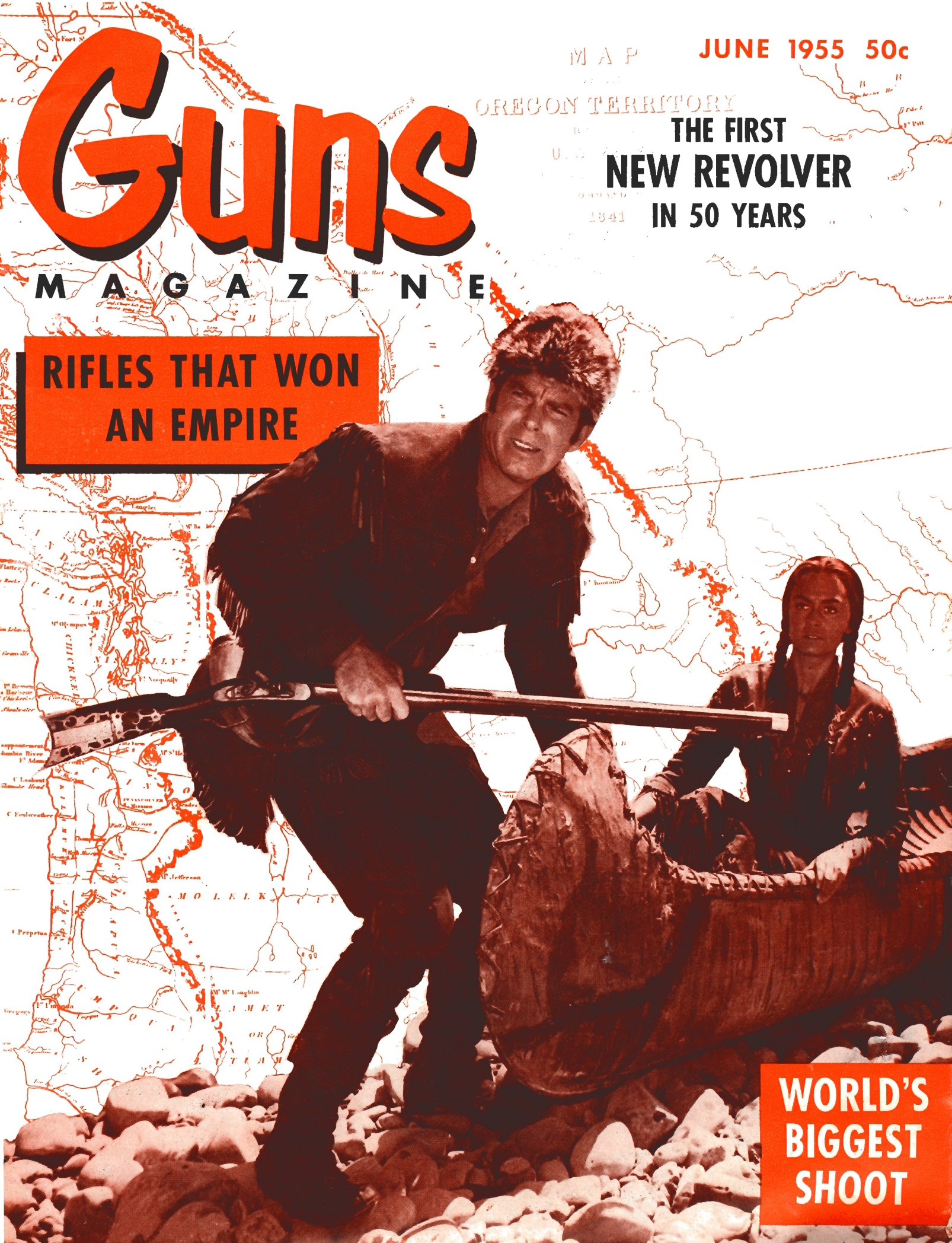
JUNE 1955 50c

Guns MAGAZINE

THE FIRST
NEW REVOLVER
IN 50 YEARS

RIFLES THAT WON AN EMPIRE



WORLD'S BIGGEST SHOOT

FIGHTING MEN OF THE WEST

. . . BUFFALO BILL CODY

Was ever a name more romantic than that of "Buffalo Bill?" Splendid in fine clothes and boots on a white horse, Buffalo Bill was a thrilling sight as he opened the exciting spectacle of his circus. Showman, impresario, trouper—what else was the real Cody?

Born William Frederick Cody on an Iowa farm in 1846, he had his fill of Indians early. In 1860 he drifted to St. Louis and into a job with the Pony Express. Service in the 7th Kansas Cavalry gave him a taste of real fighting. Jobless in 1867, he was taken on by the Kansas Pacific railroad as meat hunter for the section gangs. Slaughtering over 3,000 buffalo in one season, at 21 he had earned his name. In 1872, he was a representative to Nebraska's legislature. Then another hitch in the cavalry, in the Sioux war of 1876. His friend Custer did not survive, but Buffalo Bill came out smiling, with a growing ambition . . . the Wild West Show!

Started in 1883, the first European tour took place in 1887. Ned Buntline was Cody's advance agent, and Cody lived up to Buntline's bombast. Some of the Cody myth was false: he arrived at the scene of Yellow Hand's death (the Indian chief he was supposed to have strangled bare-handed) the day after it occurred. But the essential reality was there, the hard-riding, fast-shooting westerner. As late as 1891, he fought against the Sioux with the Nebraska National Guard.

Buffalo Bill died in 1917, but his spirit lingered on. His true adventures, and the stage-play ones, became a part of the American tradition.

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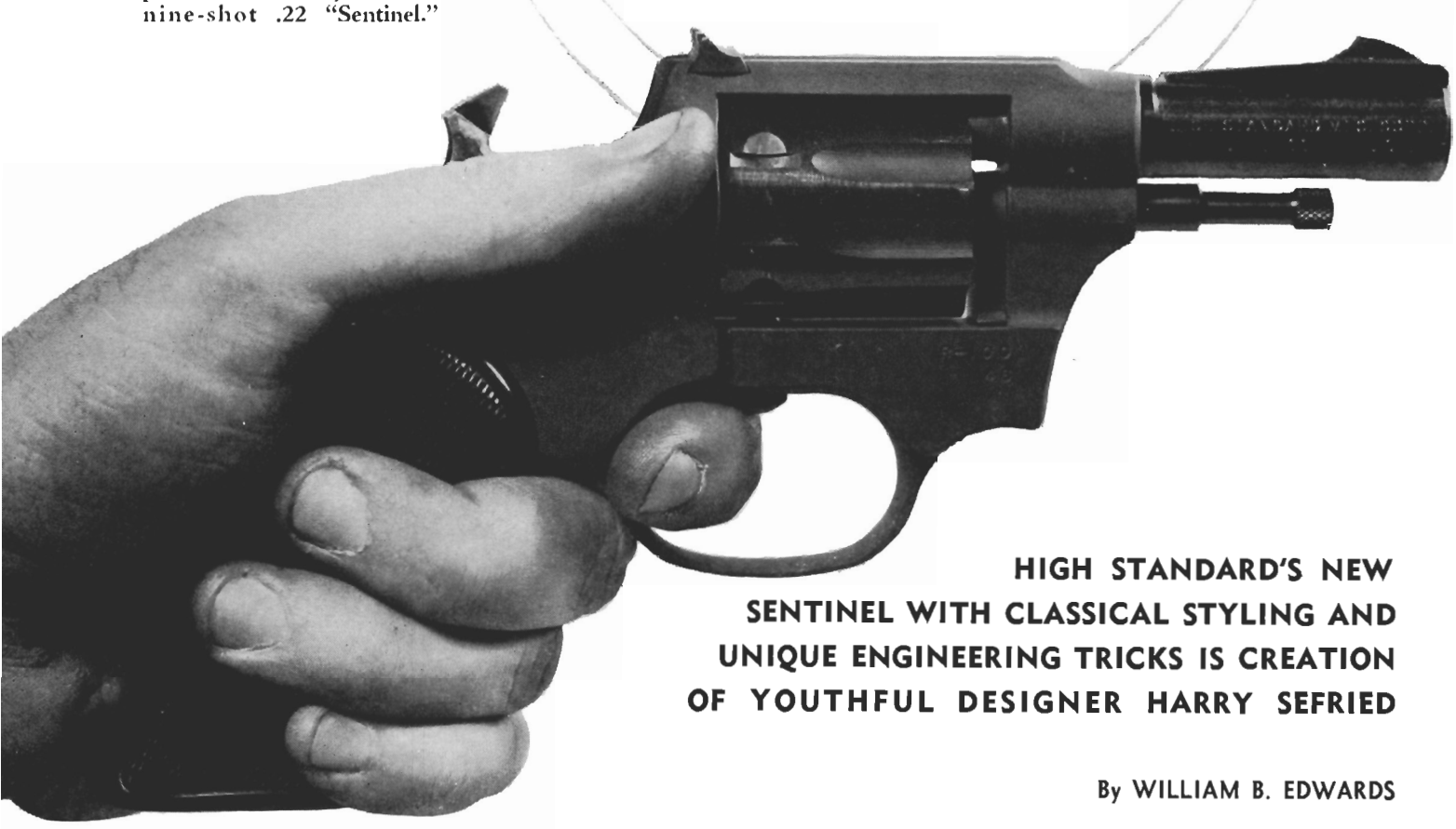
COVER

On 15 rifles and a half-dozen fusils hinged America's greatest conquest—the exploration of the Northwest by Lewis and Clark. Now reenacted by Hollywood with Fred MacMurray carrying a replica Kentucky flintlock, the historic trip depended on a meager arsenal of weapons. For the story of those guns, see page 25.

THE FIRST NEW REVOLVER IN 50 YEARS



Thumb rest moulded in frame side combines with short Double Action trigger pull for accuracy in new nine-shot .22 "Sentinel."

HIGH STANDARD'S NEW SENTINEL WITH CLASSICAL STYLING AND UNIQUE ENGINEERING TRICKS IS CREATION OF YOUTHFUL DESIGNER HARRY SEFRIED

By WILLIAM B. EDWARDS

THEY TALK about John Browning as having been the foremost designer of guns in the modern era, but there is a young man working in New Haven now who may equal and even surpass the accomplishments of the great J.M.B. His name is Harry Sefried, and he works for the High Standard Manufacturing Company in charge of handgun designing. The latest of his important developments, turned out in a space of six months from front office requisition to final approval of the model, is a .22 nine-shot "tackle box" revolver called "The Sentinel."

It is the first revolver to be made by High Standard, known since 1930 for automatic pistols, and the first really-new, different revolver on the American scene in 50 years! I got a sample, No. 46, and immediately realized that this is no "ordinary" post-war gun. It is classical in styling, but the engineering tricks in the design of its guts are really different. The Sentinel with a price tag of $34.95 is no doubt destined to be the hottest thing in the market this year. Advance orders for the new gun equalled the total of the first year's planned production only a month after High Standard took the wraps off it!

Shooting the Sentinel is a revelation of just how good one can actually shoot. Of importance in double action firing is the "hang" or "point" of the gun and its qualities

of being a natural prolongation of the shooter's arm. The Sentinel grip accomplishes these desirable things: the grip is even more important for accuracy than the barrel length, and the shorter 3″ barrel even seems to enhance the shooter's skill by reducing the amount of apparent tremor in the sights. Firing double action at the 20 yard Standard American target, I put all nine shots on the paper in a regular spread about 4″ diameter.

The moulded thumb rests, integral with the frame, make the Sentinel absolutely the finest of any factory revolver grip available. Other people who have handled this gun "cold" really get enthusiastic about the grip. It's natural. The finger behind the guard really supports the gun, without a filler or "grip adaptor." Sefried owes that to Sam Colt, from whom he has really learned a lot. Harry made some changes to make it a grip for double action as well as single action shooting, but that Civil War "pocket Colt" grip really makes the back end of the gun a success.

Sefried makes no bones about acknowledging his debt to great gun makers of the past. He has a tremendous knowledge of every firearm ever made: he still keeps up guntrading and dealing, and latches onto every odd or different gun he can find, to study it from the bottom up. "I liked the big Mauser pistol, made without any screws, no screwed-on side plate, or crane lock, so I tried to make the Sentinel like it," Harry admits. He did and there is only one screw in all Sentinel's works. That one holds the separate plastic grip onto the guard frame.

But Harry can be plenty original when he has to or there is something to gain. "That drilled-hole ratchet on the Sentinel is mine . . . that's going to be the basis for a nice little patent," he says.

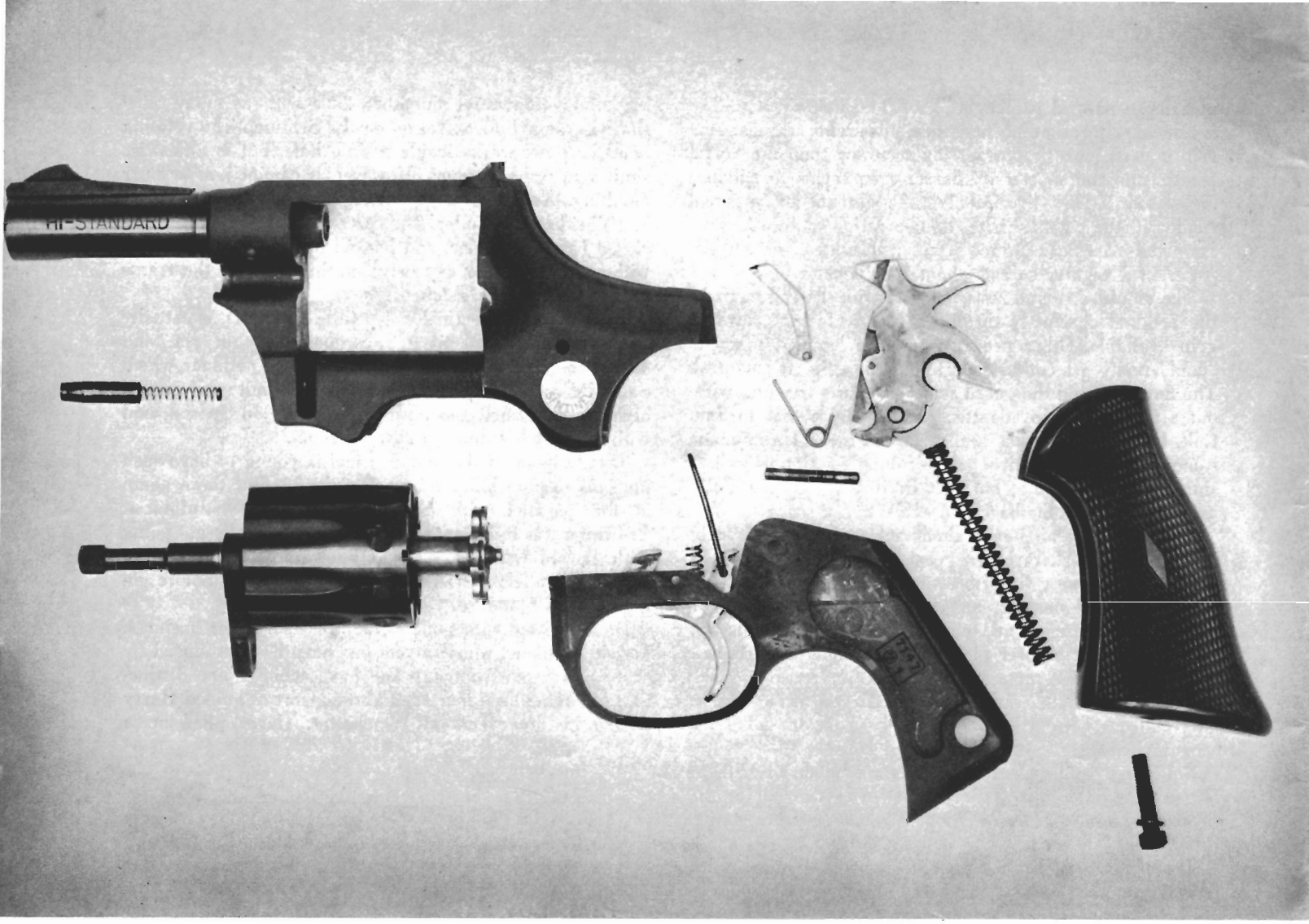
The virtually fool-proof "ratchet" consists of nine holes drilled into the back of the extractor. Ordinary ratchets are little bumps of metal easily jammed if the gun is loosely fitted, and burrs may actually make the cylinder rotating affair inoperative on other .22's with as many as 9 shots in the cylinder. Not so on the Sentinel. The rotating hand or pawl works inside a little hole, but is otherwise similar to ordinary guns. However, it cannot jam or burr anything. Added is the advantage of having the ratchet built inside the cylinder. The cartridges can be entirely enclosed by the cylinder, and backed up by the solid frame, without the need for expensive machine cuts in the frame to take an ordinary ratchet.

The size of the Sentinel leaves little doubt that eventually High Standard will have a complete line of rim and *centerfire* revolvers, and the recessed head cylinder which Sefried's ratchet makes possible will permit safe use of high powered shells, in perhaps 9mm or .38 Special, and with a stronger frame, in .357 Magnum.

The designer of the new Sentinel is young to have such unusual responsibility . . . he's only 33. But there again is the parallel with Browning's career—youthfulness. Browning was in his early thirties when he really got going with the old Winchester Single Shot rifle. That brings up another parallel: Sefried worked at Winchester before going to High Standard.

He associated with some of the best men in the business. Marsh Williams, whose inventions have been produced by every major gun company and have achieved the distinction of having been infringed abroad, sort of guided Harry during his five years at Winchester. Harry piled up a

Completely different from any other modern revolver, the "hole-type" ratchet of the "Sentinel" marks the beginning of a new trend of arms designing. Designer Harry Sefried copied grip for new gun from old Colt (above).



New "Sentinel" takes down into four main groups, consisting of the cylinder-crane, trigger-guard-bolt, grip, and barrel-frame assemblies. The hammer pin (below hammer in photo), passes through both guard frame and main frame, to hold everything together. Hammer rebound safety bar is fitted to trigger, and acts as pivot for the cylinder pawl.

record that was really a surprise when he was told about it. He had the highest "score" on patents during those five years, averaging one significant patent every six months. He worked out an autoloading .22 rifle and the latest "C" Model 52 trigger, that the Big Red W boys feel pretty happy about. When Harry came to work at Winchester at the end of the war, he already had something of a gun-designing background.

Since the age of 6, when he got his first rifle, he's been interested in guns. In East St. Louis High School, where he grew up, he used to fix the rifles of the other school kids. Sometimes the police were not exactly happy, and took the rifles and pistols away from the boys, because they used them for cracking telephone insulators or shooting cats. But other times Harry was on good terms with the boys in blue, and he even recovered some of the guns, which he promptly resold to other schoolmates.

The Air Corps took him in 1942. While there, he found himself in shooter's seventh heaven: they made him gunnery instructor, and told him about the cartridge company up in East Alton, Illinois. "Now those folks are making a billion rounds of shotshells a month, and we just want you to burn them up teaching beginning gunners how to knock out Zeros!"

Harry unfortunately picked up a spinal injury which sometimes troubles him, and the Air Force invalided him out in 1944. He went up to East Alton to get a job, for back in the days just out of high school, he had worked as a machine operator in a shell-making plant in St. Louis. Winchester's chief of research Edwin Pugsley saw him, and was pretty impressed, told him to go right up to New Haven and go to work. He stayed at Winchester, and learned how the slipstick crowd works.

Five years of night school engineering courses at Yale really put on the polish. He never tried for a degree . . . what Sefried wanted and what he got were courses that would help him be a better gun designer. If Yale wanted to give a degree in firearms engineering, they could take the courses Harry selected and have a curriculum all picked out.

When he realized that he could not get into pistol making with Winchester, Harry was faced with a problem. He solved it simply by resigning. On April 1, 1951, he went to work with High Standard.

Here was a company started in 1928 by one of the best brains in the gun business, C. G. Swebelius. "Gus" began with a couple of friends and three employees making deep-hole gunbarrel drills, over in a garage on East Street. But there was something he apparently never forgot, his years with Marlin-Rockwell during World War I when he designed the Marlin aircraft machine gun. He liked things that go "bang." When the chance came to pick up a

Hartford pistol business, he bought it. The Hartford Arms and Equipment Company, making a "Woodsman" type auto pistol, was making a big bang in bankruptcy court, and Gus bought it cheap.

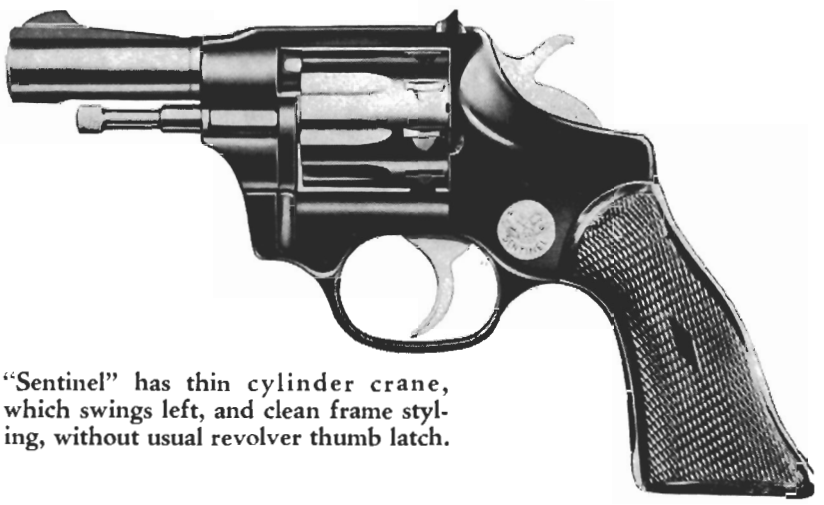
The great depression was no time to go into business, but deep hole drills paid the freight, and quality work in the medium-priced field sold guns. The "B" and "C" Hi-Standards sold for 15 to 18 dollars before the war. In 1939, things picked up. Orders for gunbarrels from Britain poured in, and barrels rolled out in an increasing production flow. High Standard Browning Heavy Fifties, wing mounted in "Hurricanes," to spread a blanket of fire over England and helped win the Battle of Britain. Production of Enfield M1917, Springfield 1903, .30- and .50-caliber BMG barrels was material aid to the U. S. forces fighting from pole to pole.

After the war ended, the High Standard HD-Military .22 training pistol was sold commercially in tremendous numbers. Serial numbers on actual guns indicated a production approaching 100,000 pistols per year. Meanwhile, other models were prepared. The "G" series, with removable barrels and quick takedown, has proved to be unusually successful in .22, although the experimental Special .38 "G" and the commercial G-380 flopped.

When Harry walked into High Standard in 1950, the company was trying to compete with a more deadly foe than any to be found among the other gunmakers. That enemy was inflation. Harry's job was to design guns which could beat the high cost of living. His first real challenge was a .22 plinking pistol which eventually was called the "Dura-Matic."

