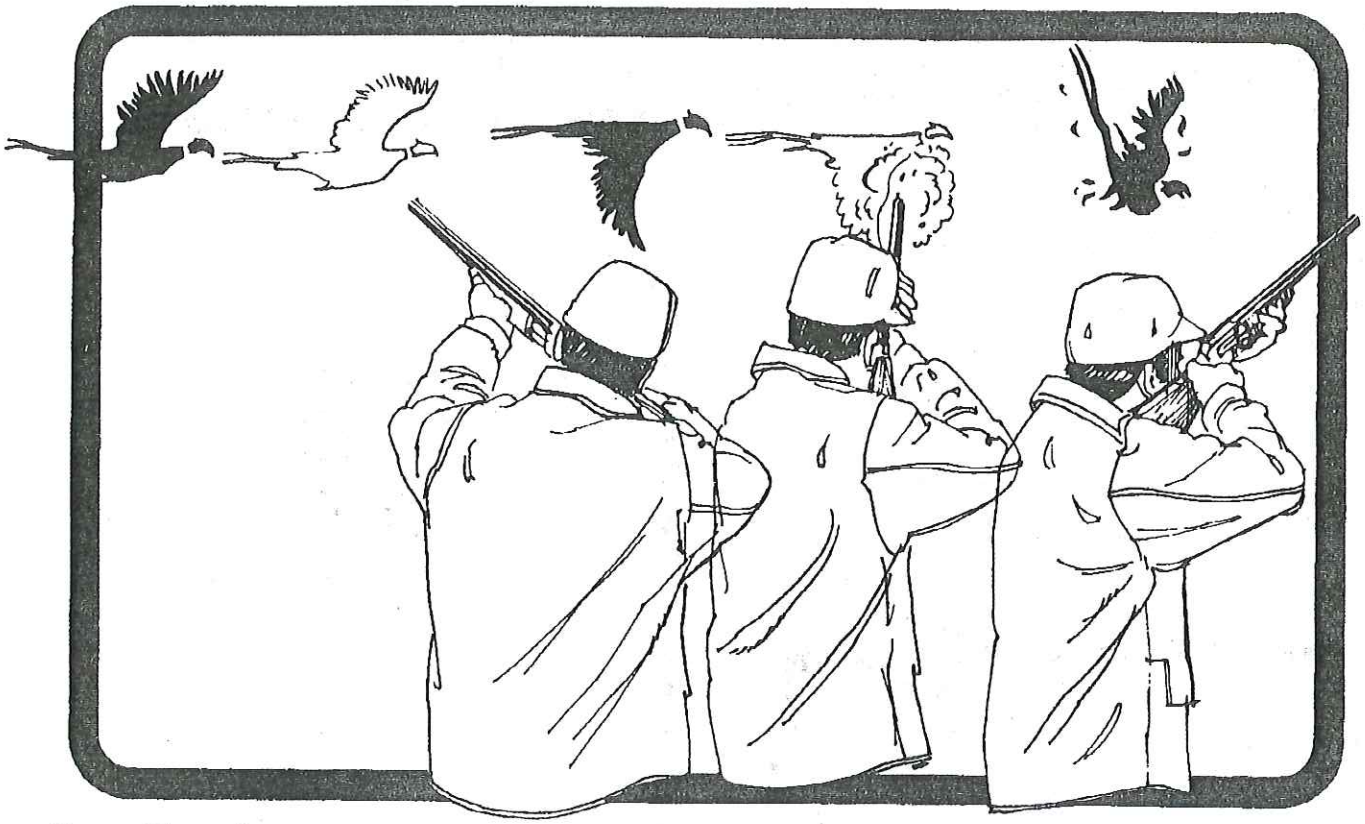
Swing the muzzle of the shotgun so it points at the flying bird. Follow its flight path, increasing the speed of your swing until the gun muzzle has passed through the bird to a spot just ahead—then fire. Continue your swing during the shot and after.

It is extremely important to continue swinging your shotgun after the shot. This is called "follow through." It ensures against shooting behind the target.



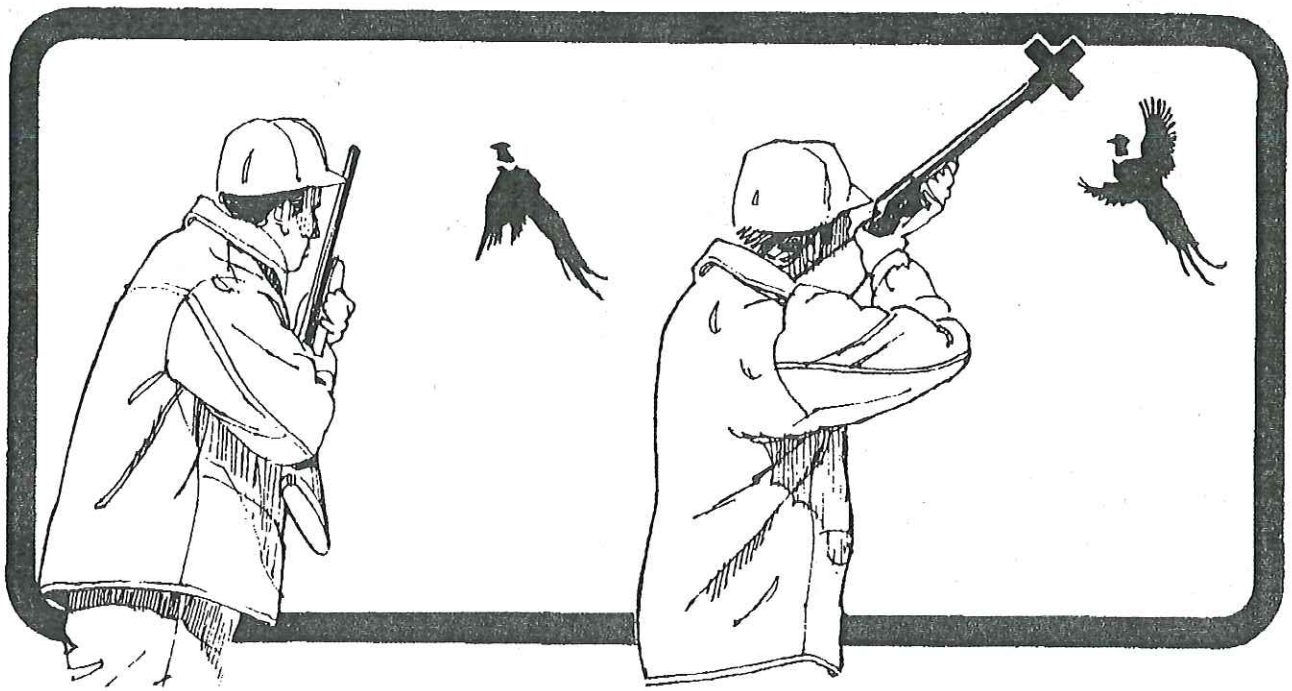
Sustained Lead

A shooter using the sustained lead technique must estimate the speed, range and angle at which his quarry is flying. Having decided on the amount of lead necessary, he swings the muzzle that distance ahead of the target. He then maintains this distance, or lead, in front of the bird up to and after the shot is fired.



Snap Shooting

Anticipating the amount of time he thinks it will take a flying bird to get there, a hunter, using the snap shot method, picks a spot in front of his target and fires at that spot. He hopes that the shot and the target will meet at the same place.



Fundamentals of Handgun Shooting

The use of handguns for hunting is legal in many states, however regulations vary from state to state. You should check the appropriate state laws before going to field with a handgun.

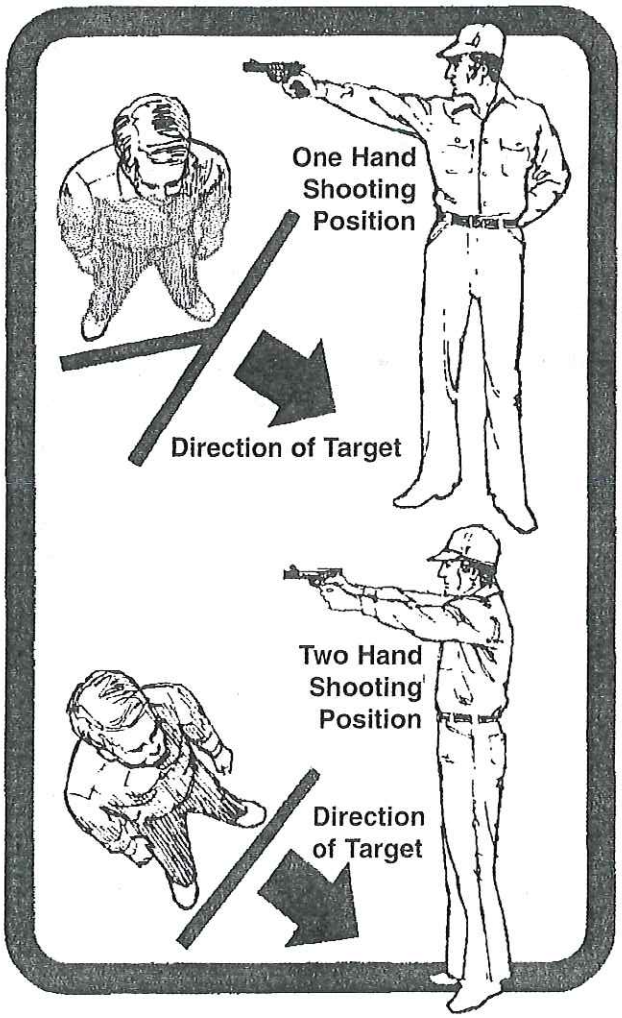
The person who masters the fundamentals of good rifle shooting (grip, position, sight alignment, trigger squeeze and breath control) will find them adaptable to handgun shooting.

Shooting Position

Stand with body turned approximately 45 degrees from the target. Spread your feet about shoulder width apart with weight distributed evenly on both feet to give you solid balance. Keep your knees straight but not locked.

