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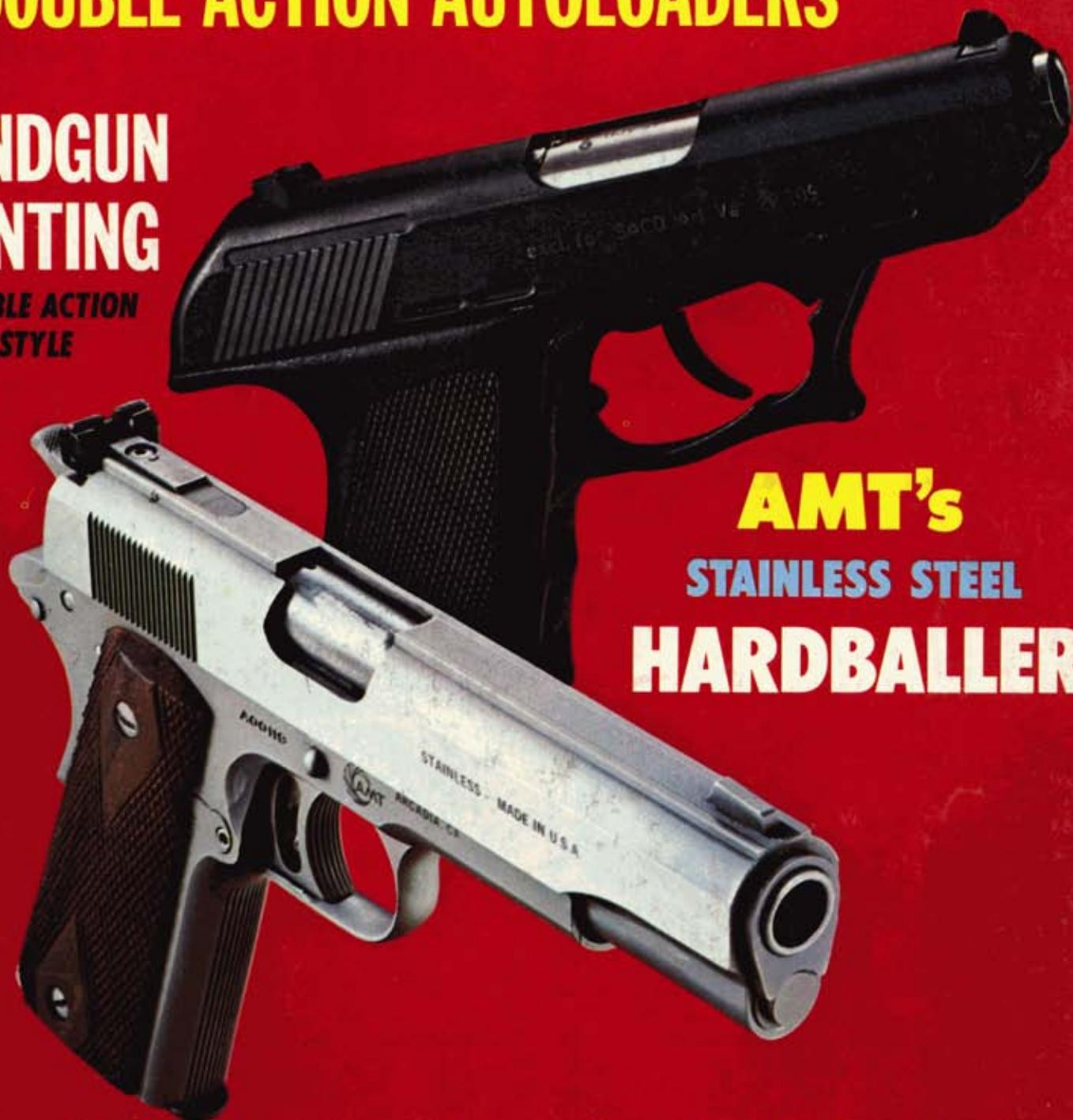
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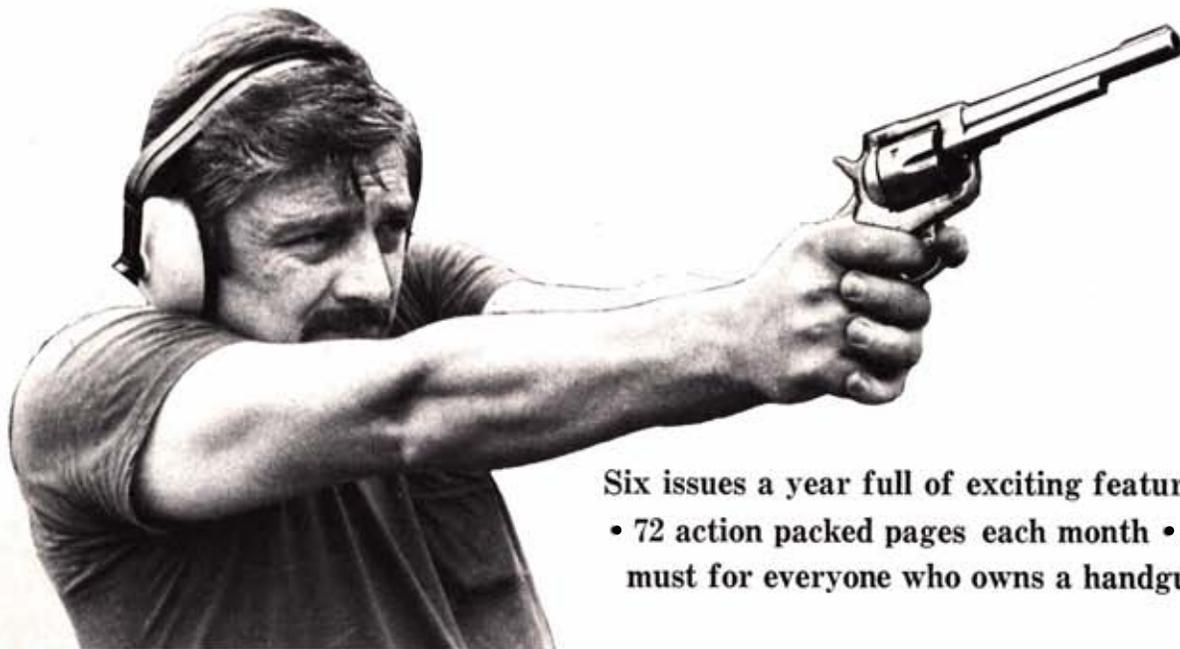
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THE AMERICAN HANDGUNNER

MAY/JUNE, 1977
Vol. 2 No. 3-5

George E. von Rosen
Publisher

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HANDGUN INDUSTRY INSIDER

NEWS, LEATHER & LOADS

By MASSAD F. AYOUB

An old favorite and a new snake from COLT's. By May of '77, the Hartford gunmaker plans to introduce two promising variations on the small "D" frame. One is the long-overdue Detective Special treatment on the four-inch Police Positive. The shrouded ejector rod will terminate partway up the barrel, as on the Mark III Trooper; the streamlined ramp sight will, as on the Detective Special, extend all the way back to the frame. The grips will be modified, also, in what the company describes as a teardrop shape. Slightly longer than the grips on the current snubbies, they'll give a better hold in a man-sized fist, while the trim silhouette of the new stocks is expressly designed for policewomen.

Colt will simultaneously introduce the Viper, which will be a four-inch Cobra with the same barrel and grips as the new Police Positive. This alloy version, like the PP, will be chambered for .38 special only, and will have fixed sights.

Price is slated for the \$160-170 bracket. A Colt exec told us that policewomen and security personnel are expected to be the principal buyers, but we wouldn't be at all surprised to see a large acceptance of this piece among uniformed metro policemen as well. Ideal for on- or off-duty carry in departments that specify fixed-sight .38s, either is a compact double-threat gun that saves a rookie the price of a second revolver to carry on his own time.

Leathermakers are planning a few surprises for '77. BIANCHI is coming out with several new items; Neale Perkins at SAFARILAND also has some interesting plans, one of which is an ankle holster that will be doubly secured, once above the calf and again above the shoe. Price isn't yet set on the ankle jobbie, which will be limited to guns the size of the Chief Special or smaller. Neale also says that he's finally got a thumb-break holster design on which the hardware won't mar the finish of the gun as it's drawn. This is welcome

news. The feature will first be seen on the Model 28 holster, Neale's answer to Roy Baker's Pancake and John Bianchi's Shadow scabbards.

Don't look for any radically new handguns from HARRINGTON & RICHARDSON for a while. A few minor variations on currently catalogued revolvers may be announced, but nothing earth-shaking. H&R is busy trying to get their autoloading .22 Rimfire Magnum rifles out to meet the burgeoning demand created by too-early announcements in the firearms press. Another thing that's irritating some H&R execs is that production of the high-powered, autoloading 360 Ultrarifle is bottlenecked way behind orders, due to some supply problems with components vendors...

Look for S&W LEATHER to introduce a new holster designed purely for free-style combat competition. This small but demanding holster market has thus far been dominated by MILT SPARKS of Idaho City, Idaho. As yet un-named, the new Smith holster has a straight-up drawing angle, and no safety straps: a leaf-sprung stud concealed inside the body of the steel-lined holster engages the inside front of the trigger guard. This prevents the pistol from falling or bouncing out, but the pressure is easily overcome by the natural drawing motion. S&W research engineer Tom Campbell used a prototype to win the Northeastern US Sectional Tryouts for the World Practical Pistol Championships, to be held in Rhodesia next August...

Good ammo cheap: American police have long been buying remanufactured (ie, industrially-reloaded) .38 wadcutter ammo for practice and qualifications. For as little as \$50 for a case of 1000 rounds, if you trade in an equal portion of fired brass, this stuff is a terrific bargain. Some will shoot right along with factory match .38 loads, while others group a little sloppier.

ZERO, the bullet makers, and STAR,

most famous for their progressive ammo reloaders, are among the leading suppliers of remanufactured ammo. Also right up there is 3-D CORPORATION, of Grand Island, Nebraska, which just introduced a spate of loadings in addition to the ubiquitous .38 Special, that includes 9 mm Parabellum and .45 ACP. At savings of up to \$50 a case, the .45 mid-range semi-wadcutter in particular should capture the attention of the civilian pistoleros, especially with cheap GI hardball .45 ammo now a thing of the past. Other real bargains in pistol ammo can be found from local, commercial reloaders using Camdex and similar equipment.

Next fad in custom handguns, we predict, will be large-bore DA revolvers with heavy Douglas barrels and BoMar sight ribs. Highly publicized shoots like the Magnum Handgunners of America silhouette matches in the Southwest and the Northeast, and the National Shooters League \$15,000-purse event in Laramie, Wyoming, have created a demand for solid-hanging, flat-shooting sixguns that punch big holes in paper targets and pack enough energy to knock over forty-pound steel animal cutouts. Ron Power, PO Box 1604, Independence, Mo. 64055, the acknowledged top builder of PPC match Smith & Wessons, has already been swamped with orders for heavy-barrel model 29 .44 Magnums and model 25 .45 ACP wheelguns, most being made for serious, big-prize competition handgunners.

Verdict is in on FEDERAL's controversial 80-grain jacketed hollowpoint load in .380 ACP. All testers including this writer have reported virtually flawless functioning. The load doesn't mushroom with the same destructiveness as the old Super Vel .380, and even the factory admits that expansion is nothing to rave about. Still, stopping power is markedly improved just by the cutting shoulder of the new bullet design, and until somebody comes out with something that expands like the Super Vel did and is as jam-free as the Federal (the most reliable expanding-bullet load yet produced in this caliber), the stuff in the red and white box from Minnesota seems to be the round of choice for .380 fans who don't handload. If you carry a .380, we suggest you buy a box now: We've heard nothing more of Winchester's proposed .380 Power Point, and Remington execs tell us that the long-thought-about .380 JHP to follow their highly efficient and successful loadings of similar design in .45 ACP and 9 mm. Parabellum, remains in the "someday" stage of development.

SMITH & WESSON's second generation 9 mm with ambidextrous safeties and fully adjustable sights are still not in production. First scheduled for July '76, it's now slated for second quarter '77. Dick McMahon of S&W also promises some first-quarter surprises with the model 25 (1955 Target .45 ACP) revolver.





THE PISTOLSMITH

By GEORGE C. NONTE

SPEED-LOADING SLIDE STOP MODIFICATIONS

As big-bore autoloaders see more use and as that use involves both law-enforcement and assorted, competitive, shooting games, rapidity of reloading takes on greater importance. In fact, the autoloader's firepower superiority over the revolver is probably more responsible than any other, single factor for broader use in various fields of law-enforcement. No matter how great a sixgun fan you might be, you cannot escape the simple fact that several different autoloaders offer up to two and one-half times as many shots from the initial loading as a revolver before reloading becomes necessary. And, even a modestly-proficient pistolero can replenish his auto with that same number of rounds in far less time than it takes to stuff a mere six cartridges into a revolver.

Even though the auto may offer from eight (Colt .45) to fifteen (9mm S&W M59) shots before reloading becomes necessary, rapid reloading is sometimes essential—and being *prepared* for rapid reloading is *always* essential. The old saw repeated so many times "if I can't finish the fight in six (8, 10, 15) shots, it'll be too late to worry about reloading," must be regarded as facetious and bearing no true relationship to a real, armed encounter. It might take 15 or more shots of covering fire to get you in a position for the single shot needed to end the fight—and if you can't reload fast enough for that one finishing shot, you might be the one who gets finished.

In any event, it is a matter of simple and incontrovertible reality that no amount of cartridges that can be stuffed into a practical, one-hand gun will ever eliminate the need for speedy reloading. In one instance brought to my attention, an officer fired 22 shots at a suspect in less than that number of seconds after his partner had been killed by a sneak shot. Most of those shots were covering fire since the officer was fully exposed and had no defense whatever except to keep his assailant down by withering fire. The bad guy did wind up very dead, but there might have been *two*

officers buried if the survivor hadn't been able to reload in one hellava hurry.

Even though reloading an autoloader is eminently faster, more convenient, and less prone to accident than with a revolver, there are still a couple ways to make it easier, faster, and more foolproof. One of these methods involves simply funneling the mouth of the magazine well in the butt so that even in the dark or when one's eyes are on a potential target, the magazine is more likely to enter on the first try. It is to the discredit of the major U.S. handgun manufacturers that this feature is not standard on all service autos. It is significant that of *all* the world's major makers, only the Spanish Star Bonifacio Echeverria provides this feature on all its big guns.

Pistolsmiths charge a goodly sum for this modification, and often require the gun for several weeks before they can get to the job. You can save the money and have the gun out of service less than an hour by doing the job yourself. It requires nothing more than an assortment of small files, a vise, and a little time and effort. Simply strip the gun, stuff the magazine well with rags or tissue to keep filings out of the innards, and clamp it butt-up in the vise. Begin at the radiused front of the magazine-well mouth and with a $\frac{3}{16}$ -inch diameter round file of medium cut, file a uniform bevel, extending about $\frac{1}{8}$ -inch into the well and outward one-half the wall thickness. With that done, take a 6-inch, flat file and carry this bevel back along both sides, keeping it as straight and true as possible. The rear wall doesn't really need beveling, but some people like it, and it can be done easily with a narrow, pillar file. Once the filing is done, wrap medium-grit, aluminum-oxide cloth around the files or hardwood sticks of similar shape and dimensions, and carefully smooth out the filing marks. This makes the "funnel" adequately smooth, but you may polish it further if you'd like it slicker. Finish by touching up the bare metal with any good, cold blue

and you'll find urgent insertion of a fresh magazine has become much easier and more rapid.

The second method used to speed up reloading is modification of the slide stop. On all big-bore, service-type autoloaders, an external stop—usually of basic Browning design—is forced up by the magazine follower to engage a notch in the underside of the slide and hold it open after that last shot is fired. The story goes that this was originally intended merely to signify to the shooter—who might very well be excited and unobservant in the midst of a fire fight—that his weapon was empty and in need of recharging. That may well be true, for military requirements of 57 years ago did specify a visual indication that the last cartridge had been fired. However, slide stops on all of our modern, big-bore autoloaders also serve the purpose of allowing the slide to be released to run forward and chamber the top cartridge of a fresh magazine just as quickly as it seats home. This disengagement and chambering of the top cartridge is accomplished simply by reaching forward with the gun-hand thumb and pressing down the slide stop. If this were not possible, it would probably require *both* hands to get that first round in the chamber after shoving in the full magazine.

The only trouble with this system is that some individuals, especially those with small hands or short fingers, find that they cannot depress the slide stop without loosening their grip on the gun, rotating it somewhat in the hand, and they are then forced to reposition the gun in the hand before firing can be resumed.

This can be eliminated to a large extent by adding a rearward extension of the slide stop, somewhat after the fashion of the modified stop found on the Norwegian P1914 copy of the Colt M1911 GM pistol.

Now, you can buy an extended slide stop for the Colt GM for about \$20. Or, you can have any good pistolsmith modify your stop for nearly as much money. Personally, though, I prefer to do the job myself. It's not at all difficult, and a single evening or weekend afternoon of spare time will suffice for the job.

The job involves simply soldering to the original slide stop a small, rearward extension. No problems except that care must be taken to provide adequate clearance for the detent device acting upon the slide stop, whether it be located separately on the frame as in the Colt GM, or inside the stop as in the S&W and Star.

Begin by laying out your propane torch, assorted files, a piece of scrap steel about $\frac{1}{8} \times \frac{1}{4}$ -inch and an inch or more long, silver solder and flux, and an abrasive cloth for polishing.

Remove the slide stop and if it contains a spring-loaded detent plunger, remove these parts also. Heat from the soldering would destroy the springs and heat scale would jam the parts in their holes. Take a safe-edge, narrow, pillar file and cut the

original thumbpiece down, flush with the body of the stop, to form a seat for the extension. Note two different types of stops are shown, the Star with its internal detent and the Colt without. On the Colt, the seat may be cut straight down to the full width of the original thumbpiece without interference; on the Star, to do this would destroy the hole in which the detent plunger rides. Consequently, on the Star (and the similar S&W), a two-step or angled seat must be cut so as to provide adequate joint surface without breaking into the detent hole. The seat may be filed at an upward or downward angle if desired in order to raise or lower the position of the new thumbpiece. Lowering it is probably a pretty good idea, especially if the modified stop is to be used on a gun equipped with a combat safety.

With the seat formed, roughly file the extension to shape making it so that it will reach 1/2-inch to 3/4-inch farther rearward than the original. Next, match the extension to the seat on the stop, filing the step or bevel in the case of the Star, so that a close fit is obtained. Epoxy or "hot stuff" the two parts together temporarily, and with the left grip removed from the gun (it may be necessary to remove the safety also), slip the stop into place and note where relief cuts will have to be made in the extension to clear the detent system. In the case of the Colt, the entire inner edge will have to be relieved to clear the spring and plunger housing; on the Star, a deeper but shorter cut must be made to clear the stud riveted into the frame. Mark these reliefs on the extension and file them to shape, re-installing the stop on the frame as necessary to make sure the cuts are deep enough to clear positively, but not so deep as to overly weaken the extension or interfere with its function. You may discover in the process of making these cuts that you'll want to change the angle, thickness, or shape and length of the extension. It must operate freely, but without being excessively bulky. If any such changes are indicated, break the epoxy bond by reheating and refile the extension and its seat on the slide stop.

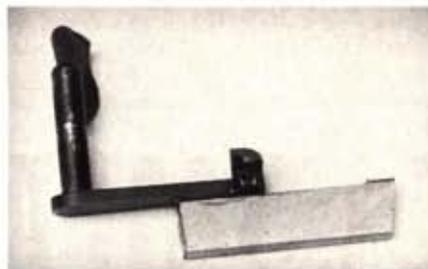


Once you're satisfied with things to this point, prepare to solder the extension in place. I prefer a fusion, silver solder such as Brownells M-539-W, but any conventional material and method is satisfactory. Even a good, soft-solder job is probably

strong enough. Clamp the slide stop in a vise, taking care not to damage the pin, at such an angle that the extension will lay in its seat at approximately the proper position. Make up a holding bar from an 18 to 24-inch length of steel bar or rod bent at the end and filed to a point as shown. The point of the bend end is placed on the extension, allowing the weight of the bar to hold the extension firmly but not tightly in its seat. A crossbar or C-clamp on the opposite end of the bar will help keep it upright, though a couple bags of shot will serve the same purpose. Because of the irregular shapes involved, it's impractical to clamp the extension in place, though it could be held by a couple wrappings of soft wire.

Anyway, once you're set up to keep the extension in proper position, clean the joint surfaces thoroughly and spread fusion solder thinly but uniformly on all the mating surfaces. Carefully position the extension and lower the holding rod point on it.

Fire up your propane torch (one is enough, but two makes for a faster and more thorough job) and direct the hottest part of the flame on the extension to minimize heat flow into the slide stop pin.



Apply heat continuously until you can see the solder liquify and run into the joint. At this point, the extension may shift slightly, and if it doesn't settle into the right position, use a sharp-pointed instrument to re-seat it. Remove the heat and as soon as the solder has solidified, pick the slide stop out of the vise and dunk it in a can of light oil. This oil quench will restore some of the heat-treatment properties that might have been affected by the soldering heat.

When the stop is cool, wire-brush off the scale and soldering residue and install the part on the gun. If any additional filing is necessary to make certain it clears the detent system and that the stop nose engages the slide fully, accomplish it at this time. Now that you know the modified stop works, ply those files to give the extension the shape and thickness, with neatly rounded or beveled edges, that suits you best. In the process, make sure it will not bump into the safety. In the case of the Star, this is a good time to clean scale from the detent plunger and pin holes with small drills and to re-assemble the detent; make sure it operates freely.

With the extension given its final shape, install the left grip on the gun and attempt to install the stop. You'll probably find

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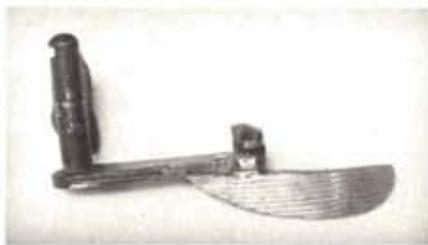
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that the grip prevents the stop from seating completely. Carve away just enough

wood to permit the stop to seat fully and to operate freely through its normal arc of movement. At this time, it's a good idea to assemble the gun completely and fire a number of rounds to make certain that the new slide stop is operating properly. This is best done by placing only a single round in the magazine and firing it to determine whether the stop will hold the slide back after the shot. Check also to make certain that the slide may be easily released with minimum disturbance of

your hold on the gun.

With everything checked for proper functioning, it remains only to polish the entire assembly smooth to match the rest of the gun and to roughen, in some fashion, the upper surface of the extended thumbpiece. Stippling is easiest, but I prefer longitudinal serrations cut with a needle file or metal checkering file. Final finish can be whatever you like but remember that a thin solder line will show through bluing.



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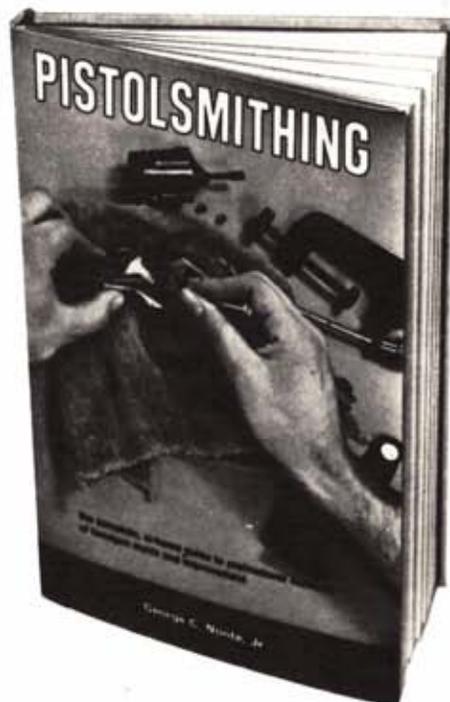
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by George Nonte



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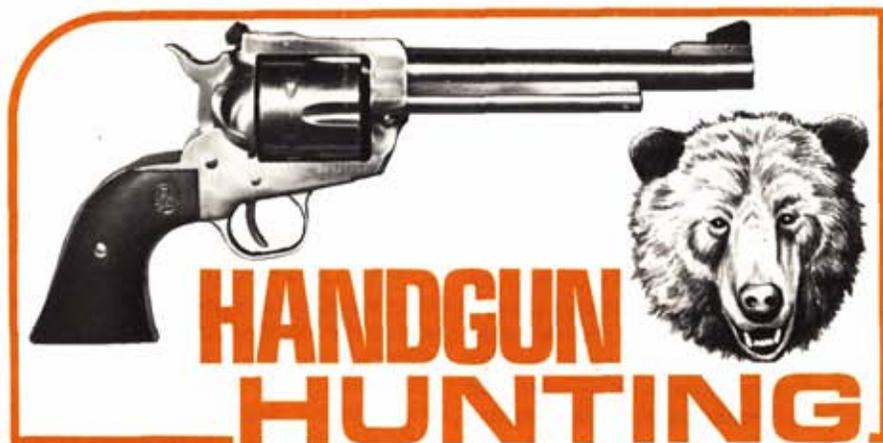
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By GEORGE BREDSTEN

SKILL AND THE FIELD

There has been a plethora of published articles concerning the efficacy of handgun/cartridge combinations used in taking big game; yet the equally important subject of field marksmanship is seldom given more than a perfunctory discourse. Many authors have quickly and erroneously summarized this subject with a few comments to the effect that fifty yards is about the maximum distance at which big game can reliably be taken with a handgun. Granted, some handgunners are unable to make a first shot hit in the vital area of big game at twenty-five feet, let alone fifty yards; but it would be the acme of presumptuous folly to conclude the handgun to be ineffectual beyond that distance. However, a disproportionate number of otherwise discerning handgunners appear to have been duped into accepting, as a truism, this arbitrary fifty yard maximum!

From a big game handgunner's standpoint, field marksmanship may be defined as "the ability to hit a big game animal in its vitals with the first shot under hunting conditions", with vitals understood to mean the heart/lungs. The definition of field marksmanship is easily given, but it is virtually impossible to cite, categorically, any specific distance as the practical maximum range for big game handgunners. The practical maximum range will not only vary from handgunner to handgunner; it will, due to changes in conditions, often become different (increase/decrease) for the same handgunner. Nonetheless, the degree of proficiency in field marksmanship is the determining factor which limits the maximum range at which the handgunner should shoot big game.

What criteria is to be used in establishing an accuracy standard or minimum degree of acceptable marksmanship? One common suggestion is to use the dimensions of the big game vitals (heart/

lungs), and while this sounds reasonable it contains one serious fault. Using the actual dimensions of the vitals does not provide the handgunner with a margin for shooting error. There are reasons why the handgun hunter may not hit to point of aim; e.g., animal movement at the instant of firing, shooting from an unusual position, or perhaps a physical inability to properly hold, aim and shoot due to some recent strenuous exertion. The responsible handgun hunter realizes this, and takes it into consideration by establishing an accuracy standard about seventy percent the size of the vital area.

The next obligation the handgunner has

is to determine the maximum distance at which he can shoot groups meeting the above accuracy standard. If he was to use the conventional, unsupported, one hand, target shooting stance, the practical maximum distance is likely to be disconcertingly short! So, contrary to the tenets of the traditionalist — who looks aghast at those who would use other than the one-hand, off-hand stance — the dedicated handgun hunter will utilize techniques which appreciably extend his maximum effective range. If any one factor could be considered more important than another in extending the handgunner's effective range, it would probably be the use of some form of two hand hold. Presupposing a modicum of control, an awareness of the importance of correct sight picture, trigger manipulation, and follow-through; most handgunners, developing and practicing a two hand hold, can expect to double and even triple their maximum effective range.

The handgunner, who has doubled or tripled his effective range, is usually able to make a first shot vital hit from sixty to perhaps ninety yards. Some people will doubt this; claiming handgun bullets do not shoot flat enough and/or the usual handgun iron sights subtend to much of the target to allow much success — other than by accident. However, and it seldom fails to surprise the ignorant, the fact is that most handgun bullets will shoot flatter over one hundred yards than will most high power rifle bullets over three hundred yards. Even the 45 ACP, not noted for its long range performance, has a flatter trajectory over one hundred yards



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(6.5") than the 130 grain 270 Winchester has over three hundred yards (8.5").

If the relative performance of a skilled handgunner at one hundred yards and a skilled rifleman at three hundred yards proved to be approximately equal at a shooting range; the odds are in favor of the handgunner doing better under field conditions. There are several reasons for this, and the hunter's range estimate error is probably the most important. Few will dispute that it is easier to estimate shorter distances more accurately than longer distances. Thus, a ten percent range error at one hundred yards for a handgunner is unlikely to adversely affect bullet placement; whereas, a ten percent range error at three hundred yards could result in a rifle bullet being poorly placed or even missing the animal. Also, it should be remembered that very few persons can estimate ranges within ten percent of the actual distance; a fifteen to twenty percent

error is more realistic — especially as the distance increases.

Using the typical one-eighth inch wide front sight found on most handguns, many handgunners are able to shoot four inch groups at fifty yards, and eight to ten inch groups at one hundred yards. Before you consider the one hundred yard groups as excessive, consider the size of an adult mule deer's thorax. When viewed broadside, it will approximate a fourteen by ten inch rectangle. Using the seventy percent accuracy standard, those handgunners shooting eight to ten inch groups at one hundred yards are reasonably certain of making a first shot vital hit close to that distance.

Contrary to what you may hear or read, it is the exceptional rifleman/hunter who can shoot one or two inch groups at one hundred yards with a sporting rifle under field conditions. For each such rifleman/hunter, there are hundreds unable to

shoot better than four or five inch groups and thousands who can not shoot within ten inches. Think about it. How many of your rifleman hunting friends do you know who can shoot even four inch groups at one hundred yards from other than a bench rest or prone?

Remember, mere possession of a tool (in this case a rifle) does not automatically confer skill to its user. A number of riflemen/hunters admit to shooting less than one box of ammunition a year, and when put to the test the vast majority of these persons are unable to hit a deer anywhere. Conversely, most big game handgunners recognize the need for a high degree of field shooting skill, and responsible handgun hunters undertake an appropriate handgun marksmanship program to develop and *maintain* the requisite shooting skill. Thus, the skilled handgun hunter is not as severely handicapped as some would have us believe!