It was a design bought from outside the company, and he had to work it over until High Standard could manufacture the gun and make money selling competitively. When the Dura-Matic was announced last year at only $37.50, Harry's success was obvious. Nicely balanced, made predominantly of forged and machined parts giving a "$50 pistol" look, the Dura-Matic has been a good seller. It hangs in the hand like a target gun, and its grouping ability will tax the experts: if you can hold them, it will do the job.

The front office tossed the idea of a revolver at Harry less than a year ago. It had to be nine shots, maybe capable of being loaded with .22 shot shells and used for blasting snakes at ten feet. Other than that, and a "low price" limit, he had carte blanche. From the first mark on paper, to the completion of the model gun ready for approval, took him three months! Into that incredibly short space of time he jammed a thousand other duties as well, since he is now chief of pistol development. It took added time before the design was finally given the green light, and more time for tools to be made by an outside contractor.



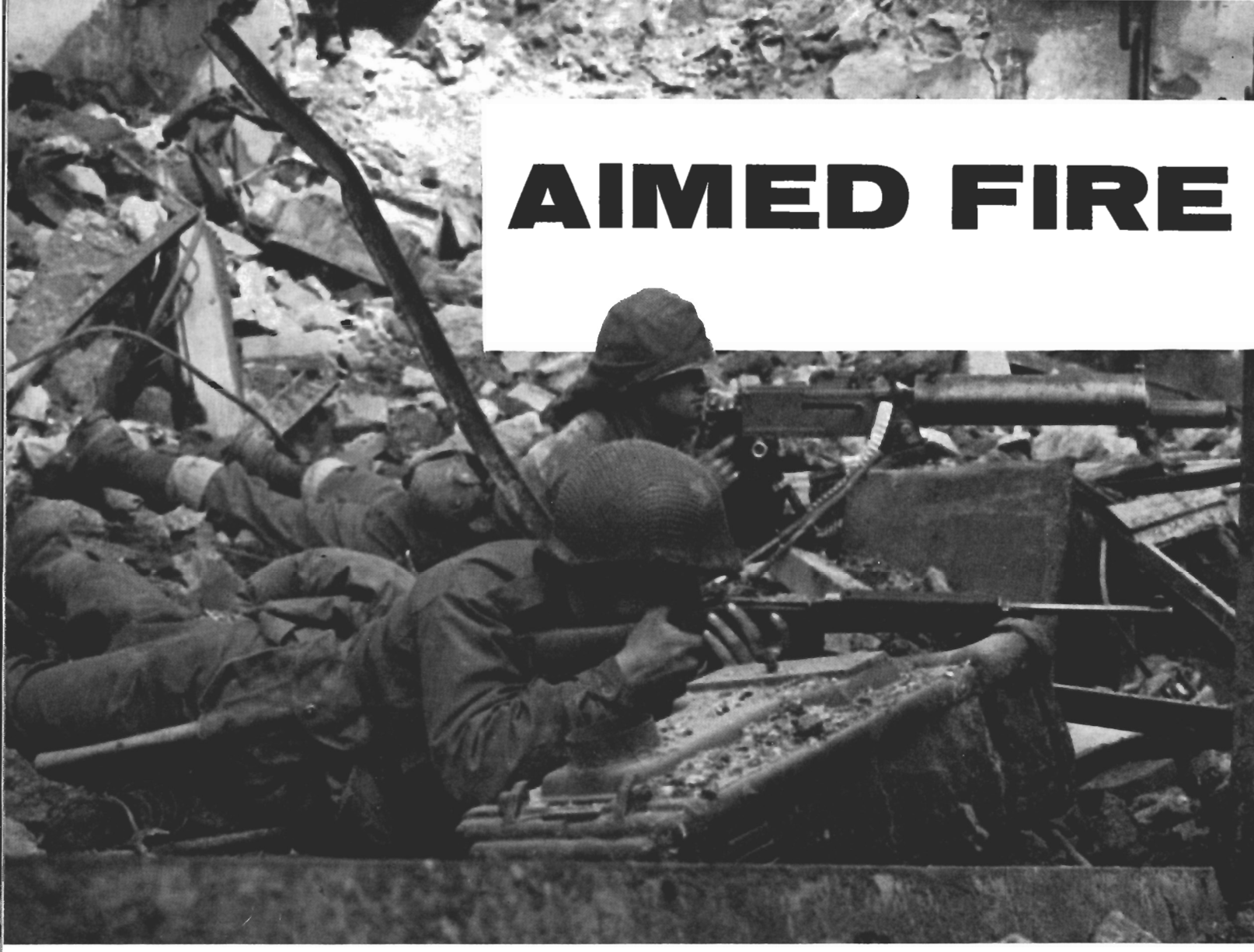
"Sentinel" has thin cylinder crane, which swings left, and clean frame styling, without usual revolver thumb latch.

Die casting seemed to Harry a good way to make a precision part with a minimum of fuss and machining. Dies cost a fabulous amount, but in production, costs on each part can be reduced to little more than the value of the raw material. Thus the frame parts of the Sentinel are of precision-cast aluminum, anodized to a pleasing dull-gray matte finish. For a "service" gun, to be tossed into the fishing kit or dropped in the mud accidentally, rustless aluminum has plenty on its side as a gun material. About the only parts likely to get rusty on Harry's latest wonder are the easily-cleaned barrel and cylinder. It is light in weight, too, only 21 ounces for a man-sized gun.

The first ten Sentinel revolvers run through the tools to check dimensions will one day be collector's items. They were supposed to be "experimental," but someone decided to give them serial numbers. The numbering machine was set up to put serials on their auto pistols . . . so the very first Sentinel revolvers have numbers in the 350,000 series. Harry is a gun collector, too, and he yelped when he saw those. The next Sentinel bore the number "1" and they are being numbered all the way up in their own series.

Handguns have always fascinated Harry. One or two features of the Borchardt experimental revolver of 70 years ago have turned up in the Sentinel! Sam Colt's little pistols always took his fancy, too. For a long time the only revolver which *(Continued on page 37)*

Designer Sefried's "Dura-Matic" has separate plastic grip and simple, outside lines similar to "Sentinel."



AIMED FIRE

In the rubble of blasted building, American infantryman with carbine combines elements of both aimed and mass fire.

WHILE TOP MARKSMANSHIP IS STILL IMPORTANT IN BATTLE, IT IS MUSKETRY OR SATURATION FIRE OVER WIDEST POSSIBLE AREA THAT WINS WARS TODAY

By JAC WELLER

TRADITIONALLY American, aimed fire has been a part of our national heritage for almost a century. Proud of the marksmanship of our soldiers, we think of America as a nation of riflemen and believe we have won all our wars largely by the pinpoint accuracy of our small arms fire.

Yet today America's entire concept of military tactics is abandoning that view and we are returning to methods of warfare of a century ago—mass fire or musketry. In Korea as well as in World War II, soldiers did not aim with any degree of accuracy but rather endeavored to send as many bullets as possible into an area where they thought the enemy was located.

Riflemen and machine gunners distributed their fire over the entire area, rather than shoot at specific targets. Far more frequently than not, there were no enemy soldiers clearly visible. The object was to inflict casualties by combing the area with bullets, to pin down the enemy and gain ascendancy over him. This is musketry, although the term is not so frequently applied to this type of fire today as in the past.

Today it is considered wasteful to use an infantry weapon for long range firing. Although an M-1 Garand rifle under ideal conditions will shoot chest-size groups at 700 yards, such aimed fire is frowned upon by many military men.

Actually both aimed and mass fire, although fundamentally different, have been used in almost every battle where American soldiers have fought. In the 18th and the

VERSUS

MASS FIRE

Elite Russian guards in West Berlin typify trend to mass fire with their PPSH-1941 model machine pistols.

Prussian troops of Frederick the Great conquered much of Europe using musketry tactics, which involved short-range firing of volleys and liberal use of the bayonet. Troops of Frederick are still honored today in German pageants featuring costumed soldiers with bayoneted original flintlock muskets.

first half of the 19th century, aimed fire was delivered by riflemen trained in the handling of their special weapons since boyhood. The regular infantry were armed with smoothbore muskets. Because of the inaccuracy of these weapons, the projectiles from them could not be precisely controlled. The term musketry means more or less saturating the landscape, although, of course, the range of the old smoothbores was limited.

After about 1860, however, the basic infantry weapon was usually capable of aimed fire. The rifle at last became universal for regular infantry use. However, it was far more frequently employed to shoot in the general direction of the enemy than at specific targets.

Even in earliest colonial days, both ways of shooting were used. The early settlers had the Indians armed with bows of an extremely primitive and inefficient type as their only internal enemies. Any firearm that could be fired quickly was satisfactory. The light flintlock musket, or fusil, was then ideal for wilderness conditions. It was rugged and cheap, but could be carried loaded and primed; it could be fired in a couple of seconds at an Indian or deer. The laws of each colony required each able-bodied man to own and keep such an arm in good shape.

Colonial conditions, of course, put a premium on accuracy; however, ranges in war and in hunting along the eastern seaboard were usually short. A smoothbore musket could deliver aimed fire up to a range of about 100 yards, if carefully loaded and aimed. The Indian bow was accurate to about 15 yards.

Around 1700 imported rifles began to be popular; they were more accurate and shot farther. Very soon American gunmakers started to produce these rifles, particularly in Lancaster County, Pennsylvania. The accepted story is that the heavy German Jager rifle of larger bore and considerably shorter length was slowly modified into the long, small-bore, relatively light, so-called Kentucky rifle.

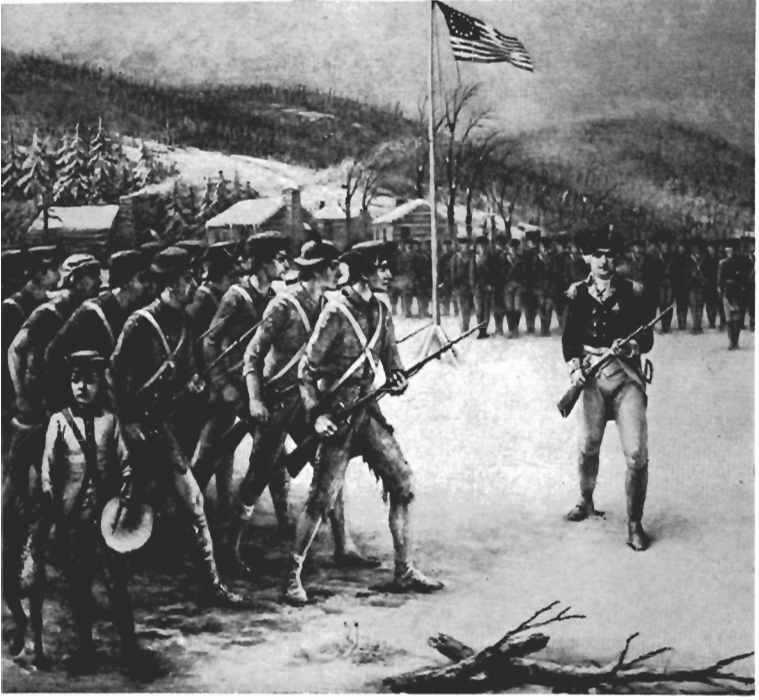
Because of their lightness, the lightness of their ammunition, and their hunting field accuracy, these rifles were extremely popular in some sections. In the hands of a skilled man, they were probably as accurate at 200 yards as a smoothbore musket was at 50.

But these rifles had many disadvantages for military use. They were slower to load and could fire far fewer shots than muskets before thorough cleaning of the bore was necessary. They were not so sturdy for hand-to-hand combat and did not take bayonets. The small caliber rifle bullets were not so powerful as the larger musket balls; buckshot couldn't be used for close range work. However, in the hands of men used to handling them for years, they were perhaps the most efficient firearm ever made up to that time. The colonial rangers who fought in the French and Indian Wars under Major Robert Rogers and others were superb light infantry for all fighting save actual line combat.

At the time of the American Revolution there were two schools of thought concerning infantry small arms. The advocates of aimed fire were numerous from Pennsylvania south, particularly behind the tidewater country. There were many rifles in this area. However, muskets also were numerous, even in the mountains. Men of military learning and experience in general favored the musket. There were very few rifles in New England.

In the early fighting of the war, the battles of Lexington, Concord and Bunker Hill were fought by both sides almost

EVOLUTION OF U.S. ARMS FROM MUSKETRY TO AIMED FIRE



Baron von Steuben's training of Continental troops in musketry at Valley Forge helped gain later American victories.

In Andrew Jackson's victory at New Orleans in 1815, British were mowed down point blank with massed cannon.

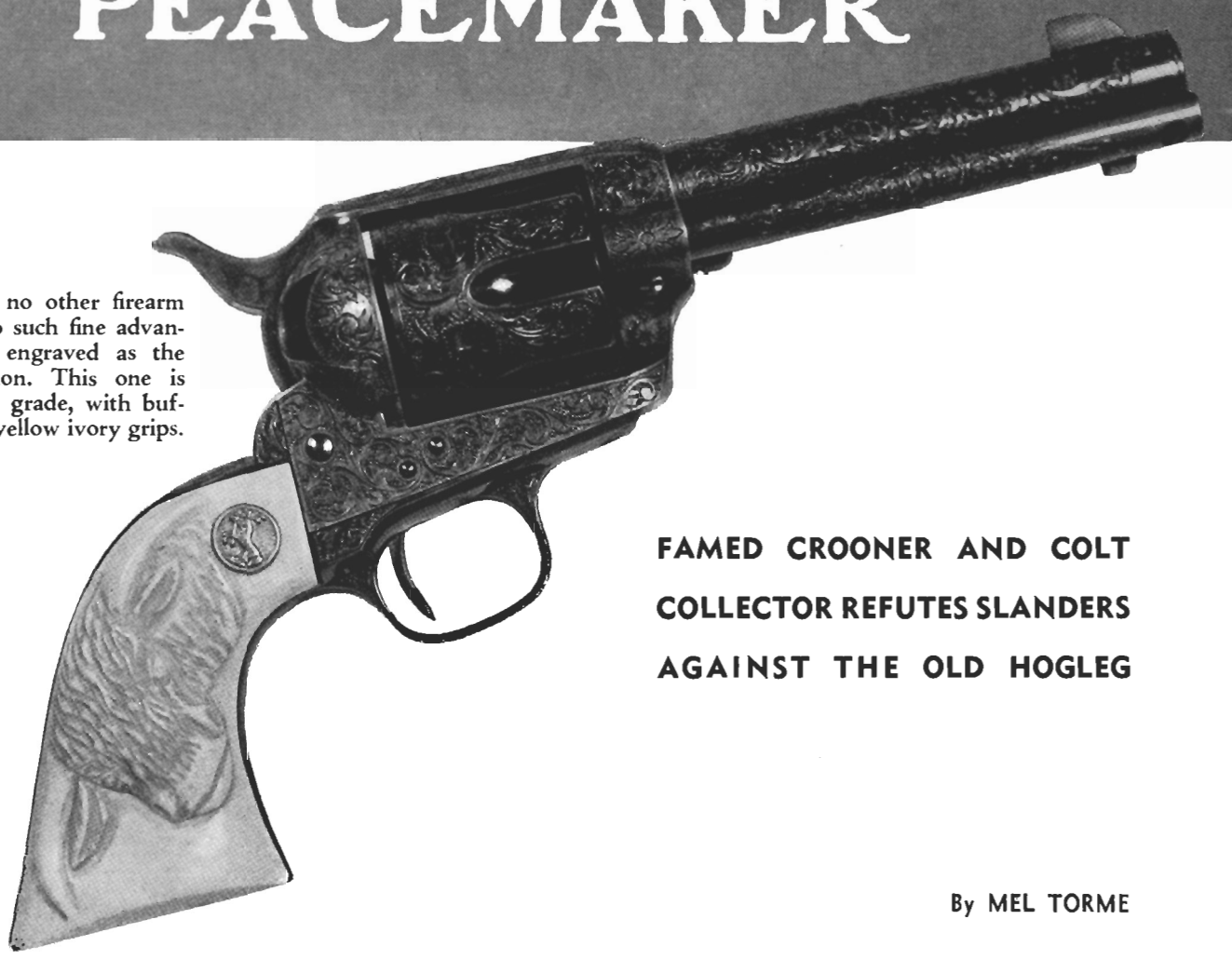
completely with smoothbore muskets. At Bunker Hill, the ill-organized and worst-trained Continental army inflicted on the British regulars about 40 per cent casualties in less than an hour. The Americans were largely behind breastworks and held their fire until the range was quite short. In some cases, the American units waited to fire until the British were no more than 20 yards away. The severe British casualties were due to the tenacity and natural ability of the colonial militia in handling their muskets. The British finally took the Continental position, but at a cost all out of proportion to what they actually were able to gain.

Fighting around New York began in the early summer of 1776 and this series of actions was distinctly disappointing to the advocates of rifle fire. Many of our defenders there were armed with rifles, which soon became useless. The long slender bores fouled rapidly with continuous firing. The tight-fitting bullets became lodged in the upper portion of the barrel, and could not be moved with the slender wooden ram-rod usual with American rifles.

Washington was pushed across *(Continued on page 43)*

At Bunker Hill, British attempted to take a strongly-defended position by direct assault. Wily colonials remained below breastworks until the British were but yards away, then opened up with volley after volley of mass fire.

IN DEFENSE OF THE PEACEMAKER



Probably no other firearm shows up to such fine advantage when engraved as the Single Action. This one is factory "C" grade, with buffalo-carved yellow ivory grips.

FAMED CROONER AND COLT COLLECTOR REFUTES SLANDERS AGAINST THE OLD HOGLEG

By MEL TORME

FOR THE last ten years, whenever I had a moment away from show business, I have been fortunate enough to amass what some have been rash enough to call the most complete collection of all types of the Colt Single Action Army Revolver to be seen around. When someone armed with a typewriter takes off after the Peacemaker and insists it's "all washed up" and ready for a future as a lamp shade base, those are fighting words indeed. It was gunsmith George Pearsall, who set down those fighting words in a recent issue of GUNS in his article called "That Overrated Old Hogleg."

Although I agree with some of his observations, I hereby elect myself a committee of one to represent the untold thousands of Peacemaker fans who must be champing at the bit to get in a few swipes at him for his condemnation of the most popular handgun of all time. I feel somewhat obligated to point out a few details of the gun which he perhaps neglected to consider.

First of all, no handgun in firearm history has been produced in such varied calibres. Since its inception in 1873, the SAA has been manufactured in loads ranging from .22 R.F. to .476 Eley, the largest revolver cartridge made. In view of this, it would seem logical to assume that the frame and other components of the "Frontier" model are of sufficient strength to withstand the rigorous jolts of any load, including the high-test .357 Magnum.

As far as Pearsall's statements concerning the inability of the backstrap and ejector rod screws to hold the gun together, I would like to say I have a factory .357 Magnum in my possession (#357111). I have fired it on numerous occasions. The backstrap screws are still reasonably tight. The ejector rod screw still adheres to its female counterpart in the barrel as though they were in love. No harmful effect whatsoever. Except the poor target which looked as though someone had fired a wide-choke pattern of 12 gauge buckshot into it. I'm a lousy shot with anything over .22 calibre.

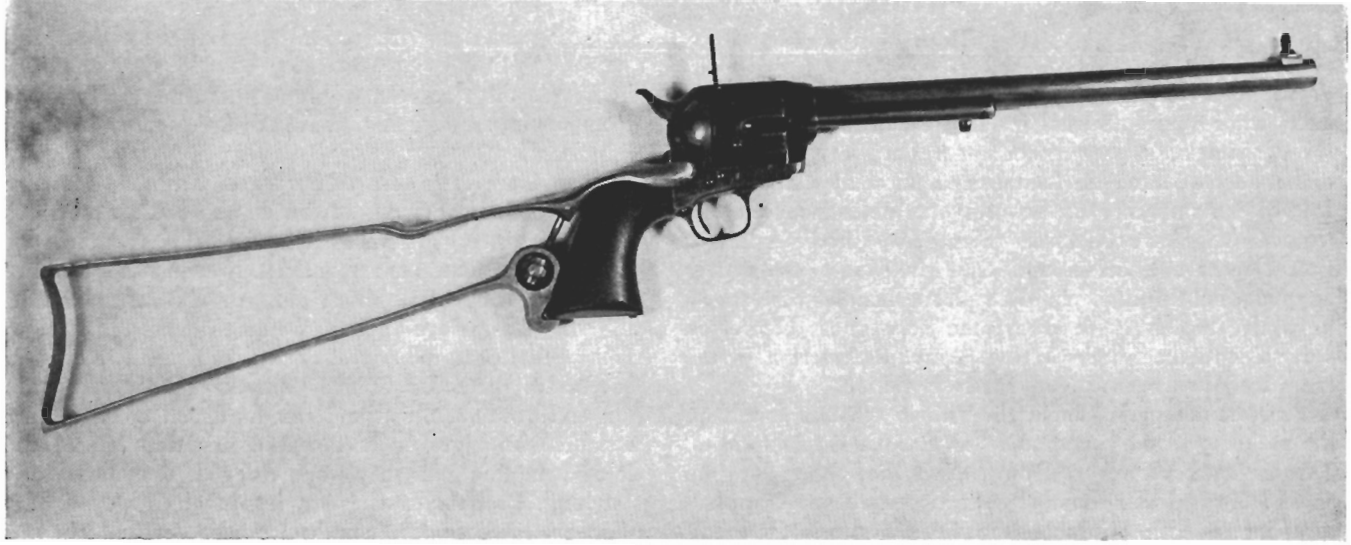
The Single Action grip of the Peacemaker is the most natural-feeling, sure-handed grip ever devised. Ever since that basic pattern first saw the light of day on the over-

grown Walker Colt and finally evolved into the 1851 Navy Colt, whose grip dimensions are practically identical to the Peacemaker's, every other handle on every other make and model of handgun has seemed puny by comparison. I know any number of Los Angeles policemen and detectives who have doctored their S&W Chief's Specials, Colt Detective Specials and Officer's Models with grip adapters, substituting one-piece plastic handles that are so ungainly they seem to dwarf the very guns themselves. Not so with the Single Action Army. Its traction in the hand has often been copied, rarely criticized.

Pearsall complains about the "finish" that is found on the majority of the SAA's and how hard it is to duplicate. This is true. However, from which viewpoint does he speak? As a dealer-shooter? A prospective gun-manufacturer interested in producing the cheapest gun in the greatest quantity with the least trouble? Or as a fancier of firearms? There are those who look upon any gun coldbloodedly as a functional instrument, designed for defense, target-shooting or law-enforcement. To this group of people the finish on a gun is there merely to keep it from rusting and pitting. What the finish looks like is unimportant.

Then there are those who regard a gun as something mechanically beautiful, both inside and out. At the risk of becoming misty, I have to adhere to this group. I don't think I'm an incurable romanticist. Nor do I feel I'm prone to the prattling of stubborn oldsters who refuse to admit the "new" guns are an improvement on the old. I simply believe that part and parcel of the excitement, interest and success of the older Colts lay in the handsomely-turned-out end product. Blued and case-hardened, nickled, silver-mounted or engraved and chased in gold, the old Colts looked the fine guns they were. Rugged. Dependable. Eye-catching. Probably a cheaper, less-involved way to finish the arms in those days could have been devised. The point is, Colt was proud of its creation and they were not interested in letting down on quality. This is not to belittle the present Colt operation. They still produce good weapons. But I'll bet everyone there from B. F. Connor, the

Mel Torme's collection of Single Action Colts has been selected for variety and fine condition. Of his 125 SAA's, five rare flat top Target models, including one Bisley, can be seen, and several excellent Civil War percussion Colts.



