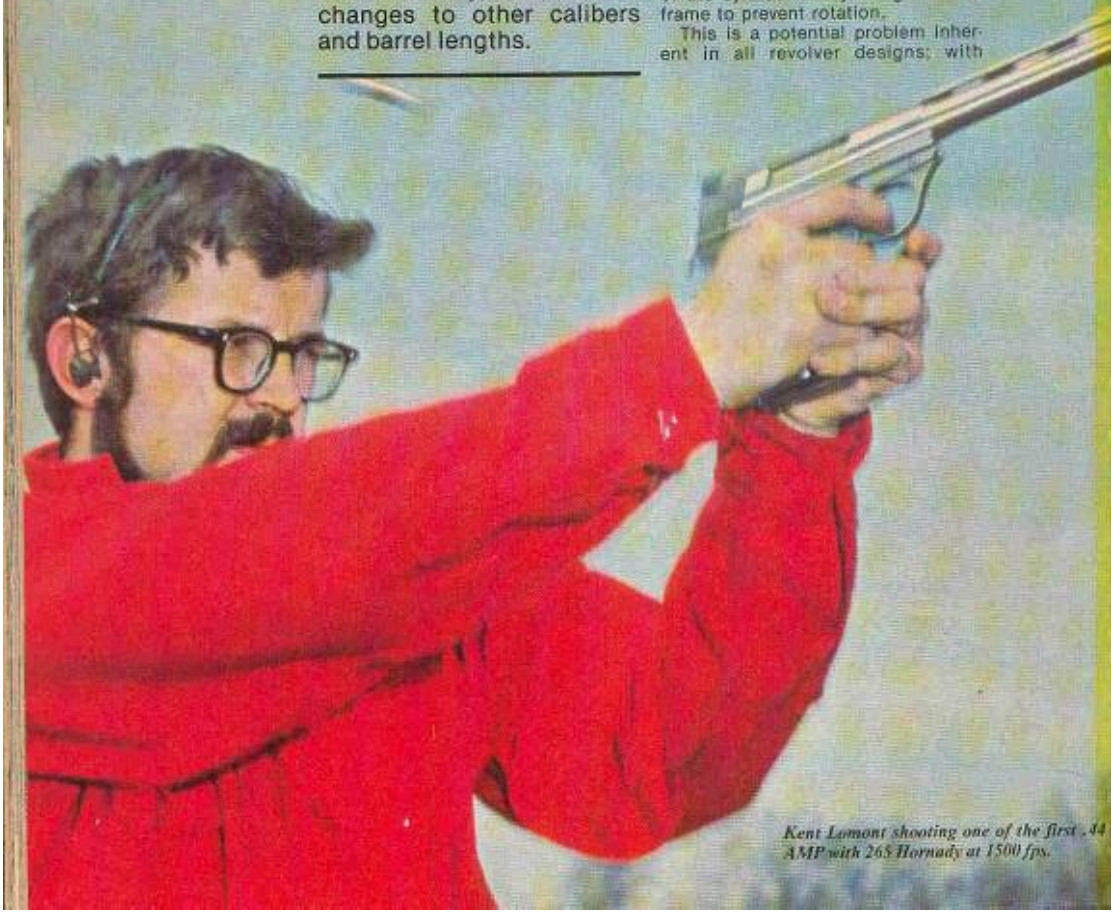
World's Most Potent Auto: THE AUTO MAG

By Kent Lomont

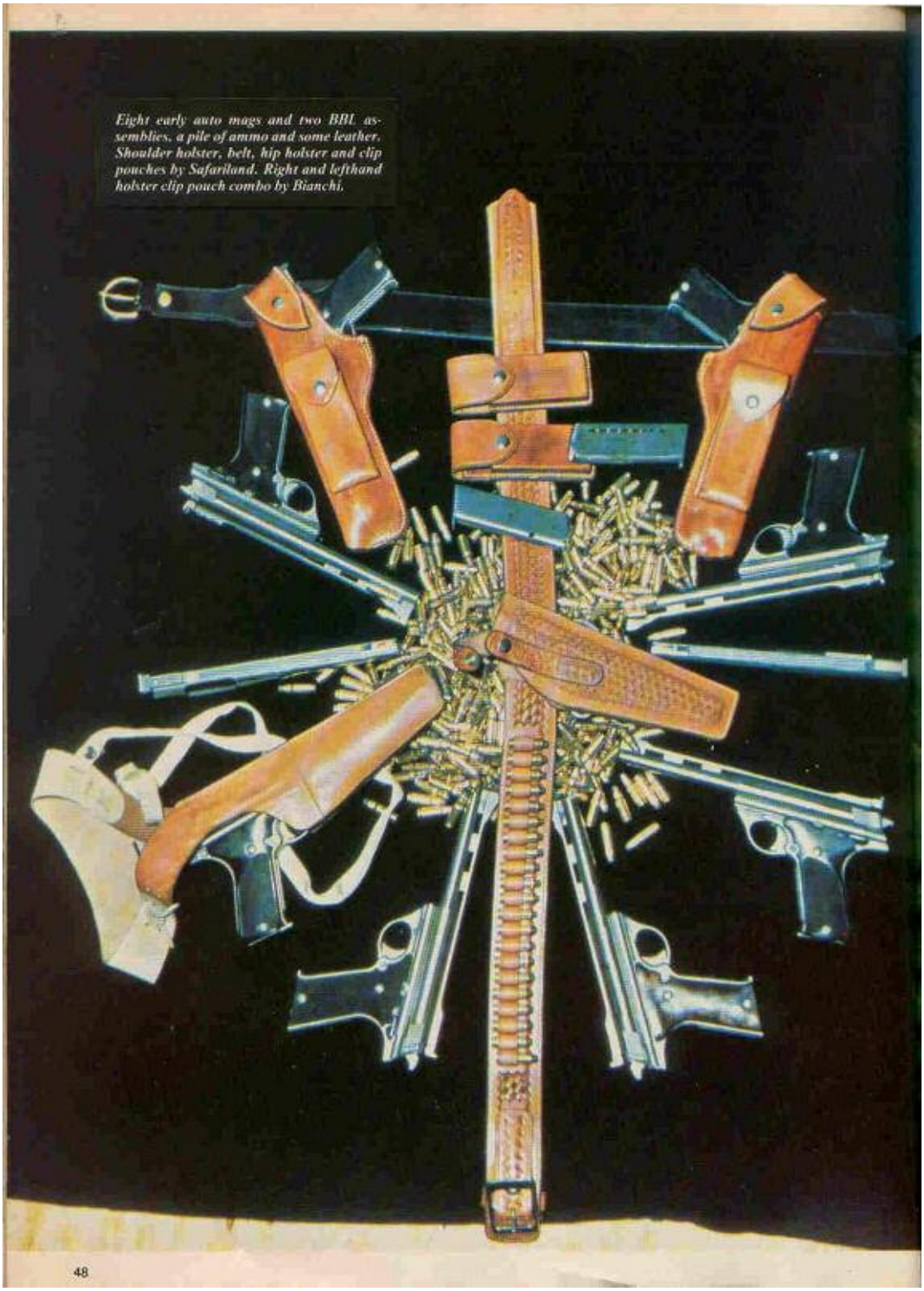
Advantages of the Auto Mag over the revolver include faster repeat hits, greater velocity and accuracy, and instant changes to other calibers and barrel lengths.

■ Harry Sanford was hunting bear in the 1960s with a .44 Magnum revolver when he encountered a heart-stopping malfunction. When attempting a fast followup shot, he discovered the cylinder wouldn't rotate; the gun was locked up and incapable of being fired! A bullet had "walked" forward in its case to protrude from the face of the cylinder and jam against the frame to prevent rotation.

This is a potential problem inherent in all revolver designs; with



Kent Lomont shooting one of the first .44 AMP with 265 Hornady at 1500 fps.



Eight early auto mags and two BBL assemblies, a pile of ammo and some leather. Shoulder holster, belt, hip holster and clip pouches by Safariland. Right and lefthand holster clip pouch combo by Bianchi.

heavy loads and their attendant high recoil forces. The inertia of the bullet causes it to "stand still" while the case is forced off as the gun recoils. No matter how heavy the crimp, this will occasionally happen with top magnum loads; case mouths just aren't consistently strong enough to prevent it.

Sanford decided only an autoloader would solve this problem and began to work on such a design of basic, rotary-bolt, short-recoil form. By July of 1968, he had built a single-shot prototype that proved his design would unlock the bolt, extract, and eject. By 1969, he had made a second prototype, this time a fully functional model, feeding from a magazine. This is in the gun that appeared on the March, 1970 cover of **Guns & Ammo** with the story by Jeff Cooper.