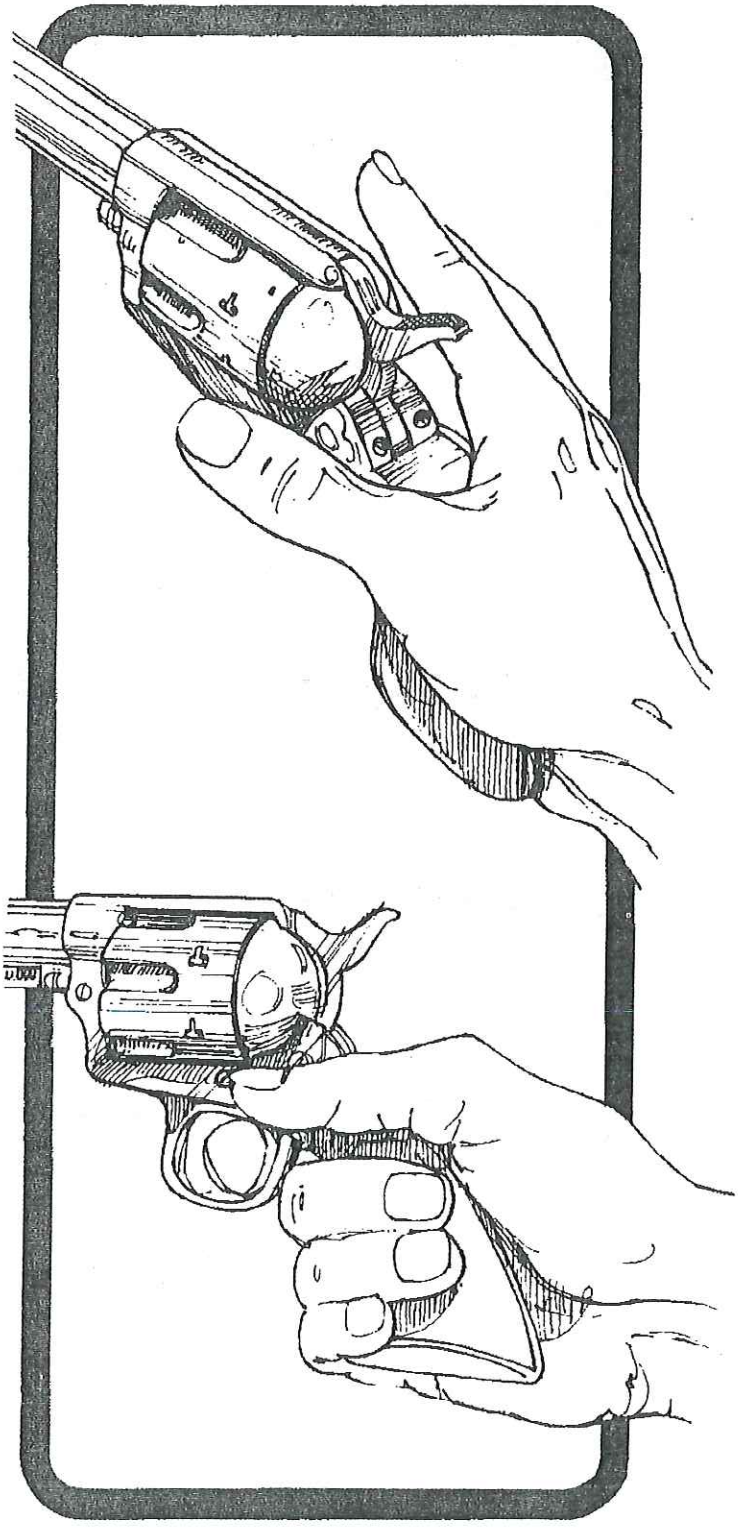
Stretch out your firing arm and lock your elbow and wrist. Keep your head erect.

This position will give you stability when firing and keep body movement to a minimum.



Grip

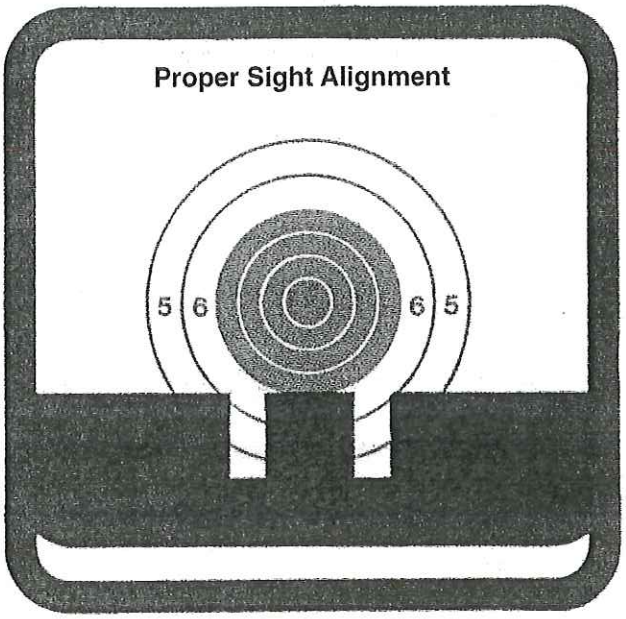
Good marksmanship requires that the grip remain firm for each shot. Change in the grip will effect the ability to maintain sight alignment and accurate bullet placement. The correct hold gives the shooter complete control of the handgun when it fires.



Sighting and Aiming

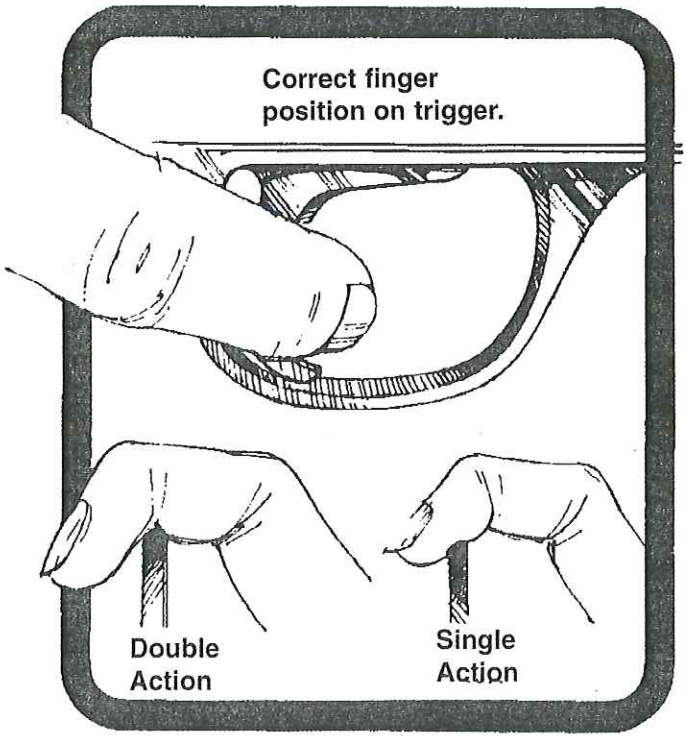
You sight and aim a handgun the same way as you would a rifle with open sights.

Because the sights of a handgun are close to each other-much closer than rear and front rifle sights—sight alignment of a handgun must be exact for accurate aiming.



Trigger Control

Squeeze the handgun trigger as you would squeeze the trigger of a rifle.



Breath Control

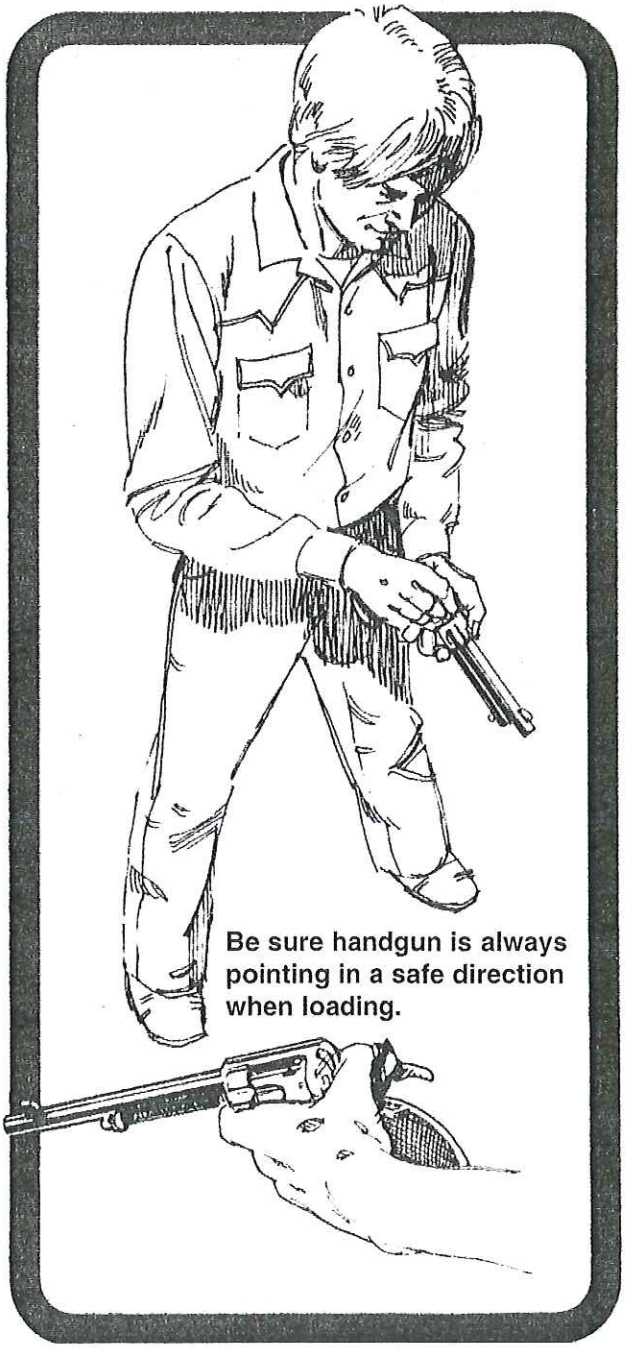
Control your breathing in the same manner as when shooting a rifle.

Following Through

As in rifle shooting, when shooting a handgun it is necessary to follow through by continuing to hold still until after the bullet has been fired.

Loading a Handgun

WHEN LOADING A HANDGUN, BE SURE IT IS ALWAYS POINTED IN A SAFE DIRECTION.



Black Powder and Muzzleloading

Black powder hasn't been used to fire guns since early in this century. In recent years hunting with black powder firearms or muzzleloaders has been revived.

Selecting Black Powder Firearms

Black powder enthusiasts will find a wide choice of firearms available today. There are muskets, pistols, muzzleloading rifles and shotguns. Black powder shooting need not be expensive. A black powder gun costs about the same as a standard shotgun. Muzzleloaders can also be made from inexpensive do-it-yourself kits. If you do have an antique gun, before using it, have it inspected by a firearms expert to be sure it can be fired safely.