Experimental variation of the "Peacemaker" is popular singer Torme's pocket rifle or pistol-carbine. Skeleton stock was regular commercial offering but this gun's frame is special with leaf rear sight and "globe" front on 12″ barrel.

present boss, right on down will admit their present inexpensive dull black finish is unlovely to say the least, compared to the mirror-like charcoal blue and iridescent case-hardening found on the Single Action Army.

As far as Single Action versus Double Action is concerned, it is obvious the day of the double action revolver is here to stay. On the other hand, I make a habit of getting in some time every week at the West Los Angeles Police Range where, I've noticed, the boys in blue make their real attempts at accuracy by hand-cocking their double-action revolvers in the single action tradition and "squeezing 'em off."

As for that "long hammer-fall" peculiar to the Frontier model, Ed McGivern, the well-known pistol expert, has been known to do some startling things with a hogleg in competition with the newer and more modern guns. Wyatt Earp, himself a proficient pistoleer, mentions in his memoirs how Bill Hickok could send five shots on their

One of three made for English trade in this combination is Torme's .450 Boxer target SAA, with 5½ inch barrel and rare "flying eagle" grips of hard rubber.

Slow reloading of SAA led to design of complicated ejector device which indexed cylinder, popped out shells. It was very unsuccessful in Army tests.

way at an incredible distance and with great accuracy before anyone knew what was happening. Sure, it takes practice. Lots of it. But it can and has been done.

Without hedging, I will admit the Single Action Army, like most small arms, has its foibles. The flat mainspring is a problem. The sear is thin, (although I've never had one go on me). Nonetheless, the combined minds of the U.S. ordnance department must have had some idea of what they were doing when they reported on June 26, 1873. "The reports plainly show the superiority of the Colt revolver (Single Action Army) over all others tried. Purchase 8000 of these arms for the cavalry arm of the service."

Since then, Colt's New Model Metallic Cartridge Revolver of 1873 has seen service in every branch of the military, including the National Guard.

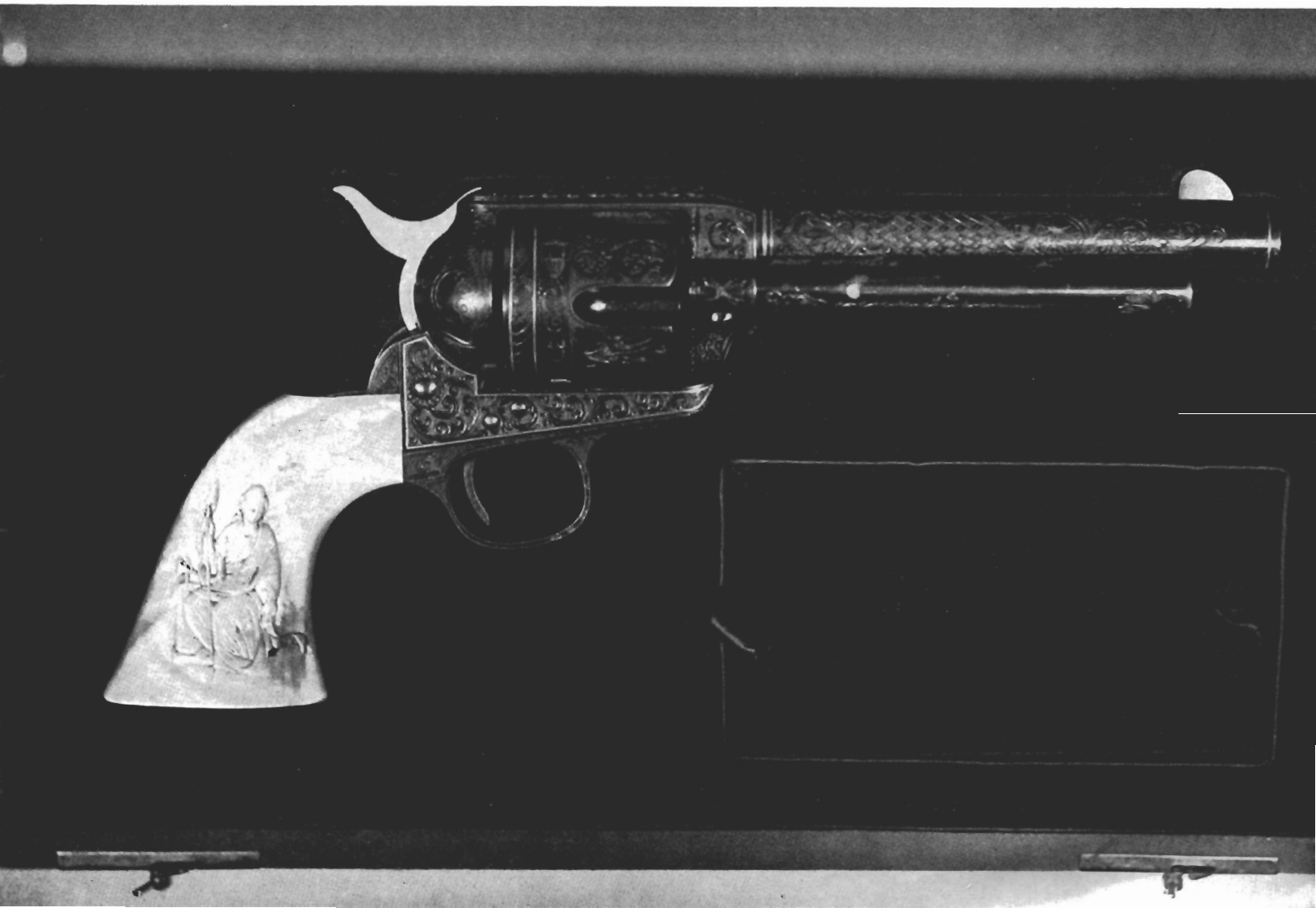
Of course, there are those who have exploited the charm and romance of the Peacemaker unmercifully for their own personal gain. While I enjoy seeing anyone make a buck, it burns me to see certain individuals prey upon the ignorance of novice gun enthusiasts, jacking the prices of average SAA's sky high, thereby setting a precedent and making gun-collecting a hobby available to the very few. One gent out West has so inflated the value of the six-gun that no matter where you travel these days in the U.S., wised-up dealers who have seen his lists throw up their hands when you protest against outrageous prices and proclaim, "Sure it's high. But what's-his-name out in your neck of the woods gets these prices for Frontiers." There oughta be a law!

That Great Western and Ruger have tooled-up to reproduce fairly faithful copies of the Thumbuster (GW's product is an almost exact duplicate while Ruger's Single Six is slightly scaled down) is yet further proof of the existing popularity of design of the Model P. My secret operatives also tell me the moguls at Colt are knitting their brows over this prolonged preference for one of their discontinued items. They figured the Frontier craze to be a fad. It's still here and now everybody's getting into the act and probably the Colt crew is somewhat unhappy that a design which was originally their baby is making moola for somebody else. I wouldn't be at all surprised if there is a surprise announcement from Hartford before too long.

Let's not, in the name of Fredric Remington, count the venerable Single Action Army out just yet. The general shape, size, feel and looks of it are enough to gladden the heart of many a handgun bug.

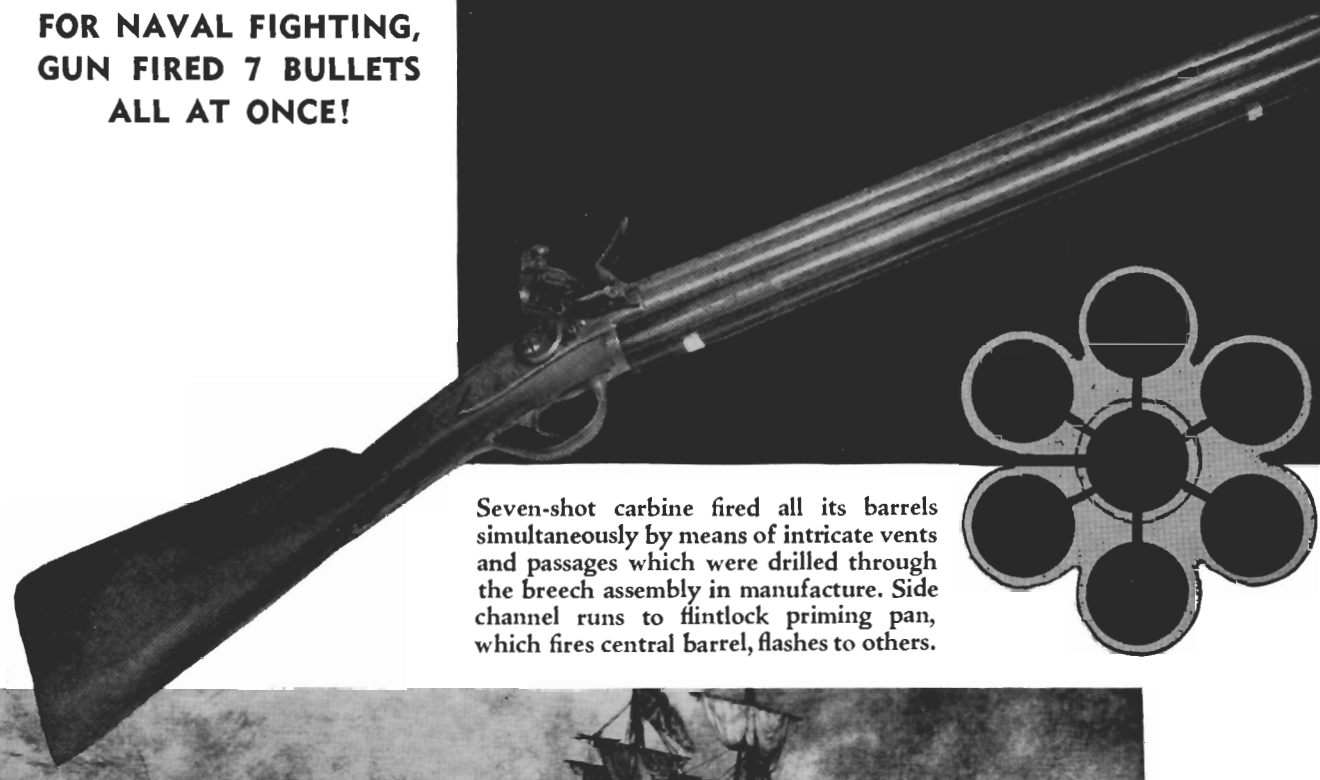
Are we all crazy to "go for" this antiquated, obsolete hunk of iron? Sure we are. Like a couple of hundred thousand foxes! ◉

Back in 1897 this gun now in Torme collection could be bought from Sears, Roebuck & Co. Engraved by Rudolph Kornbrath for the Colt factory, magnificent gun was shipped to Chicago on Oct. 23, 1897. Sears added the plush case.

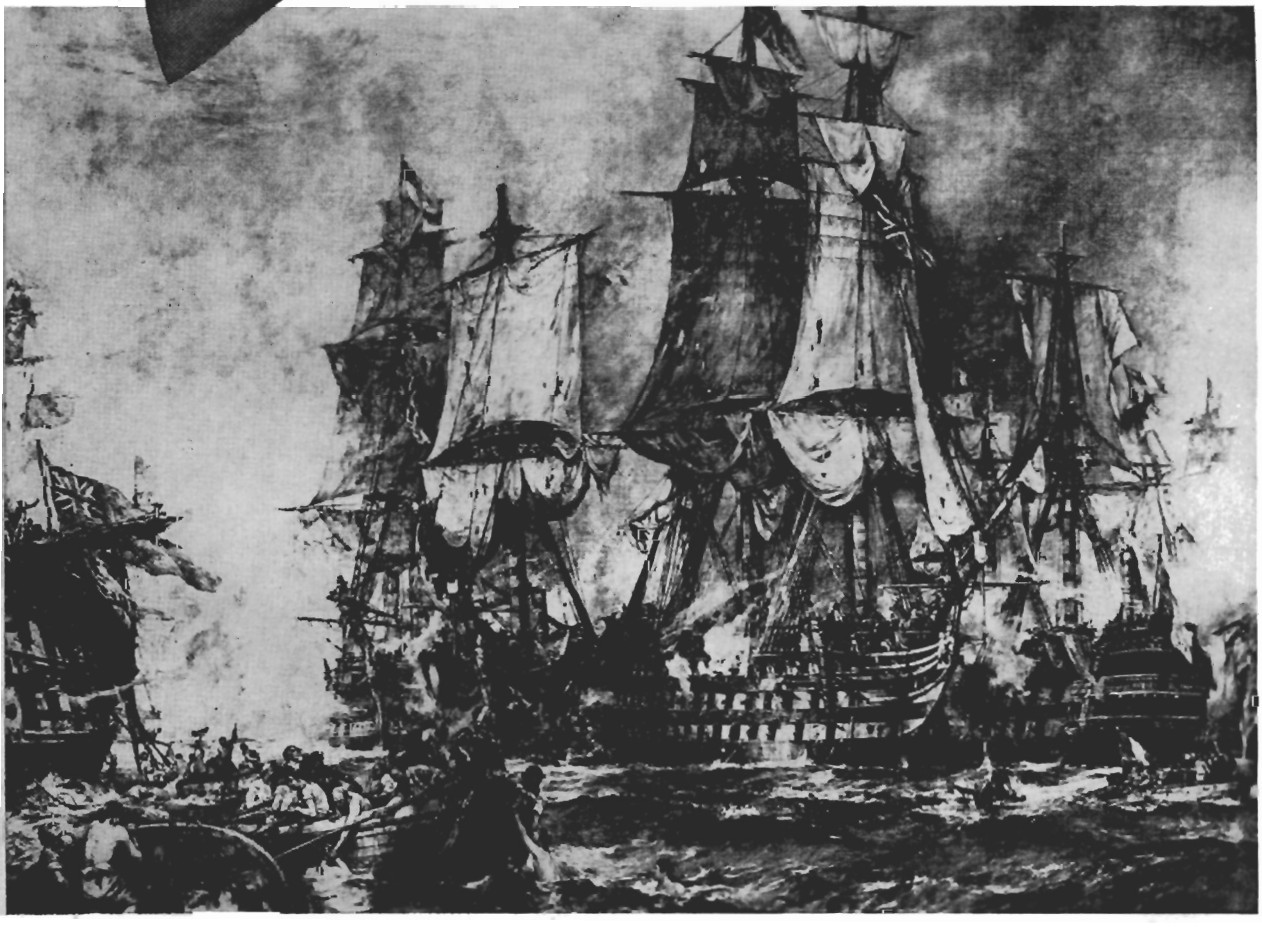


THE REMARKABLE SEVEN-SHOOTER

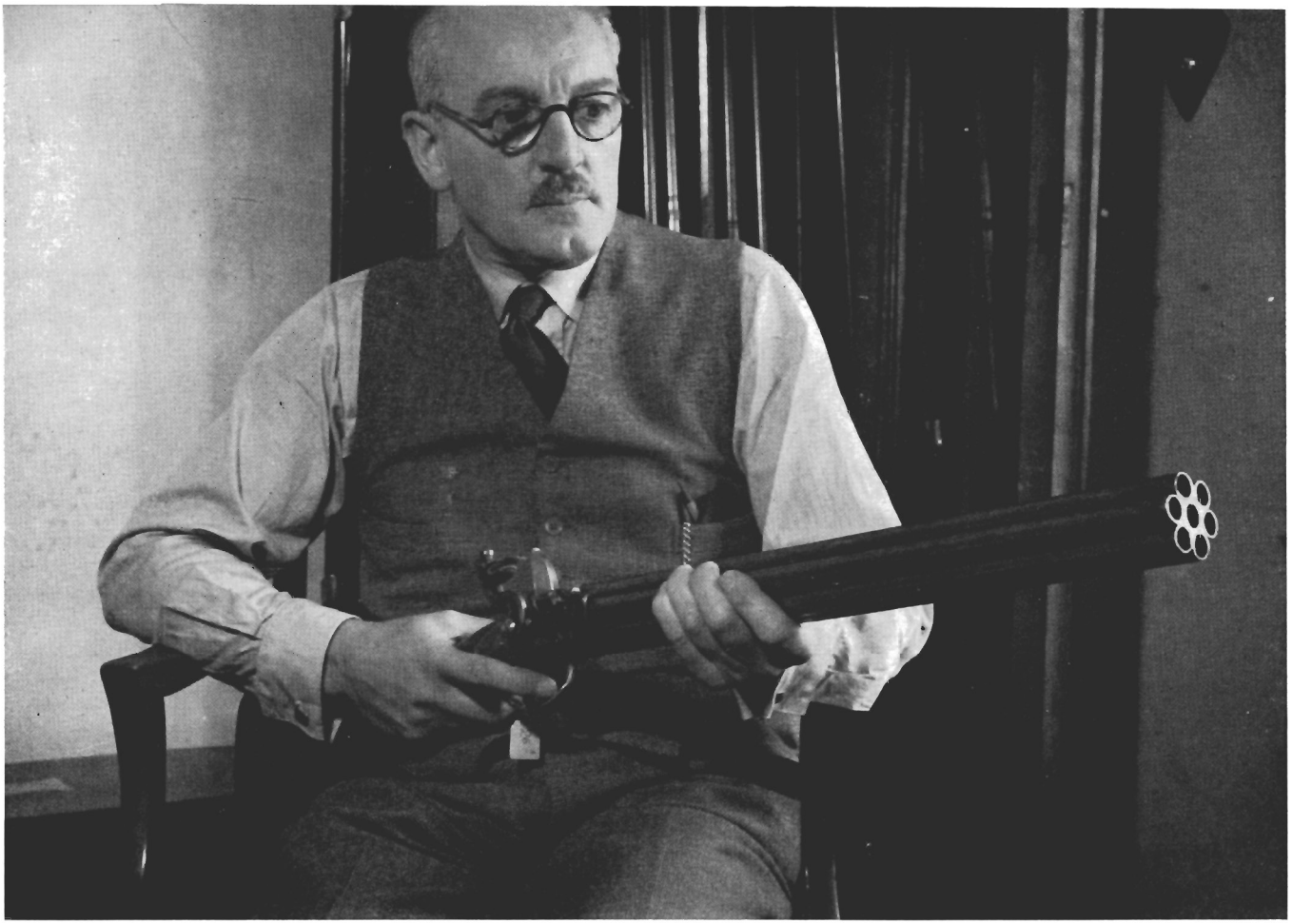
BRITISH GUNMAKER'S 7-BARRELED RIFLE WAS ONE OF STRANGEST SHOULDER WEAPONS EVER DESIGNED. MADE FOR NAVAL FIGHTING, GUN FIRED 7 BULLETS ALL AT ONCE!



Seven-shot carbine fired all its barrels simultaneously by means of intricate vents and passages which were drilled through the breech assembly in manufacture. Side channel runs to flintlock priming pan, which fires central barrel, flashes to others.



To combat snipers put in mizzen tops of naval ships, Henry Nock's carbine loosed volley into sails and brought down enemy sailors.



Major William C. Dowell holds his rare example of Henry Nock's naval "goose gun." Weighing little more than many modern target rifles, little carbine had walloping kick when all barrels were fired at once, often with 21 bullets.

Shooting of Admiral Nelson by sniper caused British to issue Nock carbines.

By WILLIAM CHIPCHASE DOWELL

"PREPARE to repel boarders" was the ringing cry, mingled with the clacking tattoo of battle rattles, which sparked the vicious hand-to-hand combat of naval fighting when ships closed in naval battle in the 1800's. After the smoke of broadsides had drifted away, the tactics of the day were cutlass and pistol work in close personal combat. The scuppers ran red and the sandy decks were a mire of blood. In this fighting one of the most devastating single weapons was Henry Nock's seven-barreled navy carbine.

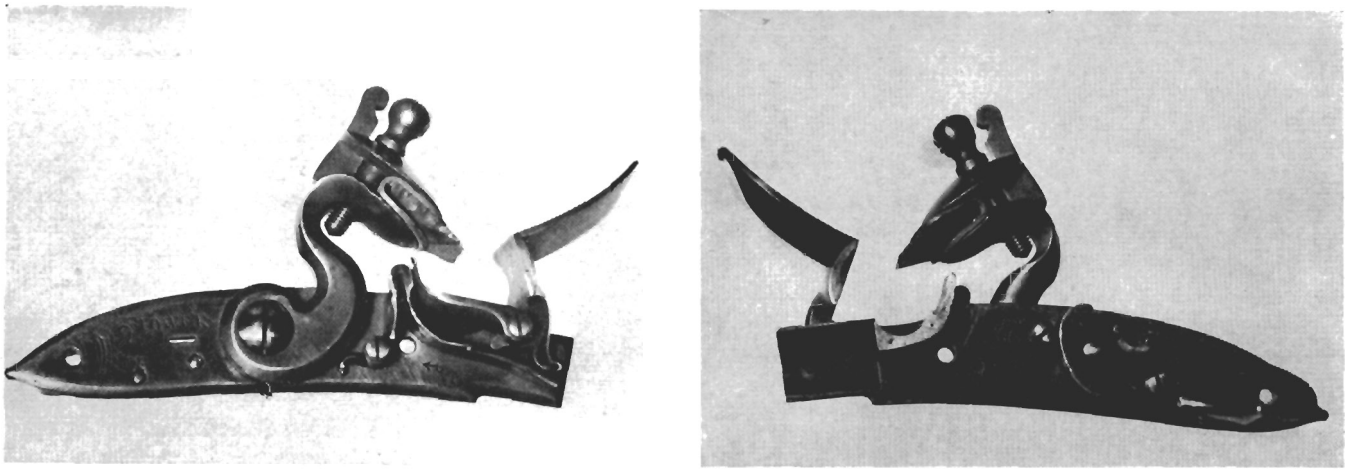
The death of England's hero, Admiral Nelson, initiated the issue of this gun which fired seven bullets at once.

To stop Napoleon's conquests, Lord Nelson and 27 British ships took on a combined French and Spanish force of 33 vessels on October 21, 1805. With Nelson commanding the Victory, the two fleets engaged in combat off Cape Trafalgar.

Soon Nelson found his three-decker pitted against a smaller opponent—the 74-gun man-o'-war. Redoubtable, which was commanded by a Captain Lucas. The French officer was not discouraged by the odds. Realizing his ship had no chance in a gunnery duel, he decided to try and board the English warship. Lucas closed the lower gun ports and ordered the crew on deck. The men were armed with hand grenades, tomahawks and cutlasses.

In the mizzen top of his ship Captain Lucas posted sharpshooters, who proceeded to pepper the unprotected decks of the Victory with small arms fire, to prepare the way for boarders. The British sailors manning the quarter-deck guns and the men in the waist and on the forecastle were entirely exposed to the murderous fire from above. Soon their bodies covered the upper deck, as the French sharpshooters, 50 feet away, found easy targets.