Sanford decided to manufacture the pistol commercially. Much of the money for the Auto Mag Corp. came from a wealthy Californian with an interest in handguns. Harry also traded off his patent rights to the gun for 10% of the stock in the newly-formed company. The pace during the next two years was hectic. Advertisements were run in most of the major gun magazines. CDM, a Mexican firm owned 49% by Remington, produced approximately 300,000 rounds of .44 AMP ammo and 600,000 unprimed cases. The

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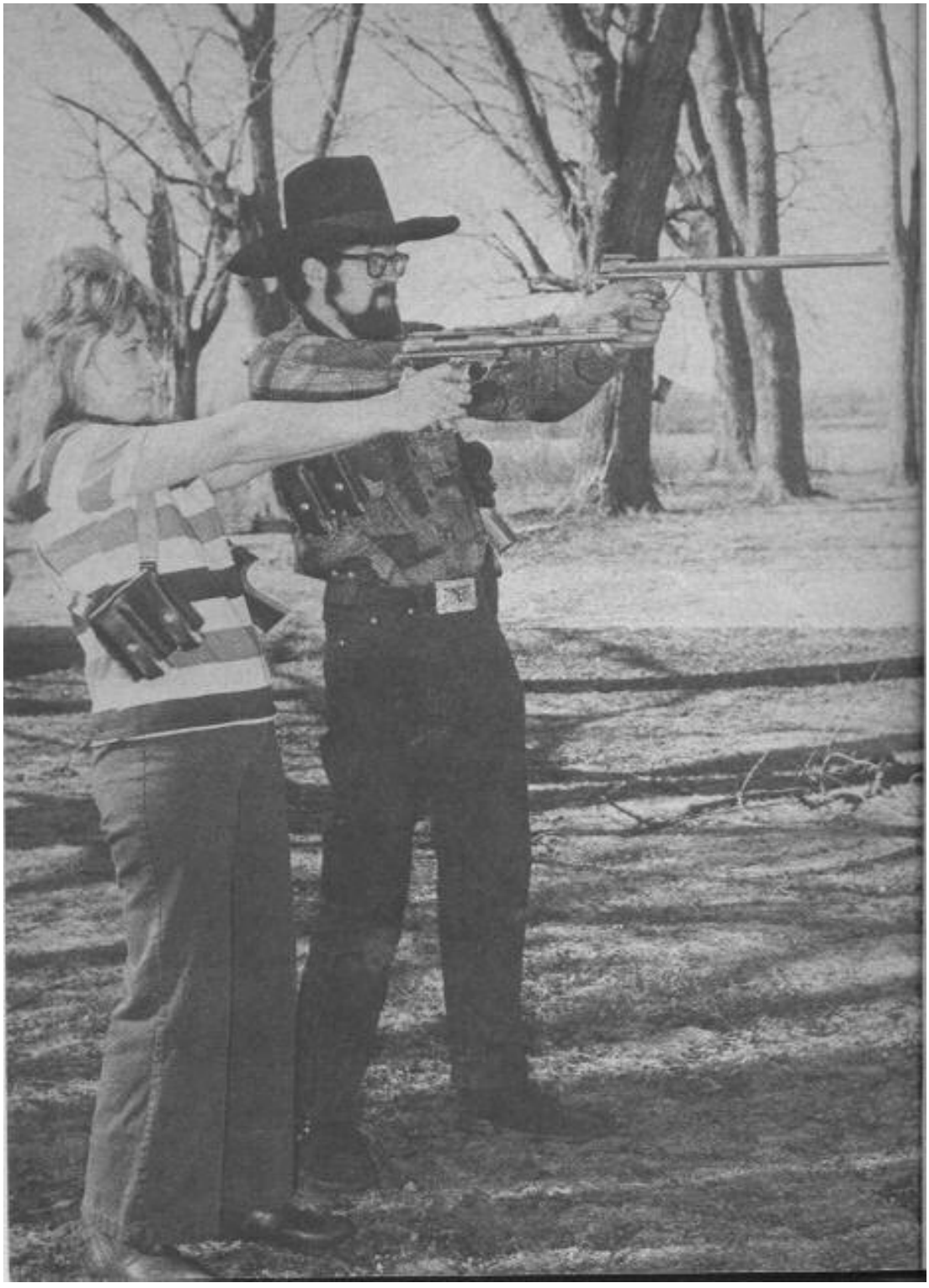
Kent Lomont holding the first scoped .357 AMP with open-sighted .44 AMP. Laminated grips are the first two pairs made by Clint Teeters.



parts and tooling and formed TDE Corp. (Trust Deed Estates) with the purpose of assembling the guns after manufacturing the missing parts. Many people that had paid for their Auto Mag in full lost all in the bankruptcy. However, those that had made only a deposit had their money refunded as it had been placed in escrow. Some ill will still exists as a result of that unfortunate situation.

