


# The History of Firearms

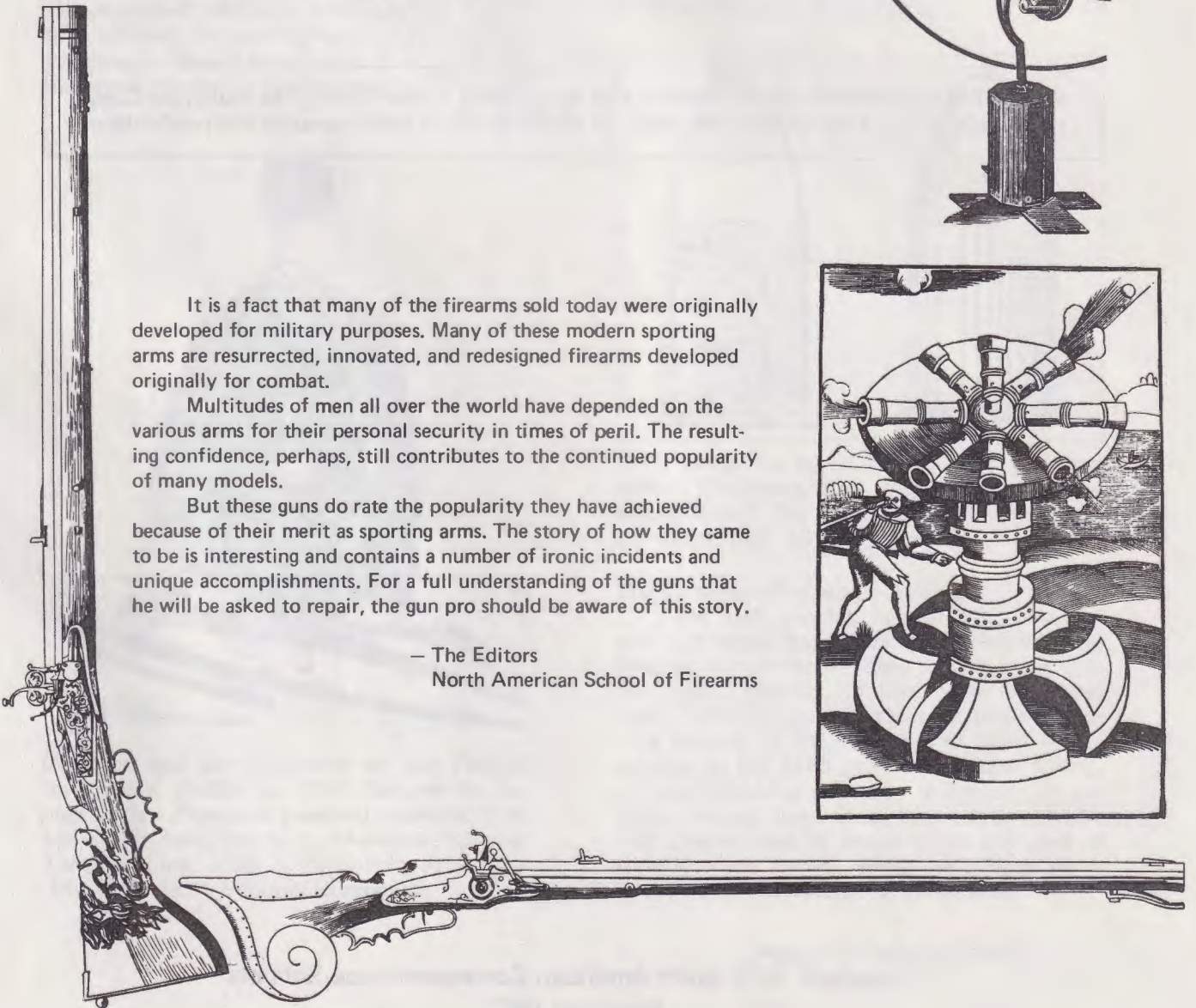
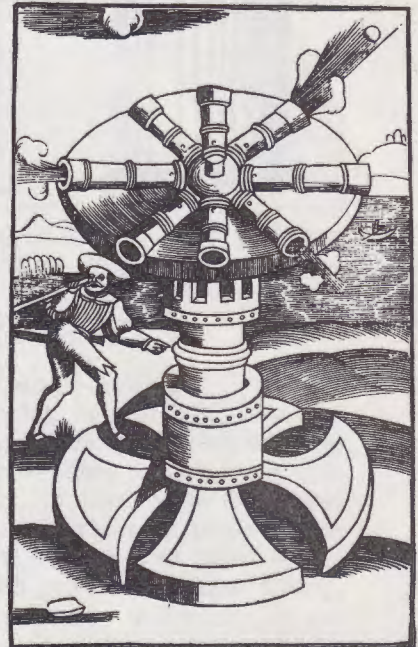
A decorative banner with a knight on horseback holding a longbow. The banner is ornate with scrollwork and a central tower-like structure. The knight is in full plate armor, riding a horse and holding a longbow in his right hand and an arrow in his left.

It is a fact that many of the firearms sold today were originally developed for military purposes. Many of these modern sporting arms are resurrected, innovated, and redesigned firearms developed originally for combat.

Multitudes of men all over the world have depended on the various arms for their personal security in times of peril. The resulting confidence, perhaps, still contributes to the continued popularity of many models.

But these guns do rate the popularity they have achieved because of their merit as sporting arms. The story of how they came to be is interesting and contains a number of ironic incidents and unique accomplishments. For a full understanding of the guns that he will be asked to repair, the gun pro should be aware of this story.