Suddenly Lord Nelson, on deck di-



Nock's seven-shooter was fitted with a flintlock of special design. Battery spring is reversed (left) and the front edge of the plate is squared off. Inside (right) shows other differences. The rear positioning of the mainspring precedes the similar arrangement of later percussion "back action" lock designs of about 1840, both intended to be compact.

recting the action, slumped down. A musket ball said to have been fired by Sargent Robert Guillemard in the rigging of the Redoubtable had slammed into the admiral's shoulder, severed an artery in his lung, passed through his spine, and finally lodged in the muscles of his back.

Nelson was brought below decks as the fighting continued. Three hours after he was hit, the Victory's log received this entry: "Partial firing continued until 4:30, when a victory having been reported to the Right Honourable Lord Viscount Nelson, K.B., he died of his wound."

Nelson's victory at the Battle of Trafalgar destroyed forever Napoleon's dream of invading England. This victory at sea gave to Britain such an aura of invincibility as to leave her unchallenged on the sea for a full century.

Unchallenged or not, the British were determined to avenge the death of their naval hero by finding a way to combat the sniper menace. The commanding officer of a squadron does not die silently: people began to wonder just "why" this happened. . . .

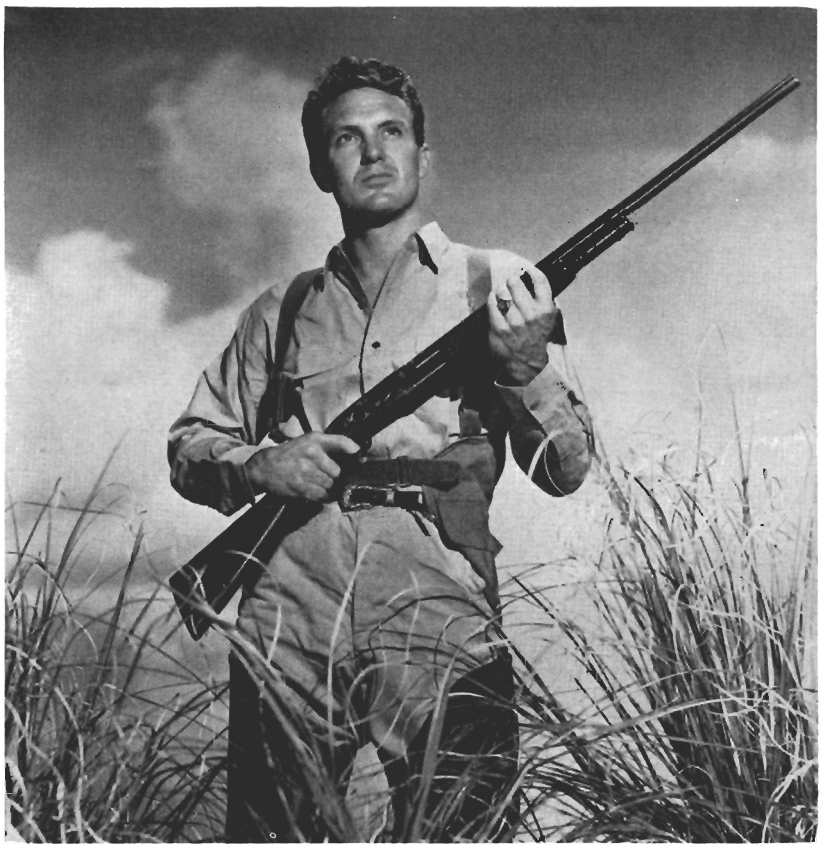
Attempting to combat the French tactic of placing skilled musketeers in the fighting tops, who were instructed to fire at picked targets aboard the English ships, the Admiralty in 1807 introduced a new weapon. It was an outgrowth of multi-barreled hunting guns discharging five or seven blasts of small shot at sitting geese. Made by Henry Nock in his London gunshop as early as 1792, a rifle-caliber "goose gun" seemed to have uses for the Navy, and Nock's gun was revised to military style.

Loaded, the gun was imposing. A full charge of powder in each of the seven chambers *(Continued on page 42)*

In hand-to-hand fighting, volleys from Nock's gun had disastrous effect as 21 bullets swept the foe's deck in boarding.

MY FAVORITE GUN

By ROBERT STACK, rising young movie star whose favorite is a Model 12 Winchester pump shotgun. His latest picture is 20th Century-Fox's "The Tokyo Story." He was Southern California skeet champion in 1937 and 1938, was the Western Open skeet champion in 1936 and 1937 and won the world's record long run skeet championship for 1937 with 364 straight hits. In 1947 he captured the Southern California open skeet championship with the score of 250 out of 250.



MY DAD taught me to handle a gun at the ripe old age of seven. Shooting skeet was a big thing in my teens, and the biggest thrill to me personally was to win the national championship at 16.

I was lucky enough to make All American and won a few more championships before I got my commission in the Navy.

The experience I had with guns helped to qualify me as an aerial gunnery instructor. The other instructors were so good I had to break 999 out of a 1000 to win a little skeet tournament we put on while I was stationed out in the Pacific.

Since the war my work in motion pictures has made it impractical for me to make any plans to keep on in tournament competitions.

I have rare shooting moments now except for duck hunting with guys like Bob Taylor, John Wayne, Alex Kerr. We try to hit it at least once every season.

One of my favorite guns is the pigeon-grade Model 12 Winchester pump shotgun. It's perfect for ducks, quail, dove and similar game.

Next month: Television star Jack Webb of "Dragnet" fame selects his favorite gun.

GUNS in the NEWS

[Special]—

▫ Carl Millslagel of Holbrook, Calif., vowed he'd look twice before shooting "panthers" from his auto again. Millslagel thought he saw a panther on a country highway and shot away at it. The "panther" turned out to be Constable Edward Elmore's Persian cat and Millslagel was charged with "disturbing the peace and shooting from a public highway."

✪ ✪ ✪

▫ Glen Smith of Detroit traveled 150 miles and toted a heavy shotgun all day hunting pheasants, and didn't get a one. But he had pheasant for supper that evening anyway. His wife, Anna, caught one in her backyard when it became enmeshed in a wire fence.

✪ ✪ ✪

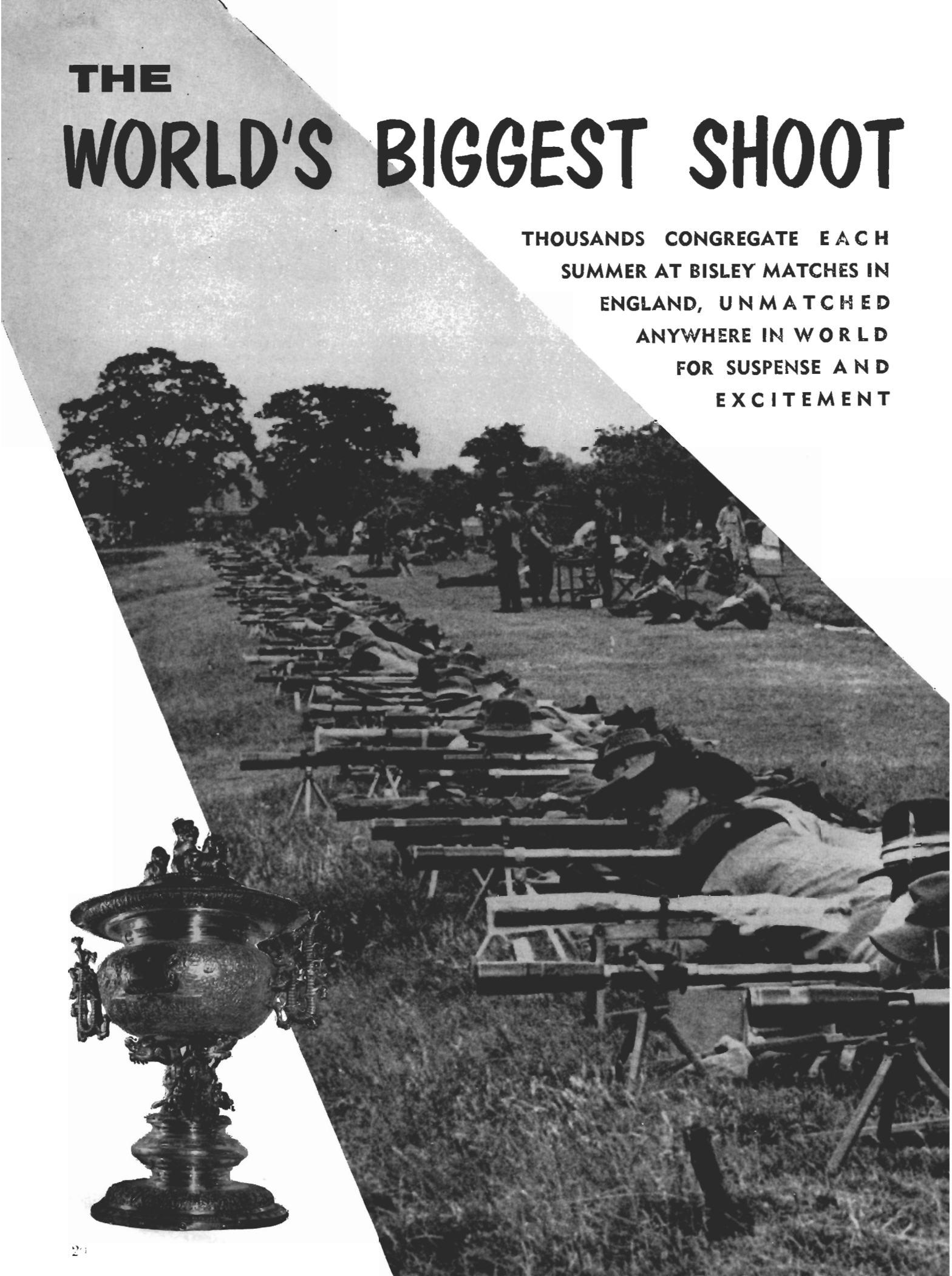
▫ Four duck hunters were arrested at Sassafras River, Md., for exceeding the daily limit. When asked their names, one of the hunters admitted to U. S. Fish and Wildlife Service agents that he was Arthur H. Brice, chairman of the state board of natural resources.

✪ ✪ ✪

▫ John Bradshaw Jr., of St. Paul, hunting deer near Danbury, Wis., said he wasn't scared while it was happening, but had the funniest sensation in the pit of his stomach afterwards. He stumbled into a small hole and landed on something soft. The something let out a roar and Bradshaw scrambled out of the hole with 745 pounds of infuriated female bear behind him. He got enough headway on the angry but sleepy animal to swing the muzzle of his 30-30 rifle around practically into the snarling mouth and drop the animal. A few seconds later a 300-pound male erupted from the den. Bradshaw shot it between the eyes. Then he heard a snarl and ducked. Another 300-pound male came hurtling at him and over him, the momentum carrying him past the hunter. The bear applied the brakes and turned, but by then Bradshaw had the situation in hand again. The rifle erupted and another bear bit the dust.

THE WORLD'S BIGGEST SHOOT

THOUSANDS CONGREGATE EACH SUMMER AT BISLEY MATCHES IN ENGLAND, UNMATCHED ANYWHERE IN WORLD FOR SUSPENSE AND EXCITEMENT



"Any rifle" at 1,000 yards allows shooters to take advantage of the pronest of prone positions. With sling across his head, Mauser-equipped rifleman (left) draws bead, while fellow shooter, who favors military Mannlicher, uses variation.

By HARVEY BRANDT

Tensely shooters settle down into their slings, eyes searching out the "elusive ten." Possibly slow fire and spotting through scopes between shots may give shooter an edge . . . and a prize!

WHAT the World Series and the Rose Bowl are to American sports fans, the word "Bisley" is for the British. Scene of what is undoubtedly the world's biggest shoot, the rolling green hills on the Berkshire Downs 30 miles south of London are the gathering place early in summer of thousands of shooters from around the earth. The best of the British empire shoots it out for top honors in the meeting held annually for the past 95 years by the National Rifle Association.

Bisley for thousands of gunners is the culmination of a year long of competition, the World Series of rifledom. The suspense and excitement is like nothing anywhere else in the world.

There are two Bisley matches that are absolutely the last word in marksmanship. They are the small-bore (.22) Queen Alexandra Cup match and the Queen's Prize Match, formerly the "King's."

The Queen Alexandra cup is a year-long tournament in which small-bore shooters throughout the kingdom compete. There is even a separate outfit, the National Small-Bore Rifle Association, to administer the .22 clubs, school teams, and general interest shooting. This coming year will see the finals for the Queen Alexandra Cup being fired on Saturday, July 2.

The Queen's Prize match last year was the first . . . before then it had been "the prize given by H.M. the King" . . . and a distinctive prize it was! An NRA gold medal, a gold badge, and the tidy sum of about $700 in cash, made it more than "just another trophy" to shoot for.

As in the Queen Alexandra Cup matches, this, too, is the culmination of some 1,000 to 2,000 competitive shooters parlaying off against one another. The top shooters place in the Queen's Hundred, and from these expert marksmen comes the one who takes all, the winner of the Queen's Prize Match. The match is a true test —of nerve and endurance, as well as simple skill with a rifle. The anxiety of merely living over those three last days is extreme . . . and the suspense is felt by thousands not directly competing.

The three-day contest gives shooters little time to fire other matches . . .

Targets, hu-u-u-p! Army shooter with typical British scope on No. 4 rifle waits intently for the first rim of black.

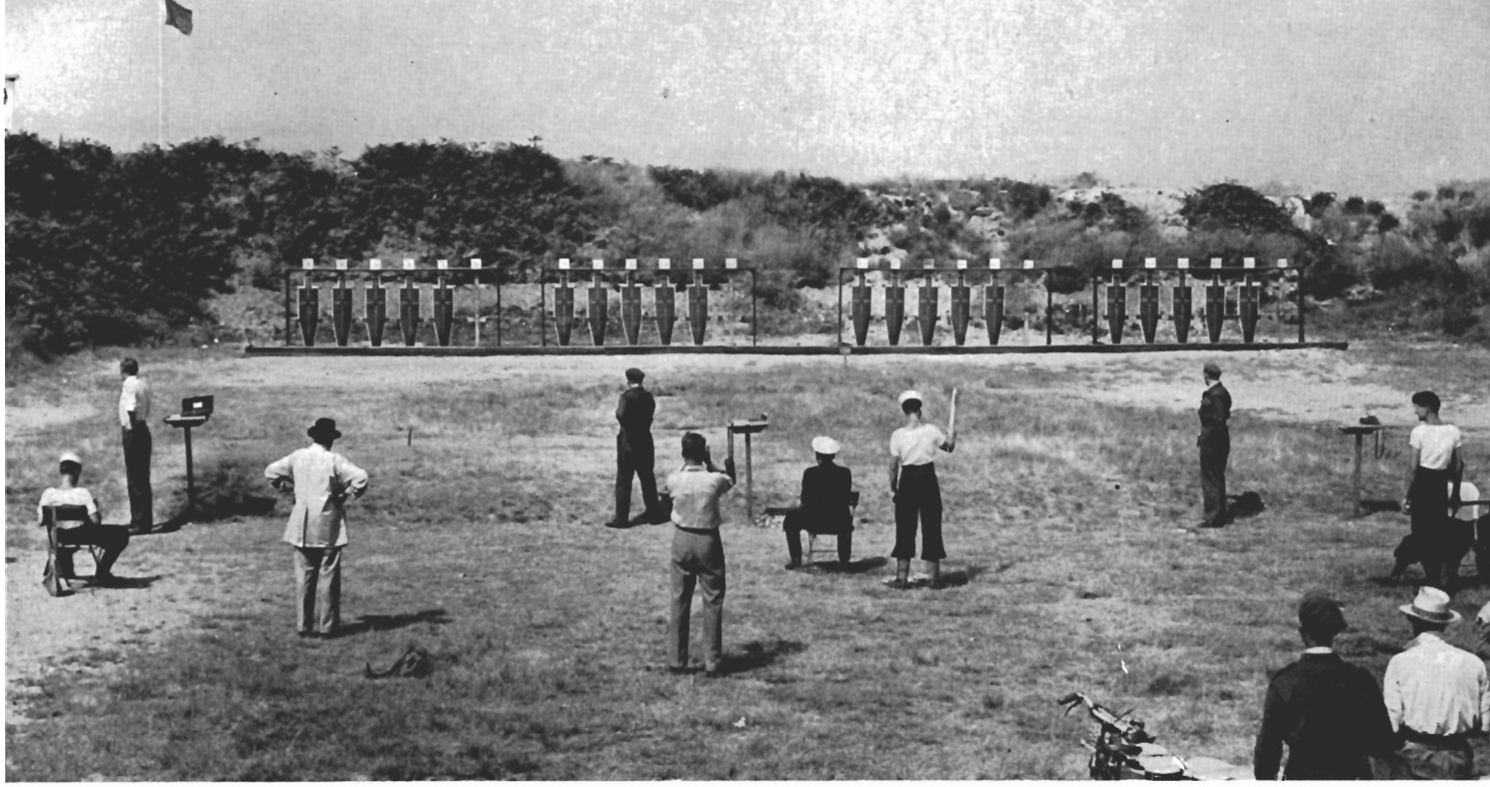
this one is *it!* On the last day thousands of spectators line the firing point and the Queen's Hundred have the targets.

In the final stages, two sighting shots and fifteen for record are fired at 900 and 1,000 yards. Heat haze makes the ground shimmer, the targets dance, salt sweat stings the eyes and only a cold, deliberate concentration on breathing, sighting, trigger squeeze can make the shot count when the target looks like a million miles away.

Winner of the Queen's has an added treat along with the medals and cash: it's a free ride in an old armchair on the shoulders of the jubilant crowd. This is the tradition before receiving the awards, that the winner must ride to all the gun clubs—26 of them—and drink a toast. This can go on for hours! It is at least one way to force the shooter, highly-tensed to concentrated control, to relax.

But it is not only the big final matches that win the crowd's attention. They are watchful from morning until dusk on all ranges.

In many ways Bisley in its sights and vistas is not unlike Camp Perry on Lake Erie, where the American National Matches are held each summer. Unlike Port Clinton, the Ohio town near Camp Perry, Bisley does not have the advantage of a normal tourist season to afford visitors convenient housing. Thus some hardy souls even



International pistol match puts shooters under the stress of a time limit. Commencing firing on a signal, match is terminated by flashing targets sideways usually after a space of five seconds to ten seconds for a five-shot string.

commute each day from London. Bisley is about a half-hour train ride from London. Most, however, prefer to stay in the pyramid tents which cluster over a field like the old pyramid tents of pre-War Perry. Others, attending as team members from some recognized shooting group, may billet in their own club house. There are about 26 year-round club houses on the grounds, most with dining rooms and living quarters for competitors. The NRA headquarters, active year round, is a group of brick buildings shaded by fine old trees.

Each day shooting commences at 8:30 A.M., continuing till almost dark. Interest in shooting has grown until now the range capacity is too small to handle the crowds. A novel means of sharing targets is used: after one man fires, his target is run down, spotted, and run up. While he marks his shot in his score book and dopes any windage or elevation changes, his second teammate fires at the same target, spotter in place. It sure keeps the pit boys active.

The shooting fare at Bisley is more varied than at Perry. European shooters like live targets or simulations of serious shooting work. Individual and team matches for rifle and pistol are of course held, as well as the chips-down precision or free-pistol and rifle work at 50 and 300 meters. On the grimmer side are light machine gun and sniper rifle events. Silhouette pistol targets, as well as timed and rapid fire are standard. But in combining shot-gun competition with an over-all rifle meet Bisley differs from U.S. practice. The Grand American Handicap at

Rear sight for lying-down position is mounted on the heel of a military Mauser M98 rifle.

Pistol shooting continues in Britain, and many shooters use early match-grade Webleys, such as this "WG" .455 being aimed.

Winner of "King's" competition is hoisted high in air after victory. He has topped others in "King's Hundred" who compete for highest shooting honor in British empire.

Vandalia, Illinois, every year, serves for the National Skeet Shooting Association and is run separately from the Camp Perry National Matches.

Commercial row in England is pretty slim by American, or any other standards. The better known sporting gun makers and accessory houses—Parker-Hale, BSA-Guns, Webley & Scott—are all represented but there is lacking the big displays of every variety of commercial firearm, so much a feature of Perry. The shooters themselves make up for the lack of scenery otherwise. Some of them are probably the worst-dressed marksmen in the world. The Bisley shooter seems to try for anonymity in clothing, but instead achieves a certain sloppy distinction. Of course many are much better dressed—team captains in their colorful blazers with dates of former Bisley meets embroidered on their coat pockets are notable exceptions.

Rifles used for NRA competition are almost uniformly the Lee-Enfield in .303 caliber. Not especially accurate by American standards, these smokepoles manage to turn in good scores for themselves, even in competition with custom Mannlichers and a sprinkling of Mausers. The U.S. built "Enfield," which is really a modified Mauser with all its inherent capability for accuracy, is becoming popular in .303 caliber, but the Lee-Enfield is still supreme.

Various gunsmithing tricks are legally done to these guns to make them shoot accurately. The ammunition is, of course, regular ammo from lots specially selected for uniformity—this makes the cartridges "match" quality through grading. The rifles themselves are tuned up. Current "Service Rifle Competition" rules permit peep sights to be used, instead of the outmoded barrel sights usually fitted to most Enfields. Commercial sights are made which instantly install in the English or the American Enfields without drilling holes. These offer the advantage of the longest possible sight radius, increasing accuracy.

Barrels cannot be "packed," *(Continued on page 39)*

Oldtimers from Camp Perry, remembering the pyramid tents at pre-war matches on Lake Erie, would find Bisley camp a familiar sight. Other vistas at British rifle competition are very much like Perry, except perhaps for the CO's tent.

GUNS THAT WON AN EMPIRE

DEPENDING ON FIREARMS FOR FOOD, DEFENSE AND DIPLOMACY, LEWIS AND CLARK EXPEDITION GAINED U.S. TITLE FOR RICH NORTHWEST LANDS

Meriwether Lewis (above) and William Clark (below) are portrayed by Fred MacMurray and Charlton Heston (center) in new Paramount movie, "The Far Horizons," that retells story of expedition that won Northwest for U.S. Indian guide Sacajawea is played by Donna Reed.

By R. H. SETHER

NEVER in all American history was as weighty and important a mission accomplished with as small an arsenal of arms as the Lewis and Clark expedition which won a vast new empire for the United States at the dawn of the 19th Century. Setting out into the unexplored Louisiana Purchase wilderness, the little river fleet commanded by Captain Meriwether Lewis and William Clark started up the Missouri River on a keelboat and two pirogues guarded by three swivel guns.

Determined to push the American frontier to the Pacific Ocean, the expedition depended on their guns for food, defense and diplomacy. It is a measure of their brilliant strategy on their three-year trip that they only had to fire their guns once in defense against Indians. Almost all of their shooting was for food.