HANDGUN RELIABILITY—II

Let's go back away in time. It's mid-winter of 1950-51, it's bitterly cold, and the place is a rough, snowy dirt road not far from a tiny village called Kagwani, somewhere in Korea. Two jeep loads of Americans, bundled up in parkas, pull up and stop at the entrance to a small draw. It looks like a likely spot for a field artillery battery position, and the young lieutenant battery commander who heads the party signals for a dismounted reconnaissance. Half frozen, bone-weary soldiers, dusty in spite of the blowing snow, climb out of the jeeps and stumble off up the draw.

The lieutenant pauses for a moment to look over the land, then heads for a clump of bushes which looks like it might provide shelter for the battery command

post. Without warning, two quilted North Koreans, surprised taking shelter from the weather, flush out of the bushes rifles in hand. Instinct is a life-saver. Without thinking, the lieutenant finds himself prone, fumbling to draw his .45 . . . it comes out, lines up on a North Korean rifleman and, snap. Nothing. Just at that moment a grease gun opens up behind him. His driver, the only man in the battery authorized a submachinegun, has just looked after his battery commander.

What happened? Congealed oil and grease, stiff from the cold, was found in the firing pin well of his pistol. It offered just enough resistance to keep the pistol from firing! I knew that young lieutenant quite well.

Some months ago, in an earlier column

on this subject, the role ammunition plays in handgun reliability was discussed. Now let's look at the second major element in the "handgun system", the gun itself.

In thinking about how to determine the reliability of the guns I keep handy at home and in the office to meet an emergency I hope may never come, it seems to me that the place to begin is with a very careful physical inspection of the gun. I'm no gunsmith, so in any case of doubt I enlist the services of a good one to help me if anything I see or feel doesn't seem quite right. After being very, very sure that the gun is not loaded, my first step is to cycle the action several times to see how it feels and sounds, and if it seems to be working properly insofar as "dry firing" will reveal. Sometimes this will tell me very quickly if I have a problem; other times it won't tell me a thing. This initial test passed, I organize my search from here on according to the main causes of malfunctions in handguns I have experienced or come upon over the years:

—First, malfunctions occur because some part fails to do its job right. This can be the result of wear, or sometimes a faulty part gets by the inspectors at the factory.

—Another kind of malfunction can happen when a gun gets out of adjustment. Some guns have a tendency to get this way in common use but usually the problem is caused by something the owner has done.

—There are, in rare instances, errors made in the design of guns which can cause failures.

—All too often malfunctions in handguns are caused by the condition of the gun. Dirty or rusty parts, and also excessive lubricant or preservatives, are all enemies of reliability.

—Finally, functional failures can be the result of damage the gun has sustained,

when dropped, for example, or struck against a hard object.

MECHANICAL FAILURES DUE TO FAULTY PARTS

I begin my search by looking for possible faulty parts, and this is no easy task. Here are just a few examples of the things I have seen or been informed of: Pistols of the Browning type have jammed with the slide partly open when the slide latch moved slightly to the left and engaged in the dismounting cut in the slide, after one round had been fired. The slide latch fits into most of the frames of these guns so that it is held at the rear by a small spring loaded pin designed to bring tension upon the latch both in the up and the down positions. This little pin should also secure the latch in the frame and prevent movement to the left and out of the frame. Old Government Model pistols I have seen issued to troops all had a small vertical cut in the face of the slide latch to receive this pin, and they worked very well. Two 1960s vintage .45s I have recently dealt with do not have this cut, and one of them has jammed in the manner described. Smith & Wesson Model 39s and 59s which I have had a chance to look over do not have this little cut either. In some of these guns, the situation is aggravated by provision of a large head for the slide latch pin which protrudes too far through the frame and out the right side of the gun. Holster pressure can cause the slide

a revolver which gave the same problem and the last a small, foreign made revolver in which the chambers had been drilled too short for the cartridge it was supposed to have been made for.

Far more serious in potential consequences, though, were the two instances reported to me in which Smith & Wesson Model 58 .41 Magnum service revolvers were shipped from the plant with .44 Magnum cylinders installed. In both cases, the error was first discovered when a shooter fired his first round through the gun. There was a dramatic case rupture, as you would expect, fortunately no one was hurt and the guns were not reported to have been seriously damaged. It could have been much worse.

Another source of problems is roughness on the face of the revolver back plate which secures the cartridges in the chamber when it is closed. I once owned a beautiful single action revolver which, when brand new, would fire one or two cartridges then freeze up tight. The hammer could not be lifted and the cylinder would not rotate. You had to take the cylinder out to clear it. Finally, one day I found the cause at the range. It had locked up on me when I accidentally struck the muzzle against the shooting bench and the action came free. What was happening was that the second cartridge to the left of the hammer was catching its rim in a small tool mark cut on the face of the back

plate. It only did this under the force of recoil. Smoothing off that cut solved the problem.

Some revolvers are made with separate recoil plates which support the head of the cartridge being fired and through which the firing pin passes. These can sometimes become unscrewed or otherwise



work loose causing the same sort of jam as that my Ruger gave.

By now, I suspect that most pistol owners have been thoroughly brainwashed to "look first at the magazine" whenever anything goes wrong with a pistol. That's a little unfair, but it is true that a lot of pistol problems are magazine related. One of the two original magazines for a brand new Smith & Wesson Model 59 I recently handled at first refused to latch in the pistol; a little patient and gentle persuasion soon solved that problem but it could have been very disconcerting under the right circumstances. A friend on a large



latch to be pressed to the left when this condition exists.

Chamber imperfections can cause failures with any kind of handgun. One of the commercial .45s mentioned above is fitted with a custom barrel having a tight chamber. This gun, after being tightened and having target sights mounted, repeatedly refused to fire more than three or four rounds without jamming with a round half-loaded into the chamber. My country gunsmith friend Haywood Nelms, of Clifton, Virginia, after considerable search and study, diagnosed the trouble as due to a tiny radial tool cut in the top of the chamber. Almost impossible to see with the naked eye, it was nonetheless big enough to catch on the rim of the cases of about every third or fourth cartridge. A little polishing solved that problem. I have seen reports on three other instances of chamber problems, one a Colt .38 Super which refused to extract empties. One was

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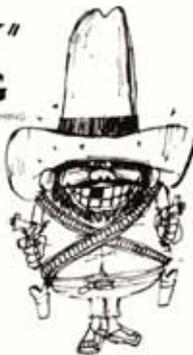
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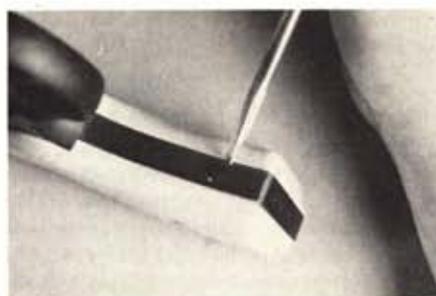
city police force had the magazine release button of a brand new Smith & Wesson Model 39 break off in the middle of a gun fight, locking the empty magazine in the gun. He also reports that a new Model 59 of his refused absolutely to release magazines once inserted; neither the departmental armorer nor the dealer proved able to correct the problem. Enough, though, about magazines; they are a major subject in and of themselves and I hope to deal with them as "associated equipment" in much more depth in the final article in this series which will be devoted to supporting equipment for handguns and its impact upon reliability.

Sometimes there is evidence that less than the best steels may have been used to make certain critical, high wear handgun parts. We see this these days in revolvers which tend to shoot themselves "out of time" with sometime less than a thousand rounds. It can be caused by wear to the cylinder latch cuts, the latch itself, the hand which rotates the cylinder or the ratchet against which it works. It is interesting to note that long before cylinders were heat treated, Smith & Wesson used to insert specially hardened steel liners into the cylinder latch cuts on some of their revolvers! No one has taken that kind of special care in manufacturing in many years.

Sometimes internal flaws in steels manage to get through even the sophisticated forging processes used by the manufacturers. Haywood Nelms reports encountering an instance of a broken hammer pin in a quality American made revolver. Unusual, but it sometimes happens.

MALFUNCTIONS RELATED TO MALADJUSTMENTS

Here, I've found, it's usually the owner who's at fault, and I've been that owner more times than I like to admit. There's an easy mistake overly conscientious Smith & Wesson revolver owners can make—and I have made it—that has to do



with the mainspring. Some owners, when a revolver is to be stored for a while, release the tension on the mainspring by unscrewing the screw which Smith & Wesson uses at the foot of the front strap to establish its tension. This is not necessary since the springs will outlast most owners, and it is important to return them to precisely the setting originally applied at the factory or the action will be heavy and rough at best, and at worst the revolver may refuse to fire.

Gun parts, removed for cleaning, can be left out when the gun is reassembled, or be put in incorrectly. I have seen a soldier put a .45 back together leaving the firing pin out. A friend in another large city police department reports the case of an officer who decided to correct the loose grip on his Smith & Wesson Model 36 "Chief's Special" by installing a washer under it. It worked fine. It also made it impossible to fire the revolver. The officer did not find this out until the next time he was at the police range!

Target shooters sometimes grind down Smith & Wesson mainsprings so as to lighten the action. If done to excess, the heat generated can ruin the spring. If lightened too much, ignition will become uncertain. In similar fashion, some shooters cut coils from the .45 recoil spring when using light, target loads. If this spring is not replaced when hardball loads are again used, the gun can pound itself into poor shape quickly.



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THE COMBAT COURSE

By EVAN P. MARSHALL

COMBAT SHOOTING SHOULD BE SURVIVAL SHOOTING!

The combat match was over and the winner stood there proudly with his highly-modified revolver in one hand and his first place trophy in the other. He was a police officer in his mid-twenties and within two weeks he would be dead.

As I stood outside the church waiting for the funeral procession to start, I asked one of the officers from his department how it had happened. He informed me that the dead officer had responded to a holdup in progress run and had surprised one of the felons at a distance of less than ten feet. Witnesses had stated that while the officer was bringing his weapon to eye level, the holdup man shot him twice with a .45 automatic.

As the widow exited the church with her three young children, the officer turned to me with tears in his eyes and said, "Sarge, all that combat shooting didn't do him a hell of a lot of good, did it?"

It seems to me that the above comment by a grieving police officer has a great deal of validity. Most of the combat matches being run today have little relevance to reality. It seems that double action target shooting would be a more accurate description of such events.

A police officer who shows up at one of these matches with his duty weapon won't have a chance. Expensive, highly-modified K-38s or Colt Pythons are the weapons used, and you can be sure these guns will never see police duty. Mid-range target loads are used, with some competitors using even milder loads at the seven yard line. Holsters and grips bear little if any resemblance to those found at on-duty roll call.

Speed loaders and special loose bullet loops are everywhere, even though such items can't stand the rigors of police duty. All the various stages are shot two-handed, even though such shooting is uncommon in real combat situations. In virtually all of my shoot/don't shoot encounters, I haven't had both hands free.

If combat shooting is to have any relevance to real police situations, some radical changes are going to have to take

place. First of all, all matches should be fired with the actual pistol the officer carries on-duty. Secondly, only full power loads should be used. If the officer carries a .357, he should shoot Magnum loads not .38 Special service ammunition. Holsters, grips, and speed loaders should be those actually suitable for day-to-day police use.

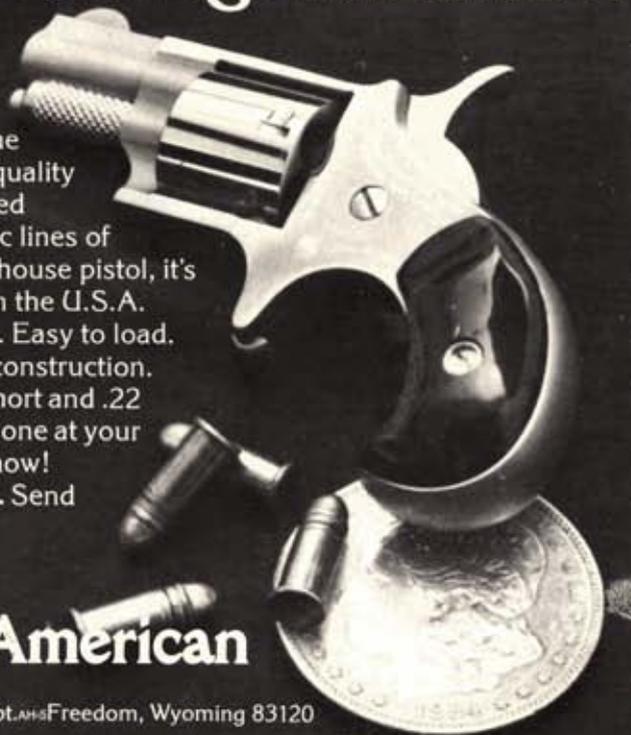
The combat course should not be setup with standard distances and traditional range commands. Competitors should be given hypothetical situations and be forced to choose between innocent bystander targets and those of an armed felon. The match should be started by the officer approaching the targets and them turning or popping up without warning. If range facilities permit, the officer should make use of the scout car. Fake building fronts such as those used by the various Federal agencies could also be employed. Blanks could be used by the range crew to add realism to the course. Each officer's performance should be critiqued and no alibi shots should be allowed. Finally, the course should be changed from time to time so that it cannot be mastered by the majority of the participants.

Obviously, this approach to police training is more trouble and expense than the traditional one, but it will greatly increase the officers chances to survive. After all, shouldn't that be our goal?



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HANDGUNNER LEATHER

By MASSAD F. AYOUB

TESTING A STACK OF PANCAKES

When we were talking to the manufacturers of the holsters you see on these pages, all but one said something like: "You aren't going to call them all pancakes, are you?"

Well . . .

"Pancake" is the name Roy Baker gave to the unique holster that captured America's handgunners by storm in '74. In fact, his is the only one that really is broad and flat enough to resemble a pancake, and he was the first to build a holster on this concept, i.e., a close fitting, high-position rig held tightly in place because the belt goes through slots cut in the wide body of the scabbard.

Are the others copies? John Bianchi, and Richard Gallagher of Jackass Leather, and a Bucheimer-Clark spokesman all say they had their designs on the drawing boards or in prototype before Roy Baker introduced his leather flapjack. But even if this is the case, there is no doubt that it was Baker who paved the way for this type of holster, commercially.

Who buys 'em? Like Roy says in his ads: Everybody. Cops like them because they ride almost as concealably close as an inside-the-belt holster, yet they look nice around the squadroom. A detective spends a lot of time with his gun showing, and a lot of dicks think a gun jammed into the waistband, even if it is wrapped in leather, looks kinda sloppy. Contrary to the Columbo mystique, most plainclothes cops make a point of looking sharp.

Hunters like 'em, cause they ride high and comfortable, offering a quick draw without hanging out where the gun can get scarred up on brush. Many handgunning nimrods are also aware that a lot of people think they look like cowboys when they wander about with big sixguns hanging down their thighs. Shoulder holsters have been the traditional choice of hunters for discreet and protective carry, but lots of gunners find shoulder rigs excruciatingly

uncomfortable. For many, the holster that is generically becoming known as the Pancake is the solution.

Let's look over the different recipes for the Pancakes and their competitors.

ROY BAKER LEATHER GOODS P.O. Box 852, Magnolia, ARK 71753

Roy has the biggest variety, including holsters with belt loops sewn on the outside, and rigs for ultra long barrel sixguns, and for single actions as well as the DA wheelguns and autoloaders that everyone makes 'em for.

Roy's holsters are unique in that they have the patented triple-slot design that gives one the choice of straight up or forward tilt carry under the gunhand, or tilt-less crossdraw.

Roy says the reason nobody else makes this style holster with three belt slots is that his patents forbid it. The opposition says the reason they don't use the third slot is that their market research tells them the overwhelming number of purchasers will carry the piece under their gunhand anyway, and that by eliminating the third slot, they do away with a lot of bulk.

Both sides are right in their own ways. I can't recall ever seeing anybody wearing their Pancake in any position but forward tilt. While I'm usually not partial to cross-draw, I do favor that position when hunting with a long barreled revolver, or when the handgun is a backup to a rifle, since the long-gun's buttstock tends to bang on a strong-side holster when walking.

I can also see crossdraw for social guns, at least in certain weather under certain clothes. One winter several years ago, I almost bought it in a darkened parking lot because my .38 was on my right hip under two buttoned coats. I saw trouble coming soon enough to undo the buttons and throw down on my two assailants in time to prevent bloodshed, but I had learned my lesson, and when I dress against the cold nowadays, a cross-draw rig that I can get at through a buttoned topcoat is part of the ensemble. This winter I'll be wearing a standard Pancake with a .45 auto in it.

That argument about the extra bulk of the triple-shot design is right and wrong. It's right for the other manufacturers, who use standard stiff leather. It's wrong for Roy, because he deliberately uses a softer, more flexible leather that bends around the belt as the holster lies on your hip, and prevents the edges from bulging.

Roy's optional model with the shell loops sewn in is ideal for hunters, though not for lawmen since the rounds will com-



1. Standard Pancake from Roy's. 2. An 8-3/8", 44 Mag in large size Pancake from Roy. 3. Bucheimer "Concealer." 4. S&W Hugger. 5. Haines Hi-Ride. 6. Roy's Pancake with shell loops. 7. The Bianchi Shadow.

bine with the bulk of the gun to cause a distinct under-the-coat bulge.

I'm also partial to Roy's big model for long-tubed hunting handguns. Come deer season, I'll be packing my 8^{3/8}" Model 29 in one. It looks ugly with its five belt slots, but nobody's going to see it under my hunting jacket anyway. Personally, the only position I find comfortable with the long tom version is crossdraw, using only the bottom loops for a semi-shoulder position.

THE BIANCHI SHADOW 100 Calle Cortez, Temecula, CA 92390

John was the first to come out with a holster similar to the Pancake, and it was an instant success. He told me he had experimented with a skeletonized version of this design years ago when he was a cop working leather in his basement; he went to the Shadow design simply because, he said, "I've learned over the years that the fewer gimmicks you have on a holster, the better it works."

The Shadow is a beautiful piece of work. I've got two, a plain one for a 4" Python and a suede-lined job for a .45. The latter is the handsomest holster of its type I've ever seen, with truly first-rate leather and workmanship. As on Roy's, the suede is a worthwhile option, since it protects the finish of the gun. Unfortunately, it also creates a bit of friction that slows the draw slightly. I like lining on my sport holsters, and smooth, naked leather on my police and self-defense scabbards.

THE BUCHEIMER CONCEALER Airport Road, Frederick, MD 21701

Bucheimer is selling these by the boatload. Judging by the workmanship, they're upgrading the basic Bucheimer line closer to the quality they put into the Bucheimer-Clark products, the deluxe line that competes with Hume, Safariland and Bianchi. The holster is open at the bottom, and will therefore accommodate longer barrel guns. Rigid through the body, this is perhaps the fastest holster of its breed.

SMITH & WESSON HUGGER 83 Stevens Street, Springfield, MA 01104

S&W Leather has improved its quality and design enormously since Dan Donahue took over the reins, and the Hugger shows the present attention to workmanship and clean, well-thought-out design. The slots are sharply angled on the Hugger, which looks funny at first, but the holster is cut that way for two reasons. It permits the leather to be trimmed in close to the holster body, making this the most compact and least Pancake-like of its type, and it lies on the belt in such a way as to prevent any holster movement whatever. It is a fact that all of these holsters are unusually free of lateral movement on the belt, in sharp contrast to many other detective-style belt holsters, but the Hugger really does seem to hug 'er the tightest.

HAINES HOLSTER 4 Oakwood Park, Claremont, NH 03743

The latest and lowest priced, this rig bears a marked resemblance to the Bucheimer Concealer. When I mentioned this to distributor Stu Haines, he explained casually, "It should. We copied the Concealer almost exactly. Our approach is to take the best available holster designs and duplicate them at lower retail cost." The leather isn't quite as nice as that on the Concealer, but Stu's holster is every bit the same as far as performance, and sells for a nickle under a sawbuck.

SAFARILAND M-28 1941 Walker Ave., Monrovia, CA 91016

A top quality rig designed to compete more against the Bianchi Shadow than the Pancake, this rig shows the same high-class workmanship and material as the rest of the Safariland line. I suggested to Safariland honcho Neale Perkins that he bring it out with his patented Sight Track for the many who carry custom combat guns with high sights, and for many more who paint their gunsights for better dim-light visibility (regular holsters will quickly rub off that enamel). If he does introduce it, the MH28 "ST" will be a long-sought concealment rig for discriminating pistol-packers.

That's the current crop, guys. By the time you read this, there may be more. Which of those now available is best?

It depends on what you want out of it. I'd say the Bianchi Shadow is the best-quality holster in this category, in terms of both leather and workmanship, with Baker's and Safariland's very close. For maximum speed, I like the Bucheimer Concealer, Stu Haines' unabashed imitation of same, and the S&W Hugger. For all-around versatility whether you carry your gun for sport or serious business, the Pancake is the logical choice, with its optional carry positions and shell loops.

The Bucheimer and Haines holsters kind of tunnel the belt through the back of their loops for a more visually pleasing effect. I prefer the slots, though; for one thing, you can put your belt through backwards of the pictures you see in the ads. That is, the belt goes around the outside of the gun. I find this holds the scabbard much tighter into the hollow of the hip, for greater comfort and concealment. On the Pancake, however, the soft leather may allow the belt to bear too hard on the gun barrel inside, making it bind slightly on the draw. The Hugger is cut in such a way that there will be less bulge if the belt goes behind the gun, the way it's shown in the catalog.

All the manufacturers tell me that their top seller in their Pancake or equivalent lines is the 4" service revolver size. It appears that this style of holster has really caught on with cops, not so much detectives as off-duty harness bulls. It carries a

4" Model 10 or Official Police every bit as discreetly and comfortably as a standard concealment belt scabbard carries a 2" small frame five-shooter. For the price of a holster, the cop saves the price of another gun, and gets the bonus of being able to carry a more accurate, more potent, lighter-kicking weapon which he's had a lot more practice with. It makes him more effective and safe, and he knows it; that's why he and his kind are buying so many Pancakes. Shadows, et al.

The second most popular is for 2-inchers, and a high percentage of those are mid-frame snubbies the size of the 2^{1/2}" Combat Magnum, Python, Dan Wesson, or Ruger. Many lawmen are upgrading to these small .357s for off duty or plain-clothes wear, only to find that they're as hard to conceal as full-size 4" guns.

Third best selling size is combat size autoloaders of Colt, Browning, and S&W persuasion. As we stated, only Baker makes 'em for really big guns, though the Bucheimer Concealer with its open bottom can carry a 6" so long as the sights are ramped to prevent snagging on the draw.

Roy Baker started something big with his pancakes. This new style of handsome, highly concealable holsters is going to be with us for a long time, and may well obsolete some other types of concealment leather for service- and sport-size guns. The inside-the-belt holster remains the most concealable, but does lose a little something in speed to the newer scabbards.

They're all good, with some obviously better for some applications and tastes. I'd be hard put to pick out a favorite. Maybe that's why I've made a point of acquiring one or two of each . . .



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When some sharp soul first sweet talked you into the art of reloading, he probably said, "You'll love it. In addition to saving money, you'll have a ball shooting your own loads. Come to think of it, reloading is a hobby all by itself." True, true, but the sweet talker must have had his mind on reloading for revolvers.

Reloading for automatics is strictly for the birds. Or, so I thought until I discovered a brand new game which I call, "Find The Brass." A case for Ellery Queen (no pun intended)? No, not quite. He's too smart to stoop so low. "Find The Brass" is absolutely fascinating and can offer the pistol shooter limitless hours of fun; that is, if he's dedicated, thorough and utterly insane.

Scoring is much the same as that done on those black & white papers you enjoy drilling at 25 yards or so. A score of 80 is fair, 90 good and anything above 95 qualifies you for a trophy. You'll note I said "qualifies you for a trophy" which is not quite the same as my promise of awarding you one. Well, enough of this frivolity, let's see how this delightful game is played.

First of all, do not, repeat, *do not* use the .45 ACP. Pick a nice, easy-to-lose round such as the 9mm, the .380 or the like. Much more sporting you know. Next, pick a spot whose terrain resembles an admixture of sand, gravel, clay bird frag-

ments and last but not least, thousands of empty .22 shells. Without this final ingredient, "Find The Brass" is too easy and uncommonly high scores can be registered by raw recruits.

In wrapping up the pre-requisites, make certain your pistol is not guilty of discrimination. Any auto that kicks out its empties in a consistent pattern *must* be disqualified. Okay? Now, we're ready to play.

Take careful aim at your regular target making certain that it's adequately backed by a solid hunk of soil. Fun is fun but even in "Find The Brass," we're going to insist upon common sense application of fundamental safety rules.

Squeeze (ha, ha) off 5 shots. Great. At this juncture, you now have a decision to make. You can begin looking for your empties or, to be really sporting, wait until you've burned 50 to 100 rounds before you seek & search. We unabashedly recommend the first alternative.

At times, Satan may tempt you to generate viable means of accelerating the game such as soliciting help from paid employees, volunteers or slaves. To the devil with this concept. Look, bribing small children to find empty cases works about as well as trying to convince a child that the wrapper off a candy bar is as tasty as the candy inside. It just won't work. Nor will the guy with the metal detector join

your efforts. He's got visions of gold nuggets in "them thar hills" and he's not about to waste his time on brass cases. So, that leaves you and me, each to find his own.

What really sends you up the wall is the ton of empty .22 shells. Never mind that they're smaller than your 9's or 380's. With a bright sun bouncing off that brass, you're ready to grab for anything that shines, even shells some other shooter lost while playing our game. But .455 Webleys? Really!

If the above rules have been followed to the letter, then you too can have an enjoyable day such as the one recently encountered by your fearless umpire.

We Southern Californians were coming to the close of a January that even we couldn't believe. Here we were basking in 80 plus temperatures while our friends & relatives in the east, north and mid-west were tunneling their way out of snow banks. If you're conscientious, you face this kind of weather with mixed feelings; you know rain is desperately needed but you rather hope it will fall tomorrow or the next day.

On one of those truly fantastic Sunday mornings, I ventured to a spot hereinafter referred to as the "sandbox." Now, the sandbox is located in a charming canyon area about half an hour away from our densely populated San Fernando section of Los Angeles. Ranges are to be found

within the city limits but my somewhat regimented work week cries out for open country and for "quicke" shoots, the sandbox fills the bill.

My sidearms for this particular morning consisted of a Star BKS, 27 ounces of reliably functioning 9mm automatic intended for defense, plinking and, you guessed it, "Find The Brass." Patterned after John Browning's classic 1911 .45 Colt, the BKS Star is scaled down, has no grip safety and no unnecessary garbage to bite the palm of the hand. The Star's pleasing lines, functional dependability and good feel make it a best buy in my book. I would far prefer having this pistol than a wide variety of other 9's, many of which carry considerably higher price tags. But, the little dude does have its limitations. Trigger pull is a creepy 10 pounds and the slide tolerances are so generous as to make the gun rattle like something out of an occupied crib. Still, the piece was never intended for precision shooting and my nice nest of target revolvers handle the more demanding needs quite well.

When the BKS goes off, it plays no favorites insofar as ejected empties go. With a sense of revenge, the little 9 slams its brass into the shooter's face, head, ear, down a shirt collar or, into some other shooter's face, head, ear or collar! But then, this is what makes "Find the Brass" such great sport.

The sandbox being what it is draws pret-

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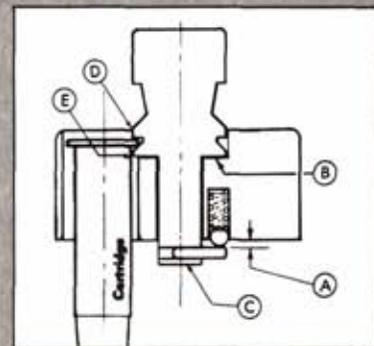
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ty good crowds on any Sunday but the Sunday in question drew an uncommonly high number of cars, vans, campers and trucks of all sorts. Regardless of the vehicle, each had a smiling face behind its steering wheel evidencing satisfaction in the day's shoot or anticipating that which was to come. What was really fun, though, was when one of my hot little empties would fly into the dirt road just to the rear of my shooting stand. About the time I'd make a spectacular dive for it, one of those vehicles with a smiling face behind the wheel would run over the case, grind it deep into the dirt and the driver would holler out, "Hi neighbor. Good shootin!" Well now, how can you possibly get mad at someone such as that? Play "Find The Brass" and you'll soon see!

My score was running about 95 that last time out but in all fairness, it should be pointed out that great care was exerted in the seek & search. Thrifty does not describe yours truly. Frugal does not describe him either. But tight does and I really looked for those empties. Oddly enough, there were occasions when I'd find a miserable 3 out of 5 one time then come up with 7 the next.

As I was down to my last 10 rounds, it was readily apparent "Find The Brass" would soon be over on this made-in-heaven day. Would my 95 score hold out? Just as I was mulling over the odds on such a feat, a very brisk wind came up and I began to think the cases were going right out the barrel. As the echo of the last shot got muffled by the wind, I shed a few tears for those cases, "missing in action" when lo and behold, there they were. Under the blanket, (I cheat) caught on an ear, stuck to my nose or just plain off to my side, the little devils showed up and I rescued all 100 for an Olympian score of record breaking magnitude. And, it didn't take much more than an hour to find them.

By now, you should be thoroughly ecstatic about this new game and be chomping at the bit to try it yourself. Do tell your friends about it as well, but before you let them get started, let me sell them their first couple boxes of ammunition. After all, I've got to get something out of this!



