The 45-70–A Century Later

Born 100 years ago, and still going strong, the big caliber cartridge wins new adherents daily—as well as rifle manufacturers. Here's history, rifle and loading information, useful material for the 45-70 shooter-hunter.

by FRANK C. BARNES

1973 MARKS THE centennial year for the U.S. Model 1873 single shot military rifle and its 45-70 cartridge. Not only is ammunition of this caliber still loaded in sporting version, but in addition Harrington & Richardson in late 1971 offered a replica of the 1875 Officers Model 45-70 Springfield. To that H & R has just announced the addition of the 1873 carbine. Other rifle manufacturers have also added the 45-70 as an available caliber, thus we have the interesting phenomenon of an obsolete military cartridge staging a remarkable comeback in popularity. The 45-70 has survived (along with the 44-40 WCF) as one of our oldest centerfire cartridges, primarily because it fills a special niche among the available calibers as a brush or short-range "knockdown" load.

When the 45-70 was adopted it replaced the earlier 50-70 cartridge, which had originated in 1866. The reduction in caliber from 50 to 45 resulted from studies that had demonstrated greater efficiency and improved performance for the smaller caliber. Although the 45-70 cartridge was adopted in May of 1873, quantity production of the new ammunition didn't get underway until after January, 1874. The original cartridge case was the Benet type inside-primed centerfire, and it was not reloadable. These cases look like a rimfire but can be identified by the cannelure just forward of the rim. The Boxer type primer, which has its own anvil, was eventually adopted as standard, but some lots of contract ammunition made by private companies used Berdan primers and cases. In these the anvil is formed as part of the primer pocket.

The original issue 45-70 cartridge was loaded with 70 grains of musket powder and a 405-gr. bullet, being known officially as the 45-70-405 round. There was also a carbine loading with the same bullet, but there were three felt wads between powder and bullet to reduce the powder charge to 55 grs. The purpose of this lower charge was to reduce recoil of the lighter-weight cavalry carbine. Muzzle velocity of the standard loading was 1365 feet per second; that of the carbine load 1150 fps.

Early experiments had indicated that more efficient powder combustion could be had by using a heavier bullet, and the weight was eventually increased from the original 405 grains to 500. The muzzle velocity of the heavier bullet was 1315 fps, a loss of only 40 fps. However, the 500-gr. bullet developed a muzzle energy of 1875 foot pounds as against 1670 ft. lbs. for the 405-gr. projectile, a gain of 205 ft. lbs. The heavier bullet had greater energy and penetration at practically all ranges, but its higher trajectory was not favored by most

The author's son firing heavy black powder charge from rebuilt Remington rolling block rifle. Note muzzle rise from recoil. Black powder "kick" is somewhat more uncomfortable than that from smokeless loads. Standard factory 405-gr. bullet smokeless loads as well as a variety of black and smokeless handloads were checked out in the 1-14" twist barrel. Accuracy ranged from good to outstanding. Shooting proved that black powder will perform OK in quick twist rifling.

hunters. After 1881 the 45-70-500 round gradually replaced the 405-gr. version except for carbine use.

The 45-70 cartridge is of considerable interest to collectors because over the years quite a variety of case types, primers and loads were manufactured, both military and commercial.*

Early cases were made from copper, the later ones of brass. There were also copper- and tin-coated brass cases. Both folded- and solid-head cases were used; all modern 45-70 brass is of the latter type. Bullet weights varied from 140 to 240 grains for light gallery loads to over 500 grains. The military used multiple-ball loads for guard duty, and there were also shot, blanks and other special types. In addition to the extensive variety of black powder loadings there was also a good choice of smokeless loads offered after about 1900. For quite a few years both Remington and Winchester produced a high velocity smokeless loading with a 300-gr. soft point bullet at a muzzle velocity of 1885 fps. This load, intended only for smokeless powder rifles, would have wrecked many of the old black powder actions. Since people don't read labels and a number of accidents resulted therefrom, the high velocity load was discontinued about 1936.

Shortly after its introduction, a number of changes were made in the 45-70 case. The head was thickened to make it stronger, the case walls were also thickened, and the outside diameter was slightly reduced. As the result of these changes the capacity of the case was lessened a little and the solid head construction reduced this even further. Modern 45-70 brass won't hold the original 70-gr. black powder charge unless the bullet is seated farther out of the case than standard. This doesn't matter with many single shot rifles, but may lead to feeding difficulties with repeating rifles. There is no problem with smokeless powder loads because the full charge doesn't fill the powder space anyway. Modern cases will only hold 55 to 60 grains of FG black powder if the 405-gr. bullet is seated to its proper depth.