— The Editors  
North American School of Firearms



## THE HISTORY OF FIREARMS – PART 3

### WAR-BORN OFFSPRING AND SPORTING DESCENDENTS

#### A BREAKTHROUGH IN FIREARMS DEVELOPMENT — THE SELF-CONTAINED CARTRIDGE

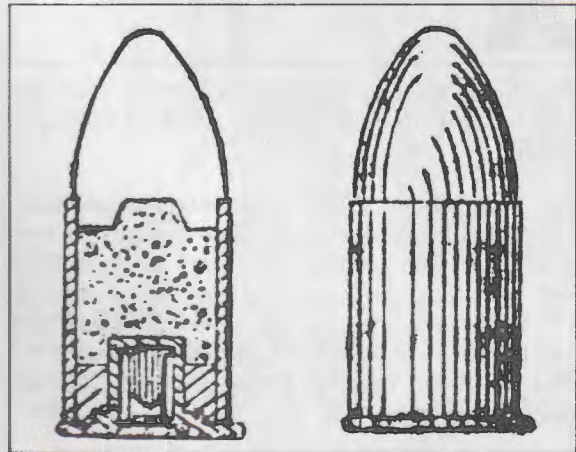
##### Post-Civil War Development

It was in the period immediately following the Civil War that the first real acceptable self-contained cartridge was designed. This in turn allowed the development of many of the firearms designs of many years previous which had been relatively unsuccessful at the time.



*Uniform and accoutrements of the Federal cavalryman during the Civil War are on display at San Francisco's newest museum. Top, 1860 Colt Army revolver, .44-caliber; Spencer 7-shot carbine; 1860 Light Cavalry saber; and .44-caliber 1861 Remington revolver.*

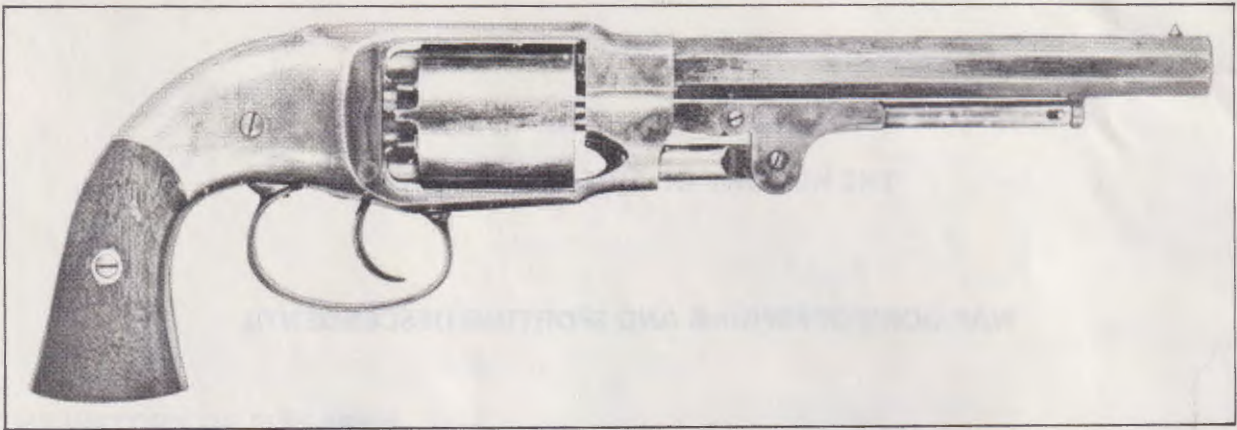
In fact, designs which had been attempted right at the very beginning of the era of firearms were now — with the self-contained cartridge — being designed, built, and fired. Many of these guns and firearms were rather peculiar or crude by today's standards. But many of them are still being manufactured in their crude form. The reason: they are still being accepted by the shooting public.



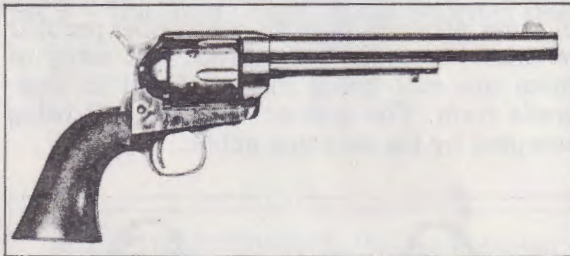
*Early center-fire cartridge for Model 1873 revolver. The charge was 10 grains of very fine blackpowder. The bullet was pure lead, hollow-based, and .460" in diameter.*

##### The Plow-Handled Single-Action

The last quarter of the 19th century gave the world many, many different firearms designs. A number of these designs are still in use today, exactly as they were produced then. Others have just recently passed from view because of the high cost of manufacture entailed in the hand production, hand fitting, or hand finishing of many different gun designs. Among those which have survived is the Colt Peacemaker or Frontier, or any one of various other names which have been given to the old plow-handled single-action.



*Left over from the Civil War was the Pettingill, the first and only hammerless U.S. Army revolver. The Pettingill was not serviceable as the mechanism was complicated and delicate and could not stand up under field usage. As a sporting conversion, however, the Pettingill was somewhat more popular.*



*The most famous revolver in history and legend is the Colt Peacemaker, Model 1873, .45-caliber.*

Aside from a few improvements in metallurgy and some minor design changes in several different models, the old single-action Colt is being made today just as it was in 1873. In fact, up until the late 1950's it was being made on much of the same machinery that had been used to make some of its original forerunners.

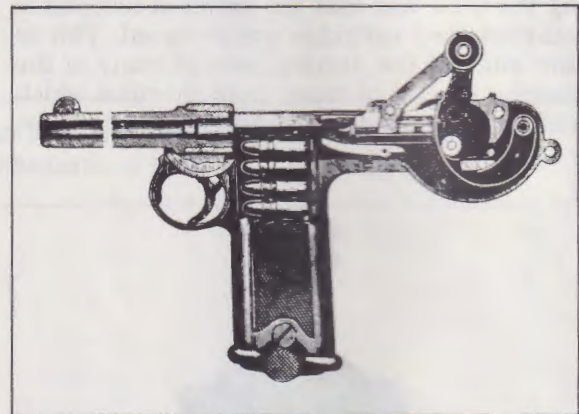
#### **The American Luger?**

The Luger pistol also has an interesting history. The gun that became the Luger was originally designed by an American named Borchardt. He took it to Germany to manufacture and then had the design improved by one of his foremen, George Luger. This gun was discontinued during World War II, mainly due to the high cost involved in the precision machining necessary to manufacture the gun. Lugers in good shape are rare pieces and are now classed as collector's items, in some cases commanding extremely high prices.