From the beginning Lewis and Clark knew that the success or failure of

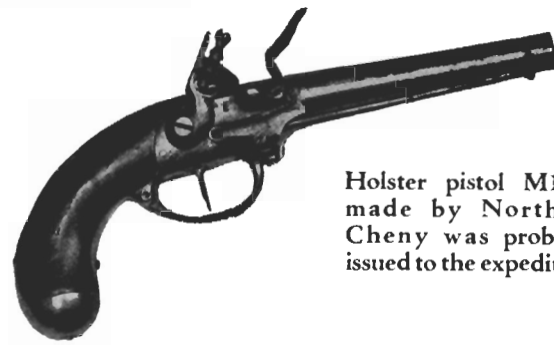
their mission rested on the arms they packed for the thousands of lonely miles far from colonial civilization. The men of the expedition carried rifles, fusees, blunderbusses as well as tomahawks and scalping knives. In addition Lewis and Clark carried pistols, and also a novel air gun.

Rifles were the "work horses" of the expedition. To them fell the task of providing the immense quantities of meat necessary to feed a party which numbered 45. Up the long stretches of the twisting Missouri, hunter George Drewyer led a party, often including Captain Lewis, which ranged the countryside killing deer, elk, antelope, bear and buffalo, as well as beaver and smaller game. Hunting became so routine that it took the grizzly bears of Montana to put adventure into it. Those huge grizzlies acted as though the expedition rifles were so many pea-shooters. A single shot merely riled the bears and made them charge. Several of the men had narrow escapes until they learned to gang up on the bears, pouring in lead from a half-dozen rifles at once. Captain Lewis made two speedy runs from angered grizzlies and decided he would rather "fight two Indians than one bear."

Lewis remarked on the respect the Indians had for the white men's guns. This discouraged them from starting hostilities. Men of the expedition were offered buffalo robes, corn, and even a slave boy in exchange for a gun. The captains said no sale, but did *buy* a gun from a Columbia River chief for two elkskins. What this gun was is a mystery.

For the Indians it was the airgun that proved "white man's magic." The airgun, purchased by Lewis out of his own pocket because he was unable to resist such a curious innovation was doubtless a Giradoni such as was described in the March issue of GUNS by Fred H. Baer. New to America at the time, its ability to discharge many shots by power from a pressurized air chamber, and to do it without fire, smoke or noise, seemed a truly amazing feat.

The airgun scored a hit early in the expedition. Demonstrating it to some settlers along the Ohio River. Lewis "fired it seven times 55 yards with pretty good success." Another man discharged it accidentally and stunned a woman standing 40 yards away. With the Indians, it became standard protocol to bring it out at council meetings. Always its performance was viewed with gape-mouthed astonishment. Clear across the continent and back the airgun as a curiosity held its own with the spyglass, compass, watch, burning glass, and demonstrations of the power of magnetism.

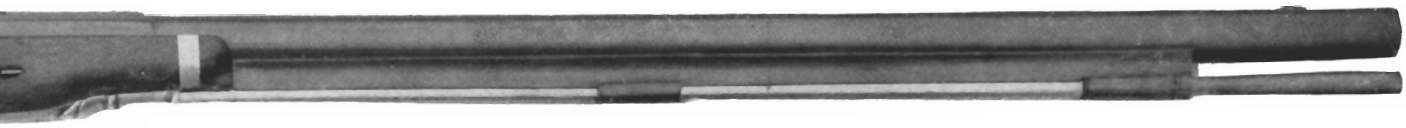


Holster pistol M1799 made by North & Cheny was probably issued to the expedition.

Setting out up the Missouri after the official transfer of the Lousiana Territory from France to the U. S., Lewis set the first major goal of the expedition as the villages of the Mandan Indians, a little above the present Bismarck, North Dakota.

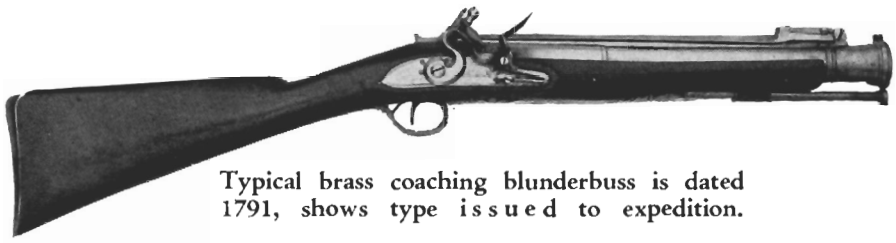
They left behind the home of Daniel Boone, the last white settlement of La Charette, on May 25, 1804. By late October, averaging about nine miles a day for 1,600 miles, they reached the Mandans, and wintered in a new stockade, Fort Mandan. Lewis was generous in distributing large silver medals, bearing portraits of the President and the coat-of-arms of the United States. Throughout his trip he told the Indians that they were now children of the Great White Father and should stop doing business with the British.

A visitor to Fort Mandan was Touissant Charbonneau, who had purchased and married the Shoshone girl Sacajawea. Since the expedition was to cross the Shoshone country, Charbonneau and his wife were engaged as guides. In the current Paramount movie about Lewis and Clark—"The Far Horizons"—Sacajawea is portrayed by slim Donna Reed. Somewhat different was the real Sacajawea, who was five months pregnant when she and her husband came to Fort Mandan. During the winter at Fort Mandan, a boy was born to Sacajawea and Charbonneau.

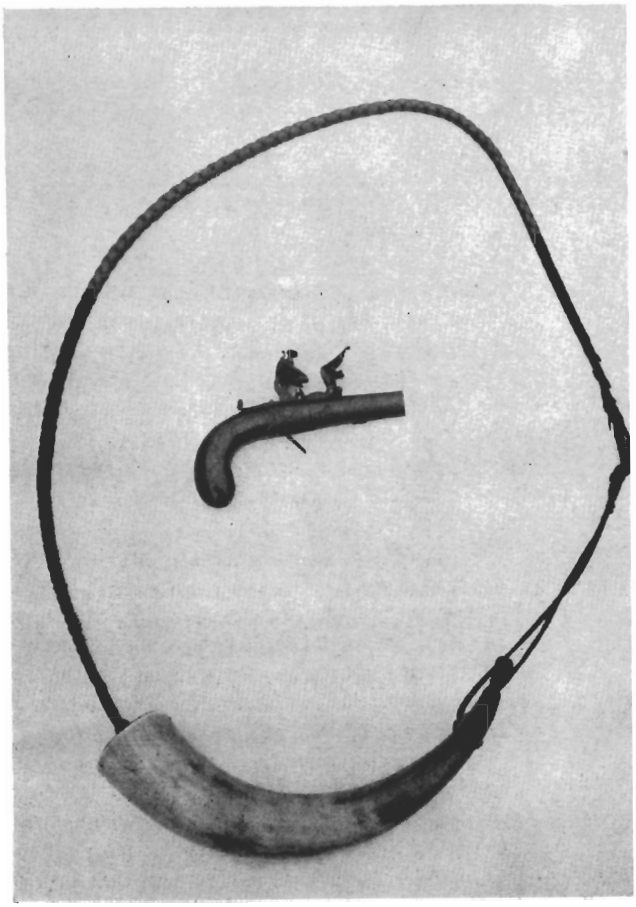


U.S. rifle of 1803-1814 model was built specially for Lewis and Clark's men, then in larger quantity, modified for regular issue.

English officer's fusil is a light, fancy musket similar to those mentioned by Lewis.



Typical brass coaching blunderbuss is dated 1791, shows type issued to expedition.



A pair of pocket pistols was issued to Lewis from government stores. No pocket pistols were made by the U.S., but they may have been common European pistols such as above.

At the time Lewis began organizing his expedition, he was a civilian mustered into army service for the trek. He had been with President Jefferson a long while as his personal secretary, and Jefferson thought very highly of this young man, who was only 29 in 1803. That he was "captain" of a small command of only 23 enlisted men did not detract from the importance of Lewis' post.

When Lewis first set down his estimate of how much the expedition would cost, one of his smallest listed items was "Arms & Accoutrements extraordinary $81." The total he asked was $2500—all that Congress ever appropriated. Many supplies were obtained from the U. S. Army. Captain Lewis presented a long list of needed

Wintering at Fort Mandan, Lewis and Clark depended on their rifles and fusils for food and defense against animals.

At Continental Divide, Indian guide Sacajawea points out Clearwater River which joins Columbia down to sea.

articles to Israel Whelen, the purveyor of public supplies. Army records reveal that Whelen's department then purchased for Lewis the following: "1 pair pocket pistols, $10; 175 lbs. gun powder, $155.75; 52 leaden cannisters for gunpowder, $26.33; 15 powder horns and pouches, $26.25."

Whelen's department also issued Captain Lewis the following items from the public stores: "15 powder horns. 18 tomahawks, 15 scalping knives and belts, 15 gun slings. 30 brushes and wires, 15 cartouche boxes, 15 painted knapsacks, 500 rifle flints, 125 musket flints, 50 lbs. best rifle powder, 1 pr. horseman's pistols, 420 lbs. sheet lead."

Lewis also requested 15 rifles with bullet moulds, ball screws, and repair parts. Whelen did not fulfill this order: instead, Lewis had Harper's Ferry Arsenal built the guns specially for him.

Today, collectors are uncertain about model designations on these rifles. Partly, this may be laid to the diplomatic haze of the times, for Jefferson was permitting a U. S. government arsenal to manufacture arms for an expedition into friendly foreign territory . . . surely an act of intended war, if ever there was such a thing! These rifles were half-stock weapons of a novel pattern. They had the deeply-curved buttplate of earlier martial Kentucky rifles, but the long stocks, fragile and liable to easy damage in frontier service, were reduced to half their length. A rib was soldered beneath the barrel, carrying the ramrod pipes, and the rather heavy barrel of about .52″-.54″ caliber turned round for half its length to help hold the weight down. A patchbox similar to some on earlier Indian trade Kentuckys was fitted of brass, as were the guards and stock thimbles.

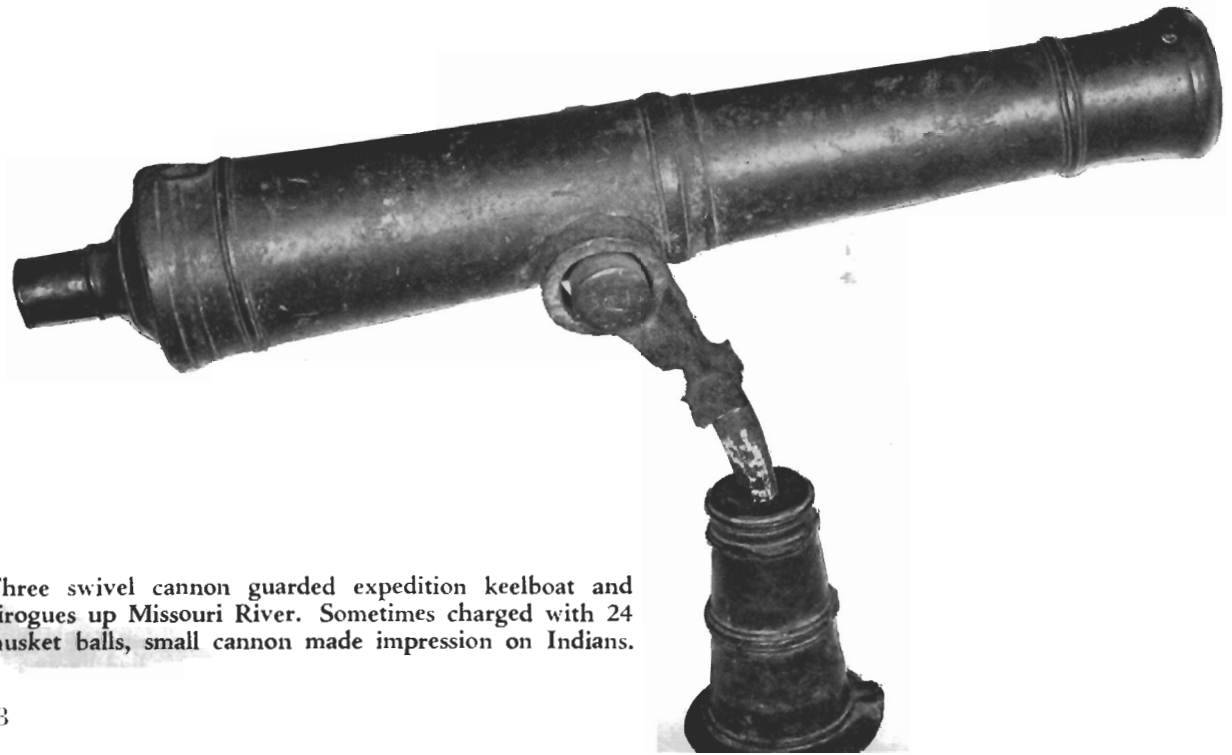
Harper's Ferry had bins of assorted parts, and the 15 special rifles built for Captain Lewis were doubtless finished up from these parts.

The first "Harper's Ferry rifle" is the Model 1803. Secretary of War Henry Dearborn ordered 4,000 of the model produced . . . but his orders were not written until May 25, 1803. Further, during the fall of 1803 he recommended minor changes, such as making the front ramrod thimble funnel-shaped, and applying a brass strap at the fore-end tip to precent the wood from splitting . . . inference that the guns of Lewis and Clark did not have this brass strap, and had cylindrical thimbles. Yet on April 20, Lewis wrote to his patron, President Jefferson, "My rifles, tomahawks and knives are preparing at Harper's Ferry, and are already in a state of forwardness that leaves me little doubt of their being in a state of readiness in due time." During July, Lewis visited Harper's Ferry to inspect his guns. On July 8, he wrote: "Yesterday I shot my guns and examined the several articles which have been manufactured for me at this place; they appear to be well executed."

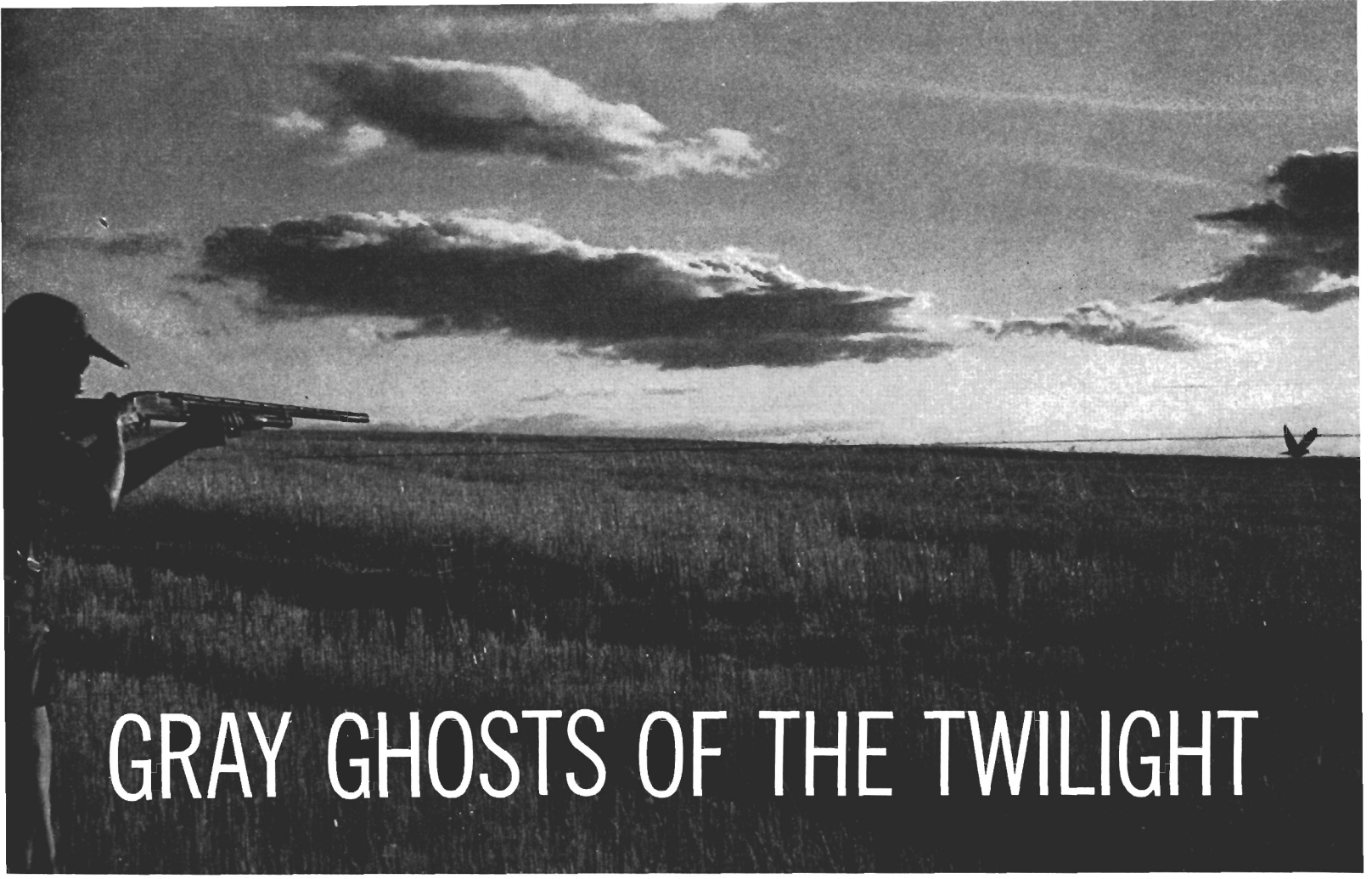
There is a solution to this paradox of Lewis' obtaining rifles of a model not yet authorized. It lies with the mythical "Model 1800 Harper's Ferry Rifle," which is supposed to resemble the later Model 1803. Source for the rumored "1800" rifle is probably the small lot of rifles especially made for Lewis, which served with minor changes as patterns for Dearborn's authorized model of 4,000 rifles. Some years later a further issue of rifles of this basic half-stock pattern was made, and collectors call this last issue "Model 1814." These are practically indentical with the early M1803 weapons. Minor changes in barrel lengths are not consistent enough to differentiate the supposed "models"—the dates on the lock plates are about the only real difference. Otherwise, "M1803" and "M1814" rifles are virtually identical.

The big advantage the rifle held over the musket of the period was, of course, its greater accuracy. This accuracy was aided by wrapping a bore-size bullet with a circular patch of greased linen or leather to take the rifling. The patch also served to wipe the barrel and keep it clean, and to keep explosion gases from passing the ball. There is no record of Lewis & Clark taking linen patch material, but doubtlessly they did. And running out of that they could substitute tough raw buckskin, of which they could prepare an ample supply from animals killed along the way.

The "best rifle powder" mentioned was probably none too good by our standards. By *(Continued on page 38)*



Three swivel cannon guarded expedition keelboat and pirogues up Missouri River. Sometimes charged with 24 musket balls, small cannon made impression on Indians.



GRAY GHOSTS OF THE TWILIGHT

Jump shooting doves in Oregon stubble field in the few minutes of fading light can be real sport. Walking them up, sun at the side, makes the flushed birds stand out in the light, but they are not easy targets even for experts.

WHEN IT COMES TO SHOOTING GAME BIRDS, DOVES ARE TRICKIEST, FASTEST, HARDIEST QUARRY AND NO DOUBT EASIEST THING IN WORLD TO MISS

By JOE VAN WORMER

ANY TIME two or more scatter-gunners get together, the conversation inevitably turns to the toughest, smartest, wildest, or best liked game birds. My own reaction to such discussions reminds me of the hill-billy Don Juan down in Arkansas who had a well-deserved reputation for the frequency of his love affairs and the size of the territory in which he operated. When asked which of his paramours he liked best, he replied: "The one I've got now."

Then he paused with a wry smile and went on, "But there's a little blonde down near Jonesboro that I keep rememberin' all the time."

I'm the same way about bird hunting. My favorite is always the one we're currently hunting, but all the time, in the back of my mind, I keep remembering doves.

Mourning doves, that is. A soft plaintive call, which gives them their name, a gentle unassuming appearance, and a general feeling that, somehow or other doves have something to do with peace and goodwill, has led to a great many misconceptions, arguments, and rabid differences of opinion about doves.

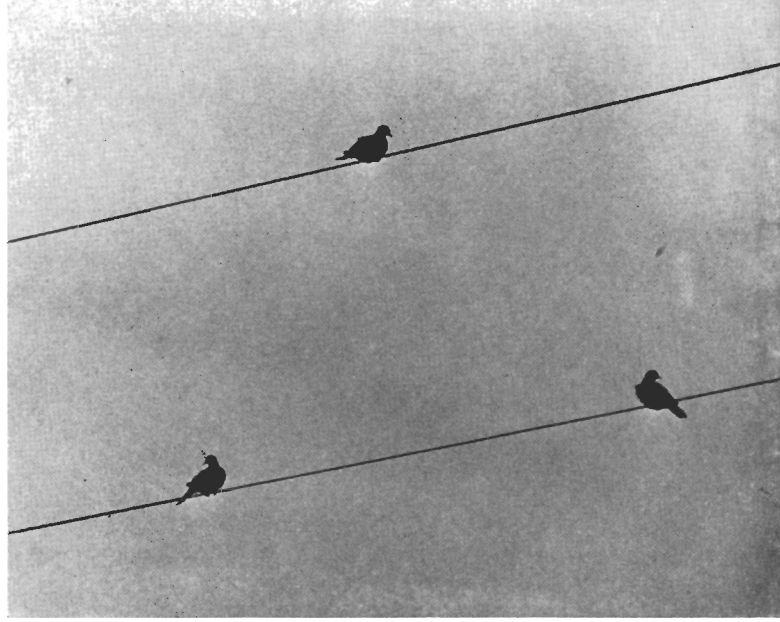
In some states they are protected as songbirds and, in almost any state, if you admit to being a dove hunter in non-hunting circles, the chances are you'll be treated with all the respect and courtesy normally given a white slaver convicted of selling 12-year-old girls.

After hunting doves for 25 years with only moderate and inconsistent success, I'm convinced their mournful sounds and meek docile appearance are a sham. They're the only game birds which have consistently outwitted me. Others have tricks which help account for misses. Pheasants run like the devil or flush suddenly and far away. Quail dive into brush patches and escape. Ducks and geese go by high, wide and fast. But a dove just flies right at you, daring you to shoot him and he makes you miss.

That's only one of his tricks. He's a fast flyer capable of a change of pace that'll give you charley-horses in your shooting arm just trying to keep up with him. He darts, dodges, and flutters around at times as if still learning to fly. The easiest thing in the world is to miss him.

On top of all this he's a tough cookie. He's hard to kill. I've had birds ignore a well-placed shot, fly a couple hundred yards and light in a tree as if nothing had happened.

Doves are partial to roosting in old dead tree limbs near their feeding areas. Rarely can they be surprised.



People who see doves sitting on wires think they are "easy" shooting, but they are truly a great game bird.

Three minutes later they tumble out stone dead. I'm firmly convinced that a dove will fly away with enough shot in him to drop the average mallard.