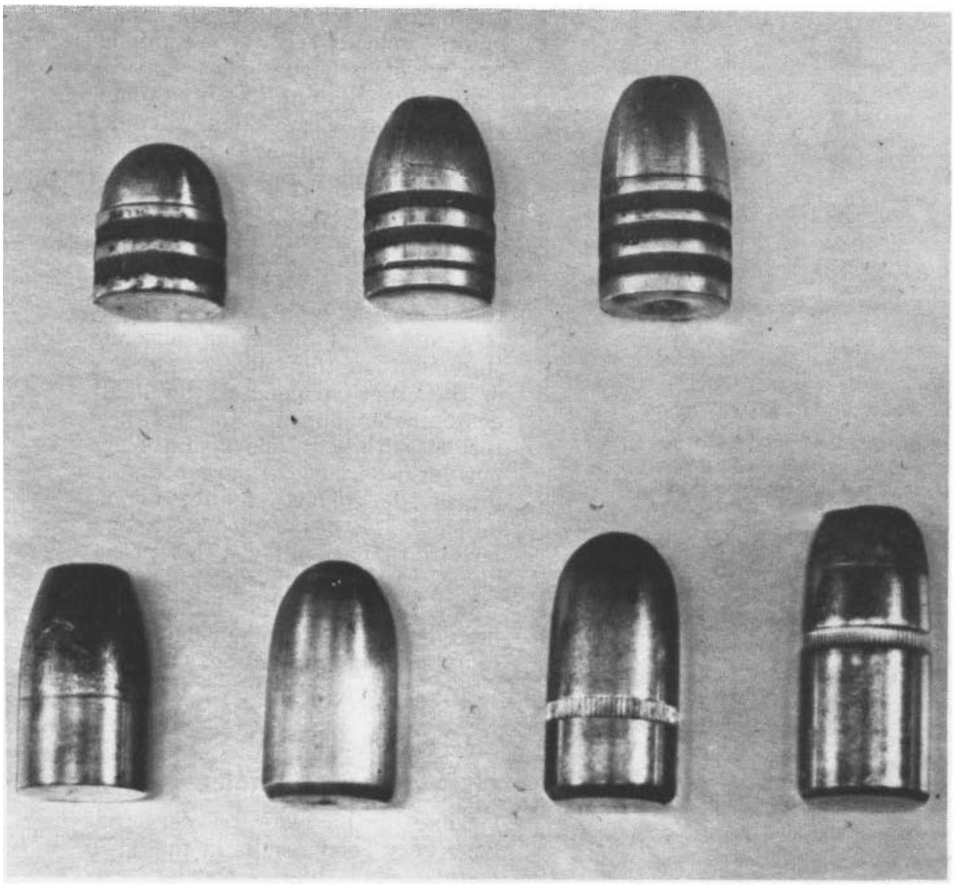
Early Rifles

A great variety of military and sporting rifles were at one time or another chambered for the 45-70 cartridge. The Union Metallic Cartridge Co. catalog of 1905 lists the 45-70 as: "Adapted to U. S. Springfield, Sharps and other military and sporting rifles; Winchester, Model 1886 and Hotchkiss, Model 1883, repeating rifles; also to Gatling and Maxim guns." However, that is only part of the story because Remington, Marlin and practically everyone else who made centerfire rifles turned out at least one model in 45-70 caliber. A few of the old black powder rifle actions were quite strong, but most of them are suitable only for black powder pressures and, as a matter of safety, handloads must be kept at or below this point. Bear in mind that the design of most black powder rifles doesn't include a provision for handling escaping high pressure gas, and when the action lets go—everything goes!

For the above reason it is necessary to divide 45-70 loading data on the basis of what rifle actions the loads can safely be used in—weak or strong. The standard factory-loaded 45-70 cartridge with the 405-gr. soft point bullet produces only about 20,000 psi, and that is probably tops for most black powder cartridge rifle actions. Modern-made replicas have much better material than the originals they copy, but the matter of design strength also enters the picture. An inherently weak design will retain that property no matter what it is made of.

Of all the old 45-70 rifles the U. S. 1873 "trapdoor" Springfield has one of the weakest action designs when it comes to handling pressure above that generated by black powder. On the other hand, these rifles

*See HANDLOADERS DIGEST, 5th edition, p. 139, "Fodder For Forty-Fives", by Charles H. Yust, Jr.



Some of the bullets used in working up loads for the 45-70. Cast bullets (top row) are the 210-, 250- and 300-gr. types. Jacketed bullets are the Hornady 300-gr. short jacket, Barnes 300-gr., Hornady 350-gr. and the factory 405-gr. The big variety of 45-caliber bullets available lets the 45-70 be adapted to many uses and hunting situations.

are perfectly safe to fire if this fact is understood and all handloads kept within design limits. The author has owned and fired a goodly number of these old rifles with both black and smokeless powder without accident or difficulty. The formula for success is very simple —use moderate loads that duplicate black powder performance and forget about "improved" performance.

There are a few other weak action black powder rifles that should be mentioned. These are the Ballard, Burgess, Colt Lightning, Maynard and Whitney, among others. These, along with early models of the Remington rolling block, should be placed in the black-powder-only category.

Old rifles with what are generally regarded as relatively strong actions are the Farrow, Peabody, Sharps Borchardt, Winchester single shot, Peabody-Martini, late model Remington rolling blocks and the Remington-Hepburn, all single shots. Repeating rifles with strong actions are the Winchester Model 1886 lever action and Hotchkiss bolt action, original Marlin Model 95s, and the Remington-Lee bolt action. All of these rifles were, at one time or other, available in 45-70 caliber. These rifles have stronger action designs than most black powder rifles, but the date of manufacture and the material used have a bearing on the ultimate strength. Few of these older actions are suitable for the modern high pressures developed by cartridges fired in some bolt action rifles.

Although factory 45-70 ammunition has been continuously loaded from its introduction right up to the present time, the same cannot be said of 45-70 rifles. The last rifles in this caliber were discontinued about 1930, and only recently has the caliber been re-introduced. In the interim all 45-70 rifles have been custom jobs, with suitable actions becoming an increasing problem. Currently, the Ruger No. 1 rifle and No. 3 carbine are available in 45-70. Navy Arms is importing an Italian-made replica of the Remington rolling block in that caliber. Marlin has recently announced that their new Model 95 lever action repeater (based on the original 444 action) in 45-70 caliber. All of these are strong actions, capable of standing handloads well above the black powder level, raising the performance of the old 45-70 to a formidable level. The Harrington & Richardson 'Officers Model' replica of the U. S. 1873 Springfield is another newcomer, as is their 1873 carbine, but these must be confined to black powder pressures as with the original. All of these good rifles open up a new chapter for the 45-70 buff.

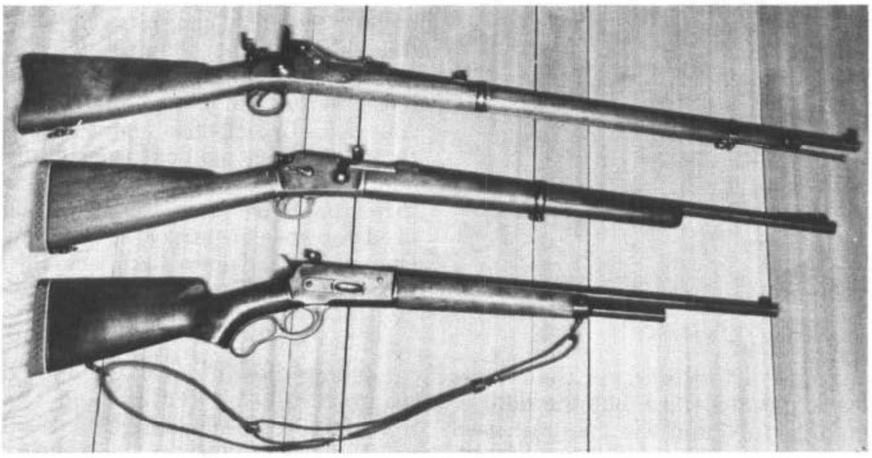
The 45-70 is an easy cartridge to handload, presenting no special problems. The big straight case allows considerable flexibility in the choice of performance and the excellent variety of cast and jacketed bullets available permits rifles of this caliber to be adapted to small game or anything else on up to the toughest big game found in North America. Lyman lists about 10 different bullet moulds specifically adapted to the 45-70, and there are three or four others that can be used for special purposes. The new Ohaus line includes 45-cal. moulds, too.