#### **The Mannlicher Rotary Magazine**

In Austria, Baron von Mannlicher designed several rifles, including both a straight-pull and a turning-bolt rifle. He also designed a most successful rotary or spool-type maga-

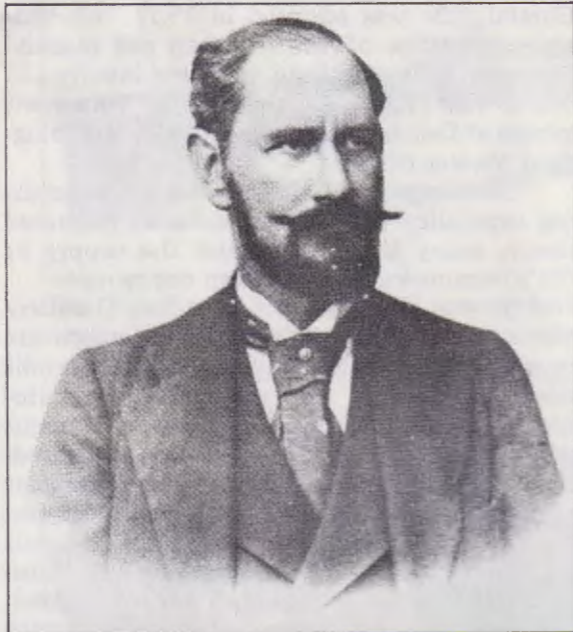
zine. Even today at Steyr, Austria, Mannlicher rifles are being manufactured for sale all over the world, including the United States.



*Sectional view of the original Borchardt which paved the way for the famous Luger.*



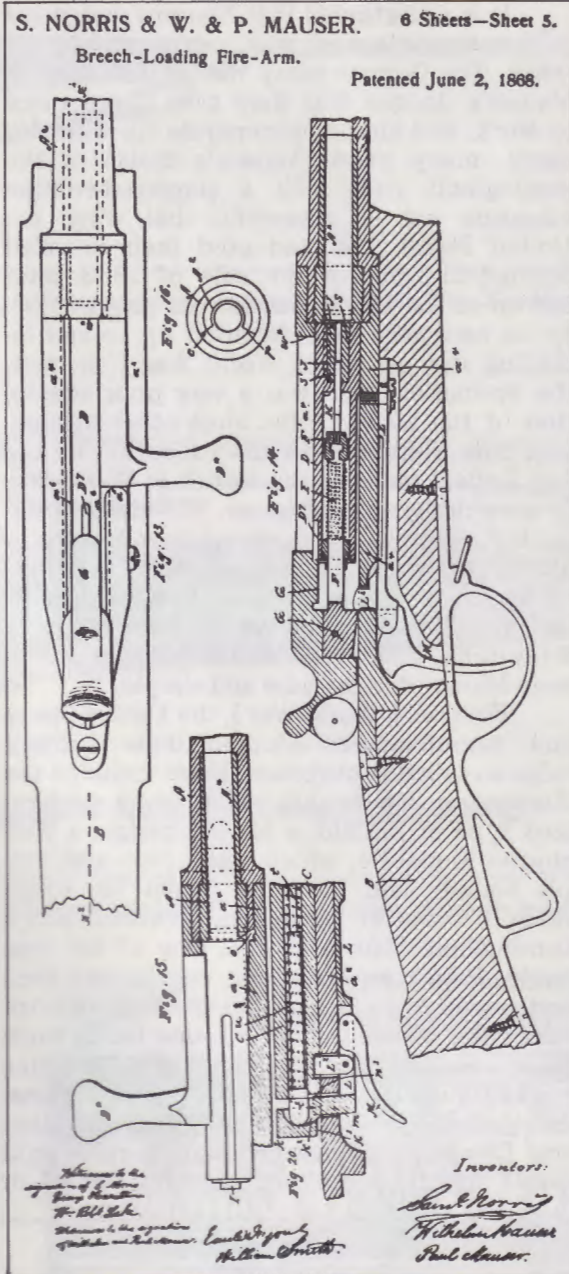
*The World War I Luger with 32-shot snail magazine was the forerunner of the submachine gun.*



Baron Ritter von Mannlicher developed several innovative rifles, including the straight-pull and turning-bolt designs.

#### The Brothers Mauser

One of the greatest firearms designers, who was not a citizen of the United States at this time, was John Paul Mauser. His father had worked in firearms before him, and of his 13 brothers and sisters, one brother worked for Remington Arms for a short time. Another brother helped him in his business affairs. Paul Mauser was the genius of the family, however, and is the man to whom the successful turning-bolt rifle design can be attributed. Much of the success of his design depended upon the staggered-column magazine which he invented, designed, and put into production. All of the magazines up until the staggered column was invented were either straight-line clip magazines or tubular magazines, either in the buttstock or under the barrel. Such tubular magazines precluded the use of pointed bullets in military cartridges, and consequently did not allow the development of those particular designs.



One of the six sheets of patent papers signed by Norris and the Mauser brothers, on file in the U.S. Patent Office. This was the first Mauser patent to be filed.



The Netherlands version of the Mannlicher turn-bolt rifle.