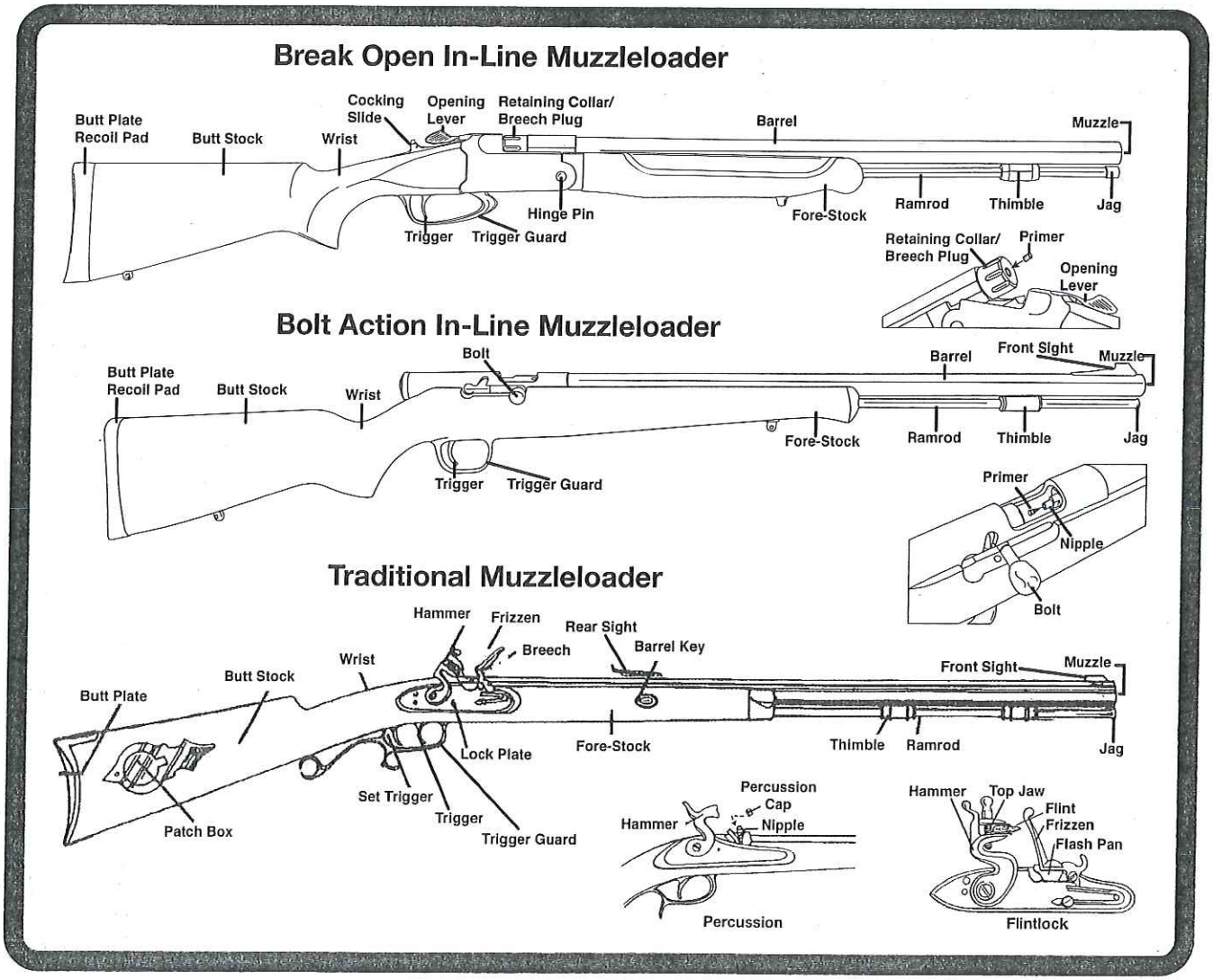
With percussion cap models, the breech plug should be removed and the nipple, drum and threads checked for rust and deterioration.

Special attention must be given to antique black powder shotguns. If they are corroded, they are not safe to fire. Antique shotguns, especially those with Damascus barrels, are particularly susceptible to corrosion.

Today, the safest guns for black powder or black powder substitutes are reproductions of muzzleloaders or in-line muzzleloaders.

Before buying a black powder gun, the newcomer to the sport should first attend several black powder shoots as a spectator. Talk with the participants and learn why they like a particular model. A gun which is good for target shooting is not necessarily the best model for hunting. Know the gun's capabilities and those functions which it can perform before purchasing a black powder firearm.

If you intend to hunt big game with your black powder gun, give consideration to the size of caliber you choose. The caliber of gun used to hunt big game is prescribed by regulations in many states which permit the use of black powder guns. You should check the hunting regulations for any restrictions on the use of muzzleloaders in hunting.



Selecting Powder and Ball

Muzzleloaders require different loads for hunting and for target shooting. There are four types of black powder and many types of black powder substitutes and pellets that can be used for both. Check your local game laws for any powder restrictions that may be in place.

FG: is very coarse granular black powder and is the ammunition used to fire muskets with large bores.

FFG: is used in most muzzleloading shotguns, big bore rifles and pistols between .54 and .69 caliber, it is the second coarsest black powder available.

FFFG: is a faster burning black powder. It is the powder used with most cap and ball revolvers, single shot pistols and rifles ranging from .36 to .54 caliber.

FFFFG: is very fine powder and is seldom used except when priming flash pans of flintlocks. It is extremely fast burning and creates pressures too great for most black powder guns.

Triple Seven Mag 50 Caliber-60 Grain Pellets: Use two Pellets for a 120 grain "magnum" load. With two Triple Seven Magnum Pellets you can achieve an additional 200-250 feet per second. In 26" in-line barrels with a 250 grain projectile this will normally result in muzzle velocity of approximately 2,000 feet per second. Designed for use with 209 shotshell primers only.

Triple Seven 50 Caliber-50 grain Pellets: Designed for use in in-line rifles. A single Pellet may be used for target or small game and two 50/50 Pellets may be used to create the 100 grain equivalent for big game. Easy to clean-up, designed for use with 209 shotshell primers only.

Triple Seven 50 Caliber-30 grain Pellets: The 50/30 Pellets are designed for use in conjunction with 50/50 Pellets to tailor loads specific to a given rifle. The 50/30 Pellets may be used in any combination with 50/50 or other 50/30 Pellets in charges up to maximum of 100 grains. Easy to clean-up, designed for use with 209 shotshell primers only.

Triple Seven 45 Caliber-50 grain pellets: The 45/50 Pellets are designed for in-line .45 caliber rifles. As with all Triple Seven Products, clean-up is quick and easy with plain water. These Pellets may be used in .45 caliber rifles for game from squirrel to deer. Designed for use with 209 shotshell primers only.

Triple Seven FFG Granular Powder: Is intended for use in shotguns and rifles .45 caliber and larger, as well as cartridges.

Triple Seven FFFG Granular Powder: Is a smaller grain size than FFG; it is used in pistols and rifles of .45 caliber and smaller.

Pyrodex 50 Caliber 50 Grain Pellets: Designed for use in .50 caliber in-line rifles. A single 50/50 Pyrodex Pellet may be used for a light target or small game load, while two 50/50 Pellets may be combined to provide a potent 100 grain equivalent load for big game. May be used with standard percussion caps, musket caps or 209 ignition systems.

Pyrodex 50 Caliber 30 Grain Pellets: Designed as a companion to the original 50/50 Pyrodex Pellet, the 50/30 Pellet allows each shooter to tailor loads for a specific rifle, projectile and use. The 50/30 Pellets may be used in any combination with other 50/30 Pellets or with 50/50 Pellets in charges up to a maximum load of 100 grain equivalents. It may be used with standard percussion caps, musket caps or 209 ignition systems.

Pyrodex RS-Rifle/Shotgun Powder: Can be used in all calibers of percussion muzzleloading rifles and shotguns. It has wide applications of uses and is the most versatile powder in the Pyrodex line.

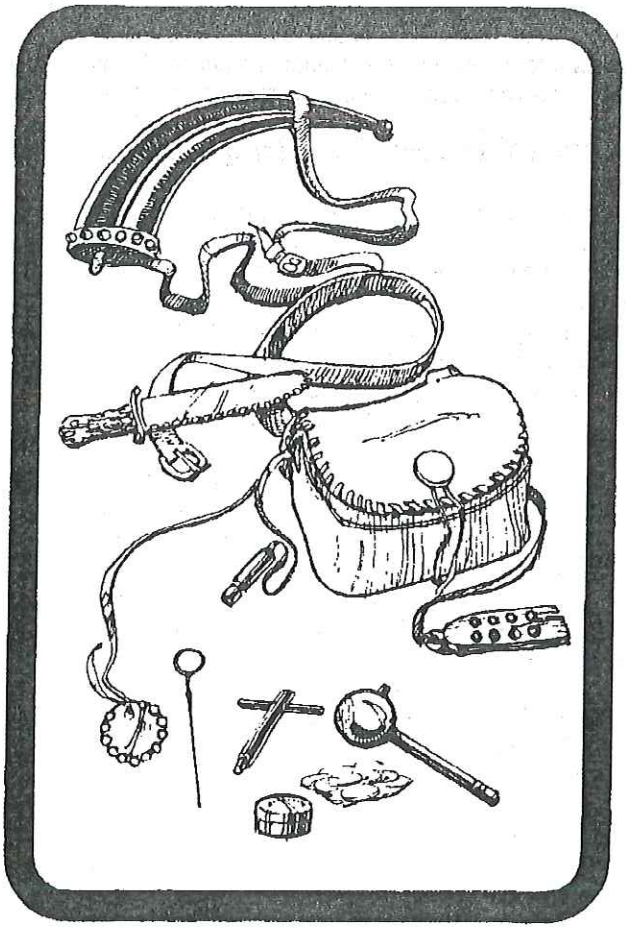
Pyrodex Select-Rifle/Shotgun Powder: Enhancement of the RS grade of Pyrodex. Using RS or 2F data in a volumetric measure, Select can significantly reduce group size. Select platforms well with sabots and conical bullets; it is also a good choice for black powder cartridge shooters because of its exceptional consistence.

Pyrodex 44/45 Caliber-30 grain Pistol Pellets: These 30 grain volume Pellets are intended for use in .44 or .45 caliber cap and ball revolvers. May be used in .45 caliber in-line muzzleloading rifles in conjunction with 50 grain Pellets in combination not exceeding 100 grains.

Pyrodex P-Pistol Powder: The principle use for Pyrodex P is in all pistols and in smaller bore rifles .45 caliber and down. P is also useful as a priming charge in guns which have tortuous or fouled ignition channels or other ignitions problems. P is compared to FFFG black powder on a particle size basis.

Most muzzleloading rifles fire round lead balls, conical shaped bullets called mini-balls, sabots or base wad bullets.

Selecting Accessories



The black powder shooter must have certain shooting accessories close at hand.