Loading Dies

Loading dies in 45-70 are offered by practically all the die and tool manufacturers, including C-H, Herter, Hollywood, Lachmiller, Lyman, Pacific, RCBS, Redding and SAECO. The 45-70 case is of the straight-walled type, and the use of 3-die sets, in which sizing, expanding and seating are separate operations, is the preferred system. Use Lyman shell holder J17 or X17, RCBS 14 or equivalent in other makes. Large rifle (.210") primers are the correct size, although when loading black powder, large pistol primers usually work equally as well. Empty cases, offered by Remington and Winchester, can generally be found in the larger loading tool establishments or ordered by local dealers. Hornady turns out a good selection of jacketed .458" bullets in weights of 300, 350 and 500 grains. Remington and Winchester make 405-gr. jacketed bullets.

The original military bullet was usually made from an alloy of 16 parts lead to 1 part tin and this hardness still gives very good accuracy with black powder. However, it has been my experience that when using smokeless powder an alloy of 10 parts lead to 1 part tin gives superior results. Naturally, if

The author bench rest testing black powder loads in 1-14" twist barrel. Accuracy with 405-gr. bullets was equal of smokeless-load groups. 300-gr. bullets and black powder charges did not group as well.



Above—A trio of 45-70 rifles. From the top—1873 Springfield single shot, Winchester Hotchkiss bolt action and Model 1886 lever action. Below—Gunsmith Franklin Frye checks out the author's caliber 45-70 Winchester Model 1883 Hotchkiss, a bolt action rifle that is fairly rare today.

attempting to achieve the maximum velocity-accuracy combination an even harder alloy may be required, something like type metal or a similar alloy. Some shooters say they get top accuracy with a very hard alloy regardless of the velocity involved.

Bullet diameter for the 45-70 is given in some manuals as .457" and in others as .458". I have sized cast bullets to both of these diameters and can't make an absolute statement on the subject one way or the other. In general, the smaller diameter appears to give best results with soft alloys and black powder whereas the larger diameter is the correct one for almost all smokeless powder loads, particularly with hard alloys. This probably varies with different rifles and rifling twists and, like bullet hardness, is something requiring a little individual experimenting. Over the years I have settled on .458" and size all my cast 45-70 bullets to that diameter.

Powder Choice

Some of the older powders that gave very good results in the 45-70 and similar black powder cartridges are no longer available. Such propellants as Hercules Sharpshooter and Lightning have been off the market for so long that the new crop of handloaders never heard of them. DuPont 4759, another good one, was discontinued only a few years ago, but dealers' stocks are now completely exhausted. Of the current crop of smokeless powders, probably DuPont 4198 and 3031, along with Norma N-200, are the most useful; they burn well with the widest variety of bullet weights and charges. However, for light loads, Hercules Unique and 2400 and DuPont 4227 are very useful. The reader is cautioned to be very careful in checking his charges when using these last three faster-burning powders because the normal charge does not bulk well in the big 45-70 case; it is possible to get a double charge into the case with possibly disastrous results. I know of several accidents caused by this, so make a double check of all charge levels before seating the bullets. For full charges with 300-gr. jacketed bullets and heavier, the slower-burning DuPont 4895 and 4320 work well. There is actually a good selection of powder to work with; it is just a matter of knowing which ones work best in this particular cartridge.

In addition to the 1873 Springfield, I've fired and experimented with quite a variety of 45-70 rifles. It has been one of my favorites since I was a boy, and I've found them an enjoyable and interesting study. I have had two Winchester 86s, an original Marlin Model 95, a Winchester Hotchkiss, several Remington rolling blocks, a Sharps Borchardt and a bevy of custom built 45-70s on various actions. My latest acquisition is a custom built job on a 7mm smokeless powder Remington rolling block action with a 22" barrel and a 1-14" twist. I'll have more to say on the subject further along. Fact is, the author has had ample opportunity to shoot 45-70 rifles and work up useful loading data. Two separate loading tables are presented; one covers data for the 1873 Springfield and similar weak-action rifles, including the new H&R replica, while the other applies to the Model 86 Winchester and other strong action rifles. The reader is cautioned to be certain he is using the correct data for his particular rifle.

Although normally considered a big game cartridge, the 45-70 can be adapted to any game or shooting conditions by the simple process of picking the right bullet and load for the job. In assembling the loading data for this article the author has attempted to present at least a few basic loads for every bullet type and weight available for the 45-70. The emphasis is more on good practical loads and accuracy than absolute top performance. The lighter bullets, even in weak-action rifles, could be loaded to higher velocities than those given. However, accuracy suffers and the author has therefore selected the velocity range that experience has shown to produce the most consistent results.

45-70 Bullets

The 144-gr. collar button bullet, 146-gr. round ball and 193-gr. 455 Webley revolver bullet (sized .457"), make good short range squirrel or rabbit loads with good accuracy out to 60-70 yards. At initial velocities of around 1200 to 1300 fps they will kill cleanly without mangling or ruining edible meat. These bullets, along with the 210-gr., are also excellent for plinking and short range target shooting.

The 250-gr. gas check and 255-gr. plain base 45 Colt revolver bullets make nice all-round loads for shooting anything from small game up through deer at ranges out to 100

45-70 LOAD DATA

For U.S. 1873 Springfield Rifles, H&R Officers Model, 1873 Replicas and other Low-Strength 45-70 Rifles.

Powder/grs.	MV	Notes
144-gr. bullet & 146-gr. round ball		
Unique/8	1135	
2400/15	1300	Small game and plinking loads. Accurate to 60-70 yards.
4227/18	1390	
4198/20	1350	
193-gr. 455 Webley revolver bullet		
Unique/10	1350	
2400/16	1260	
2400/18	1365	Accurate small game and plinking loads, also good for 50-yard target work.
4227/18	1320	
N-200/19	1330	
4198/21	1350	
210-gr. bullet		
Unique/10	1330	
2400/17	1310	This heavier bullet does not perform well in all rifles.
4227/18	1295	
N-200/20	1325	
4198/22	1400	
250- & 255-gr. Colt revolver bullets		
2400/26	1480	
4227/27	1440	Good short range small game through deer loads. Bullet 454485, 250-gr. GC appears to give best all-round accuracy.
N-200/28	1460	
4198/34	1630	
3031/37	1510	
300-gr. bullet (cast)		
2400/25	1370	
4227/28	1450	
N-200/30	1430	Varmint through deer loads at ranges to 125 yards. Also accurate for targets to 100 yards.
4198/32	1480	
3031/37	1410	
4895/40	1465	
300-gr. bullet (Hornady Short Jacket)		
4227/29	1440	Accurate varmint and deer loads at moderate ranges.
4198/34	1525	
3031/42	1560	
330-gr. Gould hollow point		
4227/26	1360	
N-200/28	1390	Excellent deer loads at short to moderate ranges.
4198/32	1430	
3031/38	1385	
350-gr. bullet		
N-200/26	1310	
4198/31	1370	Deer, black bear loads, possibly larger game at short ranges.
3031/40	1380	
4895/41	1360	
395-gr. GC and 405-gr. plain-base bullets		
4198/30	1320	Loads for any No. Amer. big game to 100 yards, or farther under ideal conditions.
3031/37	1300	
4895/40	1265	
500-gr. GC and plain base-bullets		
4198/28	1210	Short range loads for any No. Amer. big game.
3031/35	1180	
4895/38	1160	
535-gr. Postell bullet		
3031/33	1130	About the heaviest practical 45-70 bullet.
4895/36	1140	For short range use on heavy game. Good
4320/40	1120	penetration.