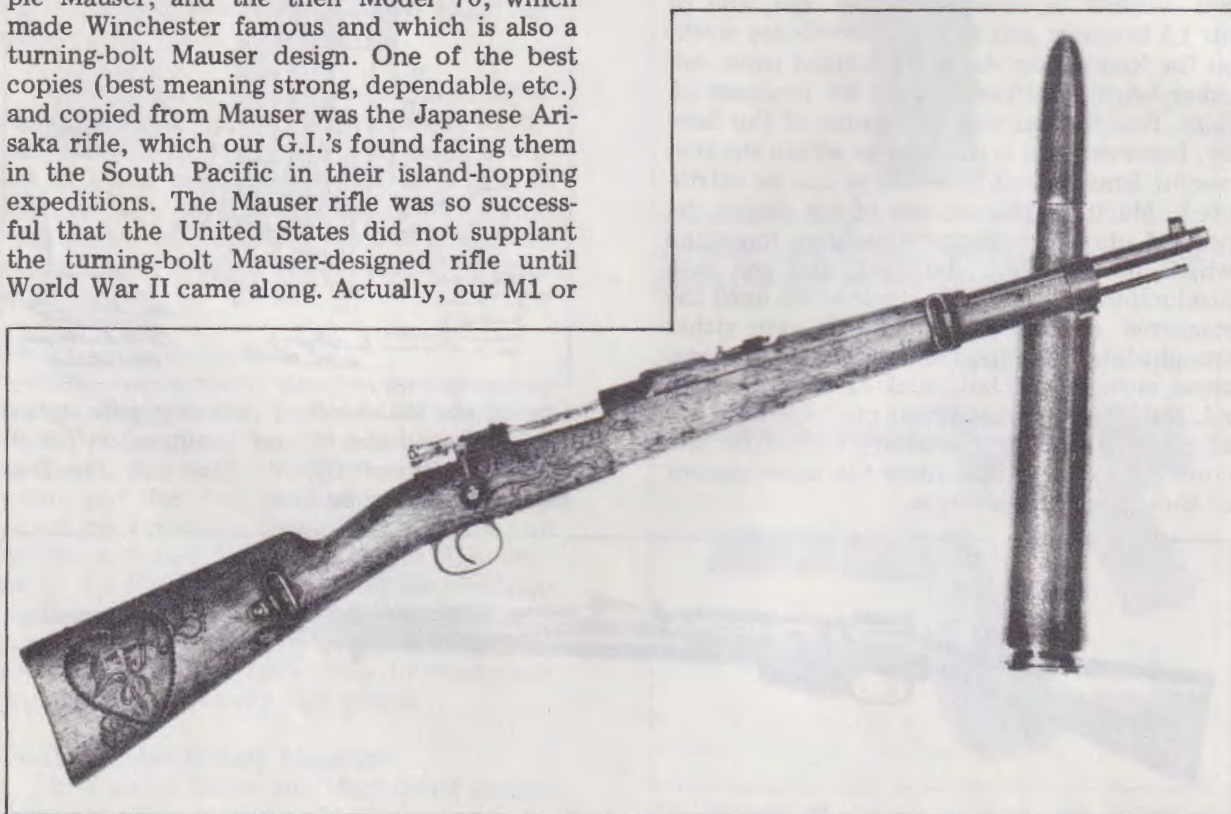
It is unfortunate that firearms design has been a byproduct of war and/or military interest. The German army was so interested in Mauser's designs that they gave him a place to work, and almost underwrote his work for many, many years. Mauser's design of the turning-bolt rifle with a staggered-column magazine was so successful that when the United States Army adopted their so-called Springfield rifle (or the rifle of 1903, later known as the 1906), Mauser was paid a royalty on each rifle manufactured up to and including the period of World War I. In fact, the Springfield rifle was a very poor adaptation of the Mauser rifle. Most other turning-bolt rifle designs, with the exception of the Lee Enfield used by the British in World War I, were designed by Mauser. The rifles in use by the Central Powers were either Mauser or Mannlicher rifles. The rifles used by the United States, including both the Springfield rifle and the Enfield rifle which were made at Eddystone, Remington, and Winchester plants, were Mauser designs pure and simple.

Following World War I, the United States gun manufacturers adopted these military rifles to sporting purposes. These included the Remington 30S model, which was a modernized type of Enfield; a Mauser design; a Winchester Model 54, which was a pure and simple Mauser; and the then Model 70, which made Winchester famous and which is also a turning-bolt Mauser design. One of the best copies (best meaning strong, dependable, etc.) and copied from Mauser was the Japanese Arisaka rifle, which our G.I.'s found facing them in the South Pacific in their island-hopping expeditions. The Mauser rifle was so successful that the United States did not supplant the turning-bolt Mauser-designed rifle until World War II came along. Actually, our M1 or

Garand rifle was adopted in 1937, but suitable quantities of the rifle had not reached our troops by the time we were involved in World War II. In fact, the Marines who went ashore at Guadalcanal were armed with Springfield Mauser rifles.

As the war developed, the manufacturing capability of the United States increased many, many times over, and the supply of M1's became sufficient to arm our troops.