PATCHING MATERIAL: linen or cotton fabric (not synthetic) cut into individual patches or one inch wide strips, Vaseline or shortening to lubricate the bullet and a knife to trim the patches.

POWDER HORN OR FLASK: a container for powder made of material such as horn, brass or copper that will not generate sparks or static electricity.

POWDER MEASURE: a brass measuring scoop to ensure the correct powder charge is loaded.

STARTER: a short and long starter are usually combined in one tool. The short starter fixes the ball firmly in the muzzle and the long starter is used to move the ball down the barrel.

RAMROD: the ramrod is used to push the tight-fitting bullet down the length of the barrel.

RAMROD ACCESSORIES

a) **Worm:** a corkscrew tip on the ramrod used to remove cleaning patches which have stuck in the bore.

b) **Ball screw:** a tip on the ramrod used to remove the lead ball without discharging the firearm.

NIPPLE PICK OR VENT PICK: a length of wire slender enough to be inserted through the vent hole in a caplock or the flashhole in a flintlock to clear any fouling or obstruction. A nipple wrench should also be carried to replace a broken nipple.

CAP HOLDER AND LOADING BLOCK: The cap holder is a small strip or disc of leather punched with holes which will hold extra caps securely. The loading block holds pre-patched and lubricated balls.

POSSIBLES BAG: a shoulder bag or pouch in which the necessary accessories are carried.

CO2 LOAD DISCHARGER: Allows you to expel a charge using a standard CO2 cartridge. Slip it over the percussion nipple, primer, or against the flash hole of a flintlock, and your barrel is cleared instantly.

BREACH PLUG WRENCH: A tool designated to remove the breach plug from a muzzleloader. Wrenches/tools may vary from muzzleloader manufacturers; make sure you select the right tool for your muzzleloader.

SPEED LOADER: Holds a pre-measured powder load with the bullet/ball, it allows for faster loading while in the field.

Loading

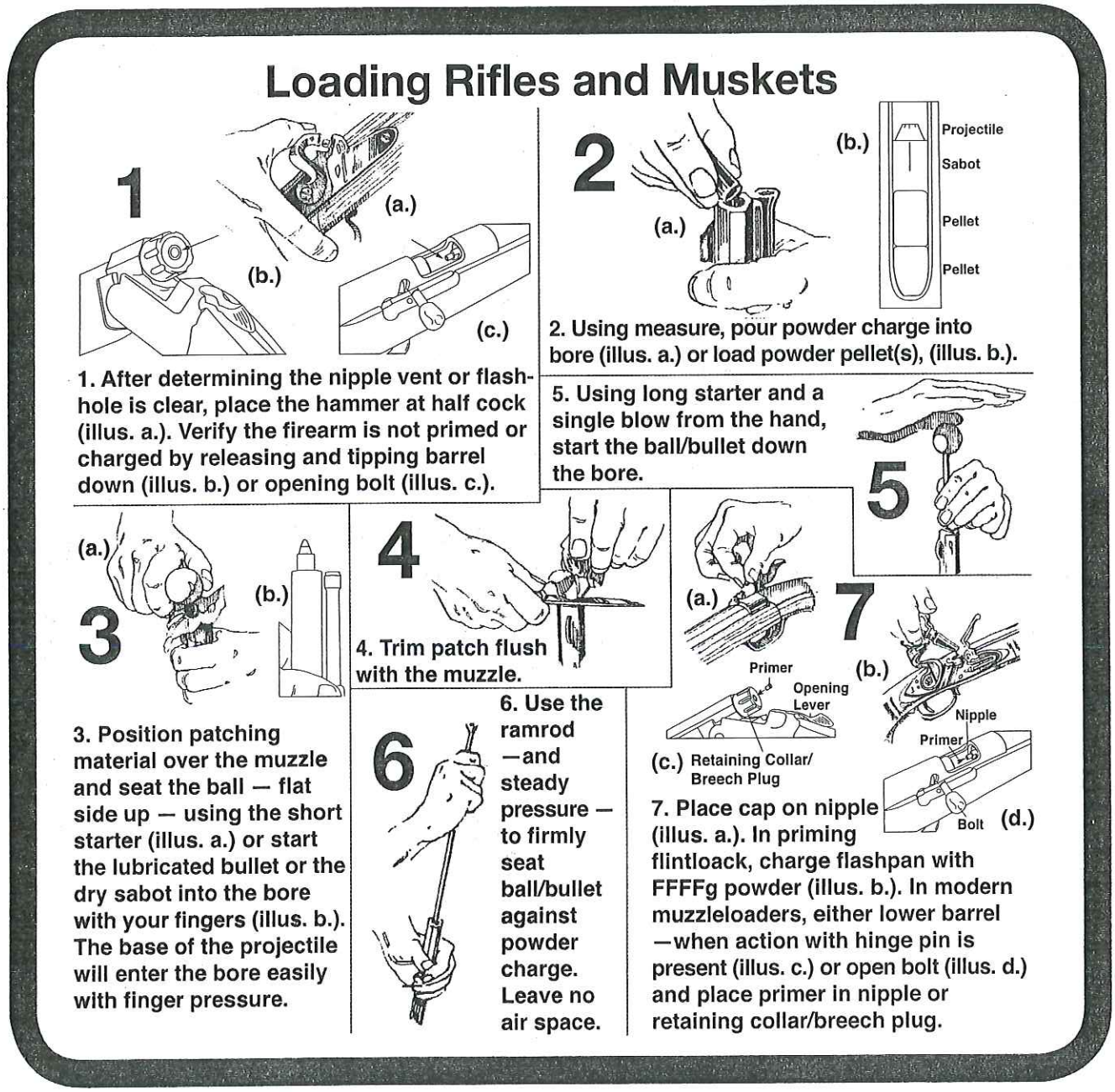
Before loading, all muzzleloaders should be wiped with a cleaning patch to remove any fouling or oil residue. When loading a traditional muzzleloader with patch and ball, the patching material is moistened with petroleum gel, shortening, saliva or a commercial made patch lube, then wrapped around the ball, forming a tight seal. With a sharp knife or razor, strip excess patching from around the ball after sealing.

To test a traditional or in-line muzzleloader, fire a cap in the unloaded gun. If the gun is in good working condition, a small curl of smoke will come out through the barrel. Or, if the muzzle is held near a leaf or blade of grass, the puff of air which comes out of the barrel will move it.

To test a flintlock, prime the flash pan and flash hole with powder and touch it off with the muzzle pointing in a safe direction. Smoke should show from the muzzle.

If the vent on a percussion gun, in-line gun or the flash hole on a flintlock appear to be closed, work the hole clear with a nipple pick.

For convenience when on a hunting trip, pre-measured powder loads may be carried in a small plastic pill container or in a commercial made speed loader. The advantage of the speed loader is that it will hold powder in granular or pellet form along with the bullet or ball and a primer or cap.



Safety Considerations

1. Muzzleloaders must be handled with the same care afforded other firearms.

2. Muzzleloaders are to be used with black powder only or black powder substitute only. Never use a smokeless powder. Black powder and black powder substitutes are highly combustible and can be ignited by a small spark. Never smoke near black powder and be sure to store black powder far from any open flame such as a campfire.

3. Never pour powder from the horn or flask directly into the muzzle. After a shot has been fired, smoldering residue often remains in the barrel, which could cause an explosion or backfire into the powder container.

4. Hold the muzzle away from the body when loading. This will protect you from burns if the powder is accidentally ignited.

5. Be certain the ball or bullet is seated firmly in place. To shoot with a ball or bullet lodged midway down the barrel will damage the gun and could severely injure the shooter.

6. Wipe the bore with a damp patch after each firing.

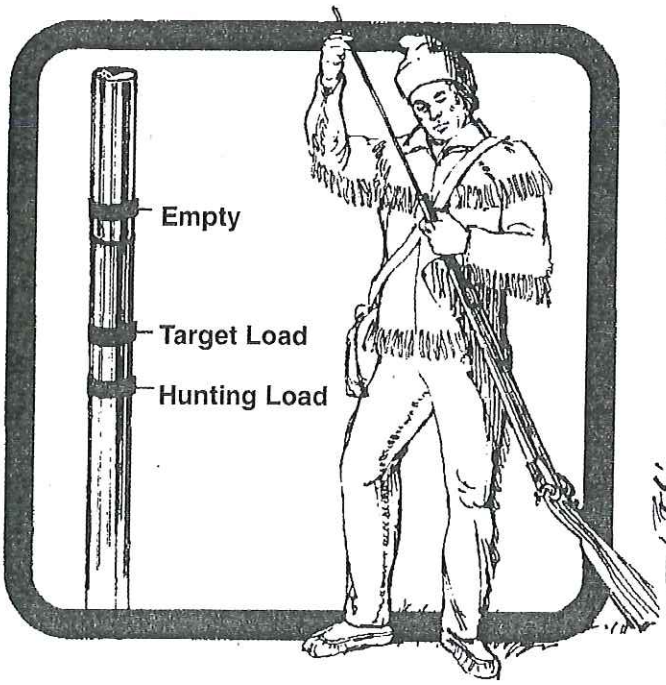
7. It is important to know when a gun is loaded. Experienced muzzleloaders mark the gun's ramrod at levels which show the bore depth when the bore is empty, when charged with a light target load and when charged with a heavy hunting load. When the ramrod is inserted in the barrel, it is immediately apparent whether or not the gun is loaded and if loaded, with how heavy a charge. This safety precaution is especially important.

Other Recreational Shooting Activities Introduction

It is important that a beginning hunter have a high level of shooting proficiency before he goes hunting. It is also important the he know his firearm is sighted-in accurately and that he know how to handle and operate it safely. It is too late to find these things out when in the field hunting. They must be determined beforehand. The best way a hunter can accomplish this is to participate in other forms of recreational shooting activity before the hunting season. These activities can be done year round. Some activities may be done during the years before a person is legally old enough to hunt. By doing a lot of supervised shooting at this time, hopefully he will have overcome the urge to do a lot of indiscriminate shooting when he first goes into the field hunting.

Plinking

Some people enjoy shooting just for the fun of it. They spend many hours "plinking" at tin cans, targets or pest species of wildlife such as gophers. But just like hunters, people who go plinking have certain responsibilities. They must ask permission to shoot on private property, they must pick up and remove targets when the shooting is finished, and they must be concerned about safety. Thoughtless, inconsiderate plinkers are not welcome any where. One problem that greatly concerns landowners is plinkers who shoot glass bottles and leave the broken pieces lying around where they may injure livestock or damage tires.