Last fall while hunting in a juniper strip bordering a central Oregon stubblefield, I leveled on one just loafing past and knocked it down in a flurry of feathers. Before I could get to him, he wobbled into the air again. Knowing about them from past experience, I gave him another charge and down he came. Again he floundered into the air, still in pretty good shape. It took a third shot, and all three of them connected to put him down for keeps.

There's another thing that is a constant reminder to me of doves—a small scar near the corner of my right eye. It's all that remains of a half-dozen 7½'s I got full in the face while dove hunting—the only time I've ever been shot. It happened a good many years ago when a friend and I were hunting in a field of head-high corn in central Florida.

Birds were coming thick and fast and were keeping our guns hot. They would come weaving in from all directions and most of the time all we could do was snap a shot at them and hope we connected. In the excitement my partner got himself turned around, forgot where I was, and proceeded to let me have it right in the kisser. A happy combination of distance, short barrel, wide pattern, and low-velocity ammunition prevented any serious damage, but it sure scared hell out of me.

It was in this same section of Florida that I first started hunting doves. That was 25 years ago and there weren't so many people around then. The limit was ten a day, as

Hunting in stubble near a desert waterhole is good idea towards dusk. There are more birds flying, and more missed shots at the waterhole, where they are alert. Rested, unwary, the doves flushed from stubble are easier shots.

Doves like to feed on grain dropped during harvest time. Wheat stubble affords ample cover to feeding doves, but gives a clear view for shooting when they take to the wing. Late afternoon is best time of day for hunt.

I recall, but I don't think I ever killed a full limit. I do remember that local hunters wouldn't think of going on a dove expedition with less than two boxes of shells apiece and quite often that wasn't enough.

There was one morning that four of us surrounded a peanut field where the farmer had turned in his pigs to do the harvesting. Peanuts had been rooted up all over the place and were lying around on top the ground. The doves loved it. We took cover behind bushes and trees around the field, stashed our extra shells in handy places and started to work.

It was fast and furious shooting. Any kind of a shot you can think of, we had. Some were easy, but, for the most part, it was tricky shooting. Birds bore in, weaving and dodging, sometimes fast and other times so slow you'd break your back trying to slow down the fast swing you needed most of the time. After an hour and a half of this everyone was out of ammunition. Among the four of us that amounted to 200 rounds. We bunched up to see what the score was. There were 32 doves and one woodpecker that somehow got in the line of fire. We considered it a highly successful morning.

Fast, brave and hardy, there is a lot of gumption packed into a few ounces of gray feathers.

Doves flash by at dizzy speeds, gray shadows blending into the gray twilight skies. Hitting them takes skill.

Doves have one weakness and you can catch them when they're most vulnerable.

It is a fondness for dead snags, especially near a feeding area. In going to and from feeding, they'll stop at an old snag for a breather. I think they like to look over the field before coming in.

A dove taking off from a perch is as tough a target as you can find, but one coming in is a setup. Just before he lights, he flutters to a standstill in the air and you could probably get your limit with rocks if your arm would hold out.

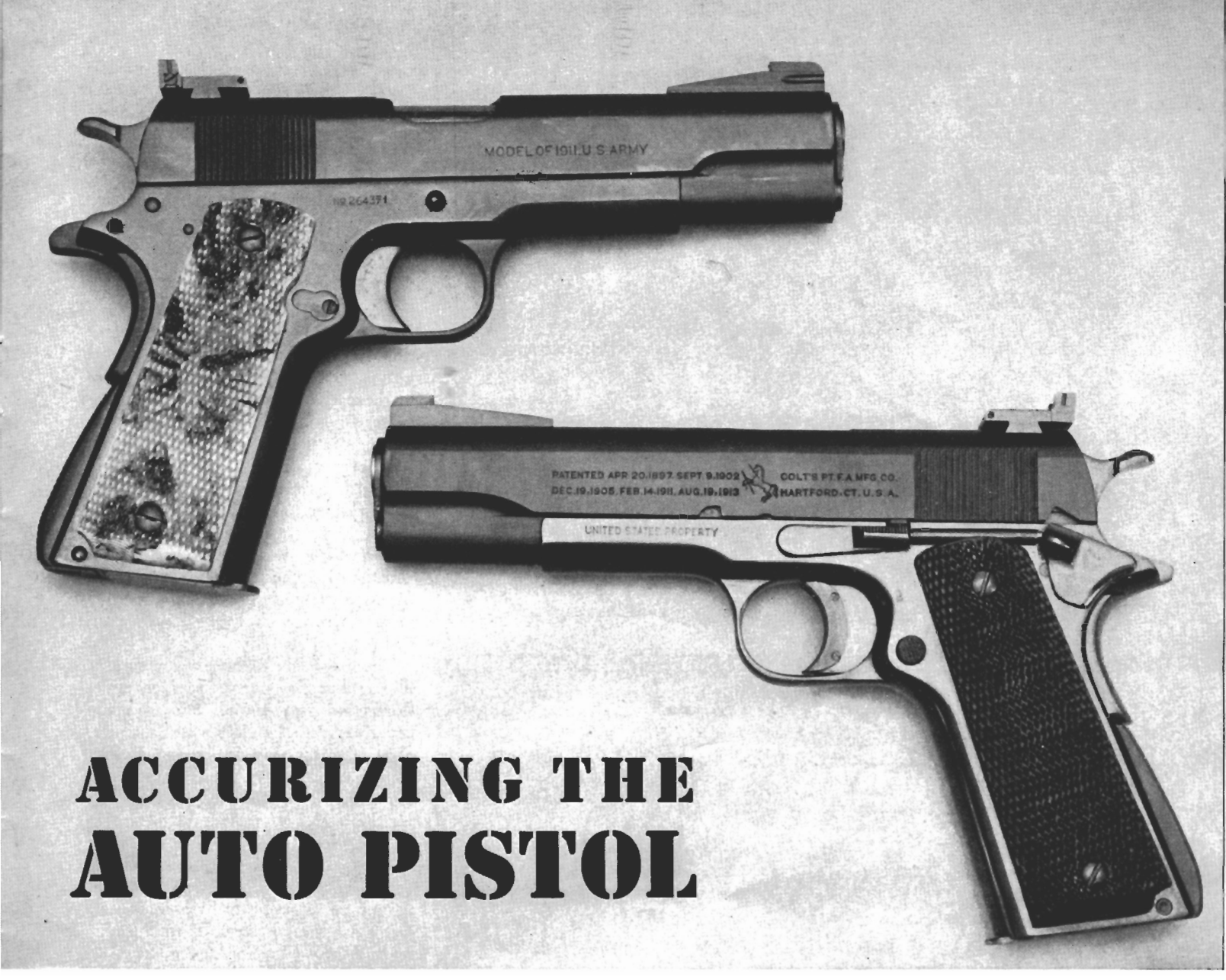
I haven't often shot at them under such circumstances for it always seemed like poor sport—like shooting them sitting. There was one time, though, that I did it deliberately. A couple of central Oregon hunting partners who were hot as a depot stove on pheasants and ducks had been belittling me about my dove hunting stories. Obviously they had never hunted them. I think their entire knowledge of the bird was based on seeing them during the summer breeding season when they sit around on telephone wires like a bunch of tame pigeons.

I had located a patch of sage brush and juniper in which a fair number of birds were feeding on some kind of tiny black seed that I never did learn the name of. I invited them out for a try.

We arrived too late to catch the flight into the feed patch, but in that kind of cover, jump shooting furnishes fine sport. However, the shots are not nearly so difficult as when they're coming in hell-bent for breakfast.

My main purpose in taking these two out was to stop their bragging and establish grounds for doing some of my own. I magnanimously turned the shooting over to them and allowed as how I would just stay back out of the way and pick up a few strays. As soon as they were well started, I picked out a juniper that looked like a typical dove observation post and hid behind *(Continued on page 46)*

With the evening sun at his side, author Joe Van Wormer lets fly at an almost invisible dove breaking fifty yards away.



ACCURIZING THE AUTO PISTOL

Battle-scarred clunker from world war can be re-built into precision target pistol (above), capable of the best accuracy of the cartridge itself. Micro sights and trigger shoes give target refinements to guns supposedly unable to hit a barn door.

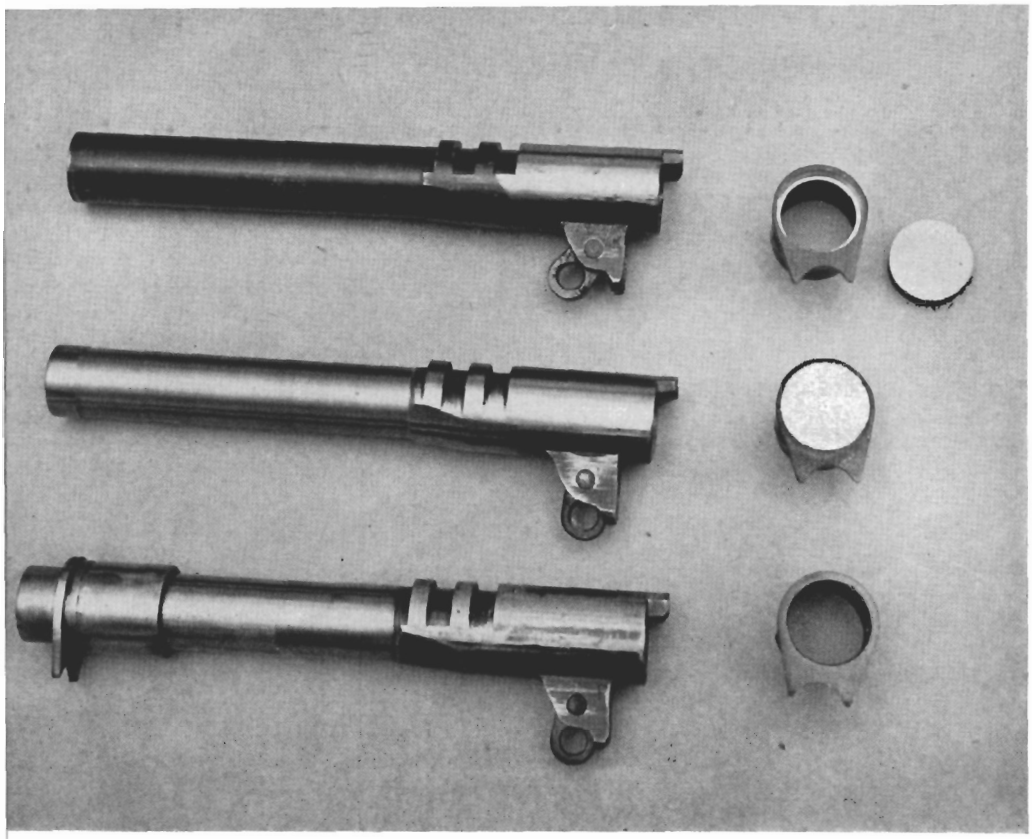
ALTHOUGH NOT DESIGNED AS TARGET ARM, COLT 45'S BROUGHT HOME FROM WARS CAN SHOOT WELL IF OWNER IS WILLING TO TIGHTEN UP SLOPPY PARTS

By GEORGE PEARSALL

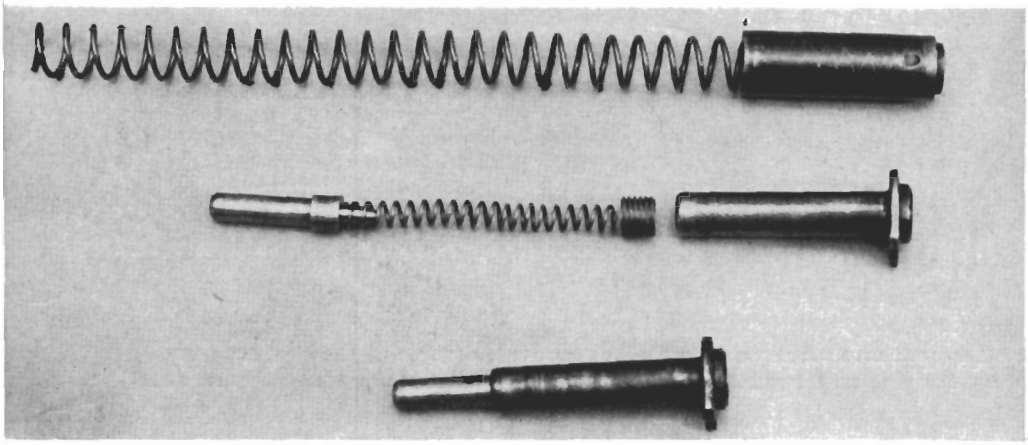
THE BATTLE CRY of 1845 was "Remember the Alamo," but the battle cry of World War II was "Aw, Sergeant, I can't shoot this thing." And "this thing" was the battle-honored .45 Colt automatic pistol, which so many GI's insisted that they couldn't hit the backside of a barn with. But they still managed to lug home Colts in surprising quantities. Release of government stocks of .45's has made even more of these guns available for the shooter. All of them are serviceable guns which *can* shoot well, if the owner wants to do a little "tightening up" of the sloppy fitting parts.

The Colt automatic .45 was originally designed as a military weapon. It had wonderful stopping power and would function under the most adverse conditions. From the Army point of view, it was a nearly perfect weapon. But that is where it stopped. The gun was not designed as a target arm in any sense of the word—but it can easily be converted to such use.

The very design and construction of the .45 which allowed it to function under adverse conditions, that included being gummed up with sand and mud, meant that parts of its machinery were simply too loose to be used successfully on the target range. Recognizing this, the Colt factory offered a "National Match" model of the .45 before the war, which was smoothed up, tightened, and "tuned" to the limit. These guns were fine shooting weapons, but they were few and far between, and cost much more than the regular .45.



Barrel of .45 Colt, with its original contour unchanged (top), has bushing reamed out to accommodate tool steel insert, silver soldered into place. Bushing is then drilled to fit barrel (turned, middle), and lapped to fit (bottom).



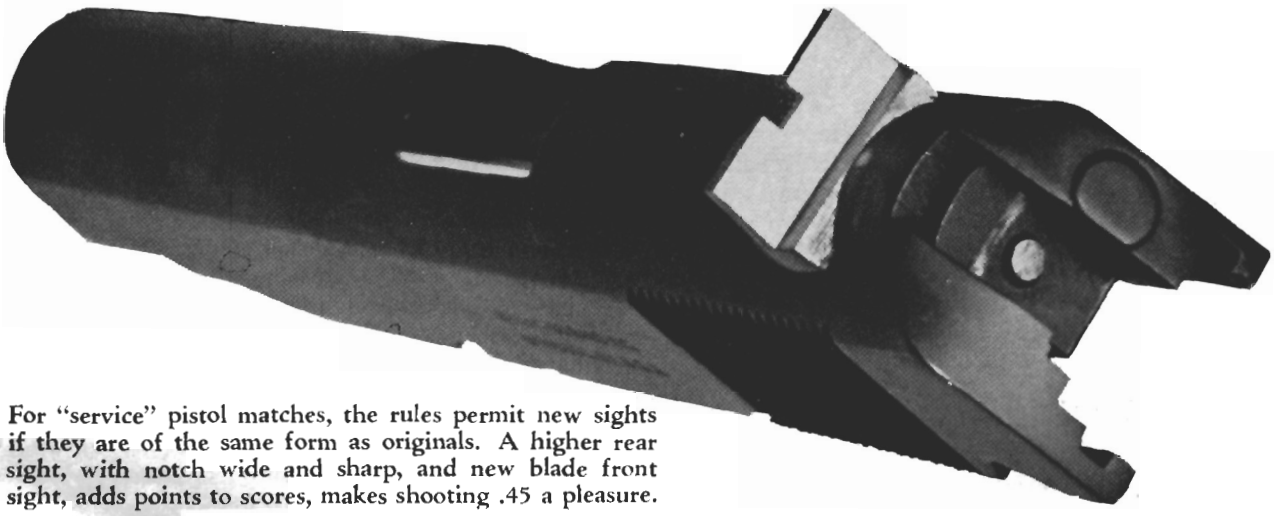
Recoil buffer can be made inside regular recoil spring guide, by swedging front end closed slightly, to retain new buffer pin and small spring. A screw plug closes rear end, makes buffer plug and spring one compact unit.

The reputation of the regular .45 was the reputation that counted, and for many years its accuracy was not at all commensurate with the needs of target shooters. Regular guns are built to large tolerances: this permits guns to be easily assembled with little special fitting, but it also means a looseness in the parts causing inaccuracy. A good portion of all these loose fits can be tightened. In the hands of a select few—and GI's who failed to "qualify" can holler—it is possible to make groups that would be reasonably close to those shot from some of the other center fire handguns.

One of the .45's primary faults is the looseness of the slide on the frame. This, of course, was necessary in a military arm. It can be eliminated in several different ways, generally just by squeezing the slide edges together and then lapping it in with the frame. Another method is to chrome-plate the receiver grooves and then lap them to a slip fit on the slide.

The front barrel bushing generally fits neither the barrel nor the slide. Correction is essential, and is made generally in the following manner. First, the bushing is expanded with a plug to a *tight* fit into the recess of the slide. Then the bushing opening for the barrel is reamed out to receive a tool steel insert, which is silver soldered into place. A new hole is drilled in the bushing. The barrel at the muzzle is trued up by grinding off just a whisker of steel. Then the barrel and "new" bushing are matched to a slide fit, by reaming the hole in the bushing.

The barrel will expand during firing from heat, possibly binding in the



For "service" pistol matches, the rules permit new sights if they are of the same form as originals. A higher rear sight, with notch wide and sharp, and new blade front sight, adds points to scores, makes shooting .45 a pleasure.

bushing as it is now fitted pretty tightly. To prevent this, relieve the external OD of the barrel starting at about ¼" back from the muzzle. Turn off about .005" for two inches, which eliminates friction on that part of the barrel. This also reduces the wear on both barrel and bushing because of the reduced diameter, and promotes easier functioning.

With the slide forward and the parts "in battery," there should be no sloppiness at the muzzle, and greater accuracy is assured. The back end of the barrel if necessary is built up to cause a thrust forward and up, holding the barrel into the locking recess. This results in a rigid barrel in the same alignment with the slide for every shot.

The installation of a recoil buffer eliminates a good portion of the kick and unpleasantness in a gun of this caliber. The buffer is made by taking the recoil spring guide and installing a steel plunger through the front opening to a shoulder which permits it to extend about ¾ of an inch. This is then fitted with a counter-recoil spring and retained by a cap screw threaded into the recoil spring guide. It is amazing how much more pleasant shooting this buffer makes a .45, especially with mid range loads. To further the refinement in a target .45 automatic, the installation of a trigger shoe with a built-in stop is almost a necessity. Whether a shooter uses the long trigger or the newer type short trigger is a matter of preference. For myself the longer trigger seems more suitable. The gun may be further improved by the installation of a heavier hammer spring which will give faster locking time and also permit a finer trigger action as well as a lighter pull.

The barrel link and pin should be well fitted. Usually the pin in the barrel has just enough clearance for the link, so as to permit free motion back and forth. The hammer should not have too much side motion in the receiver, and its pin should also have very close tolerances.

Target or improved "service" sights should be added. Most of the original front sights were stuck in like a pin, and can be bumped out again easily. For match shooting over "military" courses, the improved service sights should be used. These are not to be confused with the original type at all. Both front blade and rear notch should be wider and square, either 1/10" or ⅛" blade, and should sit up above the slide at least 5/16". These will give a good sight picture under target conditions.

Chicago custom gunsmith George Pearsall works to close tolerances with his lathe in making cut which reduces body of Colt auto pistol barrel, avoiding unnecessary bushing friction in recoil, but leaves front end uncut.

For the "open" matches, a Micro, King, or other adjustable rear sight, preferably used with a ramp front sight, will be advantageous. A ramp front sight gives more of a base for mounting on the thin top of the slide. The front sight height with the adjustable rear is too high to be stable if it is simply staked in; it should also be silver soldered.

Target grips, if needed with a thumb rest adaptor, can easily be screwed on. Many shooters glue a strip of sand paper on the front of the grip frame, and special grips can be shaped to cover this area with checkered wood. Others prefer to score the spot with a hacksaw or checkering tool. Again, some shooters discard the newer arched mainspring housing, and substitute a specially checkered flat housing, made over from the older model of World War I. All these are optional, matters of individual preference.

Finally, the appearance of the gun can be further enhanced by having the entire surface of the gun fine-shot blasted, which will strip off all the old finish and give the metal a smooth, gray, non-reflecting surface. ◉

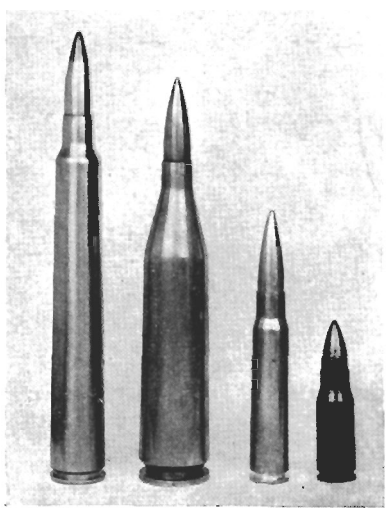
CARTRIDGES
QUIPS QUOTES & QUERIES

By STUART MILLER

The Long and the Short of It

TO STANDARDIZE and cut down on the number of tools necessary in the manufacture of barrels and projectiles, it has long been the custom for an army to pick a caliber for rifles and machine guns, and to stick to that size. The variations in size, load and purpose of cartridges in this one bore dimension are limitless. Our army was not so bad in this respect. Though there is considerable difference in size between the 30 M1 carbine and the 30-06 cartridges, they were pikers compared to what the Germans did with the 7.92 mm caliber in World War II!

The accompanying photo shows extremes to which the 7.92 mm (commonly called the "8 mm") was carried. The longest, 4 7/32" case and 5 1/8" over-all length, is the "Patronen 318 P," used in the Polish Model 35 anti-tank rifle. Large numbers of these rifles were captured early in the war, and re-issued to the German and Italian forces. The next cartridge, "Patronen 318", is for the German version of the anti-tank rifle, the Pz. B. 39. This cartridge has a powder charge of 200 grains, and a 225 grain bullet that was an armor-piercing tracer—with a tungsten core—and a pellet of tear gas thrown in for good measure! Both these rifles were single shots—with attached cartridge carriers—and were fired with bipod, from a prone position. The bullets achieved velocities up to 3800 feet per second, but as armor got thicker and tougher, the guns were generally abandoned.



Alongside for comparison is the traditional 7.92 x 57 mm used in the army rifles of Germany and many other countries for years. The military loads for this cartridge are many. The Germans loaded this with everything from a special load for silencer-equipped rifles with a velocity of less than 900 feet per second, to the high velocity loads specially made for aircraft machine guns, that zipped along at up to 3,000 feet per second.

At the other end of the line, in both size and performance, is the 7.92 mm short, for use in M.P. 43 and some other automatic weapons. A short cased cartridge, this had a load of 24 grains powder and velocity of around 2300 feet per second. Introduced late in the war, when the German supply of brass was short, all of the production rounds of this cartridge have lacquered steel cases. Specimens of this have been found with brass cases, but they are believed to have been experimental rounds used in development of the final cartridge, and are very scarce.