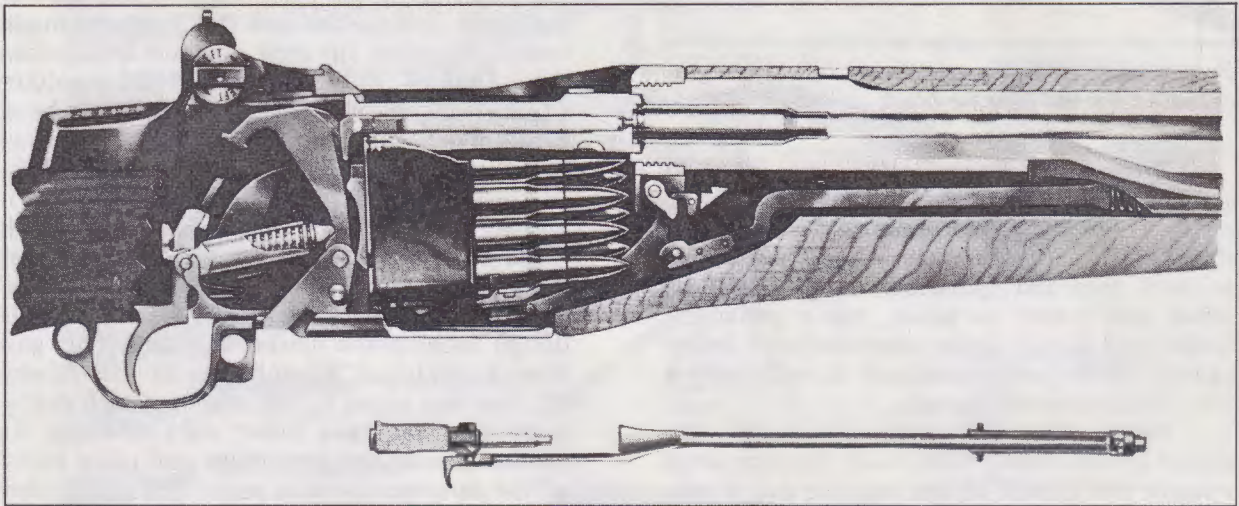
It was at about this time that Germany also saw the need for a rifle offering more fire power than the hand-operated turning-bolt design, and they, too, went to a semi-automatic or self-loading rifle. Mauser's designs die hard, however. Today we see staggered-box magazines and turning-bolt mechanisms still being made by many manufacturers, and used on many rifles. The Winchester Models 88 and 100 rifles, for instance, are still Mauser-designed rifles in that they use a staggered-box magazine and utilize a turning bolt with lugs which "lock up" the bolt at the front of the bolt. Regardless of the means used to activate this particular design, it is still a turning-bolt rifle. And, of course, there are many Mauser (pure, straight, simple Mauser-design) rifles still being manufactured as new actions and new rifles in Germany, Belgium, Finland, Sweden, and the United States.



*This Model 1895 7 x 57mm Mauser carbine has a hand-carved Boer stock. The 7 x 57mm Mauser cartridge is shown with its 172.8-grain cupronickel and steel-jacketed bullet.*



*The Winchester Model 70, of turning-bolt design, was used for sporting and made the Winchester Arms Company famous.*



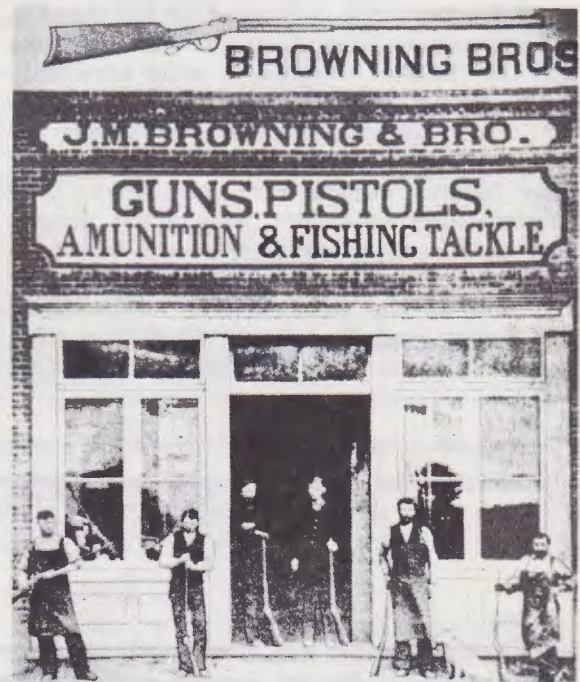
*The U.S. M1 Garand in section. The trigger action requires release of finger pressure after firing each shot.*

### John Moses Browning

During this period, the United States had a number of great firearms designers. Some of these men's capabilities of design and understanding of firearms principles could classify them as geniuses. This certainly would be true of John Moses Browning, the Mormon gun designer from Ogden, Utah, whose designs electrified the firearms industry at the time he was developing some of his better-known guns, many of which are still being used and made without change today. And it is almost a century since he first thought of these particular designs and first tried them in his gun shop in Ogden.

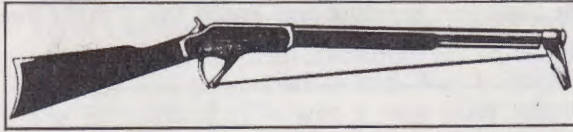
The arms used in many wars were Browning-designed machine guns, manufactured by several different manufacturers in both .30 and .50-caliber. This type of gun was used at the very end of World War I and was the mainstay weapon of World War II. Until the advent of the quick-firing cannon for aircraft use, all aircraft in our arsenal were armed with Browning machine guns for both offense and defense.

And while the military might of this nation may have depended on John Browning,



*The first Browning gun shop was a walk-up in Ogden, Utah. Pictured are, from left to right, Sam, George, John, Matt, and Ed Browning and an unknown gunsmith.*

so does the U.S. sportsman of today for many fine sporting arms. It was John Browning's design for a long-recoil-operated shotgun that introduced many Americans to repeating shotguns such as the old Remington Model 11 and the Browning Belgium-manufactured shotgun which is still being made identically in design as it was originally in the early 1900's.



*Browning's first experimental rifle was gas-actuated by the muzzle blast.*

Browning's designs also extended to short guns. For instance, the Colt Model 1911 pistol which has served our Army as a sidearm since 1911, and which has been used by both military men and sportsmen for defense, offense, and target purposes, was a Browning design and is still being manufactured today exactly as Browning designed it, with only a few minor external changes.

Many other semi-automatic pistols designed by Browning were made by companies outside the United States, and the gun repairman will undoubtedly have access to or will come across some of these other Browning-designed semi-automatic pistols in the course of his business or in pursuit of his hobby.

When one talks about John M. Browning and his firearms designs, it must inevitably lead to Winchester. For many years Winchester bought, almost as a matter of course, every design that Browning brought forth. Most of these firearms designs were marketed by Winchester, although there were some designs they purchased which never have been manufactured.