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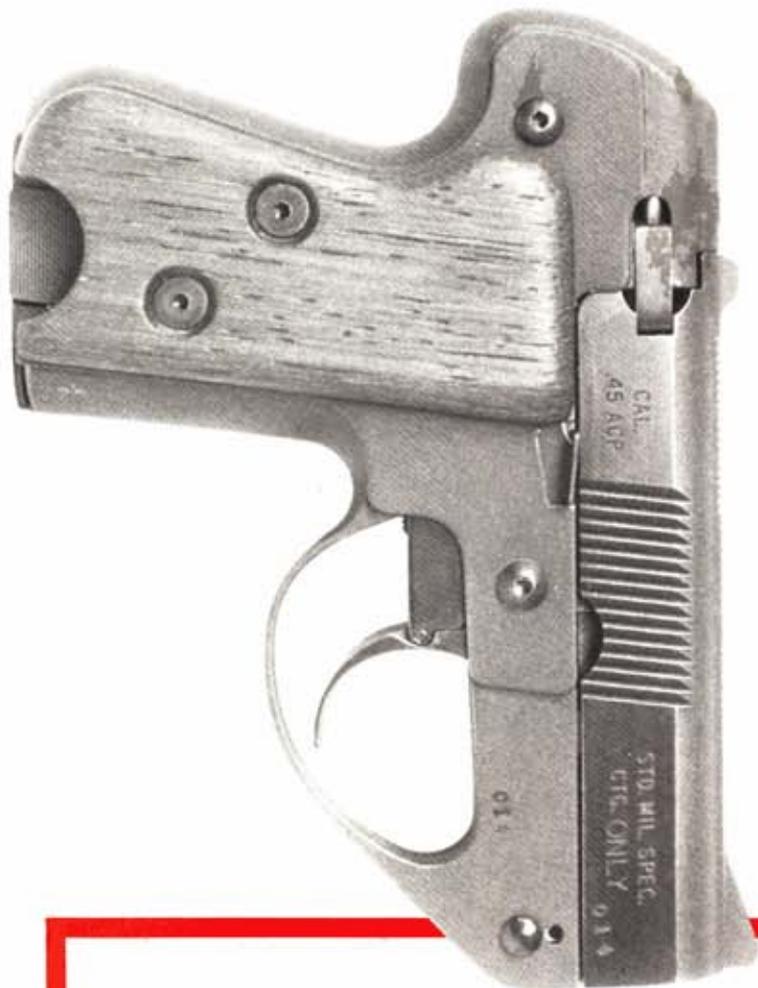
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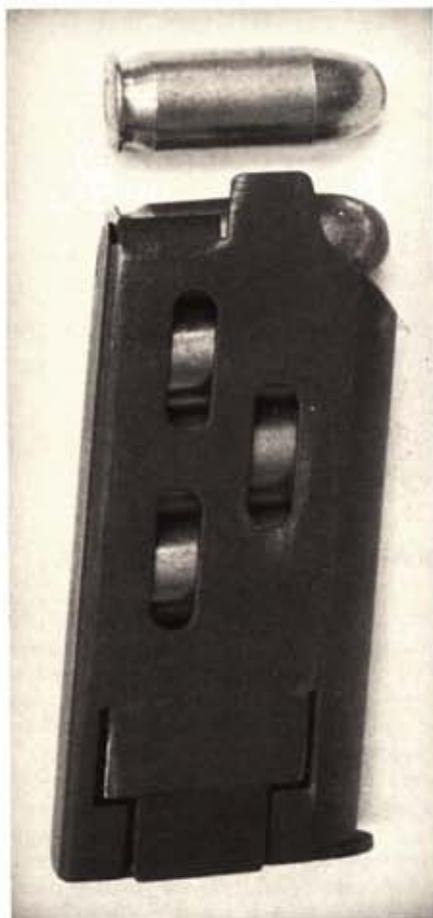
By GEORGE C. NONTE

When I first saw a picture of the Lichtman LM-4 .45 caliber pistol a couple years back, I felt certain it was an autoloader. Well, it wasn't and isn't, but after having examined it in great detail and played with it for a few weeks, I am of the opinion that it *could* be developed into an auto. Perhaps we can look forward to that someday.

A manually-operated, magazine-fed, repeating pistol of large caliber may seem to be an anachronism in these times. I might have thought so before trying out our sample LM-4 (serial number 014) but not now. There is a place in the current scheme of urban combat for the smallest-pack-



Most unusual feature of the LM-4 is the pull-forward barrel and manual repeating operation. Here barrel is shown in its full forward position.



Magazine holds four military ball cartridges. With one in the chamber a total 5-round capacity.

age/biggest-caliber handgun that can be developed, even if speed of sustained fire must be traded away for compactness.

Before condemning out-of-hand the idea, stop and consider for a moment the number of two-shot .38 and larger derringers carried by professional gunmen today. Most of them are of a design more than a century old, though recently manufactured, very difficult to handle, and as slow to get off a second shot as the LM-4. And after the derringer's two shots are gone, the LM-4 can still speak loudly three more times from its cavernous, .45 caliber throat.

Admitting that the LM-4 is bigger and heavier than a .38 or .357 derringer, I believe I'd prefer it to the two-shooters.

The LM-4 was designed purely as a *second* gun for law-enforcement officers, not as a primary weapon. As such, it is intended for maximum concealment and

very rapid emergency use. It meets those requirements admirably for the first shot; only for subsequent shots is it slower than an auto or double-action revolver.

Actually, with practice, its manual operation isn't all that slow. Using both hands as intended, and without interference, it's possible to fire five shots in less than five seconds. Though the gun is not *intended* for one-hand operation after the first shot, it *can* be fired that way nearly as rapidly as with two hands.

Operation is simple, though unorthodox, and it takes a bit of practice to avoid screwing up the detail. With the breech closed squeeze the catch flaps at the butt of the magazine and withdraw it. Load with four .45 ACP ball cartridges and replace in the butt. Now, take the barrel (it looks like an autoloader slide) at the grasping grooves and jerk it smoothly *forward*, against its stop, then snap it *backward* to close the breech. This places the first round in the chamber from the magazine, and it should be replaced.

The gun is fired double-action *only*. Simply grasp it normally and pull the wide trigger back all the way to fire. The reciprocating striker will be forced back, then allowed to run forward under the influence of its spring to fire the cartridge in the chamber.

The breech is locked *only* at the instant of firing; it is "trigger-locked" in that pulling the trigger rotates a locking shaft in front of an abutment on the underside of the barrel, locking it to the frame. When the trigger is released to run forward, it unlocks the barrel which may then be snapped forward and back to reload for a subsequent shot. When not locked (its normal state) the barrel is held

in battery by a simple detent.

When both hands are available, most rapid fire is obtained shooting from the hip, keeping the off hand slightly above and to the rear of the gun; after the shot (and the trigger *must* be released) the hand sweeps down and forward, snapping the barrel forward, then back to reload, the hand coming to rest where it began. This is faster than it seems. If the off hand is disabled or otherwise occupied, release the trigger as the gun rises in recoil, then bring it down sharply, snapping the wrist downward as it passes through horizontal. The momentum given the barrel will cause it to over-ride its detent and run forward, extracting and ejecting the fired case. Then, ramming the muzzle—not too hard—against any solid object slams the barrel back into battery, chambering a cartridge, and a second shot may immediately be fired. If no other object is handy, the muzzle may be rammed against the shooter's own leg—just don't start pulling the trigger until the leg is cleared by the muzzle.

Unusual operation, to be sure, but it makes possible a five-shot .45 pistol of this small size: length 5.160"; height 3.810"; width 1.180"; weight 21 oz. Barrel length is 3.650". Width can be reduced nearly 1/4" by replacing the grips with thin, sheet-steel plates offered separately as a "concealment conversion kit".

Actually, the principle of operation is by no means new. It has been applied to low-power autoloaders in the past and is described as "blow-forward". In an auto, this means the barrel recoils forward, leaving the fired case held against a standing breech to be hurled aside by a moving ejector; then the barrel is driven back by



Yes, she did hit what she was shooting at; she just flinched as gun recoiled. LM-4 lifted four or five inches in recoil.



Here barrel is full forward, fired case in air just above muzzle, and fresh round in position for feeding into chamber on rearward stroke.

its spring, scooping a fresh round from the magazine. The LM-4 works the same way, but manually.

Mechanically, the LM-4 is quite simple. The barrel-cum-slide rides in tracks on the frame and has an integral rearward extension laying alongside the fixed standing breech. A sturdy extractor is fitted to the

breech, which houses a short, reciprocating striker powered by a torsion spring. The trigger is pivoted to the frame and connected to its lower limb is a bar laying in the left side of the frame. The rear of this bar contacts a roller on the side of the striker. A lug on the trigger aligns with a notch in the barrel when the

barrel is in battery. The magazine rides more or less vertically inside the grip.

When the trigger is pulled the bar moves rearward, pushing back the striker to compress its spring. At the proper point, the bar cams off the striker which is driven forward to fire the cartridge. Also, as the trigger rotates rearward, it rotates a segment of the locking pin in front of an abutment on the barrel; at the instant of firing, the mechanism is fully locked, but unlocks when the trigger is released.

Moving the barrel forward leaves the fired case held against the breech by the extractor. A lug on the barrel extension contacts the head of the top cartridge in the magazine, pushing it forward about one inch; a second lug there strikes the head of the fired case just before the barrel reaches the end of its forward stroke, and hurls the case clear.

As the barrel is moved back, a ramp beneath the chamber scoops up the next cartridge, and as barrel movement continues, the cartridge is chambered and pushed under the extractor claw. When the barrel halts against the standing breech, the gun is again ready to fire.

Unless the barrel is fully in battery the gun cannot be fired; the lug on the trigger prevents pulling the trigger until the notch

(Continued on page 70)



Massive extractor hook in right side of standing breech engages case rim securely. Here cartridge is shown almost fully chambered.

Sgt. JIM COLLINS... National Po



By LUCY CHAMBLISS

Your first impression of Jim Collins, the 1976 National Police Combat Champion, is here is a scholarly looking 6'1", 220 pound Alabamian who Coach "Bear" Bryant missed recruiting. If Jim had played football instead of becoming an Alabama State Trooper, the police profession would have lost an outstanding leader.

Why do I call him a leader? Jim's example of accuracy with a handgun and his ability to organize police training leagues is unequalled. If you are a civilian, this is important. That officer on your block may be a better shot now because he's a member of his police combat league, a training aid almost unheard of four years ago.

Shooting has many people who climb to the top of the sport,



Police Combat Champion

become national and international champions while taking everything from the game and returning little. Not Jim, he has become a national champion, both individual and a team member, while masterminding The Police Marksman organization, editing its magazine, and making the Alabama Police Combat League one of the strongest and most imitated in the United States.

In 1973, Alabama, under Jim's leadership became the second state to begin the Governor's Twenty, California was the first. These training leagues conduct combat type competition to select the twenty top police shooters in a state.

Jim and his teammates began their league with 35 members, they now have 350. Florida, Georgia, Tennessee, North Carolina, and South Carolina have since organized their police leagues. Their success has been due partly to Jim's enthusiasm and always making himself available for advice.

Organizing The Police Marksman Association was Jim's next contribution to shooting. He is always looking for something that will bring peace officers together and provide training for them. Jim

modestly says that he only solidified a potential that was already there, but overlooked by the National Rifle Association. "I am proud of the PMA", Jim told me, "We've had over 1,000 members join, in 2 months." Jim quickly points out that his group hopes to enhance the NRA, not compete with it.

This man Collins, is a sergeant and a post commander in Tuscaloosa, Ala., in charge of three counties and has 23 trooper personnel under his supervision. He still finds time to be what everyone in the shooting sports want to imitate, a national champion with a score of 1493 out of a possible 1500!

All of these accomplishments made me feel very lazy, so I interviewed Jim after the national matches in Jackson, Miss., to find out more about this "bionic man".

Q: What is your training schedule Jim?

A: *I go at the whole year from January 1. I'll start jogging 3 days a week; I don't smoke, do "chew" once in a while. If I have time, I'll jog 4 days a week and go to the health spa twice. I lift weights and try to keep good body muscle tone, have to*



With intense concentration of a national champion, Collins waits for targets to be faced. While nowhere in winner's circle of 1975 nationals, Jim's five years of combat competition finally made him best in the States.



Jim uses leaning back position for sitting at 50 yards, and hands wrapped around knee rather than resting elbows on propped up knees. Leaning back appears unbalanced, but brings great scores for many in this 50 yard event.



Jim congratulated by NRA Field Rep Bob Joerg after breaking the record with score of 1497-106X at NRA Regional fired in Tuscaloosa last June.

watch my weight, I love to eat, that's probably my biggest vice. I definitely slack off shooting after the nationals in October, don't even pick up a gun until January, except maybe to go hunting.

Q: What is your combat competition gun?

A: Up until just before this year's nationals, I fired a Smith & Wesson K Model, that Wesley Barksdale, a smallbore shooter put together for me. He put a one turn in 12" twist Douglas Barrel on it, and I did the action myself. I slicked the action up as I began shooting the entire combat course double action. I trimmed the hammer down to take a little weight off it, but I still couldn't get anybody to make the trigger stop into the back of the trigger guard the way I wanted it. So I got a piece of sponge and tape and fixed it myself, the way I wanted it to feel. It was the ugliest gun on the line, but it worked. I've never had a pair of custom grips, I'd prob-

ably start whittling on them as soon as they came. I use the large grips that come with the K model and wrap tape around them to fit my hand.

Q: What gun did you fire in the nationals?

A: I used a gun Ron Powers, of Independence, Mo., made for me, it is everything I wanted, particularly the action. I think he's a fantastic gunsmith. Naturally, winning with it, I'm very happy with it and will probably stay with that gun.

Q: What ammunition do you shoot?

A: I used Winchester Match ammo in the nationals. It's just been in the last couple of years that we've been able to get factory ammo for matches. I have bought a machine rest myself and have done some testing, and I find the reloads don't quite measure up to factory as far as accuracy and reliability go. However, I do see the

quality control slipping in the factory ammo. I think it has been better in the past than it is now, hope they can bring it back under control. For practice, the state allows us about 1500 rounds a month. They issue us the bullets, primers, powder and brass and we load our own. In that respect, I couldn't ask for anything better.

Q: When did you begin shooting?

A: While I was stationed with the army at Ft. Stewart, Ga., I was watching the pistol team practice one day. I've always been an avid gun nut, and a Maj. Lindsey Henderson asked me to try out for the team. I did, and made it—surprised me. I got to make the Florida tour of matches, but I didn't contribute much to the team, my scores weren't all that good. It gave me a good foundation in marksmanship and I learned from being around people who did shoot well. I shot with the team until my discharge in 1962.

When I came out of the service, I went with the state troopers, and we didn't have any kind of shooting program; that shocked me. I tried to shoot some 3-gun aggregates with my used Jim Clark guns,

after I came out of rookie school, but without any support and not making much money, my shooting was curtailed for a long time.

In 1972, our new state trooper director started a marksmanship unit and a pistol team, we naturally decided to shoot the combat course. I think your NRA Combat Regional in Winter Haven in 1973, was the first big match our team traveled to. You know how that turned out, I shot 6 rounds on the wrong target . . . it was a bad feeling, but it seems to happen to everyone once. Anyway, I didn't worry about it after that.

Q: Do you pay your own way to many, or some matches?

A: Our department allows us to go to two out of state matches, at their expense. We usually pick a regional, and of course, the nationals. I paid my way to two more matches last year, one in Nashville and one in California. We're allowed to make all matches in Alabama.

Q: Do you think shooting has helped or hampered your police career?

A: I've done a lot of thinking about that, but I believe shooting has helped my career. I know people better within our department than I would otherwise. If it has hampered my career in any way, I guess it would be because I have devoted more time to shooting than getting promoted. It's been great to me though, and I'm go-

ing to keep shooting. Even if I didn't shoot well, I'd still enjoy going to matches.

Q: Would you like to see cash awards in police matches?

A: No, I'm against that in police matches, these matches are primarily for training. If you want to have a cash Open Match, and it should be just that, open to civilians, police, and military, fine, but it would have to be a different course of fire than anything we now have.

Don't misunderstand me, I would like to see the shooting sports developed like golf or tennis, but I don't think they will be in my lifetime. I will be badly fooled if they are. There have been several good starts at it, such as the Wyoming match where they shoot for money. I do think we should have suitable awards in police matches, particularly team matches, but not money.

Q: If you were designing your own police combat course, what time limits, equipment, etc., would you allow?

A: That's a tough question for me, because here I run into conflict with a lot of police firearms instructors. Some of them knock the competition part of training. I always take issue with them, I say to those who don't shoot competitively, "Come out and try it for yourself." Competitive shooting puts an officer under stress and pressure that I don't think he



50 yard target of 24 shots fired by Collins in national police combat championships with Powers.

gets anywhere else in his training program. Competition creates good fellowship and good relations between departments, it's real. I think we should try to get state laws passed requiring ample, regular firearms training for police officers. As you know, many departments, particularly here in the South, have no firearms training at all.

As for the course, I like the NRA Police Distinguished Course, because you are shooting a standard weapon, factory velocity ammunition that you'd be using when that "moment of truth" jumps up. Some departments are taking rookies to the range and think they are making what I call Ed McGivern experts out of them, with fast draw instinctive stuff their primary concern. I'm not saying this isn't needed, but teach them marksmanship first. Then, for advance training teach them fast draw, quick shoot techniques. With the Distinguished course, you can train more people at one time, you can't teach fast draw to large classes at one time, for safety reasons.

Q: What specific part do you see your organization the PMA and other satellite organizations like the U.S. Womens International Rifle Organization, playing with the NRA?

(Continued on page 68)

Jim's position: two handed grip, head erect, gun at eye level, knuckles of the assisting hand are pushing into the barricade.



Handgun Hunting... Double-Action Style!





By MASSAD F. AYOUB

"That's as good as you'll get!" Hal Swiggett yelled as the three Corsican sheep broke cover and ran.

The Colt Python .357 came into my hand without my having to think about it. As my left hand wrapped around my right, the weaker fingertips already interlocking with the whitening knuckles of the strong, I watched over the front sight waiting for a clear shot at the ram. At last he pulled out ahead of the two ewes who were flanking him, and I held the sight ahead of his barrelling brown chest as I began to roll the trigger back . . .

My good friend Hal Swiggett had suggested some time before that I pay a visit to the famed Y-O Ranch in Texas. "You'll never get handgun hunting like this back East," he'd said. And now I was there, on a side trip to attempt to get my confidence back after a disastrous performance at the \$18,000 purse National Shooters League tourney in Wyoming.

I had shown up on fairly short notice, but Charlie Schreiner III, owner of the Y-O, was able to accommodate me. The fact that it was early September helped. That's the off-season for Texas hunting, 'cause stalking animals across the pastures and prairies during a Lone Star summer literally ain't too cool. But even during the heavy months, Charlie can usually find a slot for you if you give him three weeks or so notice.

On arrival, you're treated to a home-cooked dinner and an evening of relaxed drinking and conversation in the impressive lodge with its trophy-room motif. Then it's to bed in comfortable, Western-decorated cabins, to await a terrific dawn breakfast and a memorable day of hunting. Being a handgunner, I had the good fortune of spending a couple of hours with Charlie and his Colt collection. If you're into collecting at all, you've heard about Charlie and his prime pieces, and a look at them is not to be missed.

The first morning, I filled up on Bobbie the cook's bacon, eggs, and biscuits, and then dragged my equipment together. For a hunter, I looked pathetic. I had packed nothing for the impromptu trip, and the only hardware I had with me was a combat-customized .45 auto, a 6' Dan Wesson Pacesetter .357, and a couple of combat competition holsters.

Since I'm a gun writer, I naturally started thinking quick to find some kind of gimmick to write a story around. Taking game with handguns is nothing new at the Y-O; about three to five per cent of all the guests use belt weapons. Borrow a black powder handgun? Nope: Hal, who has probably shot more game with muzzle loaders than anybody since the days of Jim Bridger, had done it already. The .45 auto? Nope, Hal and others had been there first with that too. Sneak up on some unsuspecting animal and pistol-whip it to death? No way: though many of us Easterners believe that game-ranch shooting is something where they drive you up on top of some half-tame animal so close that the taxidermist has to take the tire tracks off the hide, it really doesn't work that way. There are game ranches in Texas because

only about two per cent of the land in that ostensibly wide-open state is actually free to the public. If you want to hunt Texas, it'll be on somebody's property, and if it isn't yours, you can expect to pay for the privilege. It's fee hunting in the wild, not preserve shooting, and the game is as wild on the Y-O as it is in that 2% of free prairie. It's not for armchair hunters.

Which left me with a good hunt coming up, and something to come up with myself that hadn't been done yet. I got the answer outside the cabin that first morning as we were getting set to go. Hal was toying with my Dan Wesson, and I with the beautiful customizing job that had been done on Hal's Python by Jerry Moran of Clio, Michigan. "What a terrific double action," we said almost simultaneously.

Bing! Light-bulb-over-head! Eureka! "Hal," I asked, "has anybody ever shot game out here, with a handgun, *double action*?"

"Sure, lots of people use double actions."

"No, I mean, shooting a double action, *double action*?" He paused only for a second. "No," he said, and added the logical question, "Why would anyone want to?"

"To score a first," I said, adding quickly, "It makes sense. I do a lot of dou-

ble action shooting in combat competition. The top Masters there are turning to double action shooting at even the long ranges. The theory is that you don't break your hold to cock the piece, and that once you've mastered double action shooting, you can hold and squeeze for closer groups that way."

The theory had, at least, worked for me. Since I had gone to DA-only, my fifty-yard scores had improved noticeably. I personally feel that, at least in target shooting, a slow rolling DA pull, feeding back through the trigger finger into a concentrating mind, allows a shot to break more naturally with the sights where they belong. I had found in bullseye shooting, for instance, that the "roller" trigger of a European .22 like the DES Unique 69, was actually more controllable than the crisp "glass rod" triggers on American pistols, because with the constant rolling motion, you didn't know quite when the firing pin was going to be loosed. This makes it virtually impossible to jerk or heel the gun by anticipating the let-off.

"Double action it is," Hal shrugged, not altogether convinced.

My Dan Wesson was sighted for wadcutters, Hal's Python for a heavier .357 load than the 125-gr. Remington hol-

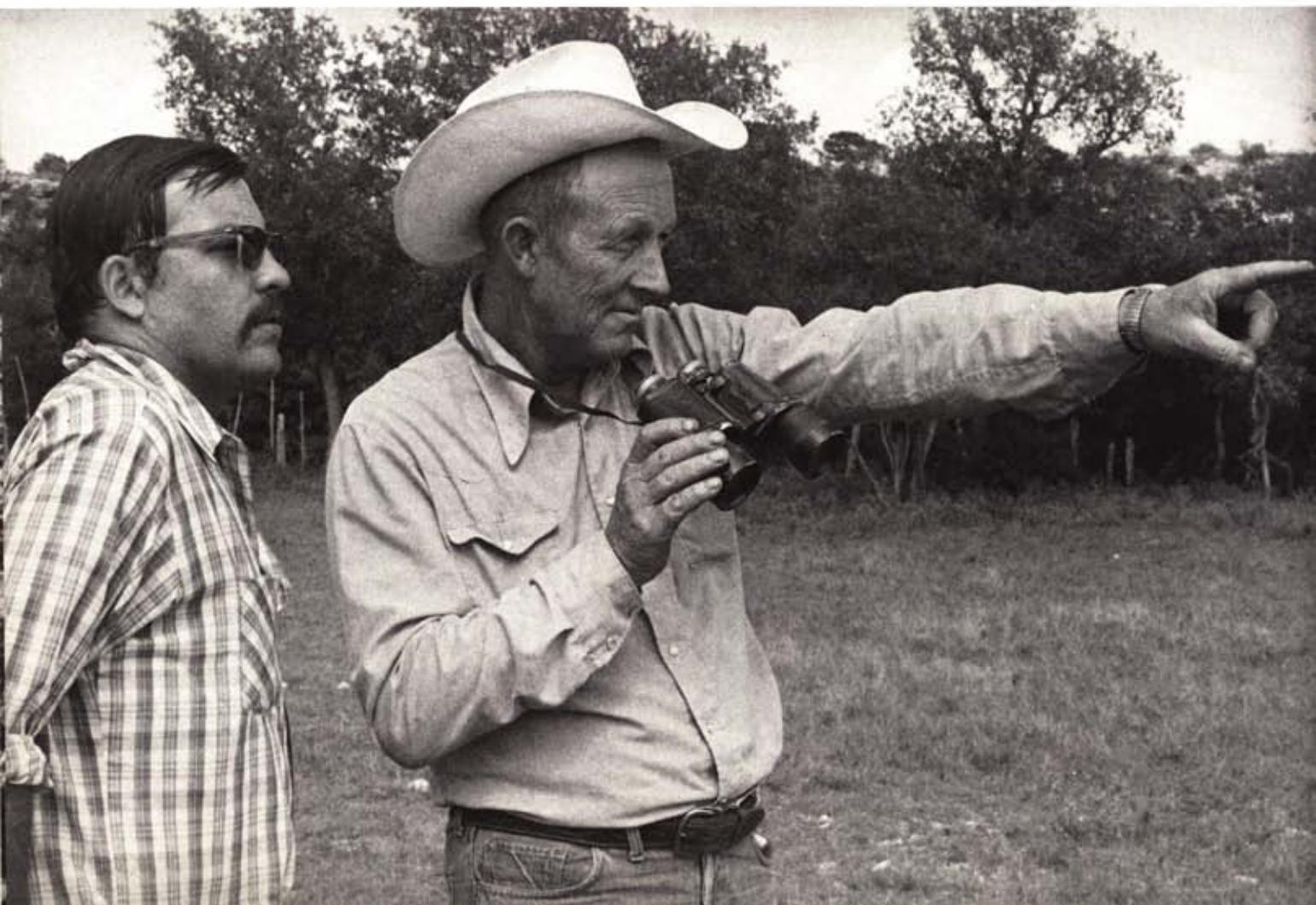
lowpoints we were going to use. We repaired to the very adequate range a short distance from the main house and cabins, and sighted in with the ear-splitting Remingtons. Even through my Clark ear protectors, the blast was fierce. But the accuracy was tremendous, and that was half of what counted: the rest was power, and that would be tested soon enough.

Harvey Goff was the guide who took us out. The Y-O is *big*, some 125,000 acres, and you need a guide partly to give you an idea where the game might be, but mainly so you can find your way back, especially if you're a Yankee who tends to get lost any place where he (a) can't find a street sign on every block, or (b) can't give the camel its head and trust it to find the next oasis.

It was Harvey who spotted the first Corsican rams, the species Charlie had selected as being fast, wary, super-intelligent, and an all-around tough challenge for a wheelgunner. They were travelling thick and close and distant, spooking when the 4WD pickup was still hundreds of yards away, but we were able to see well enough through the binoculars that there wasn't a good set of horns among them.

The hours went by. So did the Corsican sheep. We must have glassed fifty before Harvey lowered his binoculars and pointed to a big, grizzled ram who was busily cutting a couple of ewes away from

Harvey Goff points out distant cluster of Corsican sheep to author. The species is fast, wary, super-intelligent and a tough challenge.





Author used a telephoto lens to photograph ram and his two ewes before the moment of truth. Blur is due to hand-held long lens.

the rest of the sheep.

The horns wouldn't have excited Rowland Ward, but I was happy with them. Even at a distance, you could see that they curved with a full, strong, handsome sweep. That ram was my target.

There were two ways we could have taken it. We could get off now and stalk in on foot before the pickup spooked them, or we could drive in on them and wear them down with artificial horsepower the way so many Easterners picture it happening on game ranches. I *suppose* you could do it that last way. But you'd have to look the Y-O cowboy-guides in the face afterwards.

It was forty-five minutes later, with the sting of the brush still in our eyes and the cramps still in our legs, when we spotted the ram and his two ewes again. They spotted us too. They broke and ran, and I brought up my camera instead of my gun because they were too far and too fast for a clean shot with the latter.

Then it was more slow moving and waiting and scanning the prairie and the trees. Your mind can wander on the Y-O, what with the setting and the exotic game: a visiting African prince told Charlie Schreiner once, "I could close my eyes, turn around, open them again, and think I was home." To my New England eyes, the Texas land looked like the pictures of the African veldt. But the game was Corsican ram, a species no longer hunted in its native habitat, and a flash of brown through the trees caught my eye.

The ram had broken cover and was running flat out, the two females covering his flanks as if instinctively protecting him. "That's the best chance you'll get!" said Hal . . .

. . . I felt the trigger reach its final point, the hand locking the cylinder just as the

hammer dropped, and the crash of the .357 felt like a karate jock's hands clapping over my ears. The ram kept running. I still tracked him in the plastic-insert front, white-outlined rear sights that Jerry had put on Hal's Python, and still holding ahead of the ram's chest, touched another off. Missed again. "You're leading too much!" Hal barked, even as the same realization flashed through my own mind.

The ram turned, quartering away from me, and I held on the front edge of his shoulder, the trigger still rolling. At the third explosion, the big ram jerked violently sideways, and put on the steam as he ran flat out, straight across my line of sight. I jerked the trigger this time, and saw dust kick up between his feet. He skidded to a halt near a cactus patch, and looked at me for an instant as his legs

coiled for the final escape run.

I put the sights on the center of his neck, and made the long squeeze, quick. As the muzzle flipped with the ear-splitting blast, the ram was flung backwards, his feet flying. He lay still with a small cloud of dust settling over him. "That did it," Hal said softly.

I ejected five empties and a live one as my other hand reached for a Griffis Second-Six speedloader and slammed another charge of Magnums into the cylinder as we made our approach. There was no need for a final shot. The last bullet had been a perfect neck shot, the bullet severing the spinal cord and disintegrating in the final fractional inch of the cervical vertebrae. An instant kill.

Instant? I didn't think so. I had fired at the animal five times, and turning it over, saw two more wounds. My third bullet, the one that had made him change course like a squad car banging a U-turn, was a raking shot that had struck him just behind the right rib cage. The slug had destroyed the



Author with Corsican ram shot double-action at 74 yards. Gun is Moran customized Colt Python .357 mag. with Herrett stocks.

right kidney, passed just over the heart, torn a quarter-sized hole in his left lung going in and a bigger one going out, and lodged in the meat of his left shoulder without breaking a rib. The bullet had expanded perfectly. That, too, would have been an adequate kill.

My fourth bullet hadn't hit the ram at all: it had struck a rock between his feet, and shards of flying stone and lead had torn a gaping three-inch wound that had cut his left rear leg to the bone. That explained the spectacular dust-puff on my jerked shot. The first two had been in front of the animal because I had underestimated the velocity of the Remington load, and led him too far.