Before going plinking:

1. Find out if plinking is lawful in the area.
2. Obtain permission from the landowner.
3. Know what wildlife are classified as pest species which may be shot while plinking and which species of wildlife are protected.
4. Check first with the state conservation agency, state police or local police department to determine local laws governing the carrying and discharge of firearms.

Before You Shoot:

1. Be sure there is a safe backstop behind your target.
2. Be sure the noise from your shooting will not annoy neighbors or passers-by!

After You Shoot:

1. Be sure you have cleaned up your shells, targets and trash.
2. Leave all gates as you find them and report any open gates to the landowner when leaving.
3. Thank the landowner

Guns for Plinking

The .22 rimfire rifle is the most popular choice for plinking. Although this firearm has many features which make it suitable for this purpose, there are several factors which should be considered.

Positive Features

a) inexpensive to shoot

b) makes little noise

c) does not recoil when fired

Negative Features

a) because it has no recoil and it's quiet, shooters tend to forget that a loaded .22 rimfire can be a dangerous and lethal firearm in the hands of the inexperienced and careless.

b) the low velocity, all lead bullet has a tendency to ricochet after impact.

A better and safer choice for plinking is a .22 center-fire such as the .22 Remington. It has a louder noise. However, this high speed bullet will disintegrate on impact, thereby eliminating the possibility of a ricochet.

Air rifles and pellet guns are sometimes used for plinking. Some air rifles and pellet guns are classified as firearms, and are subject to laws governing firearm use.

Novelty Shooting Sports

Novelty shoots are shooting activities that, unlike plinking, are organized and supervised by an experienced range officer and conducted on a range or area designated as a safe shooting area.

3 Gun

3-Gun is one of the fastest growing shooting sports. It provides shooters with the opportunity to master a variety of marksmanship skills using a host of firearms in a fluid and dynamic setting. This sport involves three different firearms: rifle, pistol and shotgun. Courses are designed with a variety of obstacles and targets where the competitor can shoot anything from steel places to paper silhouettes. Each shooter travels and shoots around barriers using all three firearms. Scores are based on the time it takes to travel the course and how accurately they shoot each target.

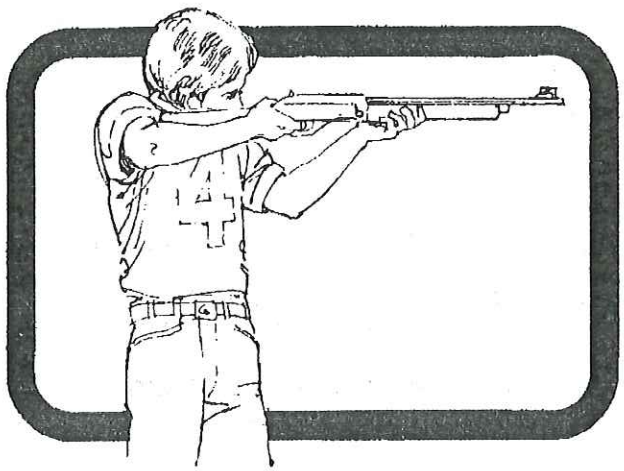
Turkey Shoot

One of the most popular of all novelty shoots is the "turkey shoot." Often held at Thanksgiving or Christmas, the local turkey shoot draws sportsmen of all ages to the target range to test their skill and try their luck at bringing home a prize. Contestants win prizes either for their marksman ship or their luck in winning a draw. Turkey shoots may be held indoors on short ranges or outdoors on longer target ranges.

.22 Sporting Rifle Match

These matches are held either indoors or outdoors and may be held on a target range of any distance. Contests are judged on either 10 or 20 shots with a .22 caliber rim fire sporting rifle fired from the standing (offhand) shooting position.

The .22 sporting rifle used must not weigh more than seven pounds including sights. The trigger pull must not be less than three pounds and only iron sights are permitted. All other shooting aids and accessories are prohibited. The shooter with the highest marksmanship score wins.



Air Gun Match

Air gun matches are usually held indoors on short ranges where space is limited and sturdy backstops are not available.

Contestants use air guns (spring, pneumatic or C02 powered).

Bingo Target Match

Bingo matches can be held on any firearms range using .22 rimfire rifles or air guns.

Bingo cards are used as targets for this novelty match. Each competitor attempts to score a "bingo" by firing five shots in a straight line across the bingo card. The shooter who does so wins.

Miss and Out Match

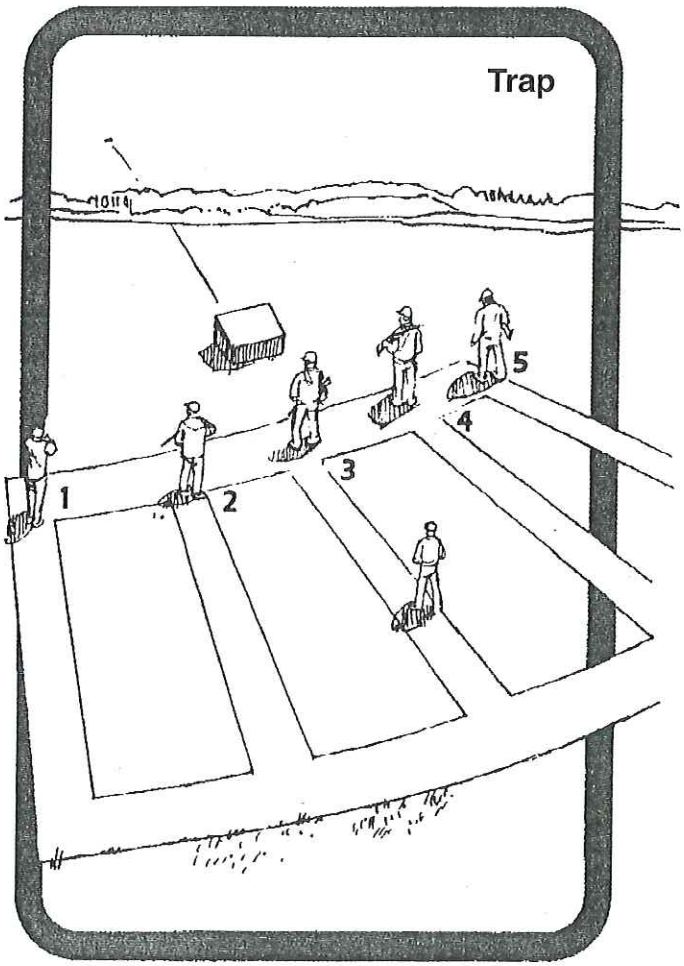
The Miss and Out match is fired using shotguns on a standard 16 yard trap range. Contestants may shoot with their own shotgun but are required to use ammunition provided by the organizers in charge of the match. For the match, each contestant is issued one box of shotshells and 25 clay birds.

The match is played much like a trap shoot except when a shooter misses a bird he is eliminated. The last man to drop out is the winner.

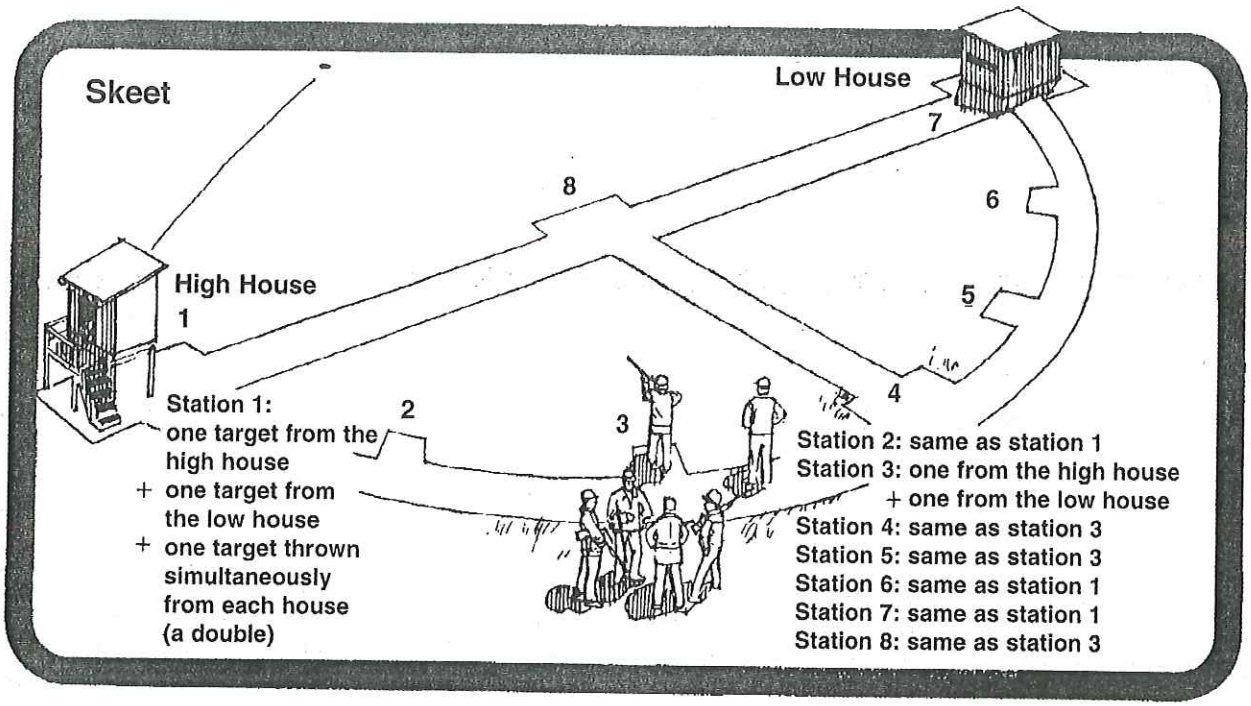
Regulation Shooting Sports

Shotgun Sports

a) **Sporting Clays:** Commonly referred to as "golf with a shotgun," sporting clays is a shotgun sport that is most similar to actual field shooting. Sporting clays typically include a squad of two to six people on a course featuring 10 to 15 shooting stations laid out over natural terrain. Each station will present targets from a trap machine thrown in singles, true pairs, following pairs or report pairs. Numerous hunting conditions can be simulated by combining various speeds and angles with different types of clay targets. Each station is unique and the course is designed to replicate the unpredictability of hunting ducks, pheasants, rabbits or other upland birds.



b) **Wobble Trap:** Wobble trap is a newer shotgun sport that features five shooting stations at different elevations. Each shooter is allowed five shots from each station and the trap is located underneath the center and tallest station. The trap oscillates on both horizontal and vertical axes which allow clay birds to be thrown at any angle.



c) **Trap:** Trap is a shotgun shooting sport which requires the gunner to try to hit targets thrown from a machine. Each shooter fires at five targets from each of five different shooting stations. A trapshooting round is made up of 25 birds (or 25 pairs when shooting doubles). The targets are thrown from a trap house at various angles anywhere within the 94 degree field. The shooter does not know what the target's angle of flight will be. In doubles, two birds are thrown at the same time.

d) **Skeet:** In skeet, the shooter fires at a target thrown from a high trap house and then one from the low trap house. A round of skeet consists of 25 birds. The birds always fly in the same path. The field layout consists of eight shooting stations. This accounts for 24 shots. One other shot is a repeat of the first miss or, if no miss has occurred, the 25th shot must be made from station 8 at a target from the low house.