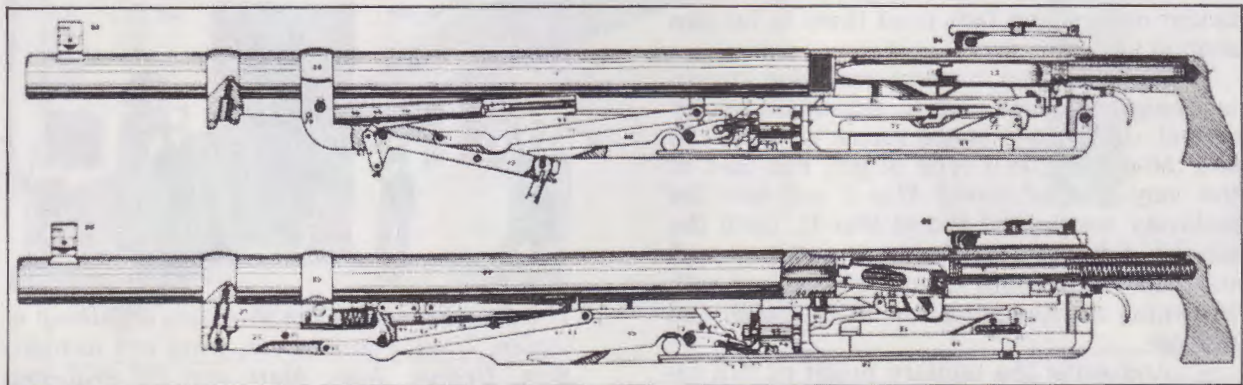
One of the earliest rifles purchased by Winchester was Browning's single-shot rifle, later known as the Winchester single-shot,

which has experienced various refinements such as the high-wall rifle and also their single-shot, low-wall rifle. Browning also designed Winchester's lever-action firearms. His long-actioned Models 1886, 1892, and 1894 are still being manufactured today. Over 3 million of these rifles have been manufactured for the American sportsman and for use in other countries of the world.

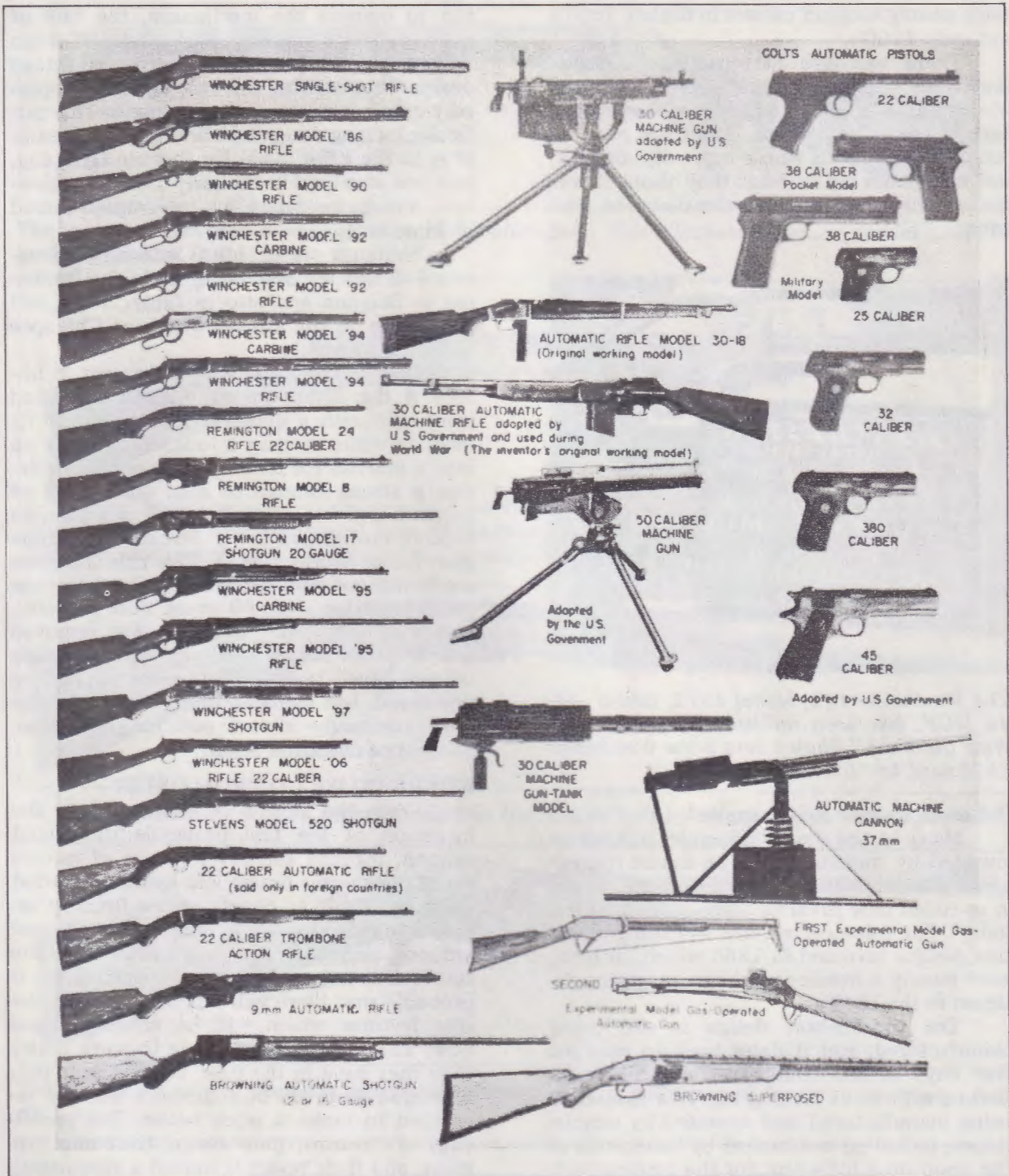
#### Developments at Winchester

Of course, Winchester-designed firearms did not encompass everything which Browning made. Winchester also designed and made various sporting firearms on their own initiative. One of these was the 1893 shotgun which evolved into the 1897 and was later modernized into the Model 1912, manufactured up until the late 1950's or early 1960's. At that time manufacturing costs became prohibitive on a shotgun which entailed so much machine work and inspection, so Winchester designers made a new shotgun which, and interestingly enough, employed a turning-bolt design locking the action together. This gun bore an external resemblance to the Model 12, but was easier to manufacture with machinery and required fewer man hours in its production. At the same time, and using many of the same component parts, Winchester also produced their Model 1400 semi-automatic, gas-operated shotgun. This was the first really successful semi-automatic shotgun design marketed by Winchester.