WARNING: The above-listed loads should be considered as maximum for older type rifles, and it is strongly recommended that they not be exceeded. They should be used only in rifles in first class condition. If there is any doubt as to the strength of action or its condition, *do not* use smokeless powder. Load only black powder.

45-70 LOAD DATA

For Winchester 1886 and other Strong-Action Rifles

WARNING: The loads listed in this table must not be used in the U. S. 1873 Springfield or similar weak-action rifles. To do so is to invite instant disaster.

Powder/grs.	MV	Notes
300-gr. Hornady Short Jacket		
4198/37	1610	
4198/40	1750	Good allround loads. For any No. Amer. game, large or small, to or beyond 150 yards, depending on hunting conditions.
3031/45	1490	
3031/50 (Max.)	1840	
4895/46	1470	
4895/50 (Max.)	1690	
330-gr. Gould hollow point		
4198/34	1520	
3031/45	1600	Cast of type metal. Big game.
4320/47	1565	
350-gr. jacketed		
4198/33	1420	
4198/35 (Max.)	1540	
3031/43	1400	Big game loads.
3031/52 (Max.)	1820	
4895/46	1375	
4895/50 (Max.)	1580	
395-gr. GC bullet		
4198/37	1535	
3031/44	1600	Cast of hard alloy. Big game loads.
4895/46	1580	
405-gr. jacketed bullet		
4198/32	1350	
4198/37 (Max.)	1480	
3031/40	1410	
3031/50 (Max.)	1760	Big game loads.
4895/42	1350	
4895/48 (Max.)	1710	
4320/50	1620	
500-gr. GC bullet		
4198/32	1380	
3031/40	1420	Cast of hard alloy. Big game.
4895/45	1400	
500-gr. jacketed bullet		
4198/32 (Max.)	1300	
3031/42 (Max.)	1350	Cast of hard alloy. Big game.
4895/47 (Max.)	1430	

Other 45-70 Load Sources

Ackley, Parker O., **Revised Handbook for Shooters & Reloaders.**

Herter, G. L. and J. P., **Professional Loading . . .**

Hodgdon's Reloading Data Manual, Nos. 20 and 21.

Hornady Handbook of Cartridge Reloading.

Lyman Reloading Handbook. 44th Edition. (Also older editions)

National Rifle Assoc., **NRA Handloaders Guide.**

Pacific Rifle & Pistol Manual.

Ballistics of Commercial and Military 45-70 Loads

Bullet Type Weight/grs.	MV	ME	Notes
285 lead	1450	1332	45-85-285 Marlin
300 SP	1885	2070	Obsolete HV, Rem. and Win.
330 lead HP	1380	1405	Gould Express, UMC
350 lead	1325	1365	45-70-350 Marlin
405 lead	1365	1670	Military rifle
405 lead	1150	1190	Military carbine
405 SP	1320	1570	Modern sporting
500 lead	1315	1875	Military rifle

yards or so. I prefer the gas check bullet as it appears to give better accuracy at the higher velocities. These bullets have more oomph than those listed above, yet are still economical of lead and powder. Loaded to over 1600 fps produces a load comparable to the 44 Magnum in effectiveness.

Bullets weighing 300 grains or more are primarily for big game, but may also be used to extend the effective range on varmint type animals. Probably the most useful of those is the Hornady 300-gr. short-jacket bullet. Even in relatively weak-action rifles the velocity can be stepped up to around 1500 fps, which tends to lift the 45-70 a notch out of the 100-yard brush busting class. In a strong-action rifle a velocity of around 1800 fps flattens the trajectory and improves the effective range to a satisfying degree. These bullets have proven very good killers on deer within permissible velocities.

The 405-gr. bullet is considered by many experienced hunters as the best all-round big game bullet in 45-70 rifles. Unfortunately the factory 405-gr. bullet is designed to expand at the relatively low velocity of the original black powder loading. When the velocity is stepped up to over 1700 fps, these bullets have an explosive effect at short range and tend to go to pieces without penetrating deeply enough. Elmer Keith and others recommend the 500-gr. bullet for elk, moose, bear or anything larger than deer. Incidentally, Keith's favorite load for the 45-70 is a good 400-gr. bullet backed by 53 grains of 3031 for an initial velocity of 1827 fps and 3000 ft. lbs. I have used this load and it is certainly effective, but it must be fired only in suitable strong rifles.

As a matter of personal observation and experience I've found the 350-gr. Hornady to be an excellent all-round big game bullet for strong 45-70 rifles. It has a tougher jacket and does not expand as rapidly as the factory-made 405-gr. bullet, so it's a better high velocity projectile. It is at its best when used in strong action rifles where velocity can be stepped up to the maximum. There have been some complaints that this bullet failed to penetrate well on elk and heavy game, but that may be due to the particular hunting conditions involved. Other reports and my own experience to date have been favorable.

When loading cast bullets weigh-

A U.S. Model 1873 "trap door" single shot and a Winchester Model 1883 Hotchkiss bolt action, the actions open. The Hotchkiss has a tubular magazine in the buttstock, its capacity 6 rounds. Made in military and sporting versions, the Hotchkiss did not achieve great popularity.