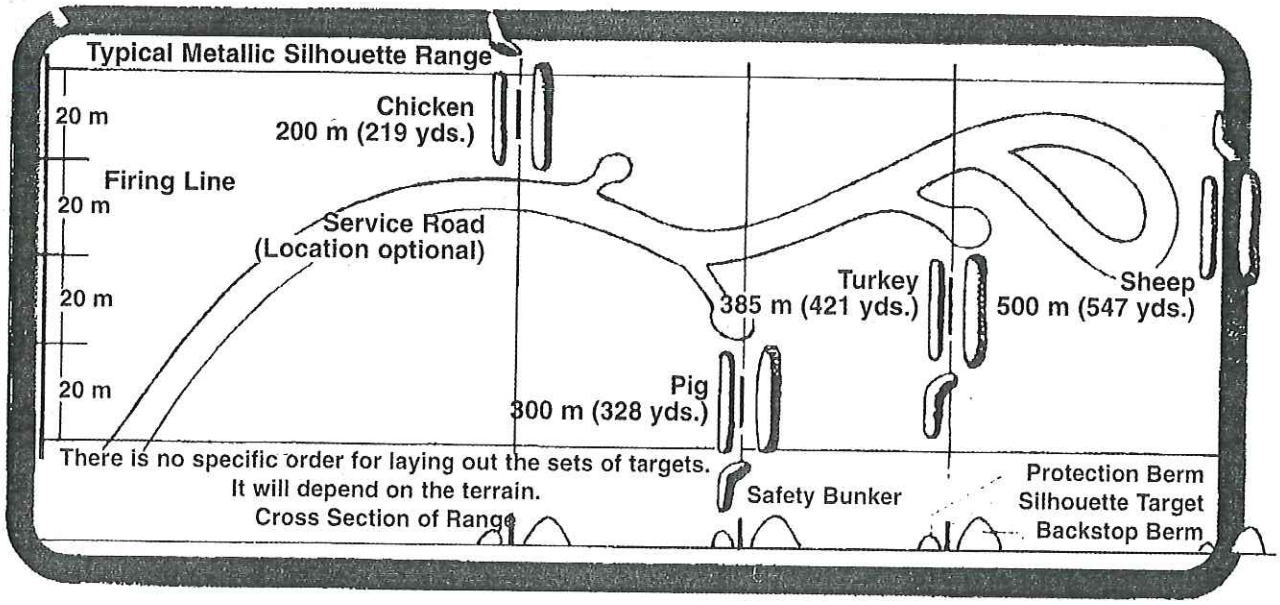
Rifle Sports

a) **Metallic Silhouette Match:** This sport requires the shooter to hit target silhouettes of various game species using a hunting rifle. All shooting is done from a single station and from a standing position.

Targets are positioned as follows:

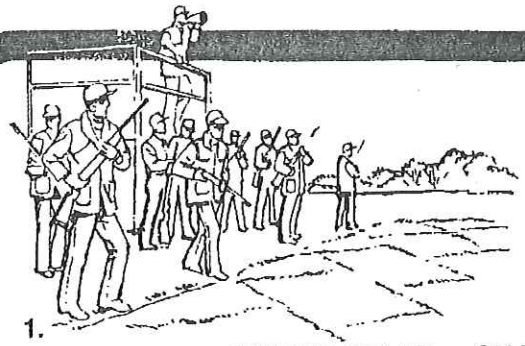
i) Mountain sheep at 500 meters
ii) Turkey at 385 meters
iii) Javelina at 300 meters
iv) Chicken at 200 meters

As indicated by the target species, this sport was developed in Mexico where wild pigs and wild turkeys are game animals.



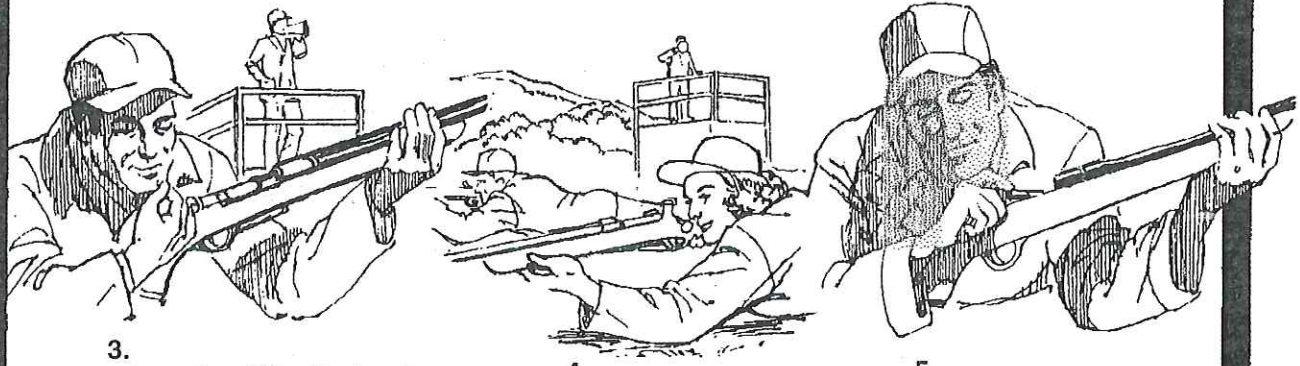
Range Procedure

Regardless of whether you use a range to sight in your gun or participate in a shooting sport, you must first understand and obey the following procedure used on all firearm ranges:



1.
On the command "FIRST RELAY — ON THE FIRING LINE" the shooters assigned to the first relay (each group of shooters using a rifle range is known as a relay) take their positions on the line and prepare to shoot.

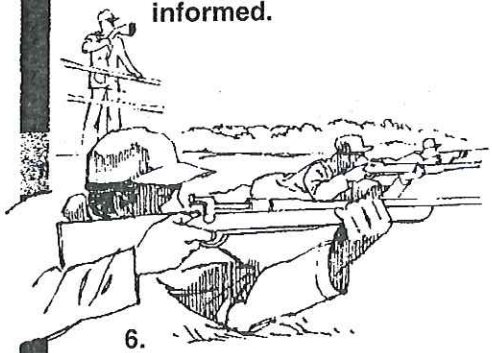
2.
When everyone appears ready the Range Officer will inquire "IS THE LINE READY"?" Anyone not ready should call out "NOT READY" and the Range Officer will state "THE LINE IS NOT READY."



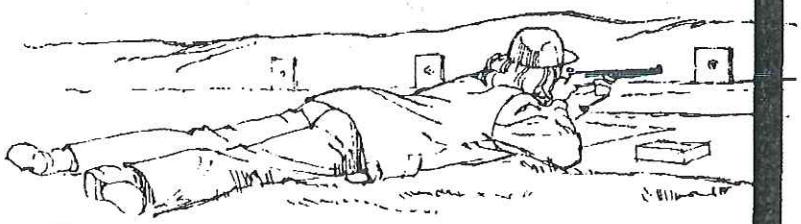
3.
When the difficulty has been corrected, the Range Officer is informed.

4.
He will then say, "THE LINE IS READY."

5.
The next command in order is "LOAD."



6.
The final preparatory command is "READY ON THE FIRING LINE."
This is followed by the command "COMMENCE FIRING."



7.
When the time limit expires or everyone is finished with that target, the Range Officer commands "CEASE FIRING." Immediately everyone stops, opens the action and makes sure the rifle is unloaded.
Any situation which is unfamiliar or which cannot be readily cleared, CALL THE RANGE OFFICER.
The Range Officer must maintain control over the firing line and the entire range at all times.

Glossary of Firearms Terminology

ACTION: The mechanism of a firearm located directly behind the barrel, by which a gun is loaded, locked, fired, unlocked, extracted and ejected.

ANVIL: That part of the cartridge primer which is a solid surface, against which the firing pin strikes to set off the priming powder.

AUTOLOADING: See SEMI-AUTOMATIC.

AUTOMATIC: A firearm that will insert, fire and eject continuously all cartridges in its magazine with a single, continuous trigger pull.

BALL: The round lead missile fired by smoothbore firearms. (The term is used today when referring to some types of bullets fired from rifled barrels).

BALLISTIC COEFFICIENT: a number which indicates how a bullet's shape, length, weight, diameter and nose design affect its stability, velocity and range against air resistance.

BALLISTICS: The study of what happens to moving projectiles in the barrel and in flight—their trajectory, force, impact and penetration. "Internal ballistics" refers to what happens inside the barrel before the bullet or shot leaves the muzzle, "external ballistics" is what happens after the bullet or shot leaves the barrel and travels to its final point of impact and "terminal ballistics" is what happens to the bullet at the final point of impact.

BARREL: The metal tube of a firearm made from iron or steel, through which the bullet or shot charge passes when the firearm is fired.

BASE WAD: The paper filler at the rear of the powder charge of the shotgun shell.

BATTERY: The metal arm of a flintlock mechanism, against which flint strikes to create sparks in the flash pan. (Also called the "frizzen.")

BEAVERTAIL: A wide, flat fore-end of a rifle or shotgun.

BEDDING: That part of the stock into which the barrel fits.

BELT: The narrow band around the rear section of a cartridge case just forward of the extractor groove. (The belt arrests the progress of the case into the chamber and controls headspace).

BERDAN PRIMER: See PRIMER

BLACK POWDER: A finely-ground mixture of three basic ingredients—saltpeter (potassium nitrate), charcoal (carbon) and sulfur.

BLOWN PATTERN: A shotgun pattern with erratic shot distribution, generally caused by gas escaping past the wads and getting into the shot.

BLUING: a process of treating metal gun parts in a bath of metallic salts and water, which colors them blue to prevent rust.

BOATTAIL: The tapered rear end of a bullet. (Also called "taper heel," this design is used to increase ballistic efficiency at long range).

BOLT: A steel rod-like assembly which moves back and forth in a bolt action, sealing the cartridge in the chamber during firing.

BOLTFACE: The forward end of the bolt which supports the base of the cartridge and contains the firing pin.