Immediately prior to their Model 1400, they utilized the floating chamber design in their Model 50. This particular design allowed gas to go between the floating chamber which held the cartridge, and the exterior walls of the barrel at the chamber end. The expanding gas floated the chamber, or forced the chamber, to the rear smartly enough to operate the action. The gun, however, was rather tricky to assemble and disassemble, and its ability to function was dependent upon spring tension, which had to be adjusted meticulously.



*Browning's famous 1895 Colt gas-operated machine gun was popularly known as the "Potato Digger."*



*Illustrated here are some of the most outstanding Browning inventions.*

Winchester's other two ventures into the semi-automatic or self-loading shotgun field, the Model 40 and the Model 11, were both unsuccessful. At times it is hard to get a Winchester fan to even remember such guns. Parts for these guns are hard to obtain, and it is actually better not to even attempt repair on such obsolete firearms.

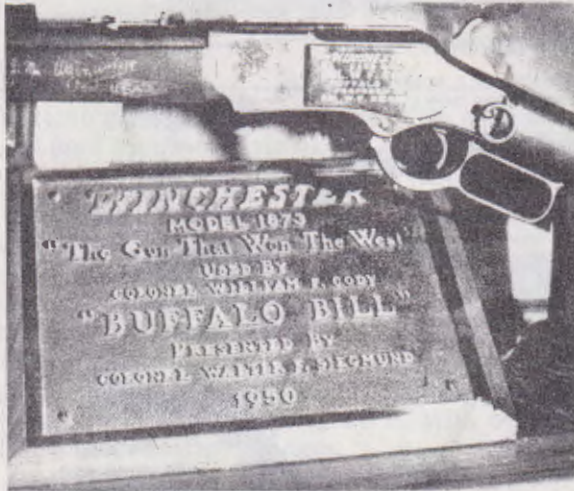
#### L. C. Smith and Others

Many other shotgun and rifle designers came to the fore during the late 19th and early 20th century. L. C. Smith designed the shotgun bearing his name. He was later responsible for much of the shotgun design work for what is now the Ithaca Gun Company. L. C. Smith was a common household



name among shotgun owners in the late 1800's and early 1900's.

There was also Stevens, whose single-shot rifles were to become quite famous and whose name is still being carried on by the Savage Arms Corporation. And there were, of course, many others whose ingenuity, designs, and mechanics led to what they thought was the perfect, or at least a better-designed, firearm.



The Winchester rifle Model 1873, caliber .44-40 WCF, has been dubbed "The Gun That Won the West." Shown here is the Winchester 1873 used by "Buffalo Bill" Cody.

#### Old Ideas are Still Being Applied

Many of the design principles utilized or invented by these people of an almost bygone age, up to a hundred years ago, are still in use in so-called new firearms being manufactured today. For instance, we are still using magazine designs invented in 1880 which, in turn, were merely a development of a magazine designed in the 1840's.

The turning-bolt design is still being manufactured, and it dates back to pre-Civil War days in this country. The turning-bolt design, with front locking lugs a la Mauser, is being manufactured and operated by various means, including mechanical by hand, such as the knob on a little arm for the turning bolt; mechanical, such as Winchester's Model 88 with a lever attached to the bolt by linkage; and the Winchester 100, which operates the turning bolt by means of a gas-driven piston.

Browning also manufactures a turning bolt-designed rifle which is interesting from several standpoints. It uses a gas-operated pis-

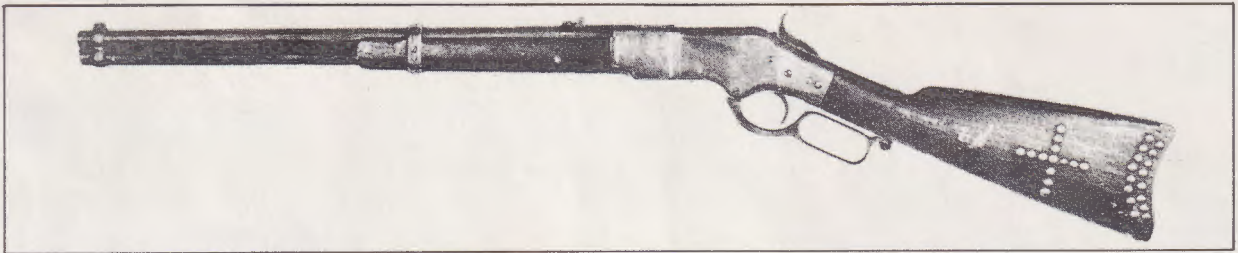
ton to operate the mechanism, the bolt of which is front-locking with a series of seven locking lugs working on an interrupted-thread design, thus locking the bolt up, and supposedly giving it much greater strength. This particular locking design is still utilized by Weathery in the rifles made for them in Germany, and was also used in the early 1920's by Newton, which he called his interrupted-thread locking design.

Shotguns using John Browning's long-recoil design are still being made for Browning in Belgium and also in Japan, Italy, and by Savage in the United States at Chicopee Falls, Massachusetts.