CAST BULLETS

For 45-70 or other 45 caliber rifles

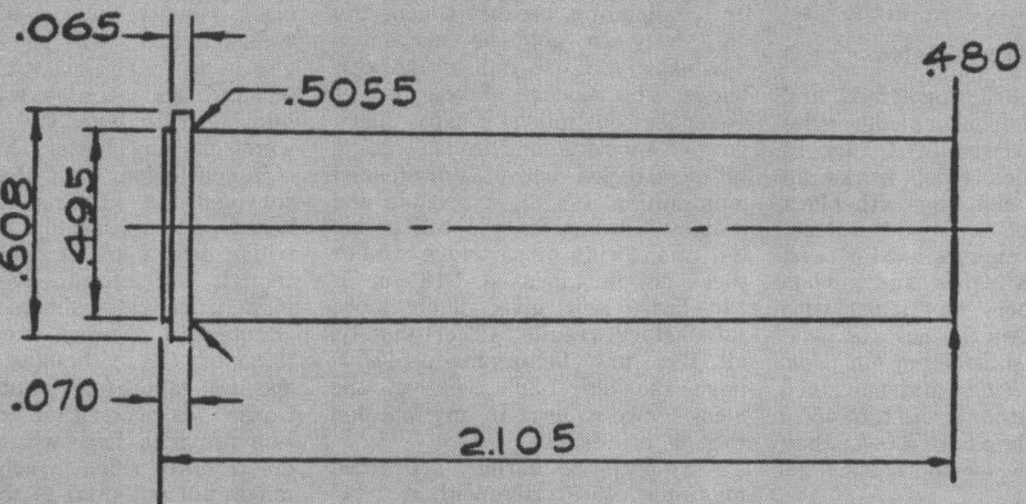
Weight/grs.	Mould*	Notes
144	457130	Collar button
146	457129	Round ball
193	456401	455 Webley revolver
210	457127	Lightweight 45-70
250	454485	45 Colt GC
255	454190	45 Colt plain base
300	457191	45-60, 45-90
330	457122	Gould hollow point
350	456192	45-75 Winchester
395	457483	45-70 GC
405	457124	Standard military
500	457125	Standard military
500	457406	458 Winchester GC
535	457132	45-70 Postell

NOTE: All bullets fired in 45-70 rifles should be sized either .457" or .458". GC = gas check.

*Lyman mould numbers

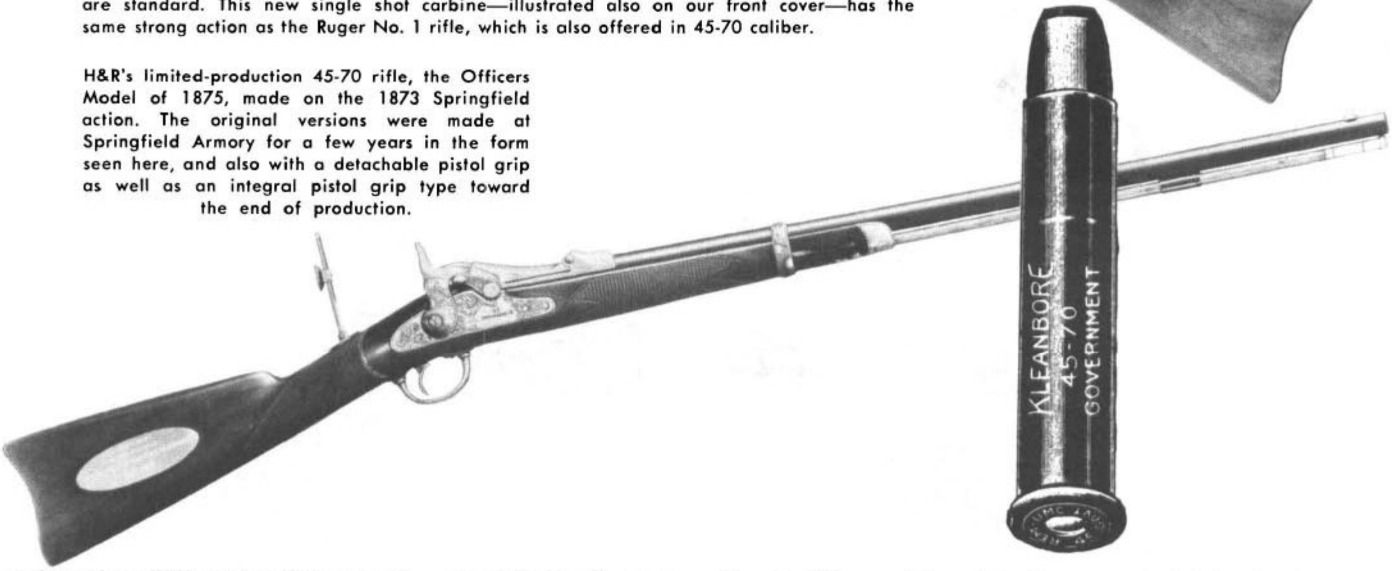
Reloading Data and Factory Ballistics

Bullet (grs.)	Powder/grs.		MV	ME	
Loads for Old Black Powder Rifles					
300	4759	26	1375	1265	Mild load
405	4198	29	1300	1520	Dup. fact. ball.
405 Lead	Fg-Blk.	70	1350	1640	30" bbl.
500 Lead	Fg-Blk.	70	1315	1560	20" bbl.
Loads for Modern Smokeless Powder Rifles Only					
300 SP	4759	30	1660	1840	Jacketed bullet in all cases
300	HV-2	53	2140	3048	
405	3031	53	1850	3080	
405	HV-2	47	1820	2978	
500	3031	50	1655	3040	
405	FL		1320	1570	200 yd. MRT = 13.0"



Ruger No. 3 Carbine, caliber 45-70, has 22-inch round barrel, weighs 6 lbs. Open sights are standard. This new single shot carbine—illustrated also on our front cover—has the same strong action as the Ruger No. 1 rifle, which is also offered in 45-70 caliber.

H&R's limited-production 45-70 rifle, the Officers Model of 1875, made on the 1873 Springfield action. The original versions were made at Springfield Armory for a few years in the form seen here, and also with a detachable pistol grip as well as an integral pistol grip type toward the end of production.



ing less than 300 grains the normal powder charge does not fill the case very well. I would suggest using one- or two-grain tufts of dacron or kapok as over powder charge positioners. I prefer this to the usual corn meal filler. As a word of warning, *don't* use cardboard wads seated on top of the powder with a large air space between the wad and the base of the bullet. This practice has been known to bulge or ring the barrel in the forward area of the chamber. It's OK to use wads tight against the base of the bullet, but not way down in the case.