Early Army Cartridges

The first of the famed U.S. Ordnance Manuals was brought out in 1841 and are mighty rare today. I have a copy, and thought that cartridge fans might be interested in the table of small arms cartridges that the army was using 114 years ago.

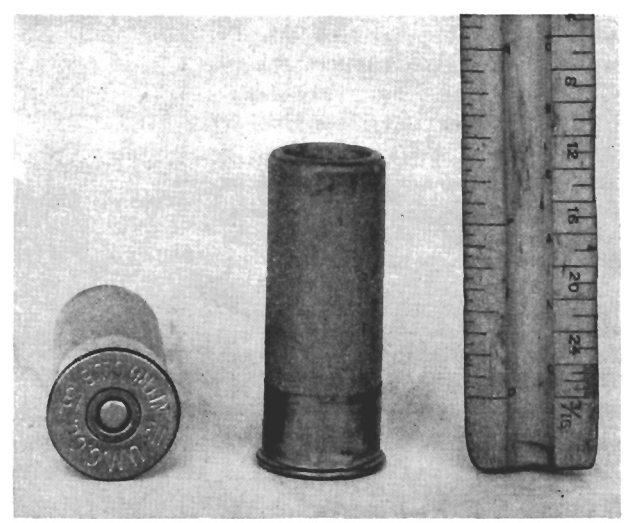
Kind	Balls	Powder	Blanks
Musket	0.64	130 grs	117 grs
Musketoon	0.64	85 grs	77 grs
Halls Carbine	0.64	75 grs	68 grs
Halls Rifle Cal	0.525	75 grs	68 grs
Common Rifle	0.525	100 grs	90 grs
Pistol	0.525	50 grs	45 grs

These charges include priming, about 6 grains to 12 grains, for all arms except the carbine which has a percussion lock. Cartridges are made either with a single ball, 1 ball and 3 buckshot, or sometimes with 12 buckshot and they are designated accordingly.

Shot Shells in 18 Gauge

Another "new" shotgun shell has come in . . . an American-made 18 gauge shell.

The first I ever saw of this gauge were those that Jack Brickell, the Portland, Oregon, cartridge dealer, located and brought back from Europe last year. These were empty primed, 2 9/16 inch green or red paper cases. The low brass bases had the headstamp "Braun & Bloem No. 18 Dusseldorf." Then S. Guarini found a brass shotgun shell with the headstamp "Kynoch's No. 18 Patent." But both of these were foreign shells.



The payoff came when a western collector came up with several boxes of these 18 gauge UMC nitro club shells. I managed to snap him out of a box of them, and had hopes of getting some data from the original label, but it was an unprinted label except for the stamp "Q 19 V."

These shells are 2" in length, pink paper case, and were factory loaded. The top was *(Continued on page 49)*

FIRST NEW REVOLVER

(Continued from page 7)

really "fitted" him was the New Model .36 Pocket Pistol . . . a gun first made in 1862! "I designed the Sentinel grip from the old Colt shape . . . just made a few changes," he admits. It really shocked me when he said that, for only the evening before, I had shown the new Sentinel to a fellow gun-crank who remarked: "That's the first decent grip on a revolver *since the Civil War* . . ."

Being a Rube Goldberg has never appealed to Sefried. If it's good, and not patented, and accomplishes the job, he will take it. Harry says, "The cylinder lock on the Sentinel . . . it gets away from having a lot of machinery on the back end of the deal. Just pull the pin forward a little, and the cylinder swings out to the left just like any other . . . that is straight off of that Borchardt revolver. Guess I must have studied those revolvers closer than anybody else at Winchester. . . ."

Now that I've shot the Sentinel I know that in terms of accuracy that gun will do anything demanded of it. But what Harry told me in confidence really floored me.

He has a Potter machine rest available to hold his test guns. I can't say how small the groups were that he was consistently getting: he asked me not to reveal this information. This sounded strange, and I asked why: "No accuracy standards have yet been set up," he said. "I can shoot that gun into an inch and a quarter at 75 feet, using a hand rest, but I don't want figures loose on machine rest groups, not yet. If some writer says that test guns shot, say, into a space one half the broadside of a barn, some guy with a gun that only shoots into the space the size of the whole side of the barn will squawk. That gun will shoot groups plenty tight enough at 50 yards in a machine rest."

Maybe I'd better leave accuracy at that, and wait till some fellow shows up on the firing line with a Sentinel on which he has put a Micro sight, and watch the scores.

Harry has pulled a neat trick by making a real bullet lead at the back end of the barrel. This is the place where the bullet jumps in from the chamber, and in .22's especially a lot of lead shaving occurs. Shaved bullets means unbalanced bullets and poor accuracy. But Harry, after fooling around with the tiny bullet lead cones in other guns, has put a hog waller at the end of his barrel that ought to catch a .30 caliber if necessary! It measures about .30″ in diameter and tapers to .22 bore diameter in a quarter of an inch. After firing, the Sentinel cylinder front shows remarkably little lead splash, unlike many revolvers costing more than twice as much.

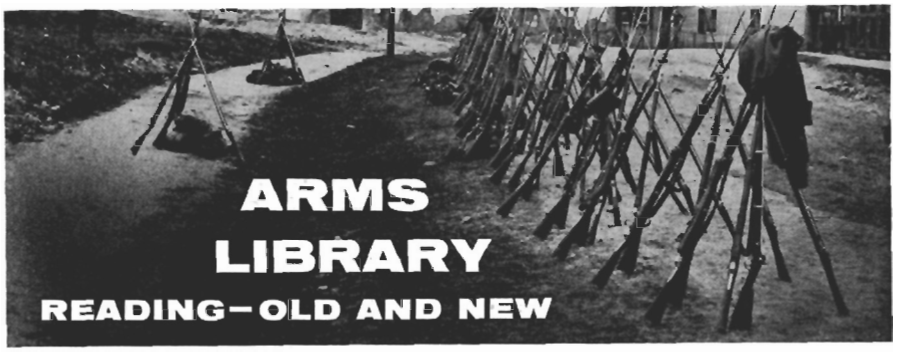
Disassembling the Sentinel is something Harry does not recommend: there are some springs inside which usually make their appearance in the palm of your hand after that first sudden jump which happens when the hammer pin is pushed out. Worst offender is the hand spring, a small torsion spring sometimes called a "grasshopper" spring. This, if not found in your hand, may have been what caused that little noise in the far corner of the room the instant after you pushed out the hammer pin. Present production Sentinels have this spring really nailed down, and it will not accidentally get lost.

The various parts in the Sentinel are simply designed and obvious in function. The hammer rebound safety bar works much like that in Colt and Smith & Wesson guns. But the entire absence of leaf springs, using instead long-lived, practically indestructible wire coil springs, insures great durability.

One thing necessary to reassemble the Sentinel is a small work pin to hold the hammer in the guard assembly. This pin must stick out far enough to serve as a temporary holder for the hand spring, but still permit the guard assembly to be put into the frame. Then driving the hammer pin through quickly secures the entire assembly. These extra pins may soon be supplied with each gun, taped inside the handle in a small cavity.

Be sure that the little trigger return spring plug bears against its notch cut on the frame shoulder inside, and that the large plunger, which fits into a hole on the front edge of the guard assembly, is in place with its spring. This plunger positions the guard into the frame at the front, and also serves to lock the cylinder crane in place.

Throughout the gun, where one part can do the work of two—or three if possible—it is so designed. Harry must have had a capital stock holder standing over him, at his drawing board, whipping him on with dividend certificates. The whole gun shows brilliant designing, cutting costs, combining functions of parts, producing a revolver of target accuracy and all-around use that is at once functional, attractive, and cheap. For my money, an American-built, solid frame, swingout ejector revolver of good quality for 35 bucks is like a dream come true. ◉



HUNTING CROWS YEAR ROUND by Charles S. Adams (Macmillan, $2.95)

Carrying the would-be crow hunter and gun-book reader through the four seasons, Adams nicely-illustrated and well-written book offers many valuable and interesting pointers for getting the black varmints. There is open season on the "American raven" and his friends of the same feather throughout 365 days. In descriptions of typical hunts at various times during the year, Adams describes picking the locations, use of natural and artificial cover, decoys, and the many things necessary to outwit these elusive, wary birds. Unusual in such a book, the fine photo illustrations are accompanied with camera tips for the shutter bug as well as the gunner.

ENGLISH, IRISH and SCOTTISH FIREARMS MAKERS by A. Merwyn Carey (Crowell $5).

With the increase in collectors' interest in foreign arms, there has been a need for a modern, inexpensive compilation of European makers' names, addresses, dates. Mr. Carey's book ably satisfies this need, so far as the United Kingdom goes. He has given considerably more than a mere mention to important shops or gunmakers, such as Rev. Forsyth, Enfield Armory, the Tower, and others. Designed as a reference, it is still well worthwhile sitting down and reading it straight through.

DOC HOLLIDAY by John Myers Myers (Little, Brown $4.50)

Straight narrative, this long-overdue authoritative biography of one of America's most colorful western characters—the epitome of the suave but tubercular gambler—is good, easy reading. Doc Holiday's interlude in Baltimore, Md., where he learned the science of pulling teeth, does not detract from that fair city's lustre as a place of other education, where he also learned to pull four aces from the deck without disturbing the fifth!

GUNS & SHOOTING by Lucian Cary (Arco $2).

Lucian Cary has been interested in guns since he was small, and this little book reflects his intense interest over the years. Many of his personal contacts with famous or interesting gun makers, designers, shooters are woven into these essays.

Wisely, Cary closes his book with a final short chapter on firearms legislation. Reiterating the usual pro-gun information about the damaging effects of stringent anti-firearms legislation, Cary adds one thing which brings it right home: in California, recent anti-gun legislation up for a hearing had one leading advocate. He was the local secretary of the Communist Party. The bill died at once . . . fortunately.

WATERFOWL SHOOTING by Wallace R. Labisky (Greenberg, $4.50)

Labisky's first book reflects a straight narrative style which is excellent in its simplicity. There is a lot of reading, and good information on the hunting of all sorts of waterfowl. A seeming sameness in the writing is actually a merit, for throughout the author, in straightforward plain language, tells facts and pointers derived from his own great experience. Clear instructions on how to prepare for a shooting trip, shot size recommendations, feeding habits of various ducks and geese, all combine to make a valuable book. Twenty drawings and a frontispiece by Charles Liedl pep up the format.

GUNS THAT WON AN EMPIRE

(Continued from page 28)

outfitting in 1803, Captain Lewis missed drawing from the first batch of "Eagle Gunpowder" made by the DuPont Company. President Jefferson himself encouraged E. I. du Pont de Nemours, a member of a French immigrant family, to begin the production of quality gunpowder in the U. S. In 1802, French-made powder machinery was set up on Brandywine Creek, Delaware. Much of the product was sold to the U. S. Government, and since it was unexcelled in quality it answered Lewis' specific request for the best possible powder. But the product was not ready for market until the spring of 1804, more than six months after Lewis left Pittsburgh with his supplies—thus it was probably French imported powder which was issued to Lewis.

The expedition also carried common rifle powder, "glaized" powder and musket powder. Black powder was made of 75 per cent saltpeter, 15 per cent fire charcoal, and 10 per cent sulphur. Differences in grade had to do with purity, thoroughness of mixing, and the size of the grain. Rifle powder was finer in grain than musket powder. The glazed product was prepared by putting powder and graphite together in a barrel and tumbling it until the grains took on a polish—this prevented dangerous static and inhibited spontaneous explosion during transporting.

Packing powder in lead cans was Lewis' ingenious idea for saving weight and keeping his supply dry. As the men used the four pounds of powder, they melted the lead cans into just enough bullets for the powder. And the canisters, sealed with wax or cork, were really water tight.

Lewis & Clark also mention having "fixed ammunition," probably small-arms paper cartridges. The "cartouche boxes" mentioned were leather flap pouches for carrying such cartridges.

Rifle flints were imported from England. They are efficient for only about 25 shots and usable for 50. If the 625 flints were all that they took, then each man in the expedition had to limit himself to an average of one shot a day over the three-year period or else exhaust the flint supply. But since there was no curtailment of firing, the expedition must have had ample flints.

As the government was not making pocket pistols, Whelen must have obtained a pair of private manufacture. Representative of such pistols of the period is an English I.N. Gardner .50 caliber flintlock with a center hammer, the whole gun being but six inches in length.

The "horseman's pistols" (horse pistols) were doubtless the North & Cheney Model 1799, manufactured under contract at Berlin, Connecticut, by Simeon North—the first official pistol maker in the U. S. Patterned on the French army Model 1777, this is a .69 caliber pistol with walnut stock, brass mountings, and a brass frame on the lower right side into which fits a steel, button-head ramrod. Its overall length is 14½ inches; its weight 3 pounds 4 ounces.

Captain Clark spoke regretfully of losing "an elegant fusee" in a flash flood near the Great Falls of the Missouri, and at another time told of his "steel fuzee" misfiring—"it snaped 7 times at a large buck," he wrote (he never could spell)).

"Fusees" or "fusils" were not actual government issue arms, but doubtless many were still in U. S. hands as a result of the Revolution. Both English and French officers often carried muskets of more delicate styling, somewhat shorter and lighter than the regular infantry muskets. Also, the Hudson's Bay Company bought large quantities of lightweight muskets from London and Birmingham makers, for trading under official sanction with the Indians. Since these latter are rather crude in workmanship, when Lewis wrote of an "elegant fusee" he may have been speaking of an English officer's fusil, or one of the fine French palace guard fusils with rainproof pans. None were made in the U. S., although later the 1795 musket was issued in a cut-down form, and a special Springfield Armory Indian trade fusil was made in small quantity during 1807.

TO A RIFLE BORE

This pantomime of how and what
And why and when and where you shot . . .
It fails to thrill me to the core.
I've heard you shoot that bull before!

—Anita Raskin

The blunderbusses were guns with short, bell-mouthed barrels of big bore, usually made of brass, but sometimes of iron. Mostly of English manufacture, a few were turned out by American gunsmiths. Adapted only for firing a scattering charge at short range, these added little to the expedition. Sometimes they were fired to make joyful noises. One got stepped on by an impulsive buffalo.

John Shields, blacksmith and gunsmith, kept all the arms in order. He fixed gunstocks, adjusted sights. Hunter Drewyer's rifle was given a new lock, Sergeant Pryor's a new cock screw, and that of Captain Lewis was re-rifled. Two other rifles, burst near the muzzle, were sawed off shorter and a new mainspring was forged for the airgun. "But for the precaution taken in bringing extra locks and parts of locks," Lewis wrote, "in addition to the ingenuity of John Shields, most of our guns would be at this moment entirely unfit for use; but fortunately for us I have it in my power to record that they are all in good order."

Finally reaching the shores of the Pacific, the party built Fort Clatsop at the mouth of the Columbia River and spent the winter of 1805-06 there. They survived there eating elk.

Before leaving Fort Clatsop in the spring, the explorers inspected their powder supply and found they still had 27 canisters of best rifle powder, four of common rifle, three of glaized and one of musket powder. In spite of the rain and damp, all were in good order except five which had been cracked or punctured. This supply, together with cached stores later retrieved, made them generous with ammunition on the homeward trip.

On the eastern side of the mountains the party divided, Captain Lewis travelling north to explore Maria's River; Captain Clark south to explore the Yellowstone River; Sergeant Ordway and a party to descend the Missouri.

During this separation the first shot against an enemy was fired. Lewis and his men ran into eight Minnetarees and Blackfeet. Though the captain was suspicious of the Indians' designs, the two parties camped together. That night Lewis was awakened by a "Damn you, let go that gun!" The Indians had seized several of the white men's rifles, including the captain's own. In the scuffle and chase which followed, Reuben Field stabbed one Indian fatally, and Lewis shot another. The Lewis party got their guns back plus one Indian rifle and several horses.

During this same period the only hunting accident of the expedition occurred. Half-blind Peter Cruzatte mistook Captain Lewis for an elk. "A ball struck my left thye about an inch below my hip joint," wrote Lewis. "Missing the bone it passed through the left thye and cut the thickness of the bullet across the hinder part of the right thye; the stroke was very severe." Cruzatte denied the shot vehemently, but Lewis knew, for "the ball had lodged in my breeches, which I knew to be the ball of the short rifles such as that he had." Captain Lewis had a tough time sitting down for many a day.

The whole expedition reunited on the Missouri and began a triumphal descent.

There was still powder to burn, and burn it they did as they swept on down the river toward civilization and home. At Charette they fired "3 rounds with a hearty cheer"; at St. Charles (where they saw *white ladies* walking on the bank) "three rounds from our blunderbusses & the small arms"; at Coldwater Creek they answered "a salute of guns"; and at last on September 27, 1806. at St. Louis the whole party fired off their pieces" as a salute to the town."

The expedition was over. The arms of the Corps of Discovery had carried them through. Thanks to that success the United States later gained title to those rich and beautiful lands which make up our far Northwest. The empire they won has added inestimably to the greatness of our nation. ◉

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THE WORLD'S BIGGEST SHOOT

(Continued from page 24)

but may be rebedded, "including replacement of wood inadvertantly removed." This permits a gunsmith to correct the usual sloppy arsenal fitting of a gun slapped together in wartime. With highly erosive Cordite powders, English barrels wear out quickly. Rebarreling is now permitted using a Lee Metford heavy barrel with Metford "smooth" rifling, chambered for Mark VIII ammunition.

There once was a *real* rifle used at Bisley—the famous and long-lamented .280 Ross. In the days before World War I when the "New" Springfield was setting records, riflemen gradually became aware of the possibilities in long, slim bullets, for extra long range shooting, if the bullets could be stabilized in flight. Black powder loads behind the .45 and .44 caliber "Creedmoor" bullets in British and American rifles produced good accuracy, but had relatively low velocities. This meant in simple mechanical terms, that a great deal of elevation had to be given to the rifle to enable the looping bullet to even reach the target. Additionally, time of flight at low velocities often gave a vagrant breeze a chance to pick up the slug mid-way down the range, and deposit it somewhere in the next county. Good sectional density—the ration of bullet mass to its area—was necessary along with high velocity to achieve optimum accuracy.

Sir Charles Ross, owner of a rifle factory in Quebec, appeared to have done just that. The special Ross caliber was a .280" bullet of 150 grains, at a muzzle velocity of 3150 feet per second—from 400 to 600 f.p.s. faster than the .30-06 and more accurate. Ross designed a rifle which is looked on with disfavor today . . . but the Russians used them to beat the pants off competitors at the Caracas matches last winter! Quoth the late E. C. Crossman, "One cannot cavil at the accuracy of a weapon that will shoot *six inch groups at 500 yards. . . .*"

The Ross straight pull match rifle was unveiled at Bisley in 1908. Using Sir Charles Ross' own ammunition, an undistinguished English shooter named Jones won world distinction by flopping down in the dirt and plinking away at the 900 and 1,000 yard targets. At 900 yards, fifteen shots were all bullseyes! At 1,000 yards, he dropped three points—72 x 75! In the Edge Match Rifle Competition, Ross rifles won again, 900 and 1,000 yards, 73 and 73. Jones won the long-range championship of England with the Ross .280. The Ross rifle was the most sensational match rifle to hit the shooting scene since the Remington Creedmoors of 30 years before. But the following year, Ross flopped!

Probably it was Sir Charles' desire to turn over problems of ammunition manufacture to an established company, which was responsible. The 1909 Eley ammunition for the Ross was described as being "incapable of hitting a flock of livery stables at a hundred fathoms." The end was in sight, and by the period of 1918, Ross had folded, after a brief day of Bisley glory.

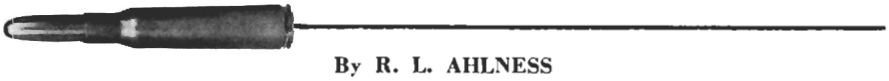
Pistol shooting at Bisley had not been neglected. The Colt company in the 1880's produced a target version of the "Peacemaker." This proving somewhat successful, Colt's got out on a limb with the redesign of grip straps and the end of the frame in the long-handled "Bisley Model" Colt. Essentially the original Single Action, the Bisley Model was produced from the late 1890's to about 1912. During that same period, Webley & Scott of Birmingham also turned out a few of their revolvers in target grades, with a special long grip forging to resemble the Colt "Bisley" grip.

But interest in Bisley as a pistol-shooting match has been superseded by the riflemen's interest: Bisley today is primarily a rifle-shooters meet, though revolvers and free pistol matches are held.

Bisley continues a top British event today although the government has virtually legislated firearms out of existence in England. For all the restrictions placed on gun-loving sportsmen, the Bisley meeting still draws thousands. Dominions of the empire send teams selected from among their best marksmen. In England there remains a hard core of gun enthusiasm, shooters willing to go through red tape and sue the police department if necessary, to obtain permits to own and shoot rifle-bore guns.

The firearms laws of England today require that even a .22 rifle must be registered, while private possession of the usual "battery" of .22, .38 and .45 pistols or revolvers, such as the American target shooter finds essential, is almost unknown. Hand-loading is also seldom done, except to load shotshells for the farmer-sportsman's use. ◉

HOW TO DETERMINE BULLET ENERGY



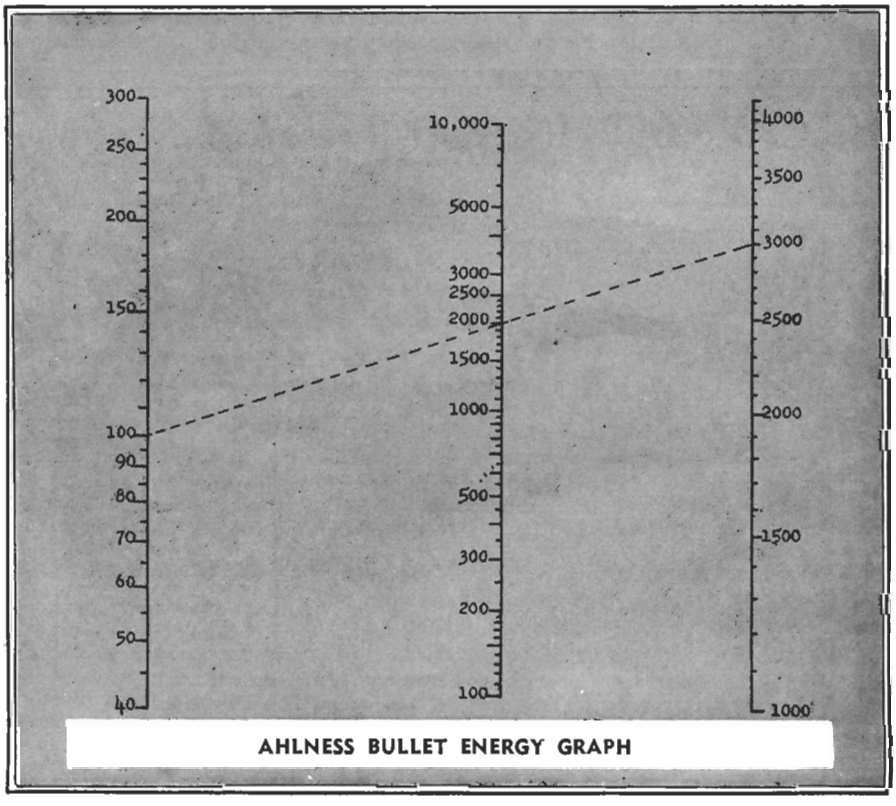
By R. L. AHLNESS

Extensive tests carried out at Princeton University during World War II showed that a close correlation exists between bullet energy and wound severity. The chart below offers a simple and rapid method of determining bullet weight and velocity. To illustrate the use of the chart consider the following example:

Assume a 100-gr. bullet has a muzzle velocity of 3,000 feet per second. Determine the muzzle energy?