BORE: The tunnel down the barrel of a firearm through which the projectiles travel.

BORE DIAMETER: The measurement from one side of the bore to the other. In a rifled barrel this means measurement of the bore before the rifling grooves are cut.

BOXER PRIMER: See PRIMER.

BREECH: The rear end of the barrel (in modern arms, the portion of the barrel into which the cartridge is inserted. See CHAMBER).

BREECHBLOCK: The part in the breech mechanism that locks the action against the firing of the cartridge.

BREECHLOADER: a firearm loaded through the breech.

BUCKSHOT: Large lead pellets used in shotshells.

BULLET: a single projectile fired from a firearm.

BUTT: The rear end of a rifle or shotgun stock, (the portion that rests against the shoulder).

BUTTPLATE: A plate which covers the butt, (some steel buttplates have trap doors covering a recess for storage of cleaning equipment).

CALIBER: The diameter of the bore of a rifle before the rifling grooves are cut.

CANNELURE: A groove around the circumference of a bullet or case. (For example, the lubrication grooves of lead bullets, or the grooves into which the mouth of the cartridge case is crimped, or the extractor grooves of the rimless or belted case).

CANT: To tilt or lean a gun to one side when aiming.

CAP: See PERCUSSION CAP.

CARBINE: A light short-barreled rifle.

CARTRIDGE: A case, usually made of brass or copper, containing the power charge, the primer and the bullet. (Before development of the metallic cartridge, the term was used to mean a roll or case of paper containing powder and shot. Modern cartridges are generally classified in three categories— "centerfire metallics," "rimfires" and "shot shells." Centerfire metallics include all metal cartridges that have primers in the center of the base. Rimfires include all cartridges in which the priming powder is sealed in the soft rim around the base. Shotshells include all cartridges that contain shot, or small pellets, instead of a single bullet).

CENTER-FIRE: See CARTRIDGE.

CHAMBER: The enlarged portion of the barrel at the breech in which the cartridge is placed ready for firing.

CHECKERING: A diamond-like pattern on fore-ends and grips of firearms. (The diamonds are made by cutting crossing lines into the material with special tools).

CHOKE: The constriction at the muzzle of a shotgun barrel by which the spread of the shot pattern is controlled.

CLIP: A detachable metal case designed to hold a number of cartridges for loading into the firearm.

COCK: To set the action into position for firing. (On some firearms the action has an intermediate position called half cock. On early weapons such as the flintlock and percussion cap, the hammer was called a cock).

COMB: The upper edge of a rifle or shotgun stock where the cheek rests.

CONE: The sloping portion at the front end of a shotgun chamber in which the chamber diameter is decreased to the diameter of the muzzle. Also, the rear portion of the choke at the muzzle of a shotgun.

CONICAL BULLET: A cone-shaped bullet.

CORDITE: A double-base smokeless powder made of nitro glycerin and guncotton which is used in the form of long, stringy cords.

CORE: The part of a bullet that is covered by a jacket.

CORROSION: The gradual eating away of the metal parts of a firearm caused by rust.

CREEP: The movement of the trigger before it releases. (Also called drag or crawl).

CRIMP: The portion of a cartridge case that is bent inward to hold the bullet in place, or in the case of a shotshell, to hold the shot charge in place.

CROSS HAIRS: The sighting lines in a telescopic sight.

DAMASCUS BARRELS: Barrels made of strips of iron and steel welded together in a spiral fashion. (Modern ammunition should not be used in such firearms).

DETERRENT: A material added to an explosive to slow its burning rate.

DOUBLE-BASE POWDER: A rapidly burning powder made by absorbing nitroglycerin into nitrocellulose (guncotton). (Cordite is a double-base powder).

DOUGHNUT PATTERN: A shotgun pattern with a hole in the middle generally caused by the interference of the top wad.

DOWN RANGE: The direction from the shooting position to the target on a range. See RANGE.

DRIFT: The departure of a bullet or shot charge from the normal line of flight. (This can be caused by wind or the unbalanced spinning of the bullet).

DRILLING: A three-barrel gun with a rifle barrel beneath two shotgun barrels. (Generally of German manufacture).

EJECTOR: The mechanism which throws the cartridge case free from the gun.

ELEVATION: The degree of adjustment of a rear sight or scope reticule necessary to cause the bullet to strike higher on the target.

ENERGY: The amount of work done by a bullet, expressed in foot pounds.

EROSION: The wearing away of a barrel's metal surface by a bullet or shot charge or by the heat of powder gases.

EXTRACTOR: A hook device which pulls the case out of a chamber as the breech mechanism is opened. (The extractor generally brings the case within reach of the ejector, which then flips it out of the gun).

FEED: The action of moving live cartridges from the magazine of a firearm into the chamber.

FIRING PIN: The part of the breech mechanism which strikes the primer of the cartridge. (In most firearms, the firing pin is part of the bolt assembly).

FLINCH: To move or jerk a firearm involuntarily while shooting.

FLINT: A piece of stone held in the cock of a firearm. (When it strikes the steel battery, or 'frizzen,' this causes a shower of sparks to fall into the flashpan and ignite the powder).

FLINTLOCK: The gunlock of early firearms in which flint is thrown against steel, causing sparks to ignite the powder charge.

FLOOR PLATE: The detachable metal plate at the bottom of the cartridge magazine of a bolt action rifle. (The floor plate is usually hinged at the front and held by a release spring located just ahead of the trigger guard).

FORE-END: The forward portion of a shoulder-arm stock. (Located under the barrel, the fore-end serves as a hand-hold).

F.P.S.:Abbreviation for feet per second. A term used in expressing the velocity of a bullet.

FRIZZEN: See BATTERY.

FULMINATE OF MERCURY: a highly sensitive explosive used as a primer compound.

GAIN TWIST: Barrel rifling which increases in pitch from the breech to the muzzle to accelerate the spin of a bullet.

GAS CHECK: A metal cup placed on the end of a lead bullet to protect the lead against the hot gases of the burning powder charge.

GAS PORT: A small hole in the barrel of a gas-operated firearm through which expanding gases escape to power the autoloading system.

GAUGE: Measurement of shotgun bores derived from the number of bore-sized balls of lead to the pound. For example, 12 balls which fit the bore of a 12-gauge shotgun weigh one pound.

GRIP: The small portion of the stock gripped by the trigger hand.

GRIP CAP: A cap fastened over the end of a pistol grip on a rifle or shotgun stock.

GROOVES: See RIFLING.

GROUP: A series of shots fired with the same sight setting and the same aim.

HALF COCK: See COCK.

HAMMER: The part of the action that drives the firing pin forward.

HAMMERLESS: Refers to a firearm whose hammer and striker are concealed within the metal frame.

HAND CANNON: One of a variety of small, crude cannons used in the early 15th century.

HANGFIRE: Delay in firing a cartridge after the firing pin has struck the primer.

HEADSPACE: the distance between the base of the cartridge and the face of the bolt or breechlock. {This is determined by the rim of rimmed cartridges, the belt of belted cartridges and the shoulder or rimless cartridges).

HEEL: The rear end of the upper edge of a gunstock.Also the base of a bullet.

HIGH INTENSITY: Refers to cartridges having velocities of 2,700 feet per second (822.96 meters per second) or more.

HIGH POWER: A term applied to the first smokeless powder cartridges with velocities of approximately 2,000 feet per second (609.6 meters per second).

HOLDING: The action of keeping the sights on the target while applying pressure to the trigger.

HOLLOW POINT: A bullet with a nose cavity designed to increase its expansion on impact.

IGNITING CHARGE: The charge used to ignite the propelling charge. (See PRIMER).

INERTIA FIRING PIN: A firing pin which moves freely forward and backward in the breechblock. {The striker impels it forward while the explosion of the primer impels it backward).

IN-LINE: A percussion ignition system in which the nipple (or primer receptacle) is located in the center and rear of the breech plug.

INTERNAL BALLISTICS: See BALLISTICS.

IRON PYRITES: See PYRITES, FLINT.

JACKET: The outer covering over the inner metal core of a bullet.

JAWS: The vise-like device on a flintlock hammer used to hold the flint.

JUMP: The amount of change in the bore axis, measured both vertically and horizontally, while the projectile moves from the chamber to the muzzle when it is fired.

KENTUCKY RIFLE: A flintlock rifle with a long barrel and short, crooked stock.

KEYHOLING: The failure of a bullet to remain balanced in flight so that it enters the target sideways, leaving an elongated opening.

KICK: The backward movement of a firearm generated by the discharge of the projectile. See RECOIL.

KNURLED SURFACE: A metal surface which contains a pattern of ridges or beads. (This rough surface aids grasping a metal part to move it).

L.R.: Abbreviation for long rifle.

LANDS: In the rifling of a bore, the uncut portions of the barrel's inner surface left after the rifling grooves have been cut into the metal. See RIFLING.

LEADING: Fouling of a firearm bore by metal particles from bullets adhering to the metal surface caused by heat or friction.

LEDE: The beveled portion of the rifling at the rear end of the barrel (and the forward portion of the chamber) where the bullet first engages the lands.

LENGTH OF PULL: The distance from the front trigger of a shotgun to the center of the butt.

LEVER ACTION: An action operated by a lever located underneath it. (A secondary purpose of the lever is to serve as a trigger guard).

LINE OF BORE: An imaginary straight line through the center of the bore of a firearm extending to infinity.

LINE OF SIGHT: An imaginary straight line from the eye through the sights of a firearm to the target.

LOAD: A charge of powder, a projectile or a cartridge. Also, to prepare a gun for firing by inserting ammunition into it.

LOADING GATE: The hinged cover over the opening through which cartridges are inserted into the magazine.

LOCK: The firing mechanism of a muzzle-loading weapon. In breech-loading firearms, the lock is the firing mechanism and breech-sealing assembly.

LOCKING LUGS: A series of projections on the bolt of a firearm designed to fit into corresponding slots in the receiver to lock the action in closed position for firing.

LOCKPLATE: A metal plate on which the firing mechanism is mounted on percussion and earlier firearms.

LOCK TIME: The interval of time between trigger release and the detonation of the primer. (Also called lock speed).

MACHINE GUN: A firearm which continuously fires ammunition at a high rate of fire when the trigger is pulled only once. See AUTOMATIC.

MAGAZINE: The part of a repeating firearm which holds the cartridges or shells in position ready to be loaded one at a time into the chamber. (The magazine may be integral part of a firearm or a separate device attached to the action).

MAGNUM: A cartridge or shell with greater power than normal, (i.e. .300 magnum rifle, 3 inch magnum shot shell).

MAINSPRING: a strong spring which activates the striker or hammer of a firearm.