He was a good trophy. Like I said, he wouldn't have done much for Rowland Ward, because his head was scarred from recent battles with younger rams, and his horns were broomed on the ends from the impact of combat in the wild. That was fine with me. If I want a perfect biological specimen, I'll go to a zoo or a museum. Here was a tough animal, a leader, a veteran of combat with his own kind and of years spent outwitting human hunters. That, to me, made him a hell of a specimen, and a hell of an adversary.

Charlie confirmed Hal's speculation that this was, indeed, the first head of game shot double-action at the Y-O. It was also the farthest anybody had taken running game with a handgun, to either man's recollection: the first bullet had struck the flat-out-running ram at 66 yards, and the shot that killed him where he stopped was fired from a measured 74.

Which was only lukewarm comfort. I had come here to get my shooting confidence back, and had blown three out of



Remington 125-grain jacketed hollowpoint .357 performed superbly on ram. This perfectly mushroomed slug was dug from shoulder after 66 yard shot.

five shots at my quarry. The next time, I vowed, it would be a one-shot kill.

The second target was for food, not wall-mounting. The ram had been six or seven years old, and weighed around a hundred pounds. A ram of that age can be eaten only if you have sawtooth dentures, though barbecuing with the right sauces and the right skill can make it an eating delight for one with an adventurous palate. My host, Charlie Schreiner, didn't trust my gourmet cooking skills (boy, can

he judge people right), and decided that if I was his guest, I should leave with some terrific eatin' meat. "I'll buy that," I agreed cheerfully. "What's the best eatin' meat you got—apart from Bobbie's chicken fried steak, that is?" "A nice, fat, Axis doe," Charlie and Hal replied in unison.

An Axis doe it was. These deer, native to India, grow to the size of a big New Hampshire whitetail or a bit larger, and just as they never lose their spots when they mature, they never lose their baby-soft texture and deliciousness.

They do, however, lose their innocence. An Axis deer is as wary and tough to stalk as a whitetail, or one of the new breed of smartass mule deer. Harvey and Hal and I spent a long, long time scouting untold miles of prairie before we found sign of the big dappled deer. Harvey's binoculars caught dark shapes moving in the yucca trees that lined an arroyo. ("Is that what you call a gulch?" I asked innocently in my New Hampshire accent. "No," Harvey replied patiently in his own Texas drawl, "that's what *you* call a 'gulch'.")

But in any man's language, they were deer. There were does, and a spectacularly handsome buck . . . and fawns. "I'd just as soon you didn't shoot a mother deer," said Harvey.

"Me neither," I agreed. "Big Macs may not taste like venison, but they don't give me guilt pangs, either." I fastened the safety strap on my Bucheimer-Clark hol-

(Continued on page 67)

Author with downed Axis deer, brought down with a Dan Wesson Pacesetter .357 Magnum Caliber.



What's New...

AVAST, THERE!

The Cutlass Pistol was patented by George Elgin on July 5, 1837. Its purpose was to combine the two naval hand-to-hand combat weapons in use at that time—the pistol and the naval cutlass. This would leave one hand free to climb rigging, etc. The U.S. Navy purchased 150 of them for use by boarding crews



and landing parties for the south seas expedition of 1838. It is estimated that 30 to 50 originals have survived in public and private collections, with price ranges from \$8,000 to \$15,000, depending on condition. This limited edition reproduction (500 pieces) is available at \$525.00 postpaid. Write Old Glory, 13 Barrie Road, East Brunswick, New Jersey 08816.

FULL COLOR SPECIAL

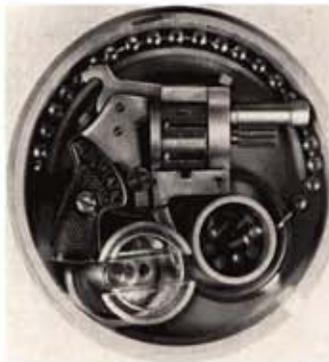
Sterling Arms is now distributing their new full color special Bicentennial edition catalog which gives a complete description and color photograph of all their handguns. Featured



for the first time in this new issue is Sterling's Renaissance Presentation collection of engraved guns. Send 25¢ to Sterling Arms Corporation, 4436 Prospect Street, Gasport, New York 14067.

MINI-HANDGUN JEWELRY

The Xythos Mini-Handgun is the world's smallest automatic revolver. It is both a working six-shooter that fires harmless blanks and a versatile men's and women's jewelry piece. For the man, the Xythos is a key chain or cufflink. For the lady, it becomes a button-holer,



bracelet charm or pendant. Precision built by an Austrian watch manufacturer, the Xythos is 1½ inches long, weighs less than an ounce, and is nickel-plated with black grips. The complete set includes: 1 revolver, 1 key-chain, 1 cufflink, and 1 cylinder cover in a round case. The piece costs \$9.95; one box of ammunition for \$2.20. Contact Horner Madsen Company, Dept. AX-178, 1500 East 79th Street, Minneapolis, Minn. 55420.

A PERFECT FIT

Get a grip on your Thompson-Contender with this new genuine oiled walnut handcrafted replacement stock. Specially designed to reduce recoil when shooting the larger calibers, the stock also improves accuracy with all calibers by providing an excellent fit for two hand shooting. Contoured for maximum com-



fort, it mounts without any modification of the gun. Available for either right or left hand at \$19.50. Write Schiermeier, Box 704, Twin Falls, Idaho 83301.

BOOZE BUDDY

Be a sociable spirit—wear a Prairie Dog buckle and you'll never drink alone. An original design featuring one of our West's first inhabitants, the Prairie Dog is inlaid and finished in antique gold. The buckle itself, finished in antique silver, simulates old western



saloon doors, with mountains, grass and prairie dog hole in raised relief. Made to last a lifetime, only \$5.50 plus 45¢ shipping. Fits all belts ½" to 1¼" wide. Check or money order to Prairie Dog Sales, P.O. Box 494, Bedford Hills, N.Y. 10507.

DRAWING ON HISTORY

The 1861 Navy .36 caliber muzzle loader was the last of a great family of percussion revolvers. It not only played a significant part in the history of firearms design but also blazed a page in the book of American History during the winning of the West and the Indian Wars. The grips are of richly grained walnut. The 7½" barrel is of precision rifle ordnance steel. The gun has an overall length of 13' and weighs about 42 ounces. The metal parts



are completely finished ready for final polish and bluing; the grips just need final sanding. Iver Johnson has taken great care to produce a kit that is practical, requires a minimum amount of tools, yet will allow the amateur or professional to produce a fine quality replica revolver. Write Iver Johnson Arms, Inc., 109 River Street, Fitchburg, Massachusetts 01420.

COMBAT PISTOL GRIPS

New from the Law Enforcement Division of VSI Recreation Products, a unique all A.B.S. constructed Company Pistol Grip (Pro-Grip) that features three finishes. (Walnut, Rosewood and Ebony). This new Pro-Grip offers a right or left hand palm swell and checkering. It is weather proof, abrasive resistant, high-impact resistant and tapered for speed loaders. Available for S&W K-Frame models only at this time. Priced at \$9.95 for plain and \$10.95 for checkering. For further information contact VSI Recreational Products, Law Enforcement Division, 1410 E. Walnut Avenue, Fullerton, California 92631.



SLICK, STAINLESS
STRAIGHT SHOOTIN'
AMT'S HARDBALLER!

By J. D. JONES

Colts M-1911 .45 Auto has proven its reliability and stopping power for 65 years. The .45 Hardballer is a stainless steel copy of the M-1911 .45.

Obviously, the .45 has been tinkered with, accurized and improved over the years. The Hardballer, in addition to its stainless steel construction, incorporates a happy medium of reliability, accuracy and modifications developed in combat competition. It's a far cry from the GI .45 Autos.

Harry Sanford, the man responsible for the Auto Mags and .380 Back Up; after analyzing the market paying particular attention to the trend of individual officers and police departments to discard the .38 Special revolver in favor of the .45 Auto and the obvious advantages and increasing popularity of stainless steel guns decided to make a stainless .45.

Stainless steel is not rustproof. It is highly rust resistant. Stainless steels are available in various chemistries suited to varied purposes. 17-4-PH (precipitation hardness) is a very tough and rust resistant steel. One of its uses is in atomic reactor engines.

The Hardballer's frame and slide are investment cast of 17-4-PH and heat treated. This is a very tough, durable frame and slide.

While the Hardballer is a close enough copy of the Colt to provide parts interchangeability, several important differences do exist both internally and in exterior appearance.

At a glance, the Hardballer appears to be a Colt Gold Cup in stainless. Closer examination reveals several distinct differences. The Hardballer retains the serrated matte rib of the Gold Cup. Its sights, however, end the top end resemblance. The Hardballer's front sight is a sloped square faced combat type that won't drag coming out of a holster. The rear sight is a direct descendent of the Auto Mag rear sight. It's rugged, positive adjustable, black, and gives a sharp sight picture. The contrast between the black rear blade and light gray natural stainless color is readily apparent and extremely compatible. Prior experience with essentially the same sight picture on Auto Mags has proven its versatility in the field under all sorts of light conditions. In my

opinion, it's a hell of a lot better than red plastic front sight inserts under any conditions.

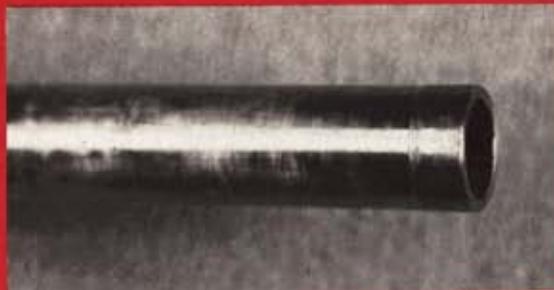
Looking down at the top of the gun, a slot cut through the rear of the barrel hood readily shows if a round is chambered—if it's light enough to see. This "loaded chamber indicator" is of doubtful value to me for that purpose but it is effective as a "gutter" to vent powder, lubricant, and other debris from the face of the breech.

The thumb safety is a fairly wide, long, serrated combat type rig. It isn't wide enough to cause problems in a holster. It is wide enough to be fast and act as a thumb rest while shooting. Particular care is exercised to insure the safety is properly adjusted and operates smoothly and at the proper amount of resistance. If they aren't properly adjusted, they can be practically impossible to disengage with the thumb of the shooting hand. If adjusted to operate without enough tension they can simply fall out of engagement or pop on safe after the gun is fired and the slide returns to battery. I've had all of the above occur in GI or commercial Colts plus a few other malfunctions I haven't mentioned. The grip safety is long enough to prevent pinching the web of the hand by the hammer.

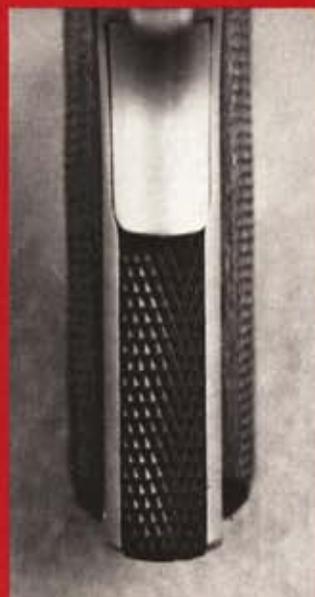
The original mainspring housings are Pachmayr Signature units. Later production will incorporate a stainless housing serrated to match the serrations on the front of the grip-frame. The trigger is wide, skeletonized and incorporates an overtravel adjustment screw—a la Colt Gold Cup.

The bottom of the magazine well is beveled to guide a slightly misdirected magazine into the well. Dimensions of the magazine well are generous to allow easy insertion and free ejection of magazines when the magazine release is depressed. The magazines are of stainless construction and feature a rounded follower and the "new style" feed lips similar to those found on Gold Cup magazines.

One note of caution regarding magazines. Don't trust a new one. It may not feed. It may be oversize and a tight fit in the magazine well. The follower or magazine itself may be off specification enough to allow the follower to slip up over the projection it is supposed to nest against. When this happens, the magazine release must be depressed with one hand and the magazine pulled from the gun with the other. Quite a few of these defec-



The Hardballer is fitted closely, yet not so tight as to cause malfunctions. Good muzzle/slide fitting (top) contribute to the Hardballer's accuracy. Though some throating has already been done, the owner of a new Hardballer will probably want to smooth up the ramp just a bit more (bottom.)



The black anodized aluminum mainspring housing is stippled for a firm hold (left) while the beveled magazine housing (right) aids the shooter in the easy insertion of fresh magazines under stress or combat conditions.

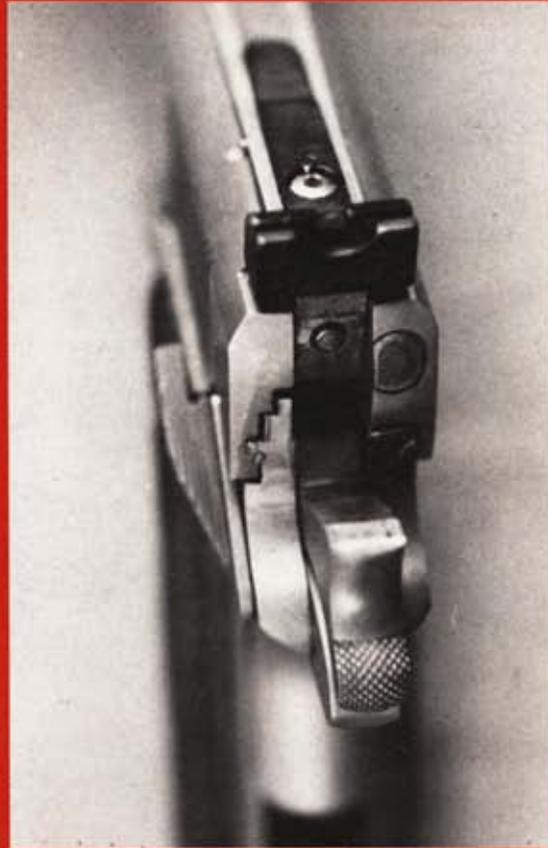


tive magazines seem to be floating around the country. Mine were wrapped in GI wrappings and sealed in plastic. My guess is that they are military rejects. I have a half dozen of them that won't work in any of the three .45s I have. They certainly weren't much of a bargain for three bucks each.

A lot of things can be done to a .45 to accurize it. Probably the most important of all of them is the proper fitting of the muzzle bushing to the barrel. The Hardballer is certainly not fitted as tightly as a custom gunsmith would fit one for maximum accuracy. The Hardballer isn't a custom target grade gun suffering from all the disadvantages of a tightly fitted target gun. There aren't any alibis in a combat situation. The Hardballer is de-

prior to "Behlertizing" was 3.40 inches at 25 yards. Austin ended up doing a combat conversion on it and it's a good one now. His work will stack up with anyone's and his brochure picturing the various conversions and accessories for just about any handgun is an evening's entertainment in itself. He recently patented and is marketing an adjustable rear sight for S&W "K" and "N" frame revolvers that anyone who shoots them seriously should have.

The Hardballer is designed for full power ammo. Individual guns may or may not work with mid range target ammo. The test gun functions flawlessly with Speer 200 grain match ammo but several popular mid range target handloads do not generate



The Hardballer features precise adjustable sights (right) and an extended combat safety (left.)

signed with the police market in mind and reliability is the prime consideration. Overall fitting is certainly not sloppy. It's a happy medium between reliability and accuracy. Particular care is taken in manufacture to insure proper dimensions and polish of the feed ramp in the frame and corresponding area of the rear of chamber. Unless the feed ramp and rear of the barrel are properly proportioned and polished, jams will result with many types of ammunition. Several years ago I bought a Colt Combat Commander that wasn't even reliable with hardball ammo. Austin Behlert of Behlert Custom Guns Inc. (725 Lehigh Ave., Union, N.J. 07083) straightened out that gun for me. In checking my machine rest records, the best 25 yard group it fired

enough recoil to function the gun. Obtaining an extra recoil spring and clipping a few coils off of it should allow it to function with light loads. With full power ammo the Hardballer hasn't jammed in over 1200 rounds without cleaning. About half of the rounds fired were full charge cast bullet loads and about half were at least full charge jacketed bullet loads. Possibly 100 rounds were light loads to check functioning and 4-500 were extremely heavy loads to try to accelerate wear and/or parts breakage. Nothing broke and after cleaning only one part, the flange on the recoil spring guide showed any sign of wear or "battering". Some of the early Hardballers contain Colt internal

(Continued on page 62)



HECKLER & KOCH

DOUBLE ACTION AUTOS

In the following three feature length articles George Nonte takes you inside the complex workings of the H&K line of fine sidearms. You'll explore the powerful P-9S in 9 mm parabellum and .45 ACP, discover the versatility of the HK-4, a multi-purpose autoloader with quick change chambering. Examine the law enforcement potential of the selective fire VP-70 auto/semi-autopistol . . . exciting and informative handgun reading!



**HANDGUN
PROFILE**

*Advanced Features and Innovative use of
Space-Age Materials make the Heckler & Koch
Pistols Frontrunners for Target, Combat,
Hunting and Defense Work.*



HECKLER & KOCH'S

P9-S

AN ADVANCED AUTOLOADER



The demand for large frame, powerfully chambered auto pistols has never been greater. Though many excellent designs exist, there is always room for newer, fresher and more imaginative approaches. The German firm of Heckler and Koch has given us the P-9S in target, service and combat configurations and has chambered them in the world popular 9MM and .45 calibers.

By **GEORGE C. NONTE**

I have an unusual auto pistol on the pegboarded walls of my office; it was obtained in 1970 and bears a W. German proofmark of that year. At the time, I was told that it was one of the very first production examples of the model, and the serial number of 100122 might be interpreted to bear that out; that is, indicating the gun was the 122nd example off the line in a particular number block.

Though nearly a decade old now, this design still represents (in this scribe's considered opinion) the highest level of sophistication in both design and construction yet achieved in a full-power, center-fire, autoloading pistol. I've said that in print before, some years back, and if you read it then you know now that I'm talking about the H&K (Hechler & Koch) P9S pistol.

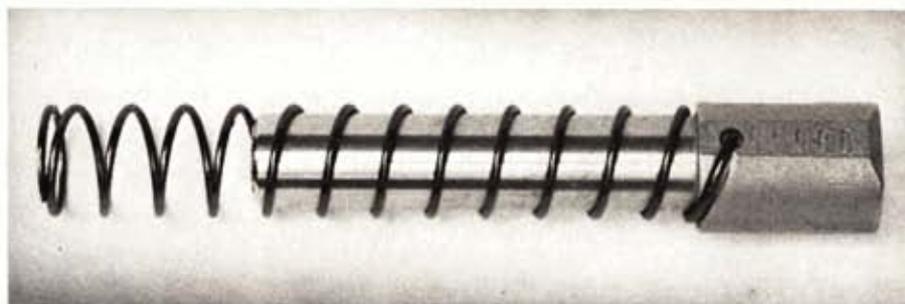
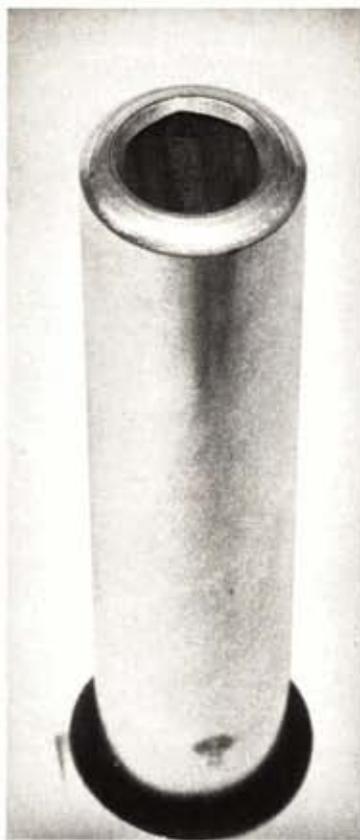
I'm still shooting that original 9mm Parabellum P9S, and in 1970, as a straight, fixed-sight service pistol, it was the only variation available. Since then, a target version has appeared, and just very recently, both service and target versions in .45 ACP caliber. After design, construction and functional details, we'll touch upon those recent additions to the P9S line.

The P9S (9mm) is fairly conventional in appearance, has double-action, first-shot capability, a single-column removable

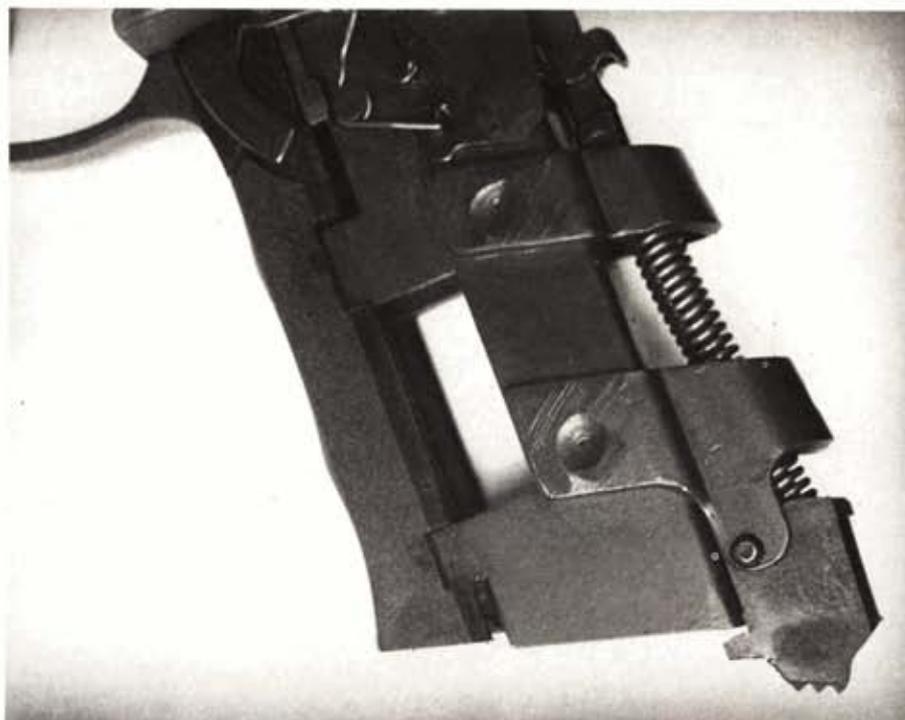


Above, contrary to most safety systems, the P9S is 'safe' when the lever appears as shown. The shooter must sweep the safety down in order to fire. Note protruding cocking indicator. Below, Nonte finds the P9S quite controllable in action.





Above, the P9S barrel and recoil spring. The spring is keyed into place by a recess and groove at the breech end. Left, polygonal rifling does away with sharply cut lands and grooves, maintaining a high standard of accuracy and greatly easing barrel maintenance.



Spot welding of additional stamped parts to the stamped frame is easily shown here. Note that the butt-mounted magazine catch is powered by the mainspring. The catch is one of the many non-critical pieces made of plastic.

box magazine in the butt, a tubular slide with recoil spring encircling the barrel, an enclosed hammer, and a somewhat distinctive silhouette. It weighs 32½ ounces (empty, 36½ ounces fully loaded), and measures 7½ inches long (4⅓-inch barrel), 5¼ inches high, and 1⅓ inches wide. Yet, it is more compact than it appears, and carries and conceals quite well. From there on, though, it is by no means conventional in either design or construction.

Construction first. The basic frame (receiver) is a precision pressing or stamping of sheet steel. Final shape is achieved by several punching, stamping, and folding operations wherein even the slide guide grooves and ribs are precisely formed under very great pressure. The hollow shell thus produced is then fitted with several cast blocks and spacers welded into position to provide rigidity and seats for other parts; even the cartridge feed ramp is a casting welded between the walls of the shell. Other areas of the shell—rear of grip frame in particular—are given rigidity and final form by smaller stamped sections spot-welded in place. Some machining is done after all these sections are permanently affixed to the shell, and this is most obvious at the barrel seat, where a forward-facing transverse undercut is machined in both the shell and the spacer block forming the feed ramp.

Even after all that, the frame does not possess a functional trigger guard, front strap, or back strap. The first two items are formed by a one-piece molding of very tough, black plastic with finely-matted finish. This part extends from the extreme front of the frame down to overlap the lower front edge of the magazine well. At the rear, it is secured by lips that snap over edges of the frame shell (those lips further secured there by the overlapping grip piece) and up front two, slotted-head screws hold it tightly to the frame. The back strap and rear frame closure (above the grip area) are formed by the one-piece, molded plastic grip which slides on from the rear, secured by two horizontal screws turning into arched sections of the frame. The configuration of the two, plastic parts is such that when the gun is held normally for shooting, no metal except the trigger contacts the hand. A considerable boon in cold weather.

The slide is constructed in much the same way; a sheet-metal shell is formed by pressing and stamping. Again, the guide ribs (three short segments on each side) are stamped very accurately inward from the outside, leaving corresponding recesses exposed in the slide walls. Contrary to expectation, the recesses do not appear unattractive; in fact, they break up the otherwise vast, flat, slide sides.

A muzzle bushing (providing also an annular-grooved, recoil-

spring seat) and rear slide closure are welded into the sheet-metal shell.

All of this welding, incidentally, is done and finished in such a manner that the joints are invisible on the external surface of the finished gun. It may also be said truthfully that the use of stamped sheet metal is not obvious until one looks inside the gun.

Internally, the slide contains a separate breech block and bolt head, and a transverse-shafted, manual safety. The block is aligned vertically by ribs stamped into the slide shell, and secured horizontally by the safety shaft, while the head rides on the block. All three of these parts *appear* to be machined entirely from bar stock. Strangely, the fixed, front and rear sights, dovetailed laterally into the top of the slide, are molded from some very sturdy plastic.

There is yet the barrel. Construction is fairly conventional, the barrel assembly consisting of a two-diameter tube strongly pinned into an intricately machined breech piece peculiar to the Vorgrimmler locking system the P9S employs. Rifling is of an unusual, but by no means new, "polygonal" type without sharply defined lands and grooves, and is formed by hammer-forging—a method originally developed in Germany and now widely employed throughout the world.

Construction of internal parts follows the lead of major components. Extensive use is made of stampings and castings, and of weldments of either or both. It should be noted that these parts do not exhibit the flimsiness, rapid wear, and ragged appearance typical of stamped parts in earlier domestic guns. The P9S has passed with distinction many severe military acceptance tests and this alone is ample evidence of the sturdiness of its construction.

So much for construction, which is extremely advanced and should be evaluated on its merits of low weight, cost effectiveness, and great strength and rigidity, rather than in regard to preconceived prejudices against sheet-metal stampings in firearms.

So, let's take a look at the unique design of the P9S. A very important design feature is evident from the construction details. The entire design is integrated with the latest metal-fabrication technology which makes maximum use of a limited amount of material. That same technology is also the most economical for producing large quantities and requires the least amount of strategic materials, machinery, and tools. Any design that meets those parameters (especially in time of peace) is especially noteworthy.

But it's the mechanical nature of the design that is of primary interest to shooters and professional gun-carriers, especially as those features effect handling, safety, reliability, and to lesser degree, accuracy.

The P9S locking system is contained entirely within the slide and is independent of the frame assembly except as it anchors the fixed, non-recoiling barrel. It is often known as the CETME system, though originally developed late in WWII by Vorgrimmler for Mauserwerke. It employs a longitudinally movable bolt head containing two, vertical rollers which are cammed outward into appropriate recesses in the barrel extension, thus lock-

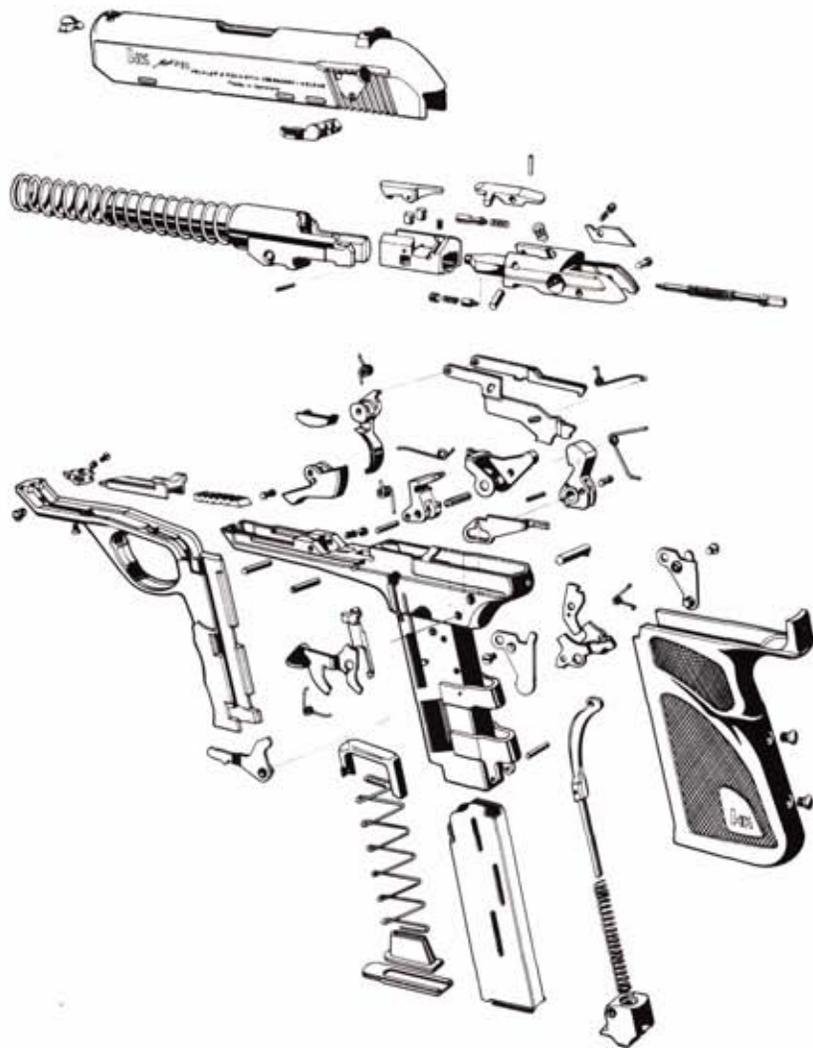
ing bolt head and barrel together, when the slide is fully forward in battery position.