45-70 Twist Rates

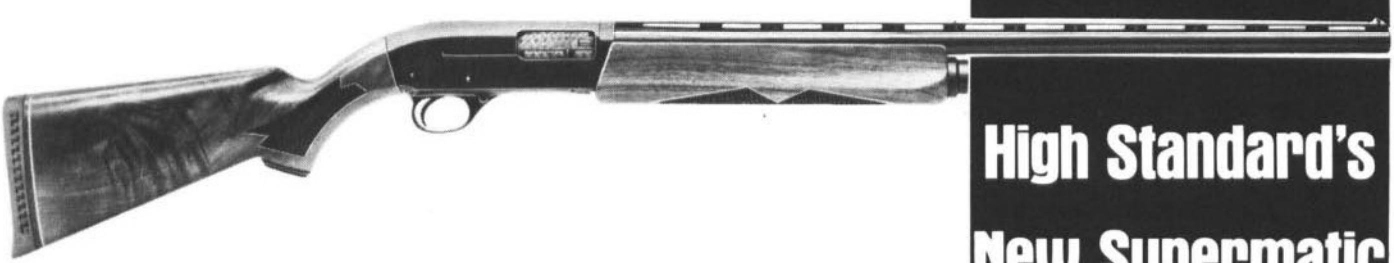
The U. S. 1873 Springfield and most other old black powder rifles have a rifling twist of 1 turn in 22 inches, which twist works all right for most shooting with black powder or at black powder velocities. Some rifle makers used a twist of 1 turn in 18 inches, and anyone who's had much experience with 45-70 rifles knows the quicker twist is much more satisfactory. In *Modern American Rifles,* first published in 1891*, the author wrote that 45-70 rifles with a rifling twist slower than 1 turn in 18 inches wouldn't shoot accurately at all ranges with all of the various bullet weights available. My own experience with different twists in various 45 caliber rifles bears this out. I discovered years ago, in working up loads for the 45-70, that a twist of 1-16" or 1-14" would give much better general accuracy with different bullets and loadings than the slower twist. As the result, I'll go Mr. Gould one better—if there was any way to avoid it I wouldn't have a 45-70 rifle with a twist slower than 1-16".

Anyone buying a 45-70 rifle in this day and age is going to end up handloading, because that is the only way to get the maximum flexibility and use out of the cartridge. The modern shooter is not going to do much if any black powder shooting, and he isn't going to be satisfied with factory-loaded ammunition. It's too expensive and it doesn't bring out the full potential of the rifle or cartridge. Under these circumstances a 1-16" or 1-14" twist will give much more satisfactory results. Unfortunately, all the new factory-made 45-70s have the old 1-22" twist of the black powder era. In my opinion this is a mistake.

As mentioned earlier, I ordered my latest 45-70 rifle with a 1-14" twist and, like other 45 caliber rifles with the same twist, it shoots extremely well. I can't honestly say that it outshoots the 1-16" twist because both seem to do accurate work with just about whatever I've fed through them. I'm well satisfied with its performance. All the wise boys, lacking experience to back up their opinion, will tell you that a 45-70 with a twist faster than 1-18" just won't handle black powder. The bullet is supposed to "jump the rifling" or something like that. Well, this simply isn't true. I can't claim any really tight groups with black powder, but even my 1-14" twist barrel will shoot 4-inch groups at 100 yards with this propellant, and the average 45-70 hunting rifle with the slow twist won't do any better than that.

In conclusion, then, the 45-70 has survived the hundred year mark because it is basically a good cartridge design and it fills a definite, though specialized, need in the modern cartridge lineup. It can be adapted to a much broader spectrum of use by handloading to fit specific game and hunting conditions. It is hoped that the information provided here will assist owners of 45-70 rifles in achieving the maximum potential of this fine old cartridge. ●

*Arthur C. Gould, Boston, Mass., 1891.



High Standard's New Supermatic Autoloader

The new auto shotgun came through the author's various tests with a near 4.0 rating—though certain loads and shot sizes patterned almost 80%. That's not all bad—especially if you've some long-range shooting in mind.

by WALLACE LABISKY

EARLY IN 1972, High Standard announced redesigned models of the Supermatic autoloading shotgun in both 12 and 20 gauge. There are two major improvements. These consist of changes in the various action parts to parallel the highly successful Model 10-B police shotgun, and a newly styled fore-end that's less bulky than on preceding models. The Supermatic guns, of course, feature a self-compensating gas system.

As in the past, the new models are non-takedown, with the barrel factory-attached to the receiver—"lock-aligned" as High Standard describes the practice. This means that the Supermatics do not offer barrel interchangeability; and also that when barrel cleaning is necessary the job must be tackled from the muzzle end.

The new Supermatic line-up in 12 ga. includes a model for every avenue of shotgunning. Hunting models are offered with plain or ventilated rib barrels, and with the usual choke options (full, modified or improved cylinder). There is also a 27″ vent-rib barrel gun decked out with an adjustable choke device. Other models include Skeet and trap guns, both with ventilated ribs; a deer gun equipped with rifle sights and a duck gun chambered for 3″ ammo, this last made in both plain and ribbed-barrel styles.