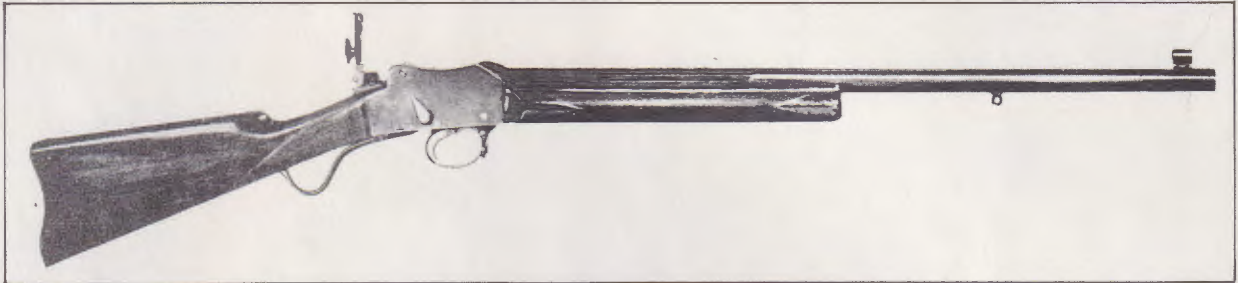
One of the more lasting firearms in history is the Savage 99 rifle, a hand-operated lever rifle with a design principle entirely its own, in which it cams a long, square bolt up into a mortise for locking. This particular design is strong enough to hold quite a bit of pressure and was, in fact, tested as a possible locking mechanism for a .50-caliber machine gun during World War II. This rifle has been made without basic internal changes except in metallurgy for over 80 years. Just recently, however, the spool magazine was removed and a detachable box or clip-type magazine offered. Both types of magazines can still be purchased, but manufacturing costs will probably eventually crowd out the old brass, spool-type magazine design.

#### WHERE DO WE GO FROM HERE?

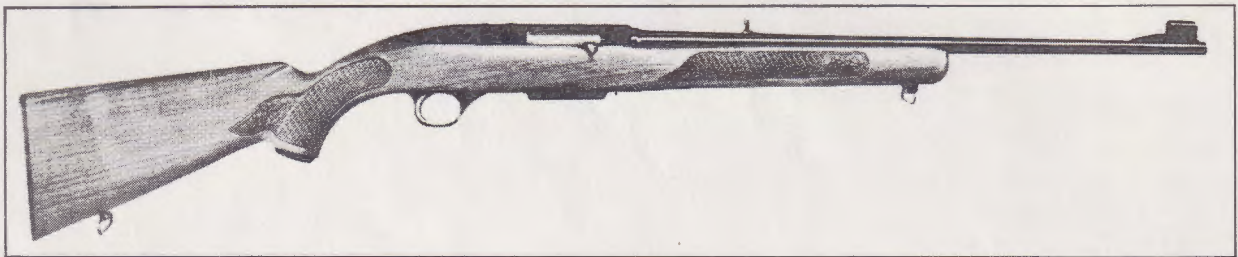
From the advent of gunpowder to the invention of the first projectile-firing hand cannon, through the development of various types of firearms design and ignition, to what we now accept as commonplace firearms usage, has indeed been a long, tortuous, and arduous campaign. No one knows what the future will offer in firearms design, but it is probable that there will not be too many design features which will be entirely brand new. The ideas may be made to work better than they have in the past, but it's quite possible that they will be someone's old idea revamped to make it work better. The knowledge of firearms, their design, their improvement, and their repair is indeed a stimulating and enjoyable hobby. This knowledge can also be a source of revenue for those who are inclined and able to instruct and advise others in the safe and sensible use of their firearms, and to repair them so that they operate efficiently.



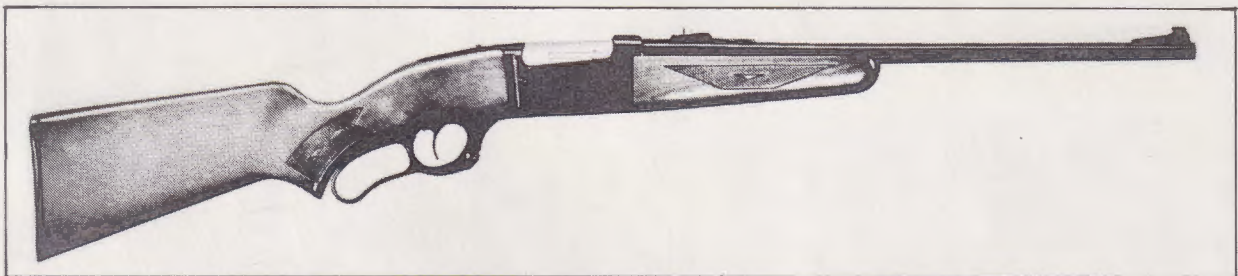
*The various Winchester models were popular Indian guns. This Winchester carbine, Model 1866, belonged to Sitting Bull.*



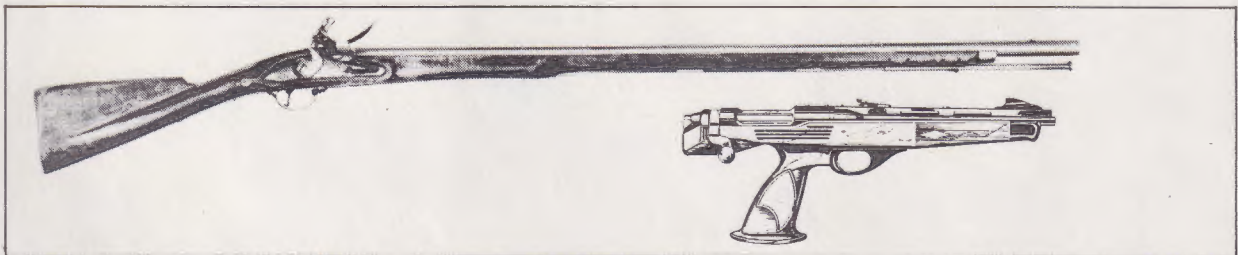
*This Stevens .22, with its typical turn-of-the-century half-octagon barrel, is mounted on a heavy British Martini action. It is the Stevens Bisley model and is said to be one of only ten made.*



*The Winchester 100, still popular, operates the turning bolt by means of a gas-driven piston.*



*The Savage 99, one of the most historically popular rifles, is still admired for its unique design principle.*



*Where do we go from here? The Remington XP-100 pistol, firing its super 221 Fireball cartridges, is certainly one of the most futuristic looking firearms on the market. BUT, the Navy Arms 1776 Brown Bess replica, a flintlock muzzleloader, is also gaining in popularity. Could it be a backward trend?*