When thus locked, the rollers are supported outward by a uniquely-shaped ramp on the sides of the breech-block extension. This extension enters the bolt head horizontally, which is free to reciprocate on it a short distance. The firing pin passes through this extension, but more on that later.

The barrel is fixed to the frame, with the slide and its parts movable upon both. Barrel and bolt head (through the extension) are locked together by the rollers at the instant of firing. As pressure builds up in the bore, the case head is thrust hard against the bolt face, tending to force the bolt away (rearward) from the barrel; this force acts upon the rollers, causing them to try to roll up the rear edge of their recesses in the barrel extension; they are prevented from doing so by the breech-block extension (locking finger) wedged between them; however, the extension contains carefully shaped ramps and pressure transferred through the rollers to the ramp slowly cams the extension (thus the breech block and slide) rearward while holding the bolt head tightly against the barrel breech; as the tapered extension moves back, it provides clearance for the rollers to come

(Continued on page 64)

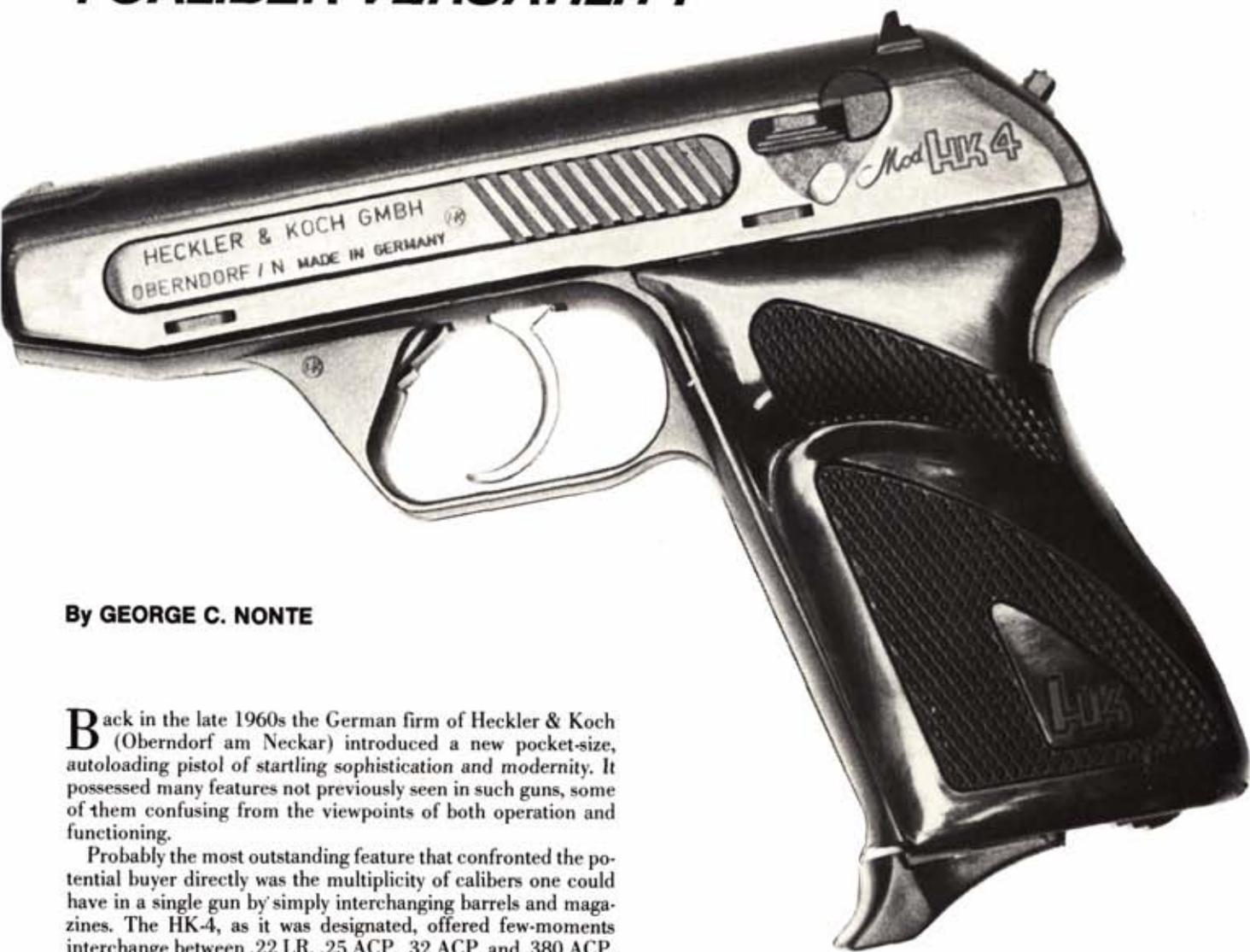
The exploded parts diagram reveals the moderately complex innards of the Heckler and Koch P9S. Note unique frame/grip assembly.



HECKLER & KOCH'S

HK-4

4 CALIBER VERSATILITY



By GEORGE C. NONTE

Back in the late 1960s the German firm of Heckler & Koch (Oberndorf am Neckar) introduced a new pocket-size, autoloading pistol of startling sophistication and modernity. It possessed many features not previously seen in such guns, some of them confusing from the viewpoints of both operation and functioning.

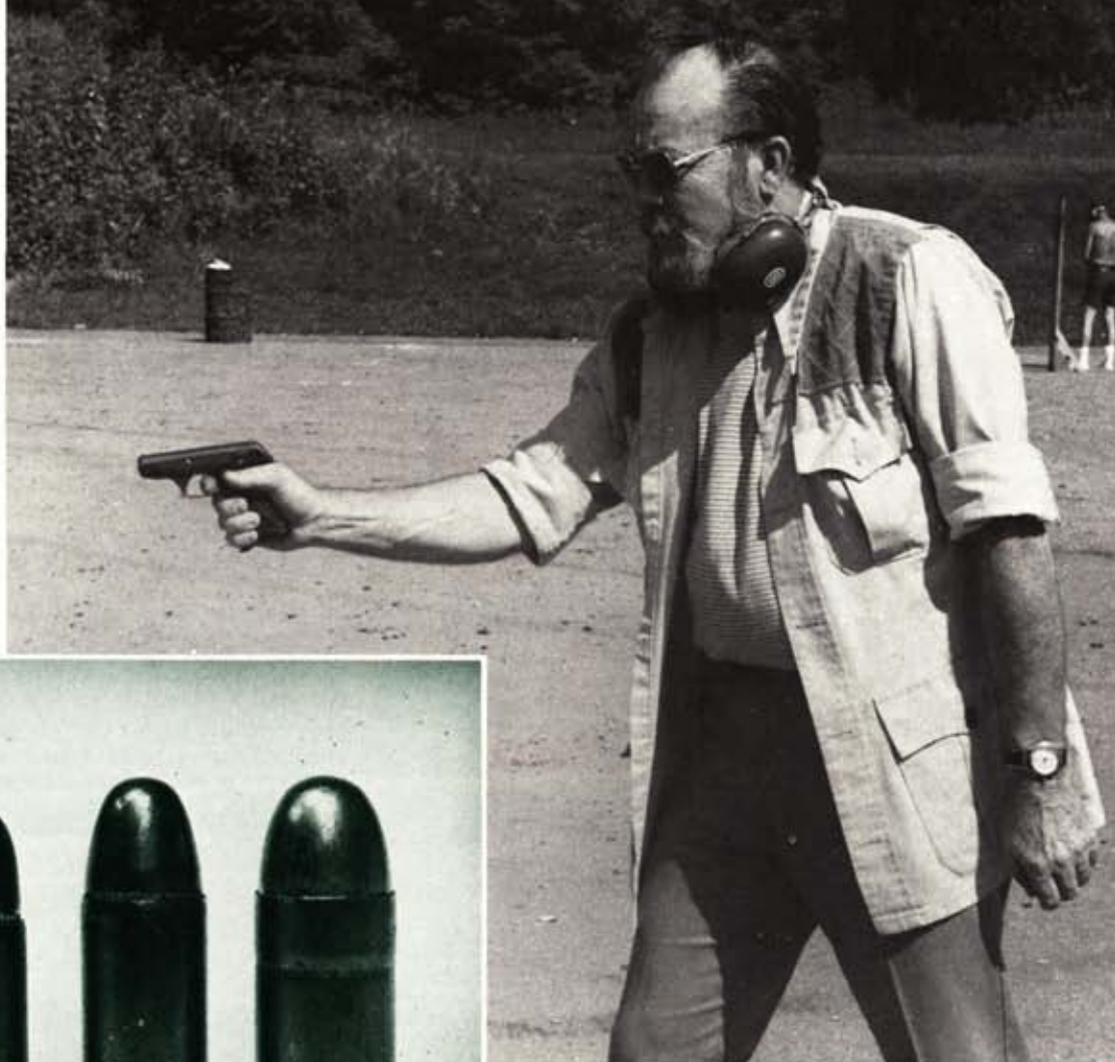
Probably the most outstanding feature that confronted the potential buyer directly was the multiplicity of calibers one could have in a single gun by simply interchanging barrels and magazines. The HK-4, as it was designated, offered few-moments interchange between .22 LR, .25 ACP, .32 ACP, and .380 ACP. Of course, those are U.S. cartridge names, and H&K used the corresponding metric designations of 6.35mm, 7.65mm, and 9mmK for the center-fire numbers.

Initially the HK-4 was sold singly in any one caliber, or as a cased set containing the parts to accommodate all four cartridges. Harrington & Richardson handled distribution at first, but as the restrictions of GCA'68 took hold, and as H&R policies changed, the HK-4 was dropped from the line. Eventually Security Arms Company (933 N. Kenmore St., Suite 218, Arlington, VA. 22201), which was already importing and distributing other H&K products, took over the HK-4 and now distributes it to the trade as the Heckler & Koch Company.

Early HK-4s possessed a very heavy, irregular, and rough double-action pull, but this has since been corrected to a large degree. Our sample gun, and others I've examined show considerable improvement in this area, though still not as nice as some

other designs. This seems odd inasmuch as H&K's big, P9, 9mm pistol has an unusually soft and smooth DA pull.

Early HK-4s contained, in .380 caliber, an unusual feature which I could never understand. The chamber contained longitudinal flutes of sharp-edged, rectangular section. These flutes were deepest in their center, flattening out to nothing at either end. The flutes were clearly imprinted upon fired cases, and some cases would split longitudinally along the flute edges. This was likely an attempt to slow opening of the breech; it probably did, to some extent, but that was not needed in the low-pressure .380 loading. The only result of the flutes was ruining the cases for reloading, and excessive fouling of the chamber when cases split. Presence of the flutes did not interfere with functioning; all such guns I fired were quite reliable.



Inset left are the four cartridges which the HK-4 will accept. Interchangeable barrels and magazines allow the user to choose .22 LR; .25 ACP; .32 ACP or .380 ACP. Above, Nonte shoots the rimfire option.

I don't know just when the flutes were dropped, but they are not present on guns now being offered, and that is as it should be.

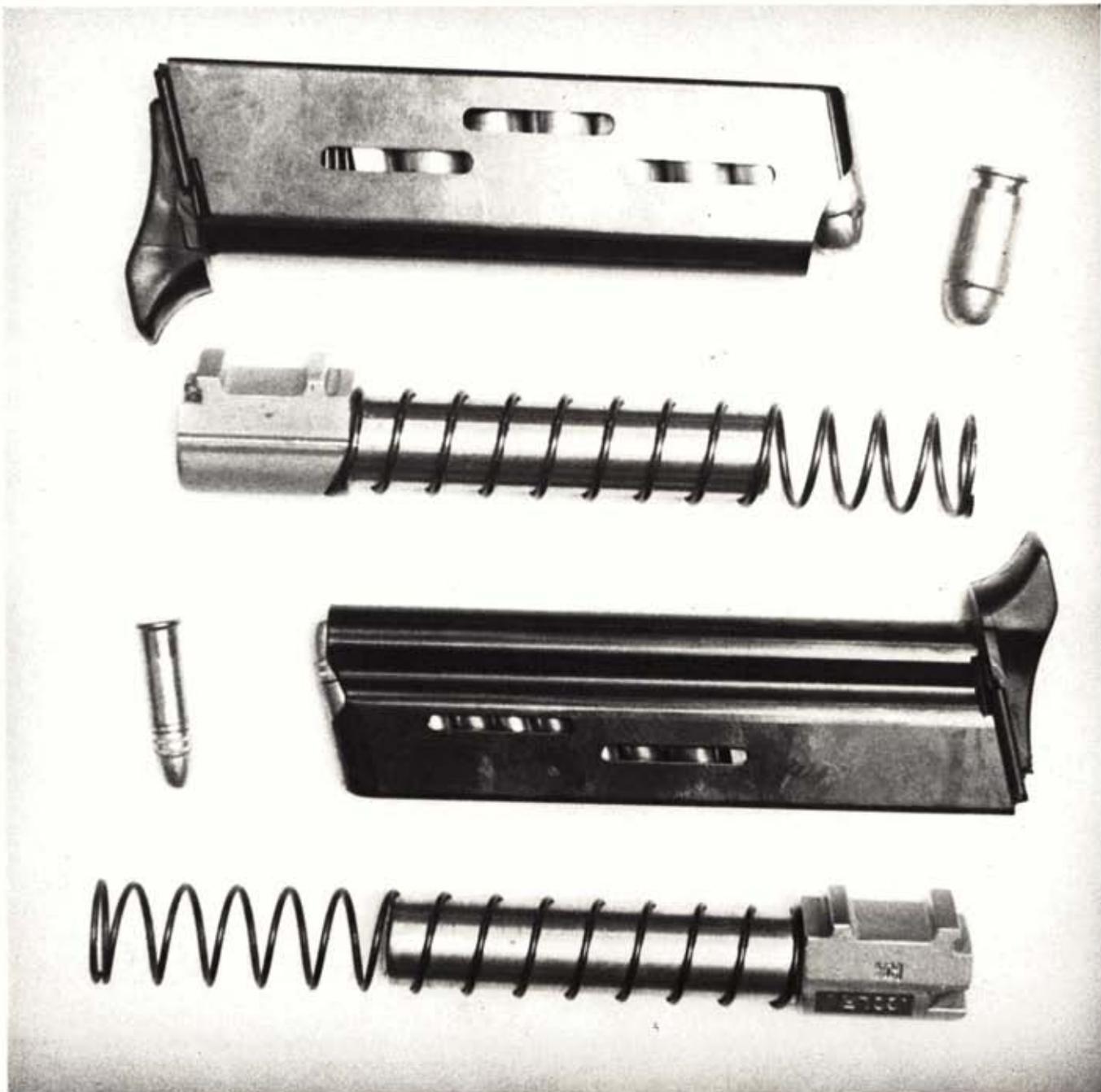
Today's HK-4 looks the same as before. It is best described as a blowback, pocket-size, autoloading pistol of conventional layout, with double-action capability, and incorporating advanced design and manufacturing features. At $6\frac{1}{8}$ inches long, $4\frac{3}{4}$ inches high, $1\frac{1}{4}$ inches wide, and with a $3\frac{3}{8}$ inch barrel, it is compact and easily handled and concealed. It possesses exceedingly few sharp edges and protrusions, so is unlikely to snag on clothing in use.

The HK-4 is unusual in operation. With gun empty and magazine removed, retracting the slide automatically engages the slide stop and the slide is held to the rear. With the magazine out, the slide may be run forward *only* by pulling the trigger; if an *empty* magazine is inserted, the slide will automatically run forward; if a *loaded* magazine is inserted, the slide will also run forward, chambering the first cartridge and leaving the hammer cocked. This will occur regardless of the position of the manual safety. The hammer may then be lowered safely *only* by first engaging the safety and then pulling the trigger; the safety shaft lowers the firing-pin head so it cannot be struck by the hammer. Further, a lug on the pin comes behind a shoulder in the slide so it cannot move forward. Moving the safety to "fire" position

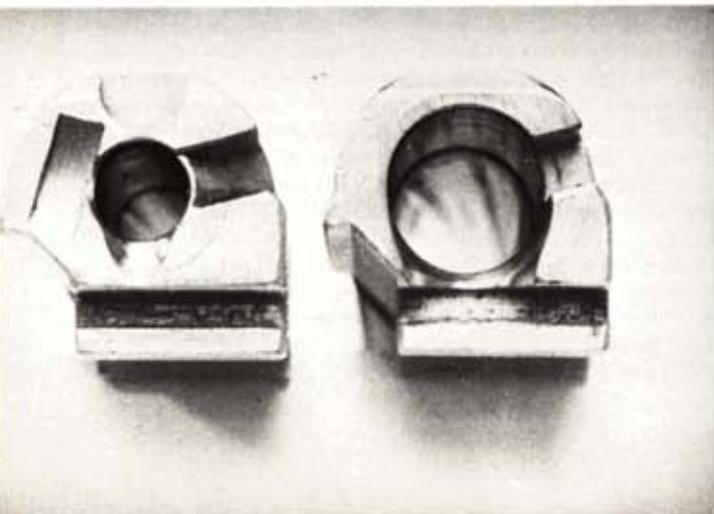
then readies the gun for DA firing of the first shot; leaving it at "safe" prevents both firing and cocking by either DA or SA. This design combination makes it possible to safely carry the HK-4 "cocked and locked," or ready for instant DA use. However, the shape, location, and direction of movement (upward) of the safety combine to make it slow and inconvenient of use when carried cocked and locked. Nevertheless, it is one of the few DA autos which allow this option. There is also a magazine safety or disconnect which prevents firing or cocking when the magazine is withdrawn more than about $\frac{1}{16}$ inch.

This 'slide-forward-when-magazine-seats' feature aids in combat reloading, but the placement of the magazine catch at the rear of the butt makes reloading still a relatively slow process. It requires two hands to remove the empty magazine, rather than one as when the catch is left and rear of the trigger in Colt/Browning fashion. Relocating the catch behind the trigger would make this one of the fastest-reloading auto pistols of all. All of this may sound a bit confusing, but with reasonable practice, operation of the HK-4 becomes as instinctive as that of other pistols.

Aside from the unusual features mentioned, the HK-4 greatly resembles the pre-war Mauser HSc. The barrel/slide unit is almost identical, as is the barrel retaining system. Pressing down on the dismount latch inside the front of the trigger guard draws



Interchangeable barrels, recoil springs and magazines for .22 LR and .380 ACP.



down the wedge-like, locking piece that engages a lug on the underside of the barrel breech. Then with hammer cocked and safety engaged, the barrel-slide unit is moved forward $\frac{1}{16}$ inch or so and lifted right off the frame. The barrel lock prevents forward movement of barrel and slide, while a lip on the barrel breech hooks under a shoulder on the frame to prevent vertical movement.

Once off the frame, the barrel is removed through the open bottom of the slide by pushing it forward to clear the extractor,

The .22 barrel (left) has additional clearance cuts to accommodate the reversed firing pin plate. The .380 ACP barrel is shown on right.

then lifting the breech clear and drawing it out rearward, with its encircling recoil spring. The barrel is conventional, a rifled tube with the enlarged breech formed by a separate piece pressed and brazed in place. Rifling is six, right-hand, wide grooves.

Slide construction is not traditional. To a thin, stamped-steel shell are welded a muzzle piece and a rear closure. A separate cast/machined, breech block is then brazed in place. Slide guide ribs are very short, two front and two rear, and are formed by punching them inward from the shell. This leaves deep, but not unattractive recesses on the outer surface, directly over each rib segment. The slide is numbered to match the frame, on the underside of the muzzle.

The face of the breech block contains the key to simple and reliable conversion from rimfire to center-fire. A separate "face plate" seats in the breech face and is secured from the front by a cap screw threaded into the block. This face plate contains a central firing-pin hole and another located for rimfire use. In addition, one side is recessed to accept .380 and .32 cartridge rims; though oversize, this recess also handles .25 cases quite acceptably. The other side of the plate is properly recessed for the .22 rimfire case head.

Assuming the gun is setup for center-fire, it is converted to rimfire thusly: remove slide and detach barrel; reach through the slide muzzle with a slender screwdriver and turn out the cap screw holding the face plate; press the extractor sideward and drop a piece of wire through the exposed hole; lift the face plate out and reverse it; set the plate back in place, pressing the mobile firing pin upward so it enters the rimfire hole at 12 o'clock in the plate; replace the cap screw, tight, but not too tight; pull the wire and let the extractor snap back in place. Finish the job by installing the .22 LR barrel and magazine and reassembling the gun.

Conversion back to center-fire involves again reversing the face plate and proper location of the firing pin. Conversion between the three CF cartridges requires only substituting the desired barrels and magazines. Dirt simple.

The HK-4 frame is a finish-machined, light-alloy, precision casting. A conventional, pivoted trigger and drawbar pass rearward to connect with the firing mechanism. A lug rising from the drawbar contacts and actuates the slide stop when the trigger is pulled to run the slide forward. At the rear, the drawbar connects to an unusual C-shape, double-leg disconnector which allows firing only when the slide is fully forward and also prevents more than one shot being fired by a single pull of the trigger. The hammer is not quite conventional in shape, and is designed so as to keep the rear of the slide and frame closed to dirt at all times, cocked or fired. A coil mainspring drives the hammer through an S-shape strut, and seats on the rear of the frame beneath the one-piece, slip-on, plastic grip. The frame has no external backstrap, the grip serving this function. An upside-down sear rides ahead of the hammer and its pivot hole is vertically eccentric to allow the hammer to cam it aside in cocking. A fixed ejector sits in a slot in the top of the sear but is pinned to the frame.

The DA firing cycle goes like this: trigger movement pulls the drawbar forward; the bar rotates the disconnector which engages a lug on the foot of the hammer to rotate it toward the cocked position; at the proper point of its travel, the disconnector cams off the hammer, allowing it to be driven forward to strike the firing pin; just before the hammer begins to fall, a lug on the disconnector cams the sear away from the hammer, so the cocking surfaces will not engage and the hammer may fall freely.

As the slide recoils after the shot, it forces the disconnector downward, disengaging it from both hammer and sear; the drawbar moves down likewise; then, as the hammer is rotated by the slide, the sear is free to engage the full-cock notch and hold the hammer; the slide runs forward, to clear the disconnector which is kept from rising by contact with the bottom of the sear; then, when the trigger is released, the disconnector moves clear of the sear and rises; this last movement places a lug of the



Above, with slide retracted, the HK-4 displays its forward guide rails. Another pair of guide rails are located toward the rear of the frame/slide unit. Below, the HK-4's hammer is shown in the fired position. Note the lightening cut in hammer body.



disconnector in position to disengage the sear when the trigger is pulled and allows the next shot to be fired, in SA fashion. Mechanically, the system is simple, but timing and parts tolerances are critical to reliability. Parts appear to be finely made, durable, and long-lived, so reliability is excellent.

The slide stop is a long, complex lever pivoted to the frame near its rear. The very rear engages a shoulder in the slide. The stop will normally engage the slide when the trigger is forward, unless there is a magazine in place containing at least one cartridge. When the trigger is rearward, though, a lug on the drawbar cams the stop aside so it cannot engage the slide. Thus, pulling the trigger disengages the stop, which permits trigger control of slide position and also prevents slide engagement during firing. Then, however, when the last cartridge is fired (or the magazine is empty for any other reason) the stop is forced to engage

(Continued on page 68)



HECKLER & KOCH'S

VP-70

**A D-A ONLY
WEAPON FOR
POLICE**

The VP-70 is caught' in stop-action at the end of a 3 shot full auto burst.

By GEORGE C. NONTE

Several years ago H&K introduced a new and unusual "machine pistol," which is the European designation for what we call a "submachine gun," identified as the VP-70. I shot this gun and found it quite interesting from several points of view.

The VP-70 was (is) a conventional-appearing, 9mm Parabelum pistol, double-action *only*, with an *unlocked* breech and a detachable, plastic shoulder stock which doubled as a belt holster. Most unique was its selective-fire capability; as a pistol, without the stock, it functioned as any autoloading (semi-auto) pistol. However, when the stock was installed, a finger on the stock entered a small hole in the frame and activated a burst-limited, full-automatic mechanism. Then, with the shoulder stock installed, the VP-70 became a full-auto weapon firing at the phenomenal cyclic rate of about *2200 rounds per minute!* However, bursts of fire could not exceed five (or three, optionally) rounds, as the burst-limiting mechanism took effect.

The unusually high cyclic rate sounds as if gun control would be difficult, but that isn't true. The three-to-five round burst limit prevents the excessive cumulative jump and recoil associated

with long bursts; there *is* significant vertical dispersion due to jump, but it is not sufficient to lift bullets of a given burst off a man-size target at normal SMG ranges. It is a most interesting system.

Since then, H&K has developed a pure, autoloading pistol variation of the VP-70. It looks and functions exactly as the machine pistol except that it lacks the stock attachment feature and is made *without* the full-auto and burst-limiting mechanism. Further, to be acceptable to U.S. authorities, it is made internally so that the VP-70 or similar full-auto mechanism cannot—as a practical, economic matter—be installed.

Essentially, the VP-70 pistol shares the sheet-steel design and construction features of the P9S, along with extensive use of high-impact-strength plastics. It is of unlocked-breech (blow-back) type, with quite lightweight recoiling parts, a tubular slide and recoil spring surrounding the barrel. Sights are fixed and of low profile, the striker firing mechanism is enclosed, and the overall finish (plastic grips and guard included) is a fairly rough matte black, with the exception of H&K name plates set into the

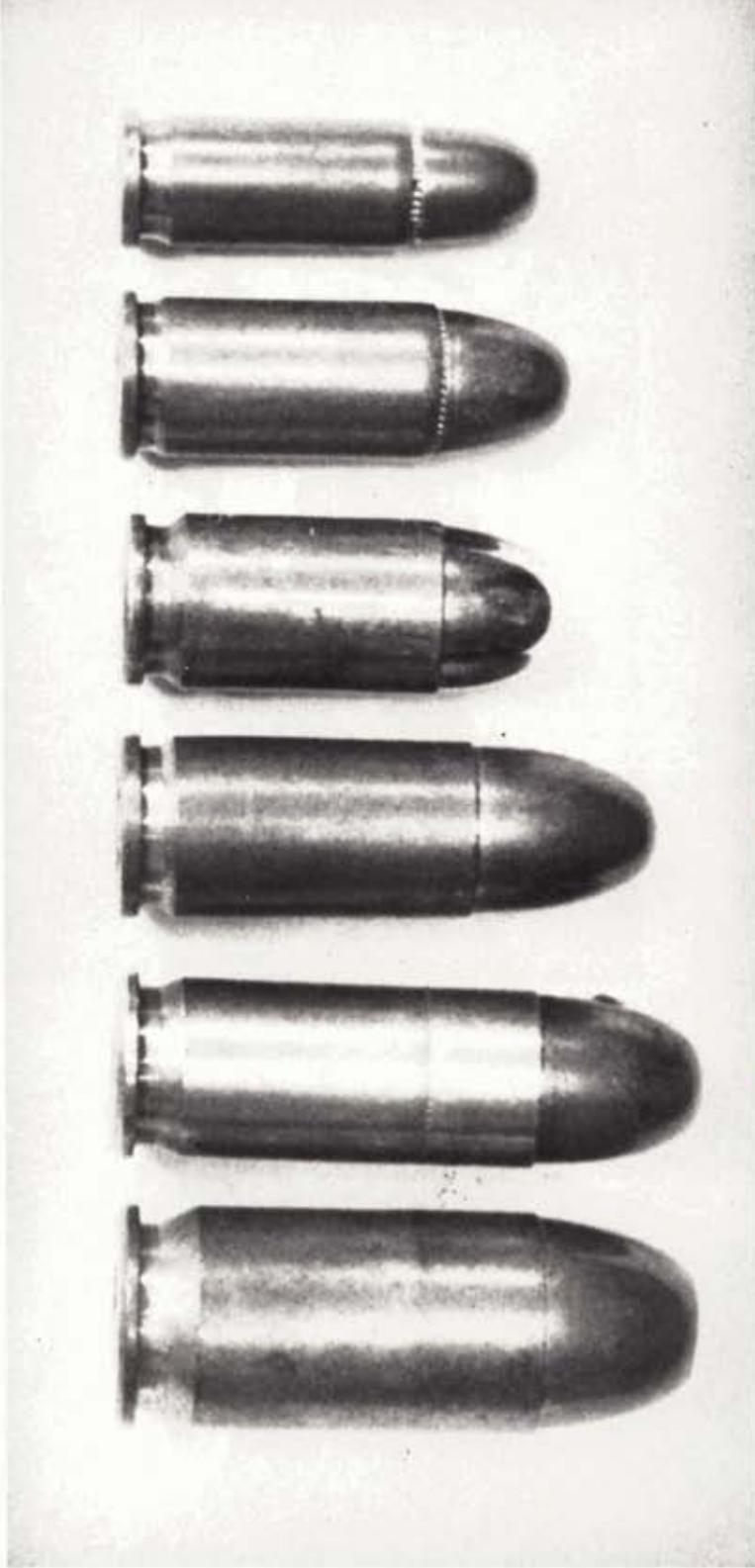
slide walls. The butt contains a conventional sheet-metal box magazine for the 9mm Parabellum cartridge, and is secured by a spring-loaded fore-and-aft catch at the rear. A pushbutton safety, similar to that found on many repeating shotguns, is located low behind the trigger. The dismounting latch is in the frame, above the front of the trigger, and is pulled down to allow slide removal; this catch greatly resembles that of the Astra Constable pistol.

The lockwork and trigger are most unusual in that firing is by double-action only, the striker always returning to the rest position after each shot. There is no provision whatever for deliberate cocked and aimed fire—the only autoloader manufactured in many years with this feature. The trigger proper is *not* pivoted as on all other DA autos; instead, it slides fore-and-aft in Colt/
(Continued on page 69)

The VP-70 proved to be a highly accurate, if somewhat specialized weapon. Below, the shoulder stock holster with mode selector is slipped onto the VP-70.



In its civilian-approved configuration the VP-70 has streamlined, futuristic lines. Its unique double action only firing system is quite functional and dependability has proven to be quite good for Nonte.



The lineup of popular centerfire cartridges for autopistols includes (top to bottom) .25 ACP; .32 ACP; .380 ACP; 9MM Parabellum, .38 Super and the .45 ACP. Nonte considers all of them easy for the reloader to master for economical fun.