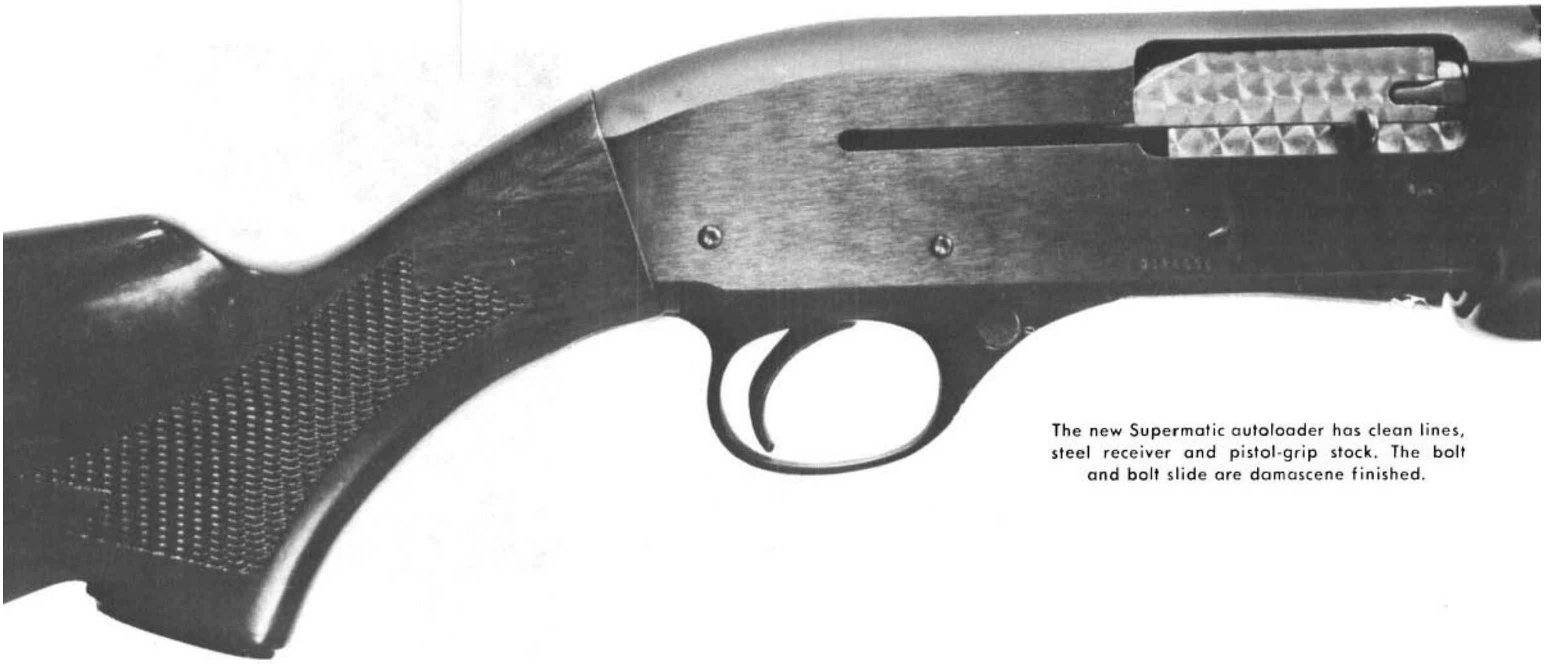
On the 20-ga. side, the Supermatic can be had with either plain or vent-rib barrels in the usual chokes, as well as with a raised rib, 27″ adjustable-choke barrel. There is also a raised-rib barrel Skeet gun in 20 bore. All 12 and 20-ga. models, except for the Skeet guns, carry a recoil pad with white-line spacer as standard equipment.

Notes on the Supermatic

The Supermatic test gun received by GUN DIGEST was a 12, its 28″ modified-choke barrel wearing a vent rib and having a standard 2¾″ chamber. The first order of business was a close look at the gas system.

Gas for operating the action is taken off through two barrel ports, these about 9¾″ ahead of the breech. The piston travels 9/16″ to the rear before it clears the gas chamber, at which point total gas relief occurs. It is also at this point that the breech bolt begins to unlock The piston then carries through of its own momentum to provide the power for extracting, ejecting, and the feeding of a fresh round from the magazine.

The gas piston is linked to the bolt slide by a sturdy twin-arm action bar. The entire piston assembly, including the action spring for



The new Supermatic autoloader has clean lines, steel receiver and pistol-grip stock. The bolt and bolt slide are damascene finished.

returning the bolt to battery, is housed outside the magazine tube. Thus magazine capacity is not affected, this being four 2¾" shells.

The gas venting-off system closely follows that used on earlier High Standard models. There are 7 small ports ringing the forward part of the gas chamber for bleeding off excess gas. This is diverted through an arrangement of washer-type wavy springs (8 in all, in a series of 4 pairs separated by washers), and the amount of tension on the wavy springs regulates the amount of gas that can escape before the piston clears the gas chamber.

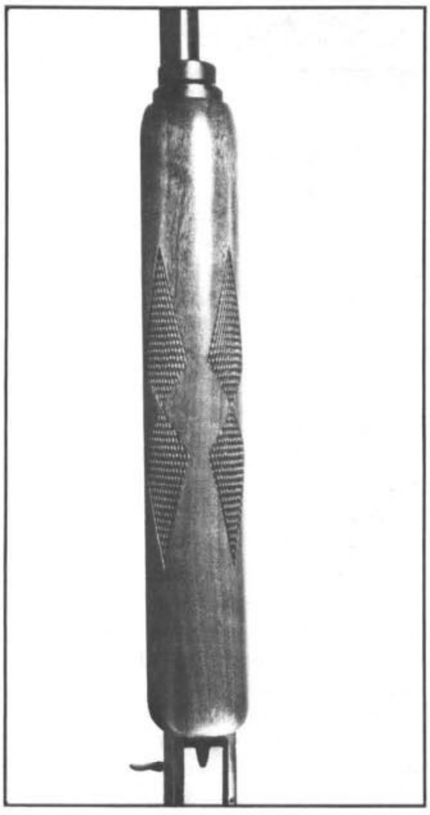
The factory adjustment of these wavy springs is such that the system automatically compensates for all 2¾" shells, ranging in "gusto" from light target fodder to full-house magnums. The Duck Gun model is factory adjusted to function properly with 2¾" and 3" magnum loads only.

In putting this gas system through the high hurdles, the writer ran 60 factory loads in different brands through the test gun. These consisted of 2¾ and 3-dram equivalent (DE) target loads, light 3DE field loads with 1 oz. of shot, high-velocity shells with 1¼ ozs., and 4DE magnums with 1½ ozs. At times the loads were randomly mixed; at other times three of a kind were loaded.

Shooting the Supermatic

It can be reported that the Supermatic took more than the lion's share of these in stride. There were two malfunctions involving a 3DE target loading. In each instance this happened on the third and final shot and the empty shell was left hanging in the ejection port. Obviously, it was a matter of the breech bolt not moving rearward with enough force to give complete ejection.

The 2¾ DE loads tried gave no trouble in this respect; however, they were of a different brand. So, on the face of things, it appears that we simply chanced across two 3DE rounds that were loaded on the light side, because a number of other loads from the same box of shells cycled the action perfectly.