Tomas realized that revitalizing the Auto Mag required someone that understood it well—and who knew it better than Harry Sanford? Therefore, Harry was hired to head TDE. Initially TDE located in North Hollywood, but soon required more space and was moved to El Monte, its present location.

High Standard became interested in the Auto Mag and several hundred were purchased from TDE with the High Standard markings. Lee Jurras, founder of Super Vel and handgun hunter extraordinaire, became interested and had 100 each made in .357 and .44 caliber marked with special serial numbers and dubbed "The Jurras Custom 100 Series." Approximately 50 more were manufactured in the .41 JMP (for "Jurras Magnum Pistol"). At approximately this time, Sanford and his partner purchased TDE from Tomas and obtained the patent rights.

The major change in the Auto Mag since its inception has been from the original "A" Series to the "B" Series. An explanation of the difference follows: First and most obviously, the "A" Model serial numbers start with the prefix AO and the "B" Models with the prefix BO. AO guns with the "B" Series bolt are converted "A" Series guns.

The main difference is in the bolt. "A" Model bolts were initially manufactured from Carpenter 455 and at a Rockwell hardness of 44-48 RC. At El Monte, they were changed to 17-4pH (Carpenter Custom 630) at an RC of 39-44. "B" Model bolts are fabricated from Carpenter 158 at hardness RC 55-58. Carpenter 158 is not stainless, but a highly shock-resistant tool steel.

All Auto Mag frames to date have been of investment-cast 17-4pH; originally the breeches were 455 at 45-52 RC. At El Monte, they were changed to 17-4pH hardened to 39-44 RC. Most modern repeating arms utilize bolts approximately 10 points RC harder than the breeches to aid in smoothness, among other things. Most of the "B" Model bolts, as mentioned before, are at 55-58 RC. Therefore, it can be seen that they are around 10-15 points harder than the breech which aids in smoothness of operation.

The "A" Model bolt weighs approximately 1820-1870 grains, depending upon the amount they were milled out on the bottom for cartridge clearance. The "B" Model bolt weighs roughly 2715 grains, which is a weight increase of around 50% over the "A" Model.

The additional weight of the "B" bolt arises from the fact that it is an almost "solid" bolt. The overall length of both bolts is the same at approximately 4.298-4.300 inch. The "A" Model bolt has a slot clear through it, measuring approximately 3.315 inches long and 0.325 inches wide. The new "solid" bolt has a groove, corresponding in location to the old slot, measuring approximately 0.325 inches wide and 0.135 inches deep. This groove extends through the rear of the bolt.

In the "A" Model gun the rotation pin must be removed to free the bolt so that it can be removed from the integral frame projection that it rides through. The rotation pin in the "B" Model is welded in with the central portion then removed, leaving two small lugs sticking out; one on each side of the inside of the projection. These lugs engage the slots in the bolt. The bolt must be inserted first from the front of the projection. The front stopped by the rotation lugs at the rearmost portion of its travel.

Some of the last "B" Model bolts have had the hole for the captive end

The Lamonts, father & son, wearing shooting gear Auto Mags.