Reloading for Autoloaders Simplified!

By GEORGE C. NONTE

I can recall when I first even heard of handloading—and that's a good many years ago—there were people around who denied that it was even possible (maybe they meant *practical*) to handload for autoloading pistols. Some others grudgingly admitted that handloading might work OK for the .45 Auto, but certainly not for smaller calibers.

Of course, died-in-the-wool, experienced handloaders knew better, and so did those shooters who really understood the functioning of autoloading pistols. Today I don't think very many people question the feasibility of handloading the quick-firers. Before the 1950's, though, there weren't any gun magazines except the American Rifleman, and it was available only to NRA members. Those who didn't get the Rifleman simply didn't have any ready sources of reliable information. Misinformation and old wives' tales spread widely under those conditions.

Then, too, more than a few fellows who had re-

FEEDING

loaded for sixguns found that the same techniques, methods, and tools often did not work with autos. That didn't help. Imagine, if you can, a 1920's handloader assembling .45 Auto ammunition with Lesmoke powder, unsized cases, unsized bullets, and a very low-velocity load. Of course, the stuff wouldn't function reliably in an auto; yet, a Colt or S&W wheelgun would gobble up these cartridges without a bobble. Then, not knowing why, our pistolero would simply decide it couldn't be done, complain bitterly to his friends, and the story would grow. It was ever thus, in any field of endeavor.

Today, almost everyone knows that handloading for autoloaders—from the diminutive .25ACP right on up through the .44 Auto-Mag and various .45's—is not only quite practical, but simple, economical, and pleasurable. But, we also know that it is different from loading for sixguns.

The two gun types place different demands upon ammunition, and the revolver is the far more tolerant of the pair. If cartridges will enter a sixgun's chambers, and, if, when fired the bullet is expelled from the muzzle, the revolver will function. Within those parameters, it couldn't care less about pressure, bullet weight or shape, recoil, velocity, or anything else. The shooter's thumb and trigger finger take care of the rest of the functioning details.

The auto is an entirely different breed of feline. It depends first upon a certain *minimum* recoil impulse to provide energy for its functioning. This recoil impulse is dependent upon bullet weight and velocity, and those factors depend upon many other variables that must be controlled to some degree by the handloader. Then, second, the auto depends upon bullet shape and cartridge length for feeding. In addition, dented, dirty, corroded, or sloppily-assembled cartridges that might function in a revolver, will usually not feed or chamber correctly in an auto.

Yet, the basic reloading operations are the same for both types of guns; clean and inspect cases; resize and decap (usually simultaneously); mouth-expand, flare and reprime (also in one operation); charge with powder; seat bullet and crimp case mouth (often simultaneously, but sometimes separately).

Beginning with once-fired cases, let's run through the procedures as they apply

to ammunition for autoloaders, noting the differences from other handguns.

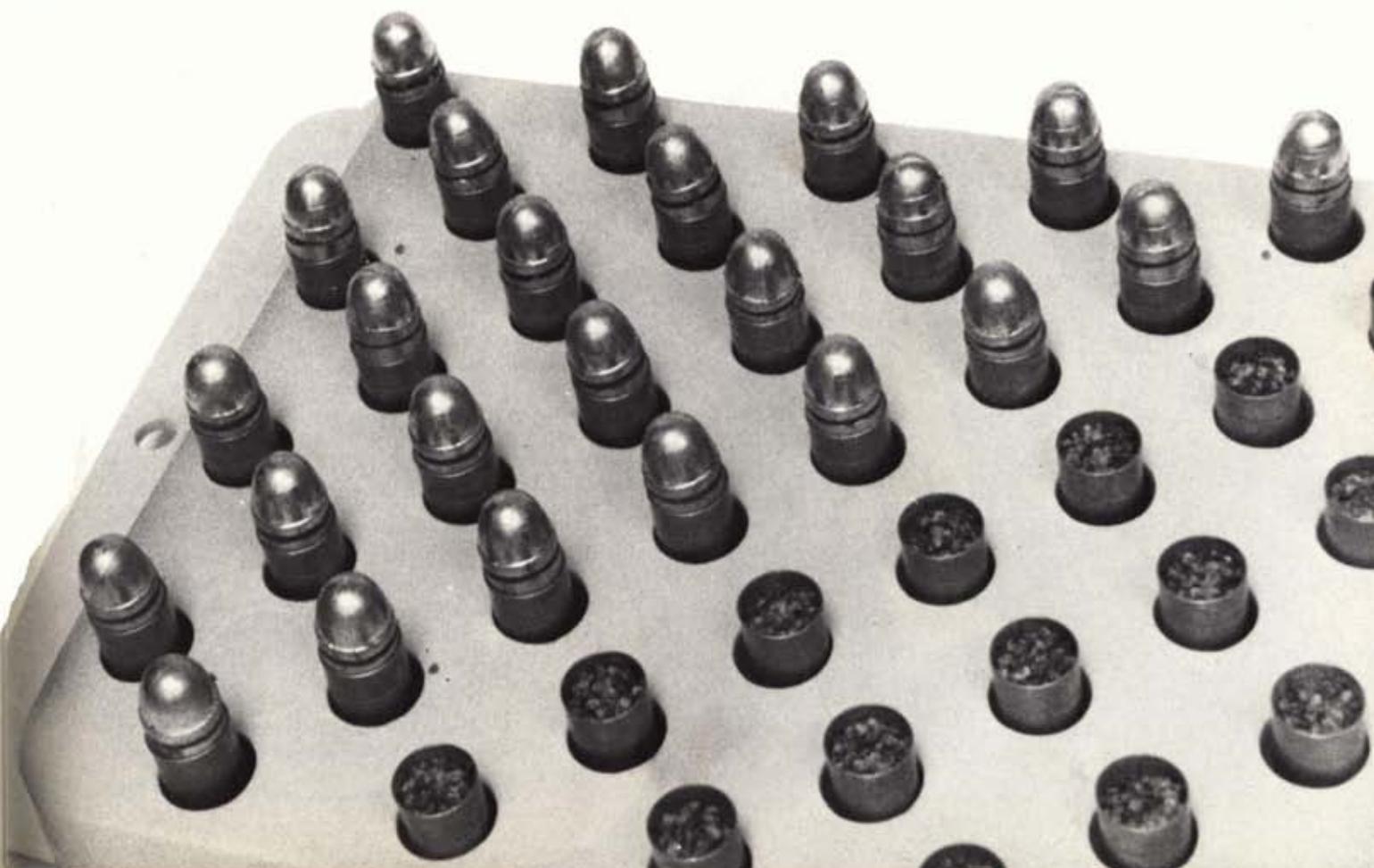
CASE CLEANING AND INSPECTION: Revolvers seldom, if ever, damage cases—but when ejected from an auto, they often bounce off the frame or slide, and are dented in the process. Severe dents in mouth or body are cause to set a case aside, to be salvaged later, if possible. Nearly all autos have a portion of the chamber wall cut away by the feed ramp from 5 to 7 o'clock. Soft cases, high chamber pressures, or an improperly shaped feed ramp—singly or in combination—may cause a case to bulge badly into this unsupported area. If the bulge is more than about .003-.005 inch high, reject the case or reserve it for *lighter* loads. Cases so bulged may look OK after resizing, but are, more often than not, cracked and seriously weakened inside. Much of the fired .45 and 9mm brass seen for sale has been fired in submachine guns, which are notorious for bulging cases badly.

Autos will also sometimes tear or deform case rims, due to violent extraction; a damaged rim may prevent proper feeding and/or chambering, or may cause an extraction or ejection failure on a subsequent firing. You don't want that.

Look also for any of the usual signs of a defective case—primer leak, loose primer, mouth splits, etc.—which are common to both types of guns.

After inspection, clean the cases thoroughly. Autos hurl their fired brass on the ground, so it is invariably gritty and dirty, and that will destroy an ordinary steel resizing die in short order. Best results will be obtained if cases are tumbled in rouge-impregnated, ground nut-hulls or fruit-pits—but, putting them into the tumbling medium dirty just transfers all that grit to the medium. It's much better to rinse them off in hot detergent/water mix first, then rinse them hot, and dry before tumbling. A rotating tumbler such as those sold by J & G Rifle Ranch (Turner, Mon-

THE SELF-STUFFERS



tana) seems to do the best job. After the cases are thoroughly clean and bright, defects are easier to see. You might save inspection until this point, or, simply go over them again.

RESIZING: There are two ways to go here. Ordinary, hardened-steel sizing dies do a fine job with scrupulously clean cases that have been properly lubricated. However, a couple dirty, gritty cases can score the die so all subsequent cases come out scratched or scored. A single unlubricated case can give you fits when it sticks in the die and a half-hour effort is required to remove it.

For these reasons, you'll be better off in the end using a tungsten-carbide die. Its T-C insert ring is too hard to be damaged by grit; and its slick inner surface won't hold a case immovable if not lubricated. The T-C die will cost twice as much, maybe more, than the ordinary kind, but it's virtually impervious to abuse, and won't show any measurable wear, even after handling many hundreds of thousands of cases.

If using a steel die, lubricate cases by hand-tumbling them in a large, long-

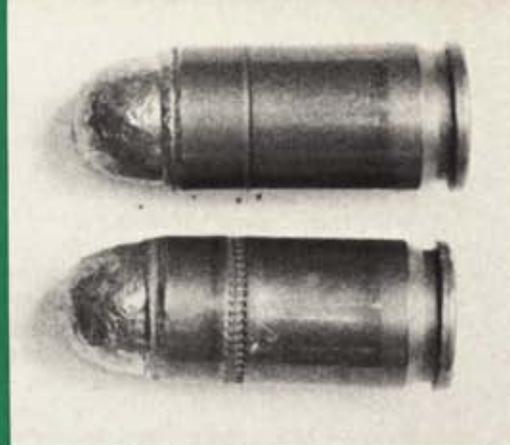
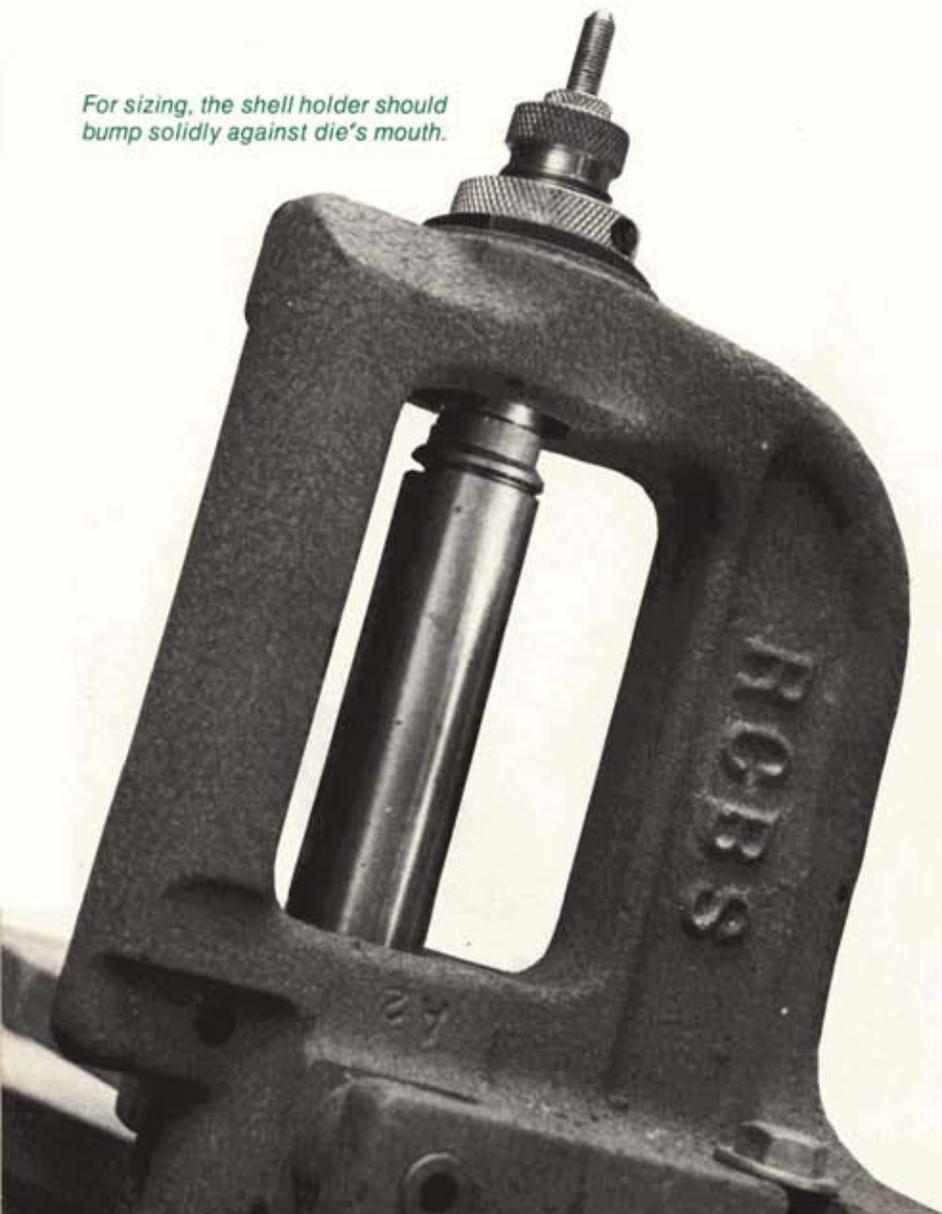
napped towel moistened with resizing lubricant or Andy Granatelli's STP auto engine-oil additive. STP is cheaper and usually easier to find. If using a T-C die, forget the lubrication unless you just *want* to get your fingers greasy.

Adjust the die so the shell-holder head bumps solidly against its mouth at the top of the ram stroke. Adjust the decapping stem so the pin protrudes through the flash hole just far enough to positively eject every primer. About $\frac{1}{8}$ inch beyond the case head seems to be enough. Make damn sure the stem is *straight*, that it's tightly secured by its lock nut, and that the decapping pin enters the flash hole without gouging the case head.

Before starting, make certain the shell-holder head is clean and unburied, so case rims will enter it fully, and also so it seats fully in the ram. If the holder doesn't align concentrically with the die cavity, you'll have problems.

Resize and decap all cases. The more you can do in one batch, the less time you'll have invested, per round, in each completed batch of handloads; this applies to *all* operations.

For sizing, the shell holder should bump solidly against die's mouth.



The load on the bottom has a bulge at the cannellure caused by too deep of a bullet seat. The top is perfect.

If done in a plain-steel die, the resized cases will be greasy and slippery. This makes later handling messy and difficult—but more important, it can result in primer or powder contamination, which might eventually cause misfires. It's best to remove the lube traces before proceeding. A hot detergent wash will do the job, but drying *thoroughly* before repriming can be a problem. I prefer to tumble them again perhaps, *moistening* (not wetting) the tumbling agent very *slightly* with a non-flammable solvent.

The cases come out of the tumbler dry and ready for priming—but, better yet, the tumbling cleans the primer pockets. Most people don't feel pocket-cleaning is worthwhile, but when you get it as a bonus, without extra time or effort, it certainly shouldn't be ignored. As an alternative, remove lubricant by hand-tumbling cases in a towel moistened with solvent. They'll be dry and grease-free quickly.

Though not really necessary, you might want to check case length of .380, 9mm, and .45 brass to insure consistent head-spacing. Use a case gauge or the pistol chamber for this.

PRIMING: This is next, and can be done on the loading press at the same time as mouth expansion. That is satisfactory, even traditional, and certainly the fastest method. However, I find more uniform primer-seating is obtained when the job is done separately on a bench-type priming tool. If one uses the new, semi-automatic, RCBS tool, very little extra time is required. It's easy to prime nearly 1000 cases in an hour. *Feel* primers to the bottom of the pocket, without deforming the cup. If a primer is deformed, its ignition characteristics are altered, so punch it out (*carefully!* I once blew a hole an inch deep in a table top by being careless in this operation) and reprime the case.

If repriming on the loading press, be even more careful—the greater leverage makes it awfully easy to mess up a primer.



Factory cannelure (top) and homemade cannelure (bottom) are the best way to keep bullets from receding into the cases.



Case damage due to excessive pressure is reflected by the broken rim & blown primer cup seen here.



Typical case mouth and body damage as caused by the rough firing and ejection patterns of certain number of the autoloaders.

Also, the design of most swinging-arm priming setups makes it pretty easy to seat a primer cocked, or to peel one edge of it on the case head.

MOUTH EXPANSION: Up to now, what we've covered applies equally to cases intended for revolvers and autos. Mouth (neck, to some) expansion really should be done differently for autos. During feeding, the bullet strikes *hard* against the feed ramp (sometimes *also* against the barrel tang or chamber wall) and can be driven deeper into the case. This may also occur in the magazine due to recoil forces. From either cause, a receded bullet causes feeding problems and may be very inaccurate.

To insure bullet stability, the case mouth should first be *very* tight upon the bullet; second, expansion should extend into the case only a little bit less, say $\frac{1}{32}$ -inch less, than the depth to which the bullet will be seated. This leaves a shallow internal shoulder in the case, which supports the bullet against recession. By stopping mouth expansion just a bit short of seating depth, the bullet base does the final forming of the shoulder as it is seated; thus the bullet is *certain* to be solidly against said shoulder.

To accomplish this, most expander plugs must be altered. To do this, first run a plug into a case until its conical portion produces the correct amount of mouth flare. This is the amount of flare required to allow a bullet to just barely be finger-started in the case. If a square-base bullet enters more than about $\frac{1}{32}$ -inch, the mouth is flared more than necessary. Next, measure down from the case mouth the distance the bullet will be seated into the case, less $\frac{1}{32}$ -inch. Below this point, reduce plug diameter enough so that it doesn't touch the inside of the case. Join the reduced portion to rest by roughly a 45-degree angle. This is best accomplished on a lathe with a toolpost grinder, but you *can* do it, albeit laboriously, by hand, with abrasive cloth and stones.

Note that to do this right, an altered expander plug is suitable for *only one* bullet-seating depth. This means, that to some extent, you'll need to prepare different expander plugs for different bullets. The plugs will never wear out—as a practical matter—though, so it's worth the effort.

Expander-plug diameter (working portion) is also important. For hard lead bullets, it should be (in my experience) about .003-.004 inch less than bullet diameter; for jacketed bullets it can be up to .006-inch less, the more the better, so long as the force needed to seat the bullet does not damage the bullet nose or change its shape. Remember the object of all this is to give the case as tight a grip as possible on the bullet. This is not only a key to reliable feeding, but heavy, consistent, bullet-pull improves ignition and combustion of the propellant, and, consequently, will give better accuracy. Greater velocity, also, other factors being equal. You may encounter an occasional batch of brass with unusually thin mouth walls. After resizing, the inside diameter of the mouth may be greater than the diameter of the expander plug. Unless re-sized in under-size dies (available from RCBS), such cases *can't* hold bullets tightly enough. However, assuming they are tight enough to keep the bullet in place during normal handling, they can be modified to prevent bullet recession. This consists of rolling a cannelure into the case to support the bullet base. Both C-H and Corbin make excellent canneluring tools I've used for years. Just don't overdo it and make the cannelure too deep; about .005-inch protrusion inside the case is plenty. More merely weakens the case. Adjust cannelure location so that the bullet base is forced tightly against the internal shoulder

in seating—but make sure this doesn't form a bulge on the outside that will interfere with chambering.

Note we've said nothing about deburring the case mouth. At the risk of being burned at the stake for heresy, I submit that when cases are correctly flared and expanded, deburring serves no useful purpose; but it does weaken the mouth and makes development of mouth splits and cracks more likely. Supposedly, deburring the inside prevents shaving bullets during seating; flaring serves the same purpose



The C-H canneluring tool is easy to operate, and certainly works well.



These examples of feed ramp bulge are usually severe. Such cases are weakened and should be discarded.

Powder charges may be easily checked by the eye when they are lined up in 50-round loading blocks.

better, so why deburr? I haven't deburred a case for an autoloader in years.

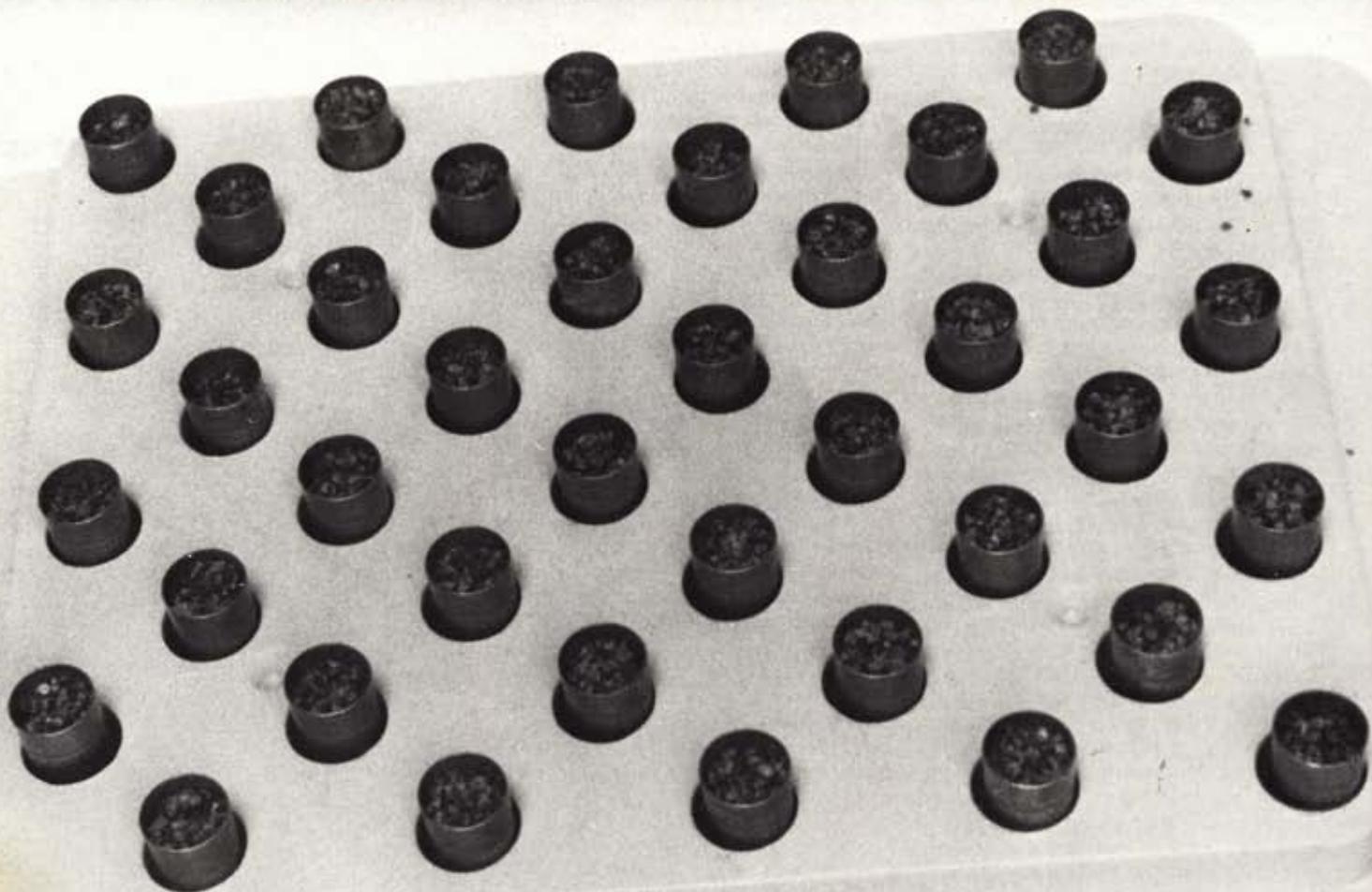
POWDER CHARGE: Autoloader cases have all been developed for smokeless powder, thus have (generally) far less volume for their caliber than revolver cases dating from the black-powder era. Thus, the auto cases are loaded to higher density and make more efficient use of less powder. Compare typical 9mm Parabellum and .38 Special loads: The .38 uses 7.1 grains of Hercules Unique to drive a 115-grain bullet at 1140 fps; the 9mm uses 6.0 grains of the same powder to drive the same bullet at 1140 fps at considerably higher pressures (CUP). The .38 was designed for black powder, the 9mm for smokeless; the latter uses powder more efficiently at higher pressures. As a practical matter, one needs only a single powder for *all* autoloader cartridges, except the bottom and top numbers—the .25 ACP and .44 Auto-Mag. The .32 ACP, .380 ACP, 9mm Parabellum, .38 Super Auto, and .45 ACP may be loaded to both high and low velocity levels quite efficiently with Unique. Bullseye is a bit more economical—by 15-25%—but generally produces higher pressures for a given velocity level, and is not entirely satisfactory

for top loads in the 9mm and larger cases.

Little can be said about charging cases with powder. It must be done carefully and accurately. I prefer to work with 50-hole loading blocks, using an old Pacific "Pistol Measure" with its interchangeable, fixed-charge drum, which cannot vary and never needs adjustment. Just install the drum for the charge desired and go to work. Charges should be inspected visually with great care. The short length of autoloader cases makes this easy, even with small charges. Take care to avoid powder spillage during handling. This is especially true of light-bullet/high-velocity loads where the charge fills the case and is then compressed in seating the bullet. Care and attention are essential watchwords.

Of course, there are numerous other powders quite suitable for autoloader cartridges. Though Unique is my favorite and predominates in most loading data tables, they *do* list others. Probably the most extensive data for other powders is found in the current Speer handbook.

SEATING BULLETS: The final operation is assembling a first-class hand-load for any autoloading pistol—and one which can be exceedingly important to the



functioning of any such gun.

Selection of the bullet comes first. A revolver will *work* with almost anything stuffed into the case—but length and shape decide whether an auto will feed reliably. And a single-shot .45 or 9mm is a poor gun to have in hand when the balloon goes up and the blue whistlers come your way. Without an extensive engineering analysis of the dynamics involved, it has always seemed to me that good feeding resulted if the bullet nose struck the feed ramp so as to be deflected upward the same as the standard ball round, regardless of specific bullet shape or overall cartridge length. Therefore, if a particular bullet of reasonable shape and weight gives feeding trouble, a slight variation in seating depth may well cure the problem. Anyway, we don't recommend any shapes other than round-nose, truncated-cone, and the *moderate* semi-wadcutter with plenty of taper to the nose. Almost any *good* gun will feed those shapes so long as the bullet is not so light and short as to make the loaded cartridge more than 10-15% under standard length.

As already mentioned, tightness and stability of bullet/case assembly is very important. Toward this end, bullets should be seated rather deeply into the case, for maximum contact area. With long, heavy bullets, this presents no problem. With lighter bullets (especially the 90-grain in the .38 Super) it does. Bullets should be one caliber deep in the case, with the possible exception of the .45 Auto; its large diameter produces lots of contact area, with relatively shallow seating depth. By "one caliber", we mean the bullet should enter the case a distance equal to its own diameter.

As a practical matter, I believe the following are the minimum weights (therefore lengths) which may be depended upon for reliable functioning in different calibers: .32, 60-grains; .380, 80-gr; 9mm P, 90-gr; .38 Super, 110-gr; .45, 185-gr. Bullets any lighter would have too little bearing surface for either good accuracy or proper assembly—unless provided with large nose and/or base cavities which would increase their lengths. Bullets longer than normal present no problems except in that seating them to proper cartridge length reduces powder capacity within the case and so considerably limits the velocities to which they may be driven. Long bullets may also bulge the case where its base runs into the thicker portion of the tapered case walls.

In any event, our choices of bullets for different uses are shown in the load data tables.

As soon as cases have been charged and inspected, bullets should be hand-started in them. This eliminated possible powder spillage or contamination. When starting bullets, align them as nearly as possible with the case. The shorter the bullet, the more important this becomes; dies don't

straighten short bullets during seating nearly as well as long ones. A cocked bullet simply cannot shoot to the normal center of impact.

Except in .25 and .32 caliber, seat-crimp dies should be of the taper-crimp type. Bullets—especially jacketed ones—can be seated and crimped in a single operation, but I much prefer doing the two separately, with separate dies.

To do this, screw the die into the press and lock it so the shell holder lacks about $\frac{1}{16}$ -inch touching the die when fully up. Then, adjust the seating screw or plunger so that the bullet is forced into the case to the proper depth. There should be no shaving or gouging of the bullet by the case mouth if it has been sufficiently flared in preparation. While hard cast bullets are rather tolerant of seating-stem fit, modern, high-performance, jacketed bullets—especially hollow-points—are not. Unless the cavity in the end of the stem fits the bullet nose perfectly, it may be deformed by seating pressure. I've seen hollow-points almost completely closed by improperly-shaped seating stems.

If your stem doesn't fit, degrease the cavity in the tip, place a small dab of five-minute epoxy therein; then press the oiled nose of the bullet into the epoxy until it sets up. When cured, trim off any excess epoxy and you'll have a perfect fit—even a teat entering the hollow point to keep it from collapsing. Remember, though, this won't work with the pear-shaped cavity in Sierra JHC bullets. If altering a stem for them, fill the nose cavity with modeling clay first, or the job will be ruined.

You should be able to feel the changing resistance as the bullet is first forced past the mouth flare, then through the expanded portion, and finally, as its base meets that internal shoulder and imbeds itself therein.

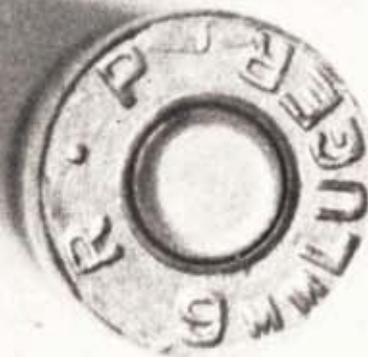
Once this is done, crimping comes up. Actually, we aren't talking about the type of heavy, roll crimp used on revolver ammunition. All we need do here is remove the mouth flare and close the case in tightly on the bullet. Whether using a separate taper-crimp die or a seat-crimp combination, adjust it so that the mouth is squeezed in upon the bullet about .010-.015-inch. To establish this, measure the diameter of the case (with bullet seated, but no crimp) about $\frac{1}{8}$ -inch back from the mouth. Then adjust the die to produce a case diameter right at the mouth of about .010-.015-inch less. This leaves the case mouth nice and square, so it will seat solidly on the headspacing shoulder at the front of the chamber (ex-

(Continued on page 69)

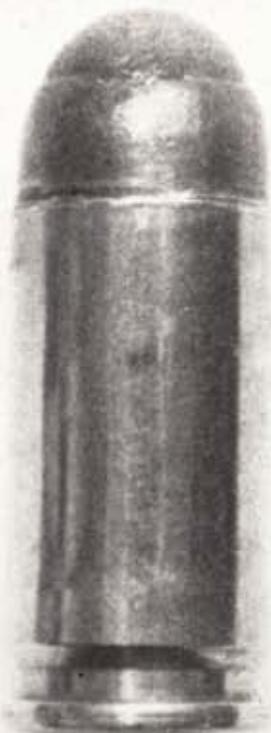
Bullet nose distortion and excessive case bulge cause many malfunctions.