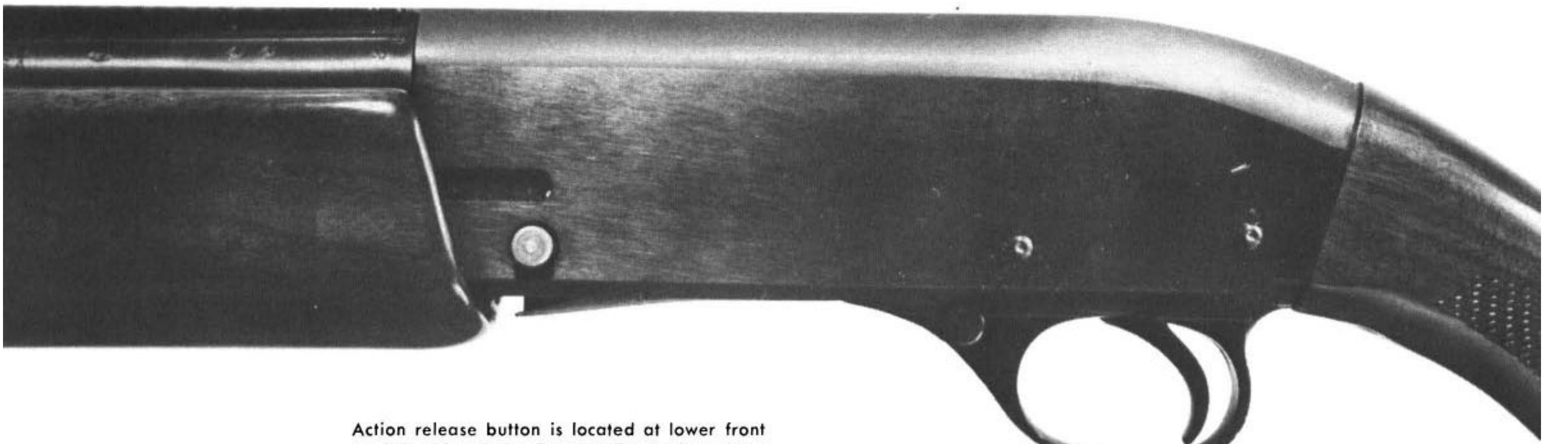


Bottom view of the newly-styled Supermatic fore-end shows checkering pattern, which is of the die-impressed type.

One other spot of trouble surfaced during the above test session. This was definitely a bonafide malfunction, but not one that can be blamed on the gas system. In this instance the gun was fully loaded with 3DE target loads. As the action cycled following the first shot, the left-hand cartridge stop failed to retain the last shell in the magazine. It ended up on top of the shell lifter where it prevented the complete chambering of the preceding shell. Other than these incidents, functioning was perfect throughout the shooting, which also included a workout on claybirds as well as patterning.

Particular attention was paid to both recoil and the force with which the various loads worked the action. Target loads were very pleasant to shoot, naturally, and the ejected hulls landed only a few feet away. With 3¾ DE high-velocity cartridges there was more shooter awareness of recoil! It follows that recoil with short magnum loads was quite pronounced, though it was not actually disturbing to this shooter, and empties landed as far as 15 feet from the gun.

That the action was being subjected to plenty of vigor with the heavy loads was evident not only in the distance of ejection, but also in the condition of the fired shells. In many cases an ejector imprint was visible on the shell headface, and invariably the brass received a conspicuous dent as a result of rather violent contact with the rear of the ejection port.



Action release button is located at lower front on left side of the Supermatic receiver. New fore-end has angled cut at the rear.

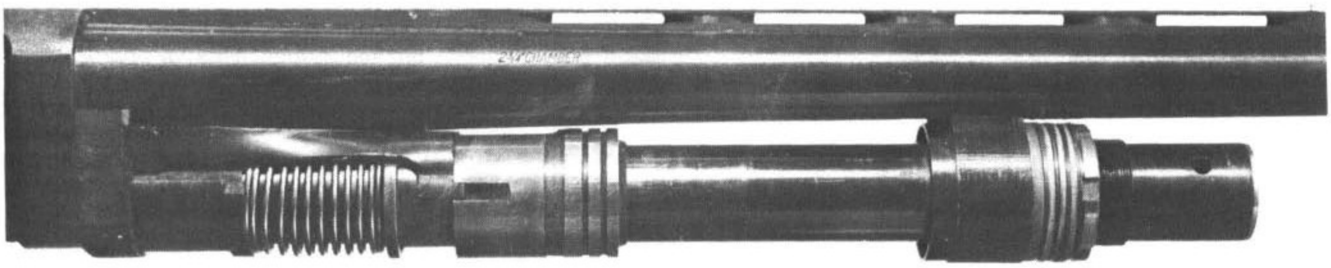
Heavy Load Adjustment

By way of personal observation, I think that if one were going to feed this Supermatic a steady diet of high-velocity and short magnum loads, as many shooters probably will, it would be a sensible move to adjust the mechanism to vent off more gas through the forward escape ports. Not only would this result in slightly less apparent recoil, it would also ease wear and tear on the various action parts. This adjustment, by the way, calls for a special spanner wrench and, unfortunately, none is furnished with the gun. However, any gunsmith should be able to take care of this matter in just a jiffy.

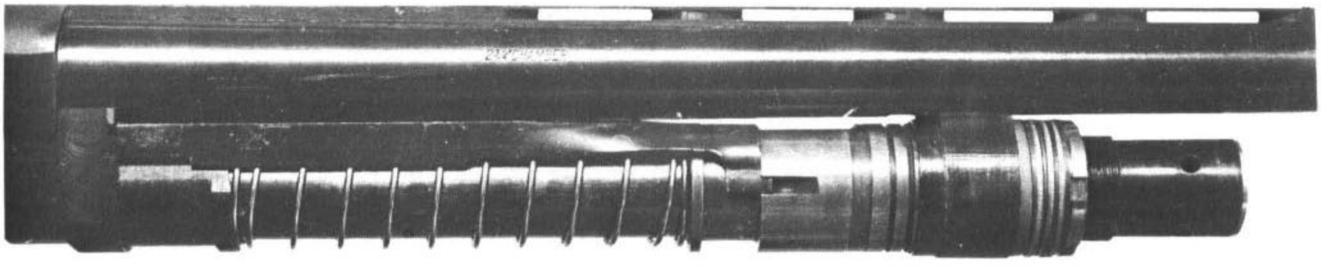
Breech lock-up on the Supermatic is handled by a round stud of ½" diameter, which is cammed vertically to engage a bolt cut in the ceiling of the steel receiver. Bolt alignment is taken care of by the action bars, each of which travels in its respective channel in the receiver walls. The bolt and bolt slide carry a damascened finish.

The plunger type ejector is enclosed within the bolt on the back side. When the bolt terminates its rearward travel, the ejector projects fully ¼" or more from the bolt face and, as we have already seen, exerts considerable thrust on the empty shells. The single extractor is of the conventional hook type.

The guard and housing for the trigger group—cast from a non-ferrous metal—are finished to match the blued receiver. All working parts in the trigger group are of steel, of course, and the shell lifter is finished bright. Aluminum is used for the action release button. It is located well forward on the



Action-open view of the Supermatic gas system shows piston fully to the rear and action spring compressed. Wavy springs for regulating escape of excess gas can be seen forward of the gas chamber.



Details of High Standard's self-compensating gas system can be seen in this action-closed view. All parts are outside the magazine tube.