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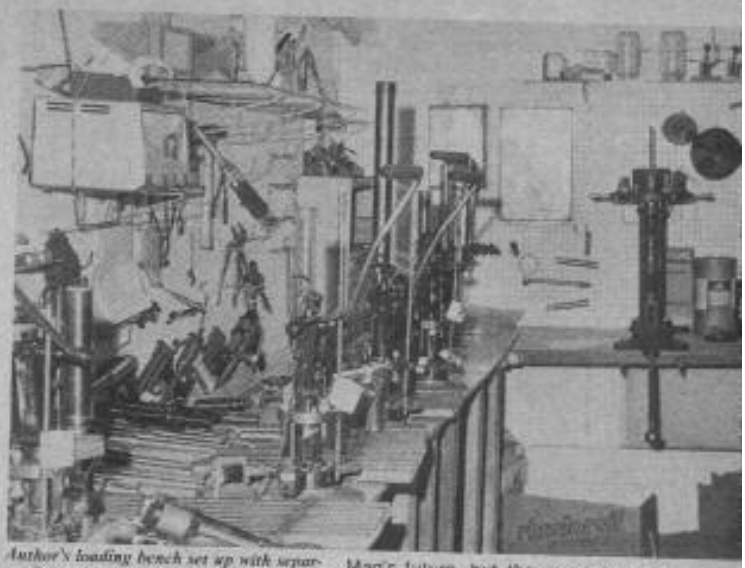
Auto Mag concept was tested in .357 and .45 caliber using the basic .44 case. Many tests were run to determine the best bullet shape, propellant, actual tolerances required for various parts, optimum materials required, heat treatment, small design changes, general debugging, best assembly and fitting procedures, etc. This would be a very difficult task for one of the large arms makers to perform on such a sophisticated piece of ordnance and seemingly impossible for a neophyte company like AMC. As it developed, ammunition working pressures were established in the 40-50,000 CUP range, well above the upper limits for revolvers.

For these tests, the company hired a staff of metallurgists, engineers, draftsmen, ballisticians, tool and die makers and just plain gun nuts. Since the initial outlay to tool up to produce every part of the pistol was prohibitive, both as to cost and time factors, various vendors were contracted to manufacture many of the parts, with assembly to be done by Auto Mag. There were many delays, partly due to the failure of vendors to meet delivery schedules. Much of the delay was due to difficulties in working with the tough stainless steel. There were also the usual problems common to the manufacture of any new high-precision item—parts out of print and small design changes that were found necessary to facilitate manufacture of the various components. Heat-treat problems arose, and much trouble was experienced obtaining correct springs.

Then, finally, in the early part of 1971, the company began delivering a handgun unlike any other ever produced — a beautiful stainless-steel pistol weighing over 3½ pounds, that bespoke quality and craftsmanship at a glance. This was the end result of a vast expenditure—the Pasadena Auto Mag. The frame was manufactured from 17-4pH; the bolt and entire barrel assembly from Carpenter 455. Most small parts were also from 455 with a few of 17-7 and 17-4. The pistol was delivered in a black, foam-lined, plastic attache case complete with stainless Allen wrenches, special lubricant and the finest instruction manual ever to be included with a commercial firearm.



Author's loading bench set up with separate Star Progressive Reloads for each AMP caliber: .44, .41, .357, .30 and .25. Quite an investment.

Although the piece cost much more to produce than the initial estimates had shown, those who had ordered while the price was under $200 received their Auto Mags for that price. However, the retail price was soon forced up to $275.

The Auto Mag Corp. was making and delivering guns, and had a fine staff with real interest in the Auto Mag's future, but the company was not progressing fast enough to suit the major financial backers. Late deliveries of a few critical parts put delivery months behind—and early in 1971, the investors pulled out. Auto Mag Corp. would have survived were it not for the late delivery of some of the parts. Although the company had almost all the parts on hand for 5000 guns, it became bankrupt in May of 1971.

At the bankruptcy auction, Tomas Oil Company bought up most of the

Lomont holds 16-inch .44 Auto Mag. In background, left, on bench are many new Auto Mag barrels in process of fitting, as well as numerous other Auto Mags used in his tests.

Two Auto Mags in action at Lomont's range: 8½-inch in foreground, 16-inch at rear. Latter has had barrel lightened by milling flats on both sides; extra long barrels can easily get too heavy for even the heavy-recoiling .44 AMP cartridge.

Author shooting standard 8½-inch .44 Auto Mag, carrying a spare 10½-inch gun with scope in shoulder. Custom shoulder rig holds two upside-down magazines ready for instant use.

of the rotation spring relocated to increase the bolt rotation force at the moment of locking. Also some of the "B" Model bolts require small modification of the diameter of the firing pin.

Generally, the "B" Model functions better than the "A," especially in the .44 AMP. This better functioning increases as the power of the load is increased. Recoil and the jolt of the bolt stopping sometimes causes the shells in the magazine to tip up at the nose and down at the base, causing what I call "hit the shell in the middle" malfunction. This occurs when the bolt closes before the base of the shell is back in pick-up position and is exemplified by a shell caught in the middle by the bolt.