Slide face impressions on the case head are quite common occurrence.



Properly seated primer shows no distortion at all and is seated well.



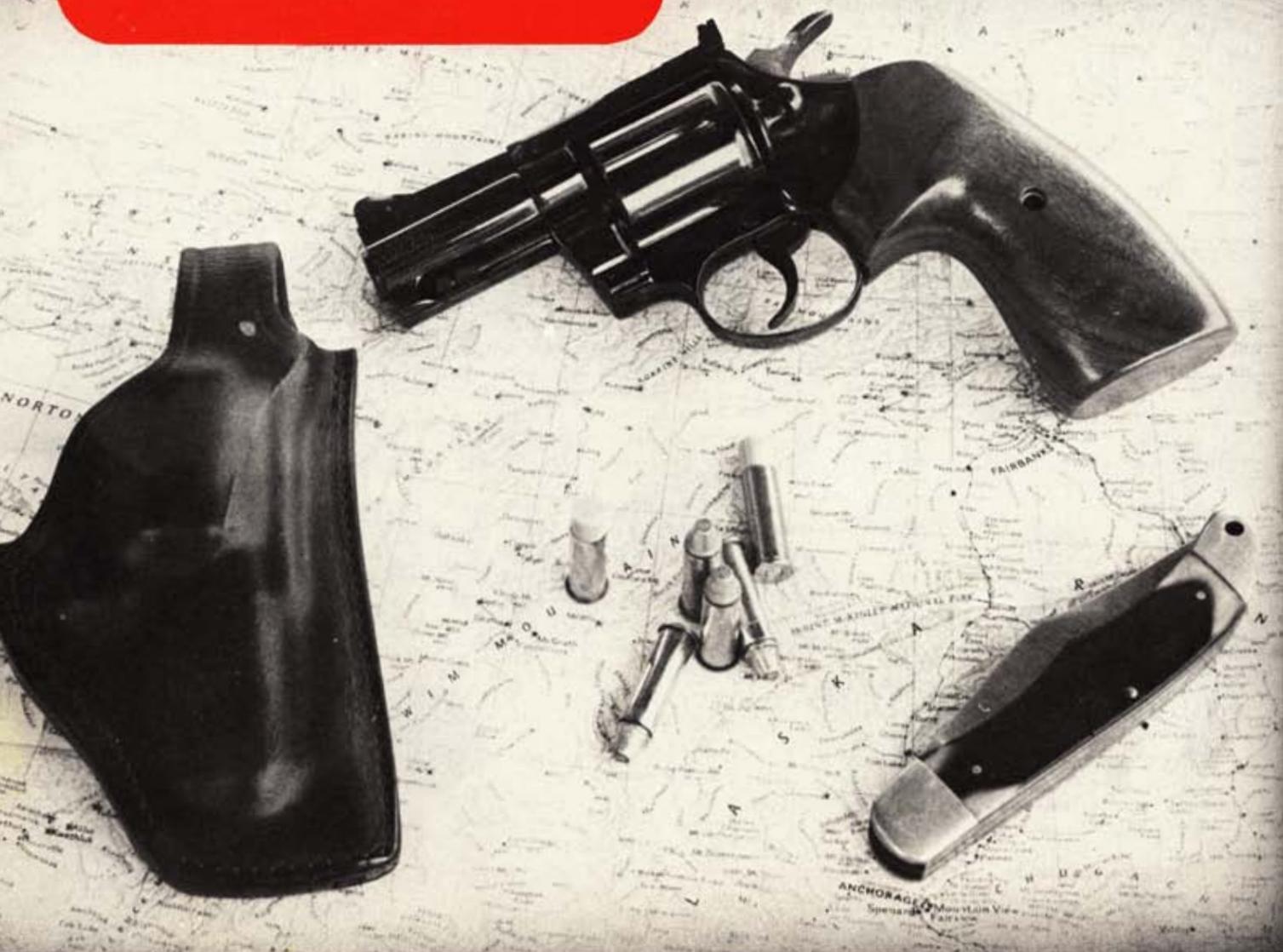
.38 SPECIAL The Ultimate Trail Gun?

*Can the Much-Demeaned
.38 Spl. Measure Up On
Nature's Proving Ground?*

By **STEPHEN W. COMER**

One of the most often used terms in the gun writer's vocabulary is that of the trail gun. In this writer's years of reading and writing about guns, he has seen this term stuck on every type of firearm from a .177 caliber pellet rifle to a 12-gauge shotgun. In grandeur and over-use, the term "trail gun" must rank right at the head of the list with such phrases as "magnum" and "knock-down punch".

But perhaps where this concept of the trail gun is most often used (abused?) is when a writer is talking about handguns. If there were a gun writer's guidebook ever written, we would wager that the first rule would read something like this: "When writing of a pistol which has neither impressed nor angered one, it is often useful to say that said gun would [would not] make an excellent trail gun." In a profession where one is often paid by the number of words he can convince the editor are worth printing, the





Even "snubbies" make adequate trail guns fired from a steady position.

phrase "trail gun" has probably garnered enough funds to enable it to retire in Palm Springs for eternity.

Unfortunately, gun writers nor their phrases seldom retire. Perhaps more unfortunate is the fact that this writer is going to examine the term "trail gun" once more. But rather than simply state that we believe the .38 special to be the perfect trail gun, we are going to present a case for the .38 special which we think will help "demystify" the concept itself.

What is a trail gun? Well, it is obviously a hunting firearm. But so is a Smith & Wesson Model 29, or a Winchester Model 94 or a Remington 870. However, we would suspect that few would classify any of these guns primarily for trail use.

From the term itself, one would assume that the trail gun is a gun that one would use in the out-of-doors. It is most often referred to as a gun that one can easily carry or have close at hand, even while engaging in another activity. For this reason, we are inclined to agree that the trail gun should be a pistol. Only a pistol can be handy at all times with a minimum amount of effort expended in carrying and storing it.

A trail gun is a firearm that you carry when you just want a gun by your side, whether you're actually hunting or simply taking a walk in the woods. It is a pistol

The trail gun in a well-designed holster can be carried all day with no fuss or bother, assuring it will be there when needed.



that one takes on a camping trip or hike, or a pistol one sticks in a tackle box for a fishing trip. A trail gun is a pistol that has to be versatile in order to be there when you need it, and yet capable of doing the job required of it. In addition to versatility, the trail gun must also meet certain rather restrictive standards.

The first of these is weight. A trail gun must be light weight if it is to be carried when other guns are left behind. In a recent article on big bore trail guns, one author suggested a trail gun should weigh no more than forty ounces. It is a matter of personal preference, but it is hard for this writer to see why he chose such a limit. The big Smith and Wesson .44 magnum only weighs 48 ounces. The difference of 8 ounces when one is carrying a three-pound gun around is moot. Therefore, it is our belief that the trail gun should be as light as physically possible while still meeting the other criteria of power and accuracy.

The matter of power is also hard to determine precisely. As stated before, a trail gun is not the gun one would pick as a primary weapon to go deer hunting with. During the relatively few short weeks of deer season, it would be far more logical to carry any of the magnum handguns, or



Group fired offhand from 25 yards using a two-hand hold demonstrates the excellent trail-use accuracy obtainable with the Colt Diamondback.

even a short carbine, and sacrifice a bit of comfort for the extra margin of power and accuracy which these guns would provide. In other words, a trail gun should be a versatile tool, rather than a weapon aimed toward a particular function such as big game hunting.

However, it would be comforting to know that the trail gun one was carrying was capable of taking medium sized game in an emergency situation, since, by definition, the trail gun would be the gun most likely carried on hiking trips, fishing trips, and such occasions where survival situations might arise.

But the primary purpose of the trail gun will most often be generalized: plinking, potting small game, taking an occasional woodchuck or other varmint, with maybe an occasional opportunity to eliminate a pesky rattler or cottonmouth. Thus, the gun's power requirements are not really that high.

Finally, the trail gun has to be accurate. It has to be capable of putting that squirrel or rabbit in the pot. And perhaps equally important, it has to be cheap enough to feed so that its user will be encouraged to shoot it often enough in order to learn to shoot it well.

If one takes some time and looks over

these criteria of weight, power and accuracy, then it becomes obvious that a compromise has to be reached. Obviously, more power and accuracy can be obtained from a rifle than from a pistol. Equally obvious is the fact that no rifle can match the pistol for its portability and light weight. It is this author's opinion that the best compromise is to be found in the .38 special cartridge and the guns chambered for it.

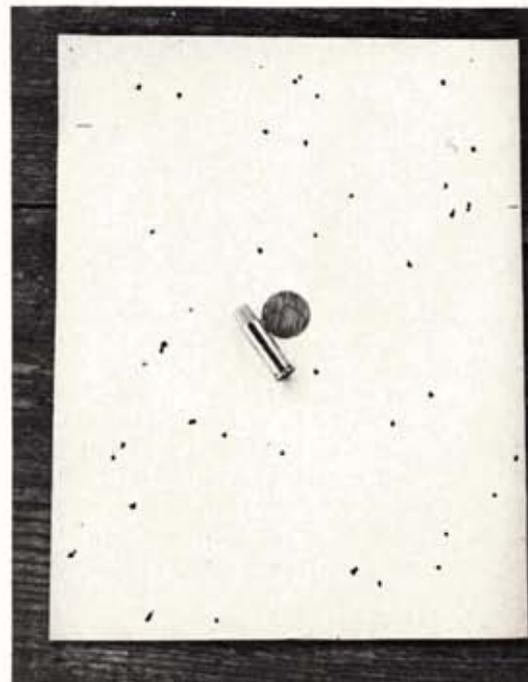
Concerning weight, there are a number of fine pistols that fill the bill. Any of the light-framed revolvers with barrels of 4" or less suit the requirements of a trail gun. Using a snub-nosed .38 as a trail gun has an added bonus for those who must sometimes carry a weapon in their work, or for those who keep a pistol around the house for personal defense. By carrying and shooting the pistol in the field, one can gain valuable experience in marksmanship and handling that could pay high dividends in a more serious social situation. It is often hard to make time for the much-needed practice with a defense pistol. Carrying the pistol with you into the field in a painless and enjoyable way to obtain the necessary practice.

Power is perhaps the crucial element that led us to the conclusion that the .38 special is the perfect trail gun. As stated

before, most of the shooting done with a trail gun will be at small game and varmints. Though we probably all have read of instances in which a .22 long rifle has taken large game, even some of the dangerous African species, the question is getting enough power to do the job intended. In our opinion, the .22 long rifle, in a lightweight pistol, does not have sufficient power. Even out of a six-inch barrel, the .22 long rifle high velocity round develops only 112 foot-pounds of energy at the muzzle. Put another way, the .22 long rifle develops about the same energy from a short pistol barrel as the .22 short develops from a rifle barrel. In our opinion, it cannot be relied upon, especially when taking the larger varmints such as the woodchuck and fox.

The .22 magnum rimfire is a much better choice. In fact, with the excellent kit guns made by Smith & Wesson and High Standard in .22 magnum caliber, and with the excellent single action versions marketed by Ruger and Colt, we were at first inclined to choose this load as the perfect compromise for trail use. However, after purchasing two boxes of this mighty mite at slightly over \$3.00 a box, we began to look around for a smaller load in center-fire that could be reloaded for less money.

The answer was the .38 special. Here is a cartridge that is available in a multitude of lightweight handguns. And, since it is the standard load for the majority of American police forces, reloading components were varied and plentiful. Most importantly, even in the short-barreled models, energy figures were much better than



Typical seven-yard pattern fired from a Diamondback demonstrates adequate grouping to bag small game in an emergency situation.



Some loads author found adequate for trail use (left to right): Speer Shot cartridge; Remington 158 g. LRN; 150 g. JHP handload and 6.5 g. of Unique; 140 g. Cast SWC ahead of 11.5 g. 2400; Remington 125 g. JHP (+P).

after the bullet leaves the barrel, other forces start working. One of these forces is momentum. Whereas the lighter bullet will indeed yield phenomenal energy levels at short ranges, as the range increases, that yield deteriorates rapidly. The same factor which contributed to its short range energy produces the rapid deterioration of that energy—lack of mass. Practically speaking, this means that a heavy bullet will retain its velocity over a greater period of time than a light bullet. And, since a trail gun will be used at longer ranges, the lightweight bullets may not be the best choice. Again, it is a personal prerogative. You decide what you want from a cartridge, and then you take your choice. Since we enjoy plinking at extended ranges, we have found the 140-grain bullets to be the best weight compromise.

Here also you can now use jacketed bullets. However, since the short-barreled weapons are the usually lightest, and therefore the most appealing as a trail gun, velocities are not going to run high enough to really take advantage of the jacketed bullet design. Our favorite load

(Continued on page 66)

even the .22 magnum. Thus we turned our attention to developing the optimum load for our trail gun.

There are a number of lightweight, medium-bore automatics on the market that could qualify as a trail pistol. Some excellent examples are the lightweight Colt Commander in .38 Super or 9mm, or the Smith & Wesson Model 39 in 9mm. However, the automatic sacrifices an essential element that makes it an inferior trail gun: it lacks versatility concerning the ammunition it will digest. Kept within rather narrow pressure and impulse limits, the automatic will function well. But the key concept of the trail gun is versatility. With reloading, the .38 special revolver becomes the king.

The standard factory loading for the .38 special is a 158-grain round-nose bullet which the factory lists at 855 feet-per-second from a six-inch barrel for a muzzle energy of 256 foot-pounds. This same load usually clocks out of a two-inch tube at somewhere around 600 fps with an accompanying 126 ft.-lbs. of energy. This is the same round that has received such raves in the gun press over the past few years as the greatest deterrent to police brutality since the Miranda decision. Un-

fortunately, the police officer using the load isn't always so lucky. But even this puny loading out of the snub-nosed barrel closely matches the .22 long rifle out of a rifle barrel. And since it is .36 caliber when it leaves the barrel, it doesn't have to waste energy expanding to a potent profile. Used at the short ranges necessary for reliably bagging small game, its parabolic trajectory is of no serious consequence. We have found this load to be excellent on rabbits, squirrels and bullfrogs.

Since we are interested in saving money, you can use the lightweight jacketed bullets to make up your own high performance type loads. Cost per box of 50 will still show some improvement over the .22 magnum rimfire, and, of course, energy figures will be greater.

However, there is a fly in the ointment. As usual, in life as well as in ballistics, you don't get something for nothing. Without getting into physics, suffice to say that

Expansion tests in soft-packed sand (l. to r.): 158 g. LRN; 150 g. JHP handload; 140 g. SWC handload (best penetration, and large wound channel); 125 g. JHP.

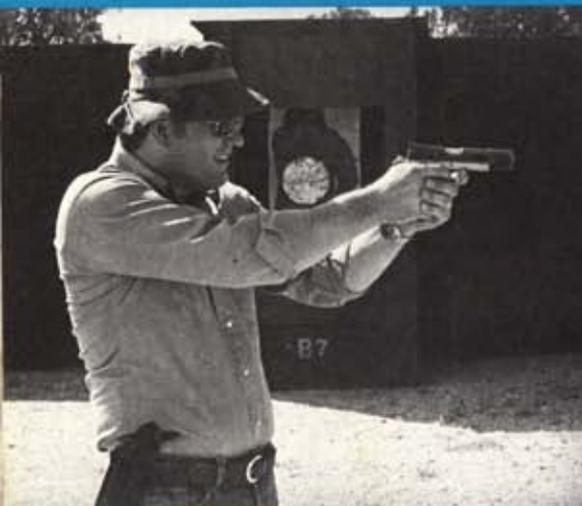




Stand with hands clasped facing bobber targets.



Turn to left, draw . . .



Back to bobber targets and hit two, two shots each.

GUNSITE/RAVEN

The Intensive Combat Handgun Course

By MASON WILLIAMS

Jeff Cooper's many years as a professional combat Marine officer plus his additional years as a counter-insurgency instructor in dozens of countries around the world have honed his mind so that he can instantly select the important and discard the trivia. His degrees plus his professorship in Central American history on which he has lectured for years have given him a rounded historical background. I have watched men from all walks of life sit down in an indifferent mood for his opening session in the classroom and then become intensely concerned with what Jeff was saying simply because they know deep down that this man has done it. They know that they are listening to facts not theory from a professor.

Jeff gets right to the point in the first few minutes. There are two reasons for this school. First, it is to enable the student to control whatever dangerous situation may arise. Second, it will force him to know his capabilities. During the first and only lecture session of the school, Jeff gets to know each man, sizing up his ability, talking about safety, and attempting to determine just what ultimate goal each man has in mind. Each class is handled differently because of the various stages of progress in handgun shooting that may be represented in the class. Some students are well advanced. Others are only slightly more than beginners. Regardless, they all sit in on the first lecture. After that, Jeff may take one group while his staff takes perhaps a couple of other groups sorted out according to handgun experience and handgun handling ability. This permits two or three levels of instruction to be run at the same time.

It might be wise for me to break at this point to emphasize that the accompanying pictures are of a specially selected group of men. They were selected by Jeff to initiate the first run through of the facilities and to shake down procedures and equipment. We had photographers, law enforcement personnel, a carpenter, the owner of a sporting goods store and a couple of Jeff's staff personnel. They were all good shooters and as a result, Jeff took them right on through the entire potential training program as rapidly as possible. We had problems with details, with wiring, with temporary target set ups to determine whether or not the basic idea was correct and many other similar details. Jeff kept experimenting with us and threw many special problems at us to see how well his concepts and equipment would handle the training problem. By the time we left, Jeff and his staff and workmen were hard at work

making the improvements that our class had demonstrated should be made. As a result, I have not attempted to break up the training sessions into what would ordinarily constitute Basic, Familiarization, Advanced, Elementary, Special Tactics, Special Tutorial and similar normal designations. I will discuss and possibly show all of the potential instruction and courses of fire without further comment.

From the classroom we drove west past the barn, turned abruptly north at the camping area and moved down across the wide slope of the hill beneath which the Square lies. The Square is an intriguing layout that is deceptive in its simplicity. Each side of the Square is 25 yards, inside measurements. The north and south walls are 10 feet high and each contains two steel 16" discs welded on the top to a 1"

steel bar, thus enabling the discs to swing when struck by a bullet. The west side has a low dirt backstop, then behind that a four foot wide channel to take the rails for the moving targets and behind this a 10 foot high dirt backstop. The east end is open to permit 60 yard firing. The ground is hard packed fine gravel. This is an excellent choice and proved to be the finest surface I have ever shot on. Because all of us fired Colt .45 ACP pistols we were constantly picking up fired brass that was always visible on the ground. We could run and turn and move and stop easily on this surface.

The first thing Jeff teaches students is the four part draw. Once they have mastered this they move into turns from right to left, left to right, front to rear. They are taught to watch the front sight. The front

sight is the key to hitting which brings us to the Weaver stance with its two handed hold. All these things are blended together so that within a short time the student can turn, go into the Weaver stance, fire and hit without thinking. Before long the student is drawing, turning and hitting the two steel plates on the right wall, swinging and hitting a target on the west end and again turning to the left to ring both steel discs on the south wall. And it's not yet lunch time the first day!

Speed is secondary at this time. Smoothness and confidence are far more important. Then comes reloading the pistol with Cooper pounding a few specific facts into everyone's head. Then we get into turning, firing, reloading, firing, dumping the magazine, reloading, firing, stop and holster. It is constant basic repe-



At the Count of Three!



Stand with toe touching the 2X4 . . .



Run forward, pick up can . . .

tition tied in with the combining of certain movements so that the course of fire is being handled with complete confidence on the part of the student without his realizing how far he has come in such a short time.

Obviously, some people take longer to grasp specific details than others. Cooper works constantly with individuals who need help. When the student needs help, he gets it, so that he can continue advancing through the courses of fire.

Every now and then Cooper will call a

Come around a corner and "oops" . . . this gentleman can appear or disappear, and there is another target immediately behind him.



break and lay down certain instructions, one of which is that a holstered handgun is SAFE! No one walks around anywhere carrying a handgun in his hand. The handgun is in the holster. Further, every handgun is loaded, and the spare clips are kept loaded. Anyone caught with a slide back and empty magazine buys the beer. Twice and it's a bottle of whiskey. Men are repeatedly reloading, checking magazines and learn that it is better to fire two or three shots and dump the magazine and reload than to be caught with an empty handgun.

As fast as the students grasp the new problem they go on to more difficult problems. Cooper believes in problems as well as demonstrations and repetition. Finally along around the afternoon of the second day we had moving targets.

Jeff set up the moving targets on small trolleys that move left to right, right to left from any point on the firing line. Power is generated by a portable gasoline generator and the target movement is controlled by a highly sophisticated control panel that can make the targets start, stop, change direction or move slow or fast. To further complicate the situation for students, there are two of these small trolleys that can move in opposite directions at the same time. One course of fire requires the student to face the targets. As soon as he sees, out of the corner of his eye, that the target has started, he draws and turns, fires one shot on each of the steel discs on the north side of the Square, dumps his magazine, slams in a new one and then places a single shot in the middle of the moving target that is usually nearly out of sight by this time. There are unlimited variations on this theme.

Breaks are frequent so that the pressure does not build up too rapidly or for too

long. On the east end of the south wall, Jeff built a covered room that permits the students to leave jackets, extra ammunition, cleaning gear and similar items on shelves that run around the entire area and also down the middle. This brings the men in out of the sun and is ideal for a short talk or discussion of some important detail.

The change of pace is excellent psychology on Jeff's part. After a particular grueling session of reloading, moving targets, turns, etc., Jeff will lecture about firing with one hand, especially the weak hand, and how to reload and how to fire from the kneeling or prone position. Most of the firing is done from less than 15 yards.

Up to this point we may consider the firing as a preliminary exercise—a training program so to speak—to prepare the student for the practical application of all that he has learned so far. Obviously, it is impossible in such a short evaluation of the school to dwell on all of the details that go into preparing the student for what is yet to come. Bear in mind that not all the students will pass through all the various firing courses discussed or shown. Some may merely wish a very basic course. In any event, those who do continue on through the whole series of courses of fire are then theoretically prepared for the Fun House. They will have proven that they could master the fundamentals of true defensive shooting. None of the preceding courses of fire are "seek out and destroy." They are strictly defensive to teach the student how best to protect himself from attack by others.

The Fun House lies in a shallow excavation about 100 feet square with the east and south walls butting one another on the southeast corner. The north side of the concrete wall extends a short distance but



Set can on top of steel rod, draw . . .



Fire two on right target, reload . . . Fire two on left target.

does not close off the north end of the one story building. The west side is open and the bulldozed dirt acts as a backstop. The building is roofed and has skylights fitted into the roofing. These skylights combine with the open west side to allow considerable light to enter the interior of the building. There is a substantial roof overhang. The entrance door is on the south side.

Inside there is corridor extending the full length of the building on the east side with doors opening off to the left. These doors may be open or closed. There are small rooms built into dividing walls. All walls are concrete blocks. All target backing areas are sheeted with steel plate and covered with plywood to prevent back-splash.

As a student opens the door and enters he stands within a narrow 15 foot long hall constructed of concrete blocks. He faces a blank concrete block wall. It is obvious that a corridor opens off to the left. He cannot anticipate what he will see when he turns the corner. If there is nothing in sight he can proceed down the new corridor and turn to face the doorway on his left which is just part way down. From here he can look into a large room opening out onto the dirt backstop. Remember that the west side of the building is open. From the doorway in which he stands he can see many rooms, halls, openings all of which may or may not contain a felon target. Other targets are once again the steel 16" discs hanging from 1" rods set into wood supports or even tires.

Cooper has set up the falling target for the next man, and is telling the student to "watch your step as you come around."

On his left as he enters this room is a stairway that goes up steeply to the roof. Part of his training will involve running rapidly up the stairway, turning, raising the trap door with his left hand and immediately firing with his right hand at a target that is falling to the roof. Because the target remains upright only two seconds after the trap door is moved, and because the target falls towards the student, time and

accuracy are of the essence. The student must then move rapidly onto the roof and survey the area around him, including the roof and the areas immediately adjacent to the roof. If no targets are visible he then runs down the roof towards the target that he hit, again surveys the entire area, fires at any visible targets, holsters his handgun, jumps from the roof to the ground

(Continued on page 63)



AMT'S HARDBALLER ONE FINE AUTO PISTOL

(Continued from page 34)

parts. This recoil spring guide was a Colt part. The lower part of the front of the slide had repeatedly come into contact violently with the flange on the spring guide to stop the rearward slide travel. The flange of the spring guide was peened. The area of the slide that it contacted was barely shiny. The spring guide would have endured another 1200 rounds of abuse but I replaced it with one of

Behlert's recoil buffers. No wear was visible on any other part of the gun; in fact the frame rails weren't even polished bright. The Hardballer appeared to have retained all original dimensions and had not loosened in any area.

"Hot Loading" the .45 for a steady diet usually results in a minimum of the gun loosening up to the point that it sounds like a tin can with about 10 pebbles in it when you shake it. Frames and slides sometimes batter and/or crack. I've done it to other .45s with a lot less rounds than the Hardballer withstood. During the early development of Super Vel ammunition I

went through four G.I. .45s in three months trying to design a .45 bullet that would reliably expand. The slides of G.I. .45s made prior to 1945 (I think) are notoriously soft and are prone to excessive loosening (commercial Colt slides are OK though) after extensive firing.

My experience leads me to believe that .45s will last a lot longer if fed a steady diet of commercial loads, commercial equivalent handloads or lighter, than they will if fired extensively with heavy handloads. I was extremely impressed by the Hardballer's performance in digesting the abusive loads fired through it. Frankly, I expected some loosening and broken parts. No doubt about it, the Hardballer is tough. How tough, no one knows as yet. Not enough experience has been attained in a variety of guns to properly evaluate them compared to competitive guns.

Branching out on your own to improve the performance of .45 ammo can be an extremely tricky business. Powder selection is very important. Some powders react very erratically when pushed past the point of utilizing their optimum pressure ranges. Pressures can be increased dramatically with very little additional powder. The possibility of running into a weak or brittle case always exists. The rear of the case in any .45 is unsupported by chamber walls where the chamber is relieved to facilitate feeding. This area is usually the cause of initial trouble that spells danger. If any load in any .45 show a mark on the case that defines the supported and unsupported case that load is dangerous in that particular gun. If the load is increased or the odd weak case crops up, the case will blow out in this unsupported area. This usually results in: (1) Fiery gases under high pressure escaping into the magazine well. (2) The bullet in the top round is usually blown back into the case. (3) The case walls can trap gases, expand and allow fire into the powder under the bullet, igniting it and adding to the problem. (4) If (3) does not occur usually the magazine follower will be ruined and gases will frequently crack or shatter the grips. (5) The report sounds considerably louder than normal.

A considerable variation in both case thickness and hardness is considered normal. It is possible for a heavy load to be perfectly safe in some brass and blow out in other brass in the same gun. In any event, the normal operating stresses induced in a .45 have already been greatly exceeded long before this point is reached; in fact to the point where damage to the gun is likely if this type abuse is continued.

STRAIGHT SHOOTIN'

Accuracy of the Hardballer I've fired has been exceptional. It far outperforms any GI or Commercial 1911 prior to the MK-IV that incorporates the "accurizer" collet type muzzle bushing. The MK-IV was a considerable step in the right direc-



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tion in improving accuracy over the older 1911 Government Models. I feel the accuracy of the Hardballers I've used is on a par with that of the MK-IV. They are both damn good. I feel the Hardballer gives me just about all of the accuracy potential I can handle.

Sat down one windy day, rested against the front wheel of the truck and fired six five shot groups with various ammo. The gun had been fired approximately 800 times without being cleaned. Where I obviously blew a shot or two, more than one figure will be shown. 200 grain Speer "Match" 1.503 inches. 200 grain H.P. Speer "Inspector" 3-1.039, 5-2.102 inches. 7.5 grains Unique-185 Sierra H.P.-4-2.338, 5-3.853 inches. 6.5 Unique-230 Norma H.P.-4-.780, 5-1.338 inches. 9.5-4756-185 Sierra, 4-1.200, 5-1.535 inches. 9.5-4756-190 Super vel-4-1.123, 5-2.031 inches.

The last two loads listed are my own. I don't recall seeing anything approaching that charge of 9.6-4756-185 in any loading manual. I will not recommend it. I use it only for abusive testing and occasionally hunting. Four other .45s I shoot handle it OK but yours may not. For ordinary purposes of plinking or self defense, handloads from any reliable loading manual are adequate as are factory loads. Both the Speer and Remington hollow point loads are good but I favor the performance of the Speer to the Remington bullet. Nothing that I know of will beat the KTW factory load for penetration.

The Hardballer and Colt Gold Cup share more than a passing resemblance. In comparing the two in actual shooting under varied conditions including the "Combat" type shooting on informal courses. The Hardballer safety is superior to the Colt's and the Colt's trigger pull is lighter than the Hardballers. Feel and sight picture of both guns is very similar. Running the various informal "Combat" courses combining scores and times, I consistently perform just a little bit better with the Hardballer than I do with the Gold Cup. I really don't know why.