MATCH: A long cord of hemp, flax or cotton, saturated in saltpeter, which burns slowly without a flame. (It was used to ignite powder in early firearms).

MATCHLOCK: A firearm action which relies upon a serpentine or S-shaped piece of metal to hold a smoldering match. By pressing the lower end of the serpentine, the upper end holding the burning match contacts the priming powder in the pan.

METAL CASED: A bullet with a lead core and a solid metal jacket.

METALLIC CARTRIDGE: A cartridge with a metallic case. (Early cartridge cases were made of linen, paper, etc).

METALLIC SIGHT: A non-telescopic firearm sight.

MID-RANGE: The point in the trajectory halfway between the muzzle and the target.

MILLIMETER: a metric measurement equaling .03907 inches. (Its abbreviation is mm).

MINI-BALL: An elongated lead bullet with a pointed head and a cup-shaped hollow in its base which spreads as it is fired, forcing the metal into the rifle grooves.

MISFIRE: Failure of a cartridge to discharge after the firearm's firing pin has struck the primer. See HANGFIRE.

MOUTH: The open end of a cartridge case into which the bullet is inserted.

MUSHROOM: The shape many bullets assume when the tip expands upon striking. (Sometimes called mush room bullets).

MUSKET: A smoothbore shoulder gun. (Commonly used by military in the 17th, 18th and 19th centuries).

MUSKETOON: A musket shortened for cavalry use.

MUZZLE: The forward end of a barrel.

MUZZLE BLAST: The violent disturbance in the atmosphere after discharge of a firearm, caused by release of powder gases into the air.

MUZZLE BRAKE: A slotted device attached to the muzzle which softens the kick of the firearm.

MUZZLE ENERGY: The energy of a bullet as it emerges from the muzzle. (Usually expressed in foot pounds).

MUZZLE FLASH: The bright flash at the muzzle of a firearm resulting from burning of gases.

MUZZLELOADER: a firearm that is loaded through the muzzle.

MUZZLE VELOCITY: See VELOCITY.

NAKED BULLET: A bullet not covered by a metal jacket.

NECK: The forward portion of a bottlenecked cartridge case. Also the portion of a rifle chamber in which the neck of the cartridge case rests.

NEEDLE GUN: The first rifle known to use a bolt action.

NIPPLE: A small metal tube extending through the breech of a percussion firearm through which the flame passes from the percussion cap to fire the powder charge.

NOSE: The point of a projectile.

OBTURATION: The expansion of the cartridge case which seals the chamber preventing gases from escaping.

OPEN SIGHT: A non-telescopic firearm sight. See SIGHT.

OPTICAL SIGHT: Usually a telescopic firearm sight. See SIGHT.

OVER-AND-UNDER GUN: A firearm with two or more barrels placed one over the other.

PAN: The small dished container located on the side or top of a matchlock, wheel-lock or flintlock firearm used to hold the priming powder charge.

PARALLAX: The displacement of an object viewed from two different positions. (For example, when using a telescopic sight, the apparent movement of the reticule in relation to the target when the eye is shifted to a different position).

PARKERIZING: A non-reflecting rust-preventive finish used on the metal of firearms.

PATCH: A piece of leather or cloth. The patch is greased and placed around a bullet before ramming it down the barrel of a muzzleloader.

PATCH BOX: Covered compartment in the buttstock of a muzzle-loading rifle used to carry patches or other small items.

PATTERN: Distribution of shotgun pellets. This is measured at a standard distance of 40 yards (37 m) using a 30 inch circle (762 mm). (A full choke charge should throw a pattern of at least 70 per cent of the shot into the 30 inch circle at a distance of 40 yards).

PELLET: A pre measured solid black powder substitute charge designed to be used in in-line muzzleloaders replacing granular powder, it comes in several calibers and charge sizes.

PENETRATION: The distance traveled by a projectile from the point where it strikes the target to the point where it stops.

PENNSYLVANIA RIFLE: See KENTUCKY RIFLE.

PERCUSSION CAP: A small metal explosive-filled cap which is placed over the nipple of a percussion firearm. (As the cap is struck by the hammer, it explodes and sends a flame through the flashhole in the nipple to the main powder charge).

PISTOL GRIP: See GRIP.

PITCH: The angle of the barrel of a rifle or shotgun away from the angle of the stock. (It is measured by placing the butt of the stock on the floor and measuring the angle of the muzzle away from a line perpendicular to the floor).

POWDER: The general term for any propellant used in firearms which burns upon ignition. (The two major types are black powder, which is a physical mixture of charcoal, sulfur and saltpeter, and smokeless powder, which is a nitrated chemical compound in granular form).

PRESSURE: The force exerted by burning gases against the cartridge case, base of the bullet, chamber and bolt face of the rifle.

PRIME: To prepare or charge a muzzleloader for firing.

PRIMER: The collective term for the chemical primer compound, cup and anvil which, when struck, ignites the powder charge.

PRIMER CUP: The housing in a shotgun cartridge base which holds a primer.

PRIMER POCKET: The depression in the base of a centerfire cartridge which contains the primer.

PRIMING PAN: See PAN.

PROJECTILE: A bullet or shot in flight after discharge from a firearm.

PROPELLANT: The chemical substance which imparts movement to the projectile in a firearm.

PUMPKIN BALL: A large round ball of lead used in shotguns. (These projectiles are the same size as the shotgun bore).

PYRITES: A mineral used to produce sparks in primitive firearms. (It was replaced by flint).

R.F.: Abbreviation for RIMFIRE.

RAMROD: A wood or metal rod used to force the wad and bullet down the barrel of a muzzle-loading firearm.

RANGE: The distance traveled by a projectile from the firearm to the target. "Pointblank range" is the distance a projectile will travel before it drops to the extent that sight adjustment is required. "Effective range" is the greatest distance a projectile will travel with accuracy. "Extreme range" is the maximum distance a projectile will travel. Also, a facility designed for the safe shooting of firearms.

RECEIVER: The metal frame of a rifle or shotgun which contains the breech, locking mechanism and reloading mechanism.

RECEIVER RING: The portion of the receiver which is threaded so the barrel can be attached to it.

RECEIVER SIGHT: A sight attached to the receiver.

RECOIL: The backward force of a firearm caused by expansion of powder gases which also impels the bullet out of the barrel. Recoil is measured in foot pounds. See KICK.

RIFLE: A shoulder firearm with a rifled barrel designed to fire one projectile at a time. See RIFLING.

RIFLED SLUG: A large, single projectile used in shotguns.

RIFLING: Spiral grooves cut into the inside barrel surface to cause a bullet to spin, thereby stabilizing it. The cut-away portions of the rifling are called GROOVES and the uncut portions are called LANDS. See LANDS and GROOVES.

RIM: The edge on the base of a cartridge case which stops the progress of the case into the chamber. (It's also the part of the case the extractor grips to remove it from the chamber).

RIMFIRE: A cartridge in which the priming compound is contained in the rim at the base of the cartridge. See CARTRIDGE.

SABOT: A sabot is a sleeve used in a firearm that partially envelopes a projectile or bullet that is smaller than the bore diameter, which in turn gives higher velocities and flatter trajectories.

SAFETY: A device that blocks the firing mechanism of a firearm.

SEAR: The part of a firearm which links the trigger and the firing pin and releases it when the trigger is pulled.

SECTIONAL DENSITY: The relationship between the weight of the bullet and the cross-sectional area.

SEMI-AUTOMATIC: An action which fires, extracts, ejects, reloads and cocks with each separate pull of the trigger and is powered by the propellant gases. (Also called autoloading).

SERPENTINE: See MATCHLOCK.

SETSCREW: A screw that regulates the amount of pressure needed to release the sear.

SHOTGUN: A firearm with a smoothbore designed to fire small pellets called shot or rifled slugs.

SHOTSHELL: See CARTRIDGE.

SHOULDER: The sharply-sloping portion of the cartridge case joining the body and neck. (Found only on the bottleneck shaped cartridge cases).

SIGHT: The device on a firearm designed to help the shooter aim accurately.

SLACK: The amount of movement in a trigger mechanism before it engages the sear.

SLING: A strap used to carry and aid in shooting a rifle.

SLING SWIVEL: A metal loop, sometimes detachable, by which the sling is attached to the firearm.

SMALL-OF-THE-STOCK: The narrow portion of the stock between the comb and the receiver of a shoulder firearm.

SMALL BORE: Generally refers to a .22 caliber firearm.

SMOKELESS POWDER: See POWDER.

SMOOTH BORE: A firearm with a bore that is not rifled.

SNAP SHOT: A quick shot taken without deliberate aim.

SPANNER: A small metal wrench used to wind the mechanism of a wheel-lock.

SPENT BULLET: A projectile which has lost nearly all its energy and lacks the force needed to penetrate the target.

SPITZER: A bullet with a sharp point for better stability during flight.

STOCK: The part of a shoulder firearm by which it is held for firing and into which the metal parts are fitted.

STRAIGHT-PULL ACTION: A bolt action in which the bolt is pulled and pushed straight backward and forward.

STRIKER: The front part of a firing pin which strikes the cartridge.

SWIVEL: See SLING SWIVEL.

TANG: A metal strip extending rearward from a rifle or shotgun receiver to attach the action to the stock.

THROAT: The forward portion of the chamber where it is tapered to meet the bore.

TOE: The bottom part of the butt of a rifle or shotgun.

TRAJECTORY: The path a bullet travels from muzzle to impact.

TRIGGER: The part of a firearm mechanism which releases the firing pin.

TRIGGER GUARD: A metal loop around the trigger designed to protect it.

TRIGGER PLATE: The metal part under the receiver of a rifle or shotgun through which the trigger projects.

TROMBONE ACTION: A pump or slide action.

TURN-BOLT ACTION: A bolt action which is locked by pressing the bolt handle in and down, thereby turning its locking lugs into the receiver.

TWIST: The angle of rifling grooves relative to the bore axis. (Expressed as the distance in inches over which a turn or twist is completed i.e. 1-10, 1-22).

VELOCITY: The speed at which a projectile travels. (Usually measured in feet per second or meters per second).

WAD: A disc used to separate powder from shot; or to seal propellant gases behind the shot; or to hold shot together in the barrel.

WHEEL-LOCK: An early firearm mechanism in which a wheel with serrated edges is wound against the tension of a strong spring and spins against a piece of iron pyrite, sending a shower of sparks into the pan to ignite the charge.

WILDCAT CARTRIDGE: A non-standard cartridge usually made by modifying the shape of a standard cartridge.

WINDAGE: The lateral drift of a bullet in flight caused by wind.

ZERO: Sight adjustment so the bullet will strike the target at the point of aim.