The heavier "B" Model bolt causes the gun to work smoother and softer, thereby, lessening this tendency. Either model profits from the heavier operating rod springs for the same reason. Smoothness is further enhanced by the harder bolt explained above. The "B" Model firing pin and spring is completely protected from dirt and oil accumulation because it is housed in the bolt and not out in the open riding through the rotation pin as in the "A" Model. This decreases misfires due to dirt and oil accumulation on the pin and spring.

Due to its increased weight, the "B" bolt slams home harder and rotates to lock better, especially with a dirty chamber. The models with the relocated rotation spring seem to work better than those without, but results are not positive due to the short experimental time.

Recently, Carpenter Tool Steel Co. has recommended that some bolts from the H-13 be tried as they are supposedly tougher than the 158. With luck, I will be testing some of these as you read this.

From the above, it can be seen that "A" Model guns can be converted to the "B" Model by welding in the rotation pin (only pins of 17-14pH) and removing the correct amount from the center, and then fitting the solid bolt. If necessary, the operating rods can be changed and sometimes the firing pin modified. Original Auto Mags were fitted with operating rods of .200 inch diameter, weighing approximately 360 grains per pair. Around serial number A06500, the diameter was reduced to .180 inch, with weight reduced to 300 grains per pair.

The "B" Model offers functional advantages in the .44 and .41 AMPs with heavier bullets, but not as much, if any in the .357, .30, .25, and .22 calibers.

The advantages of the Auto Mag over the revolver would be the following: Faster repeat hits, greater velocity and accuracy, instant changes to other calibers and barrel lengths. The disadvantages would be greater cost, less reliability and durability, loss of fired cases, smaller load tolerance and currently no factory ammo is available. Now, let's examine each of these so you, the reader, can make up your own mind. We will mainly be comparing the Auto Mag to the Smith & Wesson and Ruger .44 Magnums.

When Ma-Na-Ported, especially, the Auto Mag offers faster repeat hits than with the revolver, because of its autoloading action. However, the difference is very small and generally would be of no practical value for long-range work. At close range, the Smith has a very fast double-action—the Ruger a poor third even in very experienced hands.

As a general rule, working velocities with the same barrel lengths in the Auto Mag are around 250 fps

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Lamont is one of the niggardly few handloader/shooters who have their very own ballistics laboratory set up. Here he prepares to insert copper-crusher cylinder in Phelps-type universal pressure gun. Other pressure barrels are racked on the wall at rear.

lease—regardless of whether being fired double-action—the hammer has been lowered (by the eccentric) sufficiently that the hammer face is clear of the frame abutment mentioned. At this point, then, the hammer is driven forward by the mainspring, and with its path unobstructed, strikes the head of the firing pin in the frame. This, naturally, fires the cartridge in line with the barrel. Releasing the trigger after the shot allows it to be moved forward by its spring, rotating the eccentric in the opposite direction, and raising the hammer so that its face comes to rest against the abutment in the frame. It is now safe again. If, by some unusual chance, one's finger should slip off the trigger at the very instant of hammer release, the timing and spring forces are such that the eccentric would rotate and the hammer would be raised sufficiently that it would be caught short of striking the firing pin by the frame abutment. While it might seem that occasionally the hammer could outspeed the trigger and thus strike the firing pin before being raised enough to strike the abutment, this simply doesn't happen. The trigger wins the race every time.

The Crusader possesses yet another unique and especially useful feature. In other double-action designs, the bolt (that part which protrudes from the frame into the locking notches in the cylinder) is forced into engagement with the cylinder by spring pressure alone; it is retracted mechanically, but engaged only by a relatively small and weak spring. A weak spring, minor burrs, or simply an accumulation of dirt or oxidized grease and oil can cause the cylinder to "throw by" in fast, double-action work. This is not possible in the Crusader design, simply because the bolt is held positively in engagement with the cylinder by mechanical means. The rear of the rather long bolt is pivoted to the eccentric, and the short lever attached to the trigger which retracts the bolt also rotates and then applies upward force forward of the pivot as the trigger nears hammer-release. Thus, at the instant of firing, the bolt is propped up solidly from beneath and is no longer dependent upon spring pressure for proper engagement. In addition to this, the side area of the engaging surface of the bolt is substantially larger than in other designs; this should certainly reduce wear and increase life when a gun is used for extensive, double-action shooting.