I've visited the AMT (Arcadia Machine Tool) plant twice. It, and the equipment in it are new. Literally thousands of guns were in various stages of manufacture. The plant and production flow seemed well set up and obvious care was being taken in manufacture and assembly. The plant is small and production is necessarily limited by the availability of skilled employees. Quality definitely came before production from what I saw in two visits. I suspect the Hardballers will be somewhat difficult to obtain for awhile. B&B Sales (11100 Cumpston Street, No. Hollywood, CA 91601) has purchased the first 1500 guns. Sanford and his employees are making a high quality gun and obviously methods of manufacture will be improved in the future; resulting in increased production without a loss in quality of the prod-

uct. Sanford is an innovative guy, he has ideas, the people and equipment to transform them into shootable metal for research and development. For example, a few Hardballer frames will be made from titanium and there just happens to be a

replica of the 1874 .50-3/4 Sharps that isn't far from production.

The Hardballer is an example of Sanford's innovative ideas—a superior .45 crafted of superior materials.



THE HANDGUN COURSE AT API'S GUNSITE SCHOOL

(Continued from page 61)

and comes around the end of the southwest corner of the building. Here he may face two or three targets at any distance either within the building—sprung out by

hidden springs while he was on the roof—or under the edge of the building along the open west side. He may then move once again, noses counted and Jeff called up the first man. Instructions were simple. "Go in, clean it out. You will go up the stairway to the roof. Off the roof and around the corner and back in. You will work against time and still try to come through alive. We will assume that any felon not solidly hit will kill you."

With these cheerful admonitions, the first man went in. Shooting was sporadic and we on the outside knew what that meant. Every angle, every corner, every



back into the building and work his way through the various halls, doors and openings until he finally reaches the exit door. Those students who believe they have done well and come through with their lives abruptly realize that a man is hiding on the left side of the tree about 30 yards from the exit door. If the student does not nail him instantly, the student is considered dead.

Upon holstering his handgun, Jeff Cooper takes over and walks the student back through the Fun House, explaining errors in body handling, foot handling and errors in judgment. Each student is given a complete evaluation of his actions during his progress through the Fun House.

Each of us went through a course twice. The first time we knew where the targets were located. We had walked through once before to size up the operation. Then we went in against a stop watch. Not a single man cleaned the Fun House. Jeff then sent us all outside and, going back into the Fun House with his staff and a couple of carpenters, the entire set up was altered in about 20 minutes.

The Fun House was cleared, checked

room had to be checked carefully. There was no walking into a room and looking around. Then the student appeared on the roof. He did not get the falling target. He fired too hurriedly at a target way down at the other end of the roof. Jeff stopped him on his third shot. "If you cannot hit in two shots, you are dead. Now get going!" He took off on a fast run along the roof, jammed to a stop, fired once, holstered and jumped to the ground. We then waited and lived through quite a few shots. By this time everyone was borrowing spare clips and loading existing clips with seven cartridges.

Not a single man came through the Fun House alive. It was an entirely different layout from the first time through. By the end of the afternoon we were a very quiet, thoughtful group. We had learned what no amount of range firing could have taught us. We had learned how to enter a door, how to size up what we could before going through an opening and how to listen and catch movements out of the corners of our eyes. I have never lived through anything as educational as the Fun House. It will make a real defensive

shooter out of anyone who wants to stay alive.

I mentioned the Dry Wash. That is a 100 yard canyon, quite deep with steep sides that meanders through one corner of the property close to and behind the rifle bench rest. The Dry Wash is an excellent place in which to practice with the handgun using the Dry Wash as a walk-through with targets spotted in various places at odd distances. We did not use it because of lack of time. The reader must remember that we ran through and checked out nearly three weeks of intensive training in exactly six days.

I wish to again repeat that we were a test class. We were rammed through just about all types of courses of fire that were available at an accelerated rate, far faster than any normal class. We tested, used, fired on and evaluated all of Jeff's equipment. We benefitted greatly by this and we had a chance to observe the imagination, thought, money, concepts and planning that have gone into the Gunsite-Raven Training School.

The story of Gunsite-Raven and its rifle facilities and training program will be run in our sister publication, *Guns Magazine*, because the rifle story has no place in a magazine like the *Handgunner*. Check the April issue of *Guns Magazine* for the rifle story.



HECKLER & KOCH'S NEW P9 A DOUBLE ACTION AUTO THAT'S HARD TO BEAT

(Continued from page 41)

out of their recesses in the barrel extension; as they clear those recesses, the bolt head is no longer held against the barrel breech, and the slide has gained sufficient momentum to travel fully rearward, carrying the bolt head with it. At that point, functioning has become conventional and the fired case is extracted and ejected.

The delay created by the cam surfaces and rollers permits the bullet to leave the barrel and chamber/bore pressures to drop to a safe level *before* the bolt head moves away from the breech. In one sense, then, there is no *positive* mechanical locking, only a delayed opening. The system might well be called "hesitation lock" or "delayed blowback", but for this application, the effect is fully as good as a positive lock.

The locking cycle is simpler. As the slide runs forward, feeding and chambering are conventional. When the bolt head is halted by the barrel breech, there is a gap between it and the breech block; the slide continues forward, driving the wedge-shaped, block extension *between* the rollers; the rollers are forced outward

into their recesses in the barrel extension; as the slide is halted by the breech block striking the rear of the bolt head, the rollers are fully seated, and locking is complete.

This system might sound as if manual unlocking and opening would present a problem; it doesn't. The slide is free to be pulled back, even though the bolt head is locked to the fixed barrel; that movement draws the locking finger out from between the rollers, freeing them to be cammed inward by their own recesses as rearward pull is applied by the slide to the bolt head. If anything, this system is easier to unlock manually than most others.

Firing is by a conventional, pivoted hammer striking the head of the firing pin; though the hammer is fully covered by the slide, an unusual feature in a big-bore auto. Differing from all other large DA autos, the P9S may be carried "cocked and locked" for SA first-shot capability. Applying the safety does not drop the hammer as in most other DA autos. Instead it rotates a segment of the safety shaft to intercept the hammer *short*

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of striking the firing pin. Because of the firing pin's light weight and its return spring, an inadvertent hammer blow on the safety shaft *cannot* urge the firing pin forward enough to cause any harm.

Safety movement is the reverse of most; up for "Fire", down for "Safe". While most pistoleros prefer the opposite, this one is quite easy to operate with one's thumb without changing one's grip on the pistol. If the P9S is carried regularly this presents no problem at all.

Unique among today's autoloaders is the P9S's cocking and uncocking lever which also operates the slide stop manually. Located on the left side, the cocking-lever thumbpiece protrudes forward from the grip behind the trigger. Pressing the lever downward, when the hammer is forward, operates through intermediate levers on the hammer strut to compress the mainspring and rotate the hammer to full cock. It does not contact the hammer directly. After the hammer is cocked, the cocking lever's spring returns it to the rest position. When the hammer is cocked, pressing the lever first compresses the mainspring *past* full cock; at that time, the trigger should be pressed to disengage the sear; ease the lever back up (under full control, please) then release the trigger and let the lever return to rest. This *uncocks* the hammer and should be done only with the safety engaged.

Pressing the cocking lever fully upward, past its rest position, will force the slide stop to engage the slide as it is drawn back; when the stop is engaged, pressing the lever fully down will disengage it and allow the slide to run forward, leaving the hammer at full cock.

The double-action lockwork is unique in that the drawbar rotates a form of crank, which in turn rotates a second lever which compresses the mainspring by pressure on the hammer strut. At the proper point in time and movement, the crank cams off the drawbar, allowing the mainspring to drive the hammer forward to fire. While this occurs, the single-action sear is held out of the way so it will not catch the hammer.

This system provides a long, smooth, soft, DA pull of only about 8½ pounds. It does, however, make for longer than usual trigger travel and a long trigger reach that is a bit much for short hands.

In addition to all this, there are a couple more safety features designed into the P9S. First, there is a cocking indicator; a floating sheet-metal device that protrudes from a hole in the upper rear of the grip when the hammer is cocked. It is lightly spring-loaded inward, behind the hammer, so that as the hammer is cocked, the indicator is pushed rearward to protrude. It is easily seen or felt. The extractor functions as a chamber indicator in that when

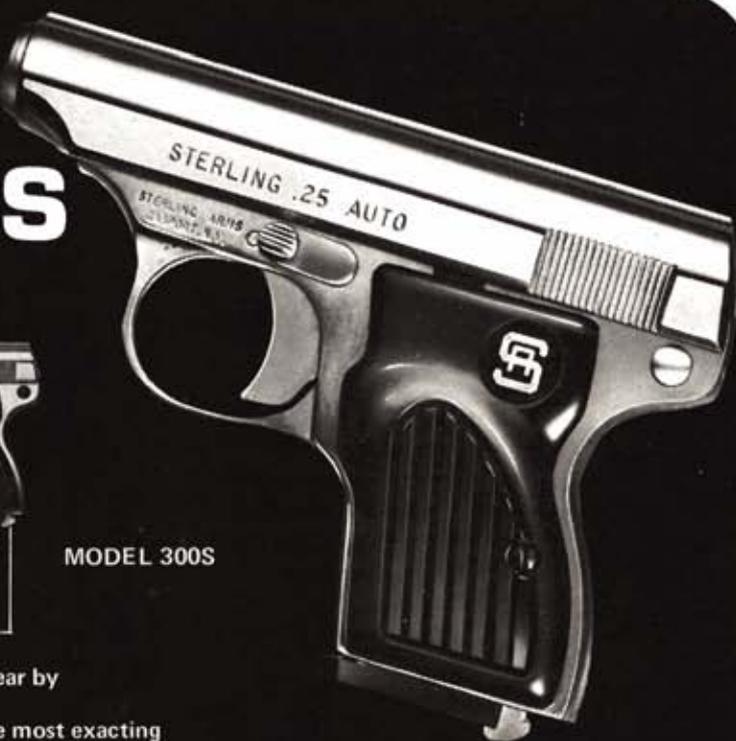
a round is chambered it protrudes above the barrel surface to be easily seen or felt. A red dot is also exposed as it rises.

Stripping the P9S is pure simplicity. Magazine out, chamber empty (make *certain*), safety engaged; press upward on the barrel latch inside the trigger guard; move slide assembly forward and lift off; invert slide, press barrel forward to clear bolt head, lift up and remove rearward; insert one prong of the barrel extension between side of bolt head and slide, left side, and press down to unlatch bolt head; slide bolt head off locking finger and lift from slide. Turn out two screws in rear of grip and slide it off to the rear. That's all there is to it. No further disassembly is needed for normal care, and none is recommended.

For reassembly simply reverse the steps. Slide the bolt head back in place, making certain the latch snaps home, and the rest falls into place.

Over the years we've shot the P9S quite a bit and have never encountered any trouble. Reliability is first-rate and accuracy is above average among service-type pistols. It has performed well with both handloads and factory ammunition. One discontinued load with truncated-cone bullets did give chambering difficulties because the bullet bearing surface was too long for the chamber throat; that can't be a problem now, since the load isn't avail-

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able. Of course, handloads can't be made too light or their recoil energy level will be too low to cycle the gun; this is common to all autoloaders, not just the P9S.

Since the first P9S, Heckler & Koch has introduced a target version. The difference lies in a micrometer-adjustable, rear sight; a barrel one inch longer and protruding beyond the standard-length slide, and a hefty weight which clamps around the barrel muzzle. This makes for a rather unusual appearance, but it does improve accuracy. Lacking machine-rest fittings for the P9S, we've not been able to determine precisely how much improvement exists, but there is *some*. Of course, the 9mm Parabellum isn't used in paper-punching matches here, nor is match-grade ammunition made in that caliber. All this makes the question of a Target P9S rather academic.

Of far more importance to the U.S. shooter, though, is the recent introduction of the .45 ACP version for the P9S. As of this writing, no sample .45 is available and we've only seen *one* display sample and we couldn't take it out shooting. For all practical purposes, it is identical to the 9mm model except for a forefinger rest on the front of the trigger guard, and it, too, will be offered in the Target configuration. The original P9S was dimensioned around the .45 ACP cartridge, but in such a manner that it could be made first in 9mm to exploit the European market. From the very beginning, H&K promised us a .45 version, but it's been over six years in coming.

At the moment, we can't present a detailed review of the .45 P9S, but we'll certainly do so just as quickly as we can obtain a sample and wring it out on the range.

Overall, the H&K pistols we've examined (quite a few) have shown really first-class workmanship inside and a very nice finish outside. Of course, the P9S is by no means the perfect autoloader—but it does show far more imaginative design and engineering than any other pistol we've seen before or since.



IN SEARCH OF THE PERFECT TRAIL GUN

(Continued from page 30)

uses a 140-grain semi-wadcutter bullet cast from a mold manufactured by Lee Engineering. Seated on top of 6.5 grains of Hercules Unique, this load chronographs at 1052 fps out of our Colt Diamondback (2⁹/₁₆" barrel). This computes to approximately 350-ft.-lbs. of energy, all at a production cost of approximately \$.03 per round. And, since the bullet has greater mass, we feel that this load's long range performance, both in terms of energy and stability, is quite better than that achieved with the lighter weight bullets.

As a point of reference, it might be interesting to point out that Al Goerg once took an enormous black bear with a cap and ball pistol which fired a round ball developing only 309 ft.-lbs. of energy at the muzzle. We are *not* implying that this load for the .38 special is adequate for hunting bear. Far from it. However, Goerg's experience does indicate that, in an emergency situation, this load would be capable of taking medium game at short range. All of this from a pistol that weighs approximately 26 ounces fully loaded.

Another aspect of power is the versatility of loadings the .38 special revolver al-

lows one to use. In addition to the various factory and handloaded "ball" ammunition, we usually carry two or three shot cartridges in the cylinder. We've found that 135 number 9's will soothe the temperament of any ornery cottonmouth. In addition, we have found that our Diamondback patterns quite well out to six or seven yards. This varies radically from barrel length to barrel length, and even from pistol to pistol. But with a quick shot, we have been able to stop several cottontails for the pot. Should a situation arise where a single bullet is required, it is a simple matter to swing the cylinder out. Since we follow the standard practice of dabbing a bit of red fingernail polish on the primers of the shot cartridges, it is an easy enough matter to "dial" the desired load. This versatility in loadings enhances greatly the trail gun concept of flexibility.

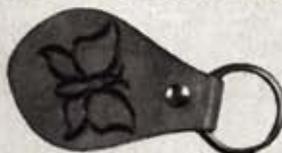
Finally, there is the element of accuracy. Again, this is a matter of choice. Some people do very well with fixed sights. They are lucky enough to find a load which they feel to be adequate, and which shoots where they want it to shoot. We have never been so lucky. In fact, we have never been satisfied to have merely one load for a particular pistol. Thus, in order to obtain any degree of accuracy, we feel it is necessary to have adjustable sights.

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decided on the Colt Diamondback as the perfect trail gun. With its adjustable sights and 2 $\frac{1}{16}$ " barrel, we feel that it is superior to any of the snubbies. Indeed, we have no trouble grouping inside of 2 $\frac{1}{2}$ inches off-hand at 25 yards. From a gun so light and compact, we find this perfectly adequate

accuracy. In addition, with a solid back support and a sitting position, we can usually keep the majority of our shots on a one-gallon milk carton at 100 yards. Again, we consider this accuracy to be quite adequate for a trail gun.

In summary, if you are looking for a pis-

tol, not to hunt polar bear or elk with, but just to carry on those forays afield when you have no specific objective other than to enjoy the out-of-doors, then give the .38 special a serious look. Like us, we think you will like what you see.



DOUBLE ACTION HANDGUN HUNTING AT YO

(Continued from page 30)

ster, the low hanging Patrolman swivel style which I had brought for match shooting in Wyoming and which had proven monstrously bulky and uncomfortable for hunting. Bucheimer makes great hunting holsters and great police combat holsters, and trusts the buyers to know the difference.

"Oh, there's a doe for you there," Harvey reassured me, a smile crossing his face now. "See her? The big one, on the edge there, by the tree. She's barren."

"How can you tell?"

"Trust me. She's barren."

"Her belly is tight . . . but so are the others."

"Axis deer are tough-bodied animals," he replied. "The mothers don't hang either."

"Then how can you . . . ?"

"Trust me. I know. She's barren. You can take her if you can get her."

"But how do you tell?"

"There's nothing you can point to. It's their walk, the way they carry themselves. I can't explain it, but I can see it." I un-snapped the Dan Wesson. This would be a double action deer. The trigger-stop screw was Loctited into the DA only position.

We circled the arroyo. It was a long, slow, rocky journey. The deer had spotted us when we'd spotted them on the other side, and had been spooked. A round-about approach had been the only one open.

Coming up through the brush, we could see an open space between us and what passes in the desert flatlands for a hillside. In the trees near the bottom, a shape moved. I recognized it. I should have: I had stared at this deer long enough when Harvey Goff gave me my lecture on the sexual biology of Axis does.

I remembered the fusillade I had fired at the ram. This one, I swore to myself, would be a one-shot kill.

I slipped the Pacesetter out of its stiff scabbard. When the final moment had come with the ram, I had just locked my elbows, muddled on with a two hand hold, and let fly. This time, I settled into a proper sitting position, clamping my hands around the finger-grooved Sacramento stocks of the heavy-tubed DW.

The doe lifted her head and looked around. I froze, watching her over the bright yellow-painted sights of the .357. Then her ears lowered, and she bent her head to graze.

Brush covered her shoulder. Her neck and head were visible, but I rejected a neck shot. The angle was too steep; there was too much room for a miss. Behind the brush, her lower back and hindquarters were visible. I didn't trust a 125-grain hollowpoint to cut the brush and still do its job. The sights settled behind the shoulder. I began the slow, rolling squeeze, the way I would have done in sitting position on a PPC range with the same gun loaded with wadcutter .38s.

If you know a DA wheelgun, you know that it feeds back to your hands through its trigger the way a Stingray does through its steering wheel. I felt the cylinder revolve, felt the hand lock into place, and knew that the last few ounces of pressure would drop the hammer. I focused on the sights and let my trigger finger finish it on automatic pilot.

The roar was deafening.

The deer jerked violently sideways with the impact. I could see her feet scrabbling to retain her balance. The trigger was already rolling back again.

Then she was running, uphill, full steam. The yellow enamel sights tracked her, locked on the front edge of her body this time, and when she burst through the tiny clearing in the brush the finger had already taken up the slack on the trigger and finished the cycle, and the gun caught me by surprise when it bucked and barked. Then she was gone in the yucca trees that lined the top of the hill.

Seconds later, I stood in the open space between the arroyo and the hillside, with Hal on one side and Harvey on the other.

"The sights were on when I dropped the hammer," I said adamantly. "I know damn well I hit her. I threw the second one to anchor her." Goff shook his head and unshouldered his rifle, a Remington 788 in .22/250. "Looks like we'll have to go after her," he said, and there was no way to read his voice.



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en when she ran, had torn a massive wound in her rising, running left leg, and then ripped an equally destructive channel through the front of her chest. She'd run the hundred yards sensing the impending human pursuit, and with the survival reflex that countless generations of deer before her had instilled in her genes. My first slug had taken her standing at a measured 45 yards, the second as she ran flat out and straight across my path at 50. She had been already out of it when her ears twitched and Harvey's bullet drilled through her forehead.

Later, I reluctantly packed my bags and left the cabin at the Y-O. I had already given Hal back his Moran-customized Python. I took a long look at my Dan Wesson before I locked it into the suitcase. Double-action handgun hunting. It had started as a gimmick and become a test.

In precision shooting on a PPC silhouette, when I know how many seconds I have, I'll still shoot DA to give myself a solid hold and a surprise break. But I don't know if I'll ever shoot game double action again. I think single action allows you to concentrate more on your sights and less on your trigger. I got away with it, because I shoot double action more than 99% of the people who read my articles, and because both the guns I used were smoother and better tuned than 90% of the DA wheelguns around. On the other hand, had I shot single action on the ram I might have anticipated those first two shots and jerked them. That could have meant gutshots instead of clean misses.

Double action handgun hunting. In retrospect, with two clean kills that didn't look that way at first, I'm glad it worked out as well as it did. I'm glad I proved that it *could* be done.

But I'll think on it a lot more before I do it again.



(NOTE: For further info on the Y-O Ranch, write them at Box 200, Mountain Home, Texas 78058.)

HECKLER & KOCH H-K-4 MULTI-CALIBER

(Continued from page 45)

the slide, regardless of trigger position. In spite of all the apparent complexities involved, the system works quite well. In firing several hundred rounds, I have encountered only one malfunction; the stop held the slide back midway in the firing of a magazine load of .22 LR ammunition.

Our current sample has fired about 200 rounds of assorted .380 ammunition. No problems were encountered except with one batch of lead-bullet handloads which produced about five-percent failures to feed. This could be corrected easily by choosing a bullet of better shape, and so, can't be blamed on the gun. Set up in .22 LR, the gun has digested about 300 rounds of three makes and five loadings of .22 ammunition; included were both standard- and high-velocity, and HV/HP, as well. No firing malfunctions whatever occurred, however extracting a live cartridge from the chamber occasionally proved troublesome; the bullet nose jammed tight into the edge of the ejection port and the cartridge had to be pried out.

Accuracy in both calibers was all that one could ask and was, in fact, better than is usually expected of a pocket-size pistol. Obviously, the same fixed sights couldn't be expected to be dead-on for both .22 LR and .380, or for the different loads in each. Yet, groups were gratifyingly small, and practical accuracy at ranges under 50 yards was quite good. Ever so, I couldn't match the 1 1/2-inch .380 or 1 1/16 inch .22 groups shown on the 15-meter test targets supplied with the gun. Of course, I wasn't shooting under indoor, test-range conditions either.

In .380 caliber (forget .25 and .32), the HK-4 makes a very nice personal, car or home, defense gun; admitting, of course, that the .380 is marginally effective in even the most potent loads. Because of its light, 18-ounce weight, it carries well and hides well for law-enforcement use. It is an excellent, hip-pocket, second gun for

police in the event the big gun runs dry or is lost. In .22 LR, it makes a great plinking or camp gun. It shoots well enough to knock off camp varmints and pot skillet game somewhat beyond 25 yards.

The HK-4 is not at its best, though, in either single caliber. I like it as I have it, for both .22 and .380. In .380 it serves a defensive purpose but is quickly switched to .22 for fun. Even better, though, is that the two-caliber setup allows unlimited rimfire practice to achieve maximum proficiency in .380. By shopping around, you can obtain .22 LR ammo for barely *one-tenth* the cost of .380s. Shoot 500 .22s for the price of 50 .380s and you'll be a far more competent pistolero (unless you're rich) than by practicing only with the .380s you can afford.



JIM COLLINS . . . NATIONAL CHAMPION

(Continued from page 25)

A: We think the PMA will add to the NRA, not take away from it. I'm not trying to tell them how to run the NRA, I wouldn't do that. I do think, however, they should take a close look at the fact that there are 500,000 policemen in this country, and other than the competitive shooting program, the NRA has not tried to enlist these people as members. I believe they have really missed the boat there. What better arguments could you have against the gun control people than that you had the majority of police officers as members in the NRA? Someone must have thought of this, but I don't see any concentrated effort toward getting police as members.

Jim can also teach what he knows. He and his student of only three years, Jimmy Woods, fired together to win the national two-man team championship with a record setting 1196x1200.

I was glad to know Jim experienced the same feelings while winning the national championship that I, and others have felt. I have been accused of being aloof and grim, while really I was just scared and concentrating. Jim told me, "I didn't get around too much at Jackson, speak to as many people as I wanted to, visit with some of them. Matter of fact, I got home and finally started realizing I had won what I'd been trying to win for so long, and it was a good feeling."

A feeling he'll probably know again in his career, this scholar of the shooting game.



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BULLET	WT. (gr)	POWDER	WT. (gr)	VELOCITY (fps)
.25 ACP				
#252435	52	Bullseye	1.2	600
#252435	52	630	3.2	695
.32 ACP				
#311252	77	Bullseye	1.5	685
#311252	77	Bullseye	2.0	830
#311252	77	Unique	2.6	830
#311252	77	Red Dot	2.3	940
FMJ	71	Bullseye	2.2	825
FMJ	71	Red Dot	2.5	935
FMJ	71	Unique	3.1	945
*JSP	62	Unique	3.5	1030
.380 ACP				
#358242	92	Bullseye	2.4	870
#358242	92	Bullseye	2.9	995
*#358242	92	Red Dot	3.0	1005
#358242	92	Unique	3.9	950
*#358242	92	Unique	4.5	1050
FMJ	95	Bullseye	2.9	980
FMJ	95	Red Dot	3.0	1005
*FMJ	95	Unique	4.5	1050
JHP	90	Unique	4.6	1065
*JHP	90	SR7625	3.9	1070
*JHP	80	Unique	4.7	1100
9MM LUGER				
#358345	115	Bullseye	4.0	1050
#358345	115	Bullseye	4.9	1200
#358345	115	Unique	5.7	1210
#358402	121	Bullseye	4.4	1125
#358402	121	Unique	4.3	940
*#358402	121	Unique	5.4	1145
JHP	90	Unique	6.8	1330
*JHP	90	Unique	7.2	1400
JHP	100	Unique	5.7	1120
JHP	100	Unique	6.1	1220
JHP	125	Unique	5.5	1060
JHP	125	Unique	6.0	1155
.38 Colt Auto				
#356402	121	Unique	5.2	1090
#356402	121	Unique	6.0	1255
#358480	133	Unique	5.1	0175
#358840	133	Unique	6.2	1240
JHP	90	Unique	8.0	1445
*JHP	90	Unique	8.5	1510
JHP	100	Unique	7.0	1275
JHP	100	Unique	7.5	1350
JHP	125	Unique	6.5	1165
JHP	125	Unique	7.0	1240
.45 ACP				
#452389	185	Bullseye	3.5	660
#452389	185	Bullseye	5.0	890
#452389	185	Unique	5.0	685
#452389	185	Unique	7.5	995
#452389	185	SR7625	6.0	1030
#452460	200	Unique	5.0	670
#452460	200	Unique	7.5	980
#452374	225	Unique	5.5	695
#452374	225	Unique	7.3	905
#452374	225	Unique	7.7	950
JHP	185	Unique	7.7	1000
*JHP	185	Unique	8.0	1050
JHP	185	Unique	8.5	1100
JHP	200	Unique	6.9	920
*JHP	200	Unique	7.3	975
JHP	225	Unique	6.6	875
*JHP	225	Unique	7.0	925

*Top loads should be approached from below, and used only in first-class guns.

RELOADING FOR AUTOLOADING PISTOLS

(Continued from page 53)

cept in .38 Super, .32 and .25, which headspace on their semi-rim). The roll crimp favored by many is not necessarily bad, but it may be applied only into cannelures existing on the bullet—thus restricting seating depth—and it *does* make headspacing less certain and less consistent. For this reason, I much prefer the taper crimp. Applied in the fashion described, with cases properly prepared, it offers superb results—further, cases ¹ longer than when using a roll crimp.

Ammunition loaded as we've described will give you the best in reliability and accuracy in service guns. Pure target guns are another matter we'll go into another time. However, there is yet one more operation needed if you wish to be absolutely certain every round will feed and fire perfectly when the occasion arises. Remove the barrel from your pistol, then drop each cartridge into the chamber, using it as a profile gauge. The cartridge must enter freely, and to full depth; if it doesn't, it *might* cause a malfunction. If a cartridge enters the chamber more deeply than normal, it shouldn't cause any trouble, but I'd suggest keeping it for plinking or practice, rather than  serious social intercourse.

HECKLER & KOCH VP-70 AUTOLOADER

(Continued from page 47)

Browning fashion, but its travel is much greater.

Overall, the VP-70 Pistol offers many new and perhaps desirable features. It is aimed primarily at the law-enforcement market in this country, though certainly thousands of handgun buffs will feel they simply *must* have one because it differs so much from others.

As this is written, we've not had an opportunity to field-test a *production* VP-70 Pistol. However, we have shot the VP-70 Machine Pistol in the pistol mode, and there should be no detectable difference. Functioning was flawless, and accuracy acceptable for combat use, though the unusual double-action pull requires a bit of concentration. I found myself getting off the first round DA fine, then forgetting that all subsequent rounds also required the same long, heavy trigger pull. A bit of practice will correct that problem, though, and shooting should be akin to that of any good DA revolver. All in all, performance is good, if a bit different from what we've come to know—lots of people will like the VP-70 Pistol. 

(Continued from page 21)

on the right underside of the barrel is aligned with it. Functioning is just that simple, and parts are ridiculously few.

Disassembly hardly seems necessary for cleaning, but is simple enough. Reach inside the small hole at the right front of the frame and depress the barrel-pin latch; a 1/16" punch does the job nicely. Press the pin out to the right and slide the barrel off to the front.

Turn out grip screws and remove grips. Turn out the front side-plate screw on the right side of the frame; loosen the rear side-plate screw only slightly. Rotate the front of the side-plate downward carefully, removing each small spring as it comes into view. If this is done carelessly, the spring may fly out and become lost. Remove the sideplate and stop. No further disassembly is necessary—but the steps are obvious if you insist.

Though not of a type with which sights will often be used, the LM-4 carries a better set than most pocket pistols, complete with serrated rib. The sights are useful, because the DA-only trigger pull has a built-in hesitation just before the striker falls. This allows deliberate aimed fire with a modicum of practice.

One might expect this gun to recoil viciously—but it does not. The wide back-strap and low barrel position greatly reduce recoil effect. Even at 21 ounces I've not found its recoil or jump noticeably worse than a .45 Colt LW Commander weighing over a third of a pound more.

All in all, this is a most unusual gun, designed by Philip Lichtman and produced by the Semmerling Corp. of Boston (P.O. Box 400, Newton, Mass. 02160). But, friends, it ain't cheap. In current limited production an LM-4 will set you back \$645.00 worth of American long green. But, if it can save your life, who can say that's too much? You pay more for life insurance, and it only pays off after you're dead!!



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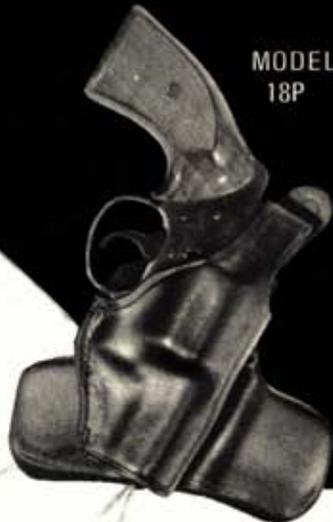
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MODEL
18P

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