This gear sector design offers several advantages. One noted most readily is that the mechanical advantage of the system in double-action functioning remains fairly constant throughout trigger travel; something not true in the traditional design where the contact point between hammer and trigger shifts as one moving part slides across another. The use of gear sectors offers a smoother double-action pull *without* the necessity for hand-polishing, and it also allows the engaging surfaces to be made more robust. Parts interchangability is also improved.

After all is considered, the design of the Crusader does appear to offer a great deal. It is worthy of note if for no other reason than that it is the first genuinely new double-action system to get this close to production since about the turn of the century.

Obviously, by now you've gotten the impression that I like the Crusader. I do like it as it now exists, in the form of a half-dozen, hand-made examples. On the other hand, anyone familiar with the manufacturing business knows that it is often easier to make a few of something well by hand than it is to make them by the thousands upon assembly lines. While the design certainly appears durable and reliable, that statement is only conjecture until *production* guns get out in the hands of the troops, so to speak, and we can see how well they hold up there. Many an apparently quite-good gun design has gotten this far before and then died on the vine for one reason or another. In any event, High Standard assures us they will be producing the Crusader in .44 caliber in the very near future. Between now and the time that happens, we'll sit back and watch—and perhaps hope. ●

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faster than with the revolver. With lighter bullets, the gain in favor of the Auto Mag is greater and it lessens as weight is increased. This is due to both higher chamber pressures and the absence of a barrel/cylinder gap. Heavy working loads in revolvers with the 180-grain bullet would produce approximately 1,550 fps, 1,625 fps, 1,690-1,750 fps from 4 inch, 5 inch and 6½-8½ inch barrels respectively. With 265 grain bullets, velocities will run about 1,100 fps, 1,200 fps, and 1,325 fps. As a general rule, there is no difference between the 7½ and 8-3/8 inch barrel and often only 50 fps between the 6½ and 8-3/8 inch tubes. Of course, individual guns may show up to a 200 fps difference with the same barrel length. But, the above figures stand as averages taken from over 50 .44 Magnums chronographed.

Heavy working loads in the .44 Auto Mag would look like this: With the 180-grain bullet→1,800 fps at 6½ inches; 2,200 fps at 8½ inches; 2,060 fps at 10½ inches; 2,100 fps at 12½ inches; 2,200 fps at 16 inches. With the 265 grain bullet, it would look like this: 1,400 fps, 1,500 fps, 1,600 fps, 1,650 fps and 1,700 fps respectively. Very heavy super loads in the Auto Mag will push the 180-grain bullet at 2,200 fps from the 10½ inch barrel and the 265 at 1,750 fps. This is very hard on the gun and for this reason such loads are not practical.

Notice that in the revolvers, there is very little reason to go longer than 6½-7½ inches for velocity only. Of course, if you find that you shoot better with the longer barrels, by all means use them. My favorite revolver is by far the 8-3/8-inch Smith .44 Magnum with 250-grain bullets. The Auto Mag of course, gains velocity all the way up to 10½ inches but becomes impractical with the 12½ and 16-inch barrels. The factory manufactures 6½, 8½ and 10½-inch barrels only. Of course, for special applications like the Jurras Alaskan Model with shoulder stock, the 12½-inch can be utilized. My favorite barrel in the .44 Auto Mag is two heavy custom barrels that I made up in nine-inch length, although the heavier factory barrels in 10½-inch will do nicely.

After having fired *literally* several hundred thousand rounds at targets, many using scoped 8 3/8 inch Smith's and 7½-inch scoped Ruger's with the .44 Magnum and very close to 20,000 rounds using scoped Auto Mags in .44 Caliber, the results are as follows: Optimum loads in the .44 Magnum will consistently group in three to four inches at 100 yards. Super loads will stay under 2½ all day. In the .44 AMP, best loads will stay under two inches all day. Both the .44 Magnum and the .44 AMP will occasionally turn a one-inch five-shot group, with the latter doing it more often.

Therefore, we may say that by using the optimum loads, the Auto Mag is approximately 50% more accurate than the best revolver. Also, a greater range of bullet types and loads will shoot more accurately from the Auto Mag than from the revolver. As a very crude guesstimate, I would say that with all loads and bullets, the Auto Mag would be around two to three times as accurate as the revolver. Remember, this is *inherent* mechanical accuracy, not field accuracy. In the field, it takes an exceptional shot to tell the difference between even 3 MOA and 6 MOA ammo. I can't do so under field conditions most of the time, but it

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