SOLUTION: Using a ruler connect 100-gr. on the left scale with 3,000 feet per second on the right scale. Read the answer 2,000 foot-pounds.

Consider the effect of velocity on bullet energy. Connect a bullet weight of 80-gr. on the left scale with a velocity of 2,000 ft. per sec. on the right scale. Read the energy, 710 ft.-lbs. on the center scale. Now, again assuming a bullet weight of 80-gr., connect with a velocity of 3,000 ft. per sec. Read the energy, 1,600 ft.-lbs. on the center scale. Note a velocity increase of from 2,000 to 3,000 feet per second has well over doubled the energy of the bullet.



AHLNESS BULLET ENERGY GRAPH

Yet the Bisley shooter—and there were over 2,000 of them present at recent post-war meetings—is one of the crankiest and most meticulous shooters alive. He has to be: most of the competing shooters are "Territorials" or men from the "Colonies."

British gun enthusiasts know too well the predicament which Britain found itself in 15 years ago as a result of anti-gun legislation. Then, Britain faced the threat of an invasion from the Continent more terrifying than any prospect before. The victorious armies of the Nazis had pushed through the Lowlands, routed French forces, and were ready to embark at Calais for Dover. Only the intervention of Hitler's astrologer made Der Fuhrer abandon invasion preparations and turn his attention elsewhere. Had German troops landed in the south of England during 1940, the conquest of Europe would have been a certainty, and the "1,000-year empire" of the Nazis might be a reality.

The men who show up at Bisley these days have a deep appreciation of the need for skill in riflery . . . the very life of England may be one day at stake. Appropriately enough, the start of what is now the annual Bisley shooting competition came when there was another threat of invasion from the continent by another would-be emperor.

The year was 1859, the emperor was Napoleon III. The English saw that the spectre of the dead Bonaparte hovered over Europe, and in Napoleon III they saw a man justly to be feared.

Throughout the English countryside a spontaneous volunteer militia movement arose. Coincidental with this forming of small bodies of troops and activation of local militia, there occurred significant changes in the designs of military arms. The smoothbore "Brown Bess" was being replaced throughout the service with accurate Enfield rifles. Commercial gun makers were becoming increasingly concerned over practical accuracy.

These "volunteer rifles," bought by gentlemen of means mustered into the volunteer corps as officers, were designed for shooting offhand at 200 yards, and at longer ranges up to 1,000 yards from several different prone positions. Muzzle-loaded, they took advantage of special bullet shapes and excellent fitting to perform accurately at ranges up to 1,000 yards. Logically, the next step was to find some place to shoot these rifles in open competition with expert members of other militia units.

The army school of musketry at Hythe was inconvenient for public shooting matches. A few leaders of volunteer outfits realized that target shooting competition would maintain interest in activities of the units. From these early enthusiasts, the English National Rifle Association was formed.

The infant NRA needed a home. It achieved the status of an important institution when Prince Albert, the husband of Queen Victoria, became its patron. Albert was an ardent hunter and gun-sportsman. Today his array of fine shotguns and sporting rifles is a prized part of the arms exhibit at Windsor Castle. Then, his interest was reflected by the interest of the Queen herself. Wimbledon Common was selected for the first English Shooting Derby, and the Queen graciously consented to fire the first shot opening the proceedings.

Officers of the NRA worked day and night before the scheduled opening day, digging drainage ditches and laying boardwalks. A heavy rain turned the field at Wimbledon into a mire, but finally July 2, 1860, dawned bright and clear. A pavilion had been erected for the royal party to protect them from rain or sun. On the raised platform, an Enfield rifle rested in a tripod cradle, held down by two great iron ball weights. Young Queen Victoria pulled on the lanyard, the shot cracked out, and the match was on.

A tiny beginning for the great show of today, this first shooting match had only seven competitions, with twenty targets being provided. Shooting was from 200 yards offhand to 1,000 yards prone. Instead of the modern bullseye or head and shoulders profile, the targets were large boards marked off in one-foot squares. For 200 and 300 yards, the targets were six feet high and four feet wide, and increased in size up to 10 feet in width at 800 to 1,000 yards! The marksmen at this first meeting shot in unusual comfort: a small tent covered each firing point, but these were dispensed with as the lists of competitors increased each year.

At the end of the match, NRA officials were pleased, and began preparations for a much bigger shoot the following year. New competitions were set up. Prizes increased from £ 1,200 to £ 4,300 in only three years. Trophies of impressive size—and difficulty of attainment—were offered. Lord Elcho, a famous member of the Volunteers, once stated: "Archery was formerly the chief national pastime, and therein lay the nation's strength and security. What the bow was in former times the rifle now should be." He was solidly behind the Wimbledon shoots and offered what is now called the Elcho Challenge Shield.

Matches continued at Wimbledon until 1888. The magnificent long-range rifles of the Gibbs-Metford and Rigby types, in muzzle and muzzle-breech loading styles, took the top honors. The lying-down position known in America as the "Creedmoor" position was a favorite of the 1,000 yard shooters of this time, and mounting the rear sights on the heel of the stock became common.

The annual NRA matches were about the only sort of long-range competition in England, and special types of guns and sights were developed for those conditions. They were similar to American Sharps, Remington, Whitney and other long-range buffalo rifles. At shooting matches held on New York's fine "Creedmoor" range, or in Massachusetts at "Walnut Hill," Irish and English rifle teams competed for the championship of the world with America's best. British training at Wimbledon often proved superior!

The Duke of Cambridge in 1888 indicated he could no longer allow the matches to be held at Wimbledon because of "the increasing range of the rifles."

Lord Wantage offered a site on the Berkshire Downs, an historically appropriate location which had once been a battleground between the invading Danes and the Saxons. Various townships offered deeds to land, and it was finally decided that the new, and hopefully permanent location, should be Bisley Common, situated in one of the most beautiful parts of Surrey.

The War Department, always interested in the volunteers, donated considerable land and the association purchased the necessary other parcels. Companies of the Royal Engineers were detailed from Aldershot to survey roads and help move the club buildings from Wimbledon to Bisley. The Duke of Cambridge, president of the NRA though objecting to its continued existence on his land, opened the proceedings on July 12th. Escorted by Hussars from Aldershot, the royal party this time drove to the 500-yard firing point, where the Duke made a speech dedicating the new range location . . . considerably enlarged from that small beginning in 1860, for now there were 90 firing points instead of ten! The Princess of Wales, later Queen Alexandra, fired the opening gun by a lanyard as Victoria had years before. ◉

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"Now here's my deal for you. Some time ago I got word that Scotland Yard wanted to unload a rogue's gallery full of pistols and revolvers that they've been lifting off of thugs and scalawags over there for the last fifty years. I bought the whole batch and they're sitting out back right now."

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"I'll ship you 2 of these guns to hang on your wall for $17.00 or three for $23.00 together with a notarized personal letter from me verifying their origin. If you don't like 'em you can ship 'em back and I will refund your money."

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17.00 FOB BURBANK
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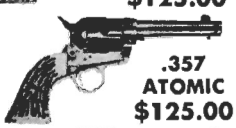
GREAT WESTERN FRONTIER SIXSHOOTERS

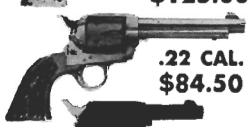
.45 LONG COLT $97.50
BARREL: 4¾", 5½", 7½"
LENGTH OVER ALL: 10⅞" with 5½" barrel
WEIGHT: With 7½" bbl., 39½ oz., 5½" bbl., 37 oz., 4¾" bbl., 36 oz.
SIGHTS: Fixed standard single action Army. (Fitted with micro target adjustable sights, $20 extra.)
GRIPS: Tenite Stag
FINISH: Bright Blue, case hardening colors on frame
FRAME: .45 Caliber

SMITH & WESSON .38 SPECIAL $97.50
BARREL: 4¾", 5½", 7½"
LENGTH OVER ALL: 10⅛" with 4¾" bbl.
WEIGHT: With 7½" bbl., 44½ oz., 5½" bbl., 42½ oz., 4¾" bbl., 41½ oz.
SIGHTS: Fixed standard single action Army. (Fitted with micro target adjustable sights, $20 extra.)
GRIPS: Tenite Stag
FINISH: Bright Blue, case hardening colors on frame
FRAME: .45 Caliber

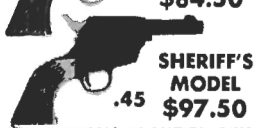
.44 SMITH & WESSON SPECIAL $125.00
BARREL: 4¾", 5½", 7½"
LENGTH OVER ALL: 10⅞" with 5½" bbl.
WEIGHT: With 7½" bbl., 41½ oz., 5½" bbl., 39½ oz., 4¾" bbl., 38½ oz.
SIGHTS: Fixed standard single action Army. (Fitted with micro target adjustable sights, $20 extra.)
GRIPS: Tenite Stag
FINISH: Bright Blue, case hardening colors on frame
FRAME: .45 Caliber



.357 ATOMIC $125.00
BARREL: 4¾", 5½", 7½"
LENGTH OVER ALL: 12⅛" with 7½" bbl.
WEIGHT: With 7½" bbl., 44 oz., 5½" bbl., 42 oz., 4¾" bbl., 41½ oz.
SIGHTS: Fixed standard single action Army. (Fitted with micro target adjustable sights, $20 extra.)
GRIPS: Tenite Stag
FINISH: Bright Blue, case hardening colors on frame
FRAME: .45 Caliber



.22 CAL. $84.50
BARREL: 5½"
WEIGHT: 46 oz.
SIGHTS: Fixed standard single action Army. (Fitted with micro target adjustable sights, $20 extra.)
GRIPS: Tenite Stag
FRAME: .45 Caliber



SHERIFF'S MODEL .45 $97.50
BARREL: 3", 3½"
LENGTH OVER ALL: 8⅞" with 3½" bbl.
WEIGHT: With 3½" bbl., 32 oz.
SIGHTS: Fixed standard single action Army. (Fitted with micro target adjustable sights, $20 extra.)
GRIPS: Tenite Stag
FINISH: Bright Blue, case hardening colors on frame
FRAME: .45 Caliber

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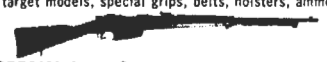

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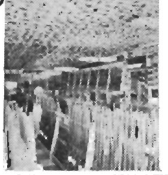

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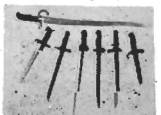

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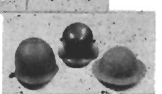

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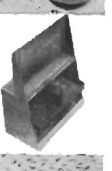

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THE SEVEN-SHOOTER

(Continued from page 18)

backed up the authority of 3½ ounces of lead. Shooters who have fired heavy-bore elephant guns can imagine somewhat the push of this gun. Actually, though, the recoil was not too unpleasant as the gun is proportioned to absorb the force and weighs about 11 pounds. When British sailors loaded these weapons for real fighting, three bullets per barrel was the rule! Seven drams of black powder behind 21 half-inch lead bullets sweeping the deck simultaneously created fearful carnage.

Closing for boarding required the marines to be ready. Sailors were needed for handling the ships, and did not usually take part in the fighting, except as gunners and to repel boarders. Corresponding to the land-fighting dragoons, who were men trained to fight afoot but get there on horseback, the marines were actually used as infantry. Conveyed by ships instead of walking to their destinations, their job was to fight the enemy in personal combat on the enemy's decks. Meanwhile, picked snipers were placed in the rigging to shoot down on the enemy's decks. It became the fashion to tie or sew small crosses of rope on marines' hats, so as to distinguish them in the melee from the enemy and avoid being hit by their own snipers. In such work Nock's "goose gun" was useful, and proved effective for killing snipers.

The seven 32-gauge or .526″ bore barrels were clustered, with six outside and one centrally placed. They were muzzle-loading, the ramrod being held below the gun in ordinary brass thimbles. At each end, star-shaped spacers hold the brazed barrels.

Each barrel is closed by a screw plug, while the center barrel has a special plug with a "spigot" communicating to the priming pan. Since all barrels fire simultaneously, there are seven supplementary flash holes leading from the central plug . . . to each barrel. These were actually drilled from the outside, after the barrel group was assembled, and the outside holes then plugged up. Straps from the solid part of the breech extend backward to attach the plain walnut military stock, with brass buttplate and trigger guard. The barrels are only 20″ long —accuracy at great ranges was not the purpose of the gun.

These guns have been accepted into government stores, as is evidenced by the "Broad Arrow" property stamp on the lock plate, as well as the "Tower" and the crown stamps. The lock is a special flint lock of Nock's design, using a patch or thin sheet of lead (instead of the usual leather), to hold the brittle flint between the steel jaws. According to James' "Military Dictionary" (1810), lead was recommended for holding flints, "whereas leather is elastic and does not wrap round the flint as well as lead, which collapses at every pressure."

Multi-barreled guns continued to be used, but for more peaceful occupations. One Frenchman, at least, seemed to have learned a strong lesson from Henry Nock: a *double* seven-shot flintlock gun is known to have been made about 1820, probably for hunting. Even today, seven barreled .22 caliber rifles are made in France and Belgium. They are quite a "come-down" compared to their lead slinging ancestor, which fired nearly a pound of bullets at once. ◉

AIMED FIRE VERSUS MASS FIRE

(Continued from page 11)

New Jersey and into Pennsylvania. On the brink of ruin, he counterattacked. He won the two brilliant actions at Trenton and Princeton. However, during the battle of Princeton, Mercer's brigade, largely armed with rifles, fought the British regulars in open action and was defeated badly because of the inherent disadvantages of the rifle. It was slower to operate and far poorer for hand-to-hand combat, since it did not take a bayonet. Fortunately, the New England Continentals saved the day with their volley firing from muskets.

On the other hand, aimed fire was of tremendous importance in certain circumstances. Hand's Pennsylvania riflemen were of great valuc to Washington in holding back the British advance the day before the battle of Princeton. They were firing from behind trees and from any other available cover. When they were forced out of one good defensive position almost at the point of a bayonet, they retreated only far enough to find another. They were the prime reason that Washington was able to march around the British and gain the victory at Princeton the next day.

After Cornwallis left for Philadelphia by sea, Daniel Morgan's riflemen were sent to West Point and finally to the northern army opposing Burgoyne who was advancing from Canada. They were superb in some actions against Burgoyne's men. Tim Murphy shot General Fraser of the British army at Bemis Heights at a range of about 300 yards. Morgan had sent Murphy up a tree with specific instructions to shoot the British commander in this sector. Tim's third shot was mortal; the first two touched Fraser's horse.

However, even Morgan's stalwart soldiers had their disadvantages for use in the open field. Morgan's force was once broken and dispersed by a smaller British unit attacking with musketry and bayonet at Freeman's Farm. His men melted away but assembled later in the rear when Morgan sounded his famous turkey call.

The concensus of opinions by the end of 1777 throughout the Continental Army was that, even though the rifle was of great value for certain types of action, infantry, to be able to stand up against the British regulars in the open field, must be musket-armed. During the dreadful winter at Valley Forge, the entire Continental infantry was re-equipped with French muskets and trained to use them in the approved European manner by Baron von Steuben, the Prussian drillmaster of Washington's army. The next summer these men were able to stand against the British regulars at the Battle of Monmouth and fire volley for volley with them. They even fought at close quarters with the bayonet on even terms.

Perhaps the greatest victory ever achieved by aimed fire over musketry occurred at King's Mountain. Colonel Ferguson and an army of British and Tories who were both well-trained and well-equipped were caught by mountain riflemen on top of a rugged hill. The mountaineers advanced on the enemy from all sides and shot them from behind trees and rocks just as if it were a gigantic game round-up. The mountaineers did not stop to fight hand-to-hand combats; while the British were charging in one direction, the encircling mountaineers continued their pitiless rifle fire from every other. Ferguson and his entire army of about 1,000 were either killed or captured.

But in the end muskets proved more important than rifles in bringing about the final British collapse at Yorktown.

Our new nation in its second war suffered greatly from the lack of discipline in its land forces. Perhaps the most notable battle was the stand of Andrew Jackson outside New Orleans late in the war. Actually, peace had already been concluded, but Jackson did not know due to the slowness of communications. This battle has frequently been stated to have been won by aimed fire from Kentucky riflemen. This is not completely true. Old Hickory, using a dry canal, cotton bales and various other materials, had fortified a line which the British obligingly attacked very much as they had the American fortifications at Bunker Hill. The American line contained a number of pieces of artillery, including several heavy guns. The backwoodsmen actually armed with rifles were in the minority. The musket was at least as effective as the rifle at moderate range. The British lost 2,000 casualties in a relatively short time. Our losses were only 71.

The Mexican War was the only large one we ever fought using a considerable percentage of professional soldiers. The infantry units were almost completely armed with smoothbore flint-lock muskets; they performed their battle duties flawlessly and were uniformly victorious. On the other hand, our volunteers were largely armed with the new percussion rifles; they did not by any means cover themselves with glory.

Between the Mexican War and the Civil War, one of the most far reaching ordnance changes ever to take place largely swept away the old distinction between an arm for musketry and an arm for aimed fire. The new Minie rifle was as easy to load and as rapid firing as a smoothbore musket. It was far more accurate. Aimed fire could be delivered at 500 yards; maximum range increased from perhaps 200 yards to about 1,000 yards.

Although this new rifle was capable of aimed fire, it was used largely in the same manner as the old smoothbore musket. Thousands of rounds of ammunition were fired by the Union infantry to produce each Confederate casualty at Gettysburg. Large oak trees were cut down completely by small arms fire in the wilderness. The Confederate infantry units of Gordon and Cleburne, in their extremely effective fighting at Gettysburg and Missionary Ridge, were using musketry rather than aimed fire. Each of these outfits averaged better than four shots per rifle per minute for a considerable time.

On the other hand, aimed fire was used in the Civil War to an extent unprecedented in regard to range. Union General Sedgwick was killed by Sergeant Grace of the Georgia infantry at a range of approximately 700 yards with a special Whitworth sharpshooter's rifle. Berdan's Union sharpshooters were armed with some of the most accurate rifles

ever made in America until that time.

However, when one studies the terribly bloody battles of Shilo, Fredericksburg, and Sharpsburg—the last the bloodiest single day of all our history—one is impressed with the reliance on musketry. Ranges were relatively short; thousands of men were standing shoulder to shoulder in ranks. Infantry rifles could deliver, at least while reasonably new and clean, accurate fire. However, they apparently seldom did.

The new rifle's accuracy wasn't fully apprcciated. Target practice for the infantry rank and file wasn't common in either army. Skilled marksmen were usually men already capable of delivering aimed fire before becoming soldiers. Little or no effort was made to develop them from the general run of recruits.

In Indian campaigns, aimed fire played a larger part than in our wars because of the training and thinking of our professional soldiers. On the Western prairies, one of the prercquisites necessary for keeping one's hair seems to have at least basic proficiency at aimed fire.

In World War I the Germans were literally astonished at the precision of fire from some American units. This was particularly true of the very first actions in which the quality of our troops was very high. The cnemy, accustomed to the poor individual shooting of the British and French civilian soldiers, was stopped cold by the old Springfield in the hands of the 28th Regiment of the 1st Division at Cantigny.

However, when many civilians were inducted into the army more or less against their will and turned into infantrymen in a relatively few weeks, marksmanship of U. S. troops fell off. Many of these men were not at all familiar with firearms in general, and rifles in particular. A system of aiming the Springfield rifle starting at the extreme right of the target area and moving by uniform steps to the left was taught to infantrymen, when time was too short for paper target shooting.

As the war progressed, battlefields no longer were filled with visible enemies. Soldiers who fired many hundred rounds in battle, often never saw a live German. The siege-type fighting of World War I put a premium on guile and ability to conceal oneself while picking out individual enemies. Ranges were usually not long. However, this sniper form of fighting did not win battles. Even a relatively small offensive in World War I involved 500,000 men.

When the big pushcs were on, artillery, machine guns and musketry from rifles became more important than aimed fire.

Between the two World Wars, firepower was tremendously increased. A battalion of infantry in 1945 was probably equal in the number of bullets that it could fire in a short space of time to a regiment in 1918. The net result was an overpowering disposition towards musketry over aimed fire during World War II.

The magnificent Garand soon took the place of the tried and true Springfield in the hands of our troops. Let none belittle the Garand; it will shoot with any weapon in the world for accuracy. It can be made to deliver aimed fire. However, we made bullets by the billions and were thinking in terms of firepower from full automatic weapons. In most units, there was a tendency to em-

phasize the machine-guns and Browning Automatic Rifles (BARS). Most infantrymen thought of their Garands more as "cone of fire" weapons than as a precise instrument for shooting at a specific target in battle.

When newly-trained infantry divisions went into battle, it was well that they had this disposition towards musketry for that was what was needed. Live targets practically disappeared from most battlefields. The infantry company making the deepest penetration on D-Day in Normandy saw but six enemy soldiers. Five days later, the magnificent 502nd Parachute Infantry in the stubbornest kind of hand-to-hand fighting saw relatively few live Germans in a dawn-to-dark fight amid hedgerows and ditches. Even though in insolated instances about six enemies were bayoneted, and in some cases Germans were killed at actual ranges of under 45 feet by machine-gun fire, only one man in five of the front line personnel ever saw the enemy.

In Korea, nothing was more evident than that the infantryman and his weapons are still the core of any army. The infantryman's rifle with guts on both ends of it is what wins battles. More bullets were fired from small arms than ever before; however, a smaller percentage of these were individually directed at specific targets. Musketry probably reached an all-time high over aimed fire. Sniping was frequently done with the BAR instead of the scope-sighted sniper's Springfield. A burst of fire actually worked better than a single shot.

In theory, at least, we endeavor today to train soldiers to deliver aimed fire. The army wishfully hopes that each GI can pick out any visible enemy under battle conditions and kill him with one or two shots from the Garand. With this object in mind, the infantry recruit spends a rather large percentage of his time in basic training learning about his rifle. He is supposed to fire 400 live rounds at paper targets clearly defined.

However, the infantry recruit is exposed directly and indirectly to the fire power theory. He receives some training as a part of crew-served weapons teams. The machine-guns of both .30 and .50 caliber are fired; the infantry now handle mortars, bazookas and flame-throwers. Not so subtly, the emphasis is on delivery of firepower by the ton rather than a single bullet precisely.

This is as it should be. Our unique and ever-expanding industrial capacity helps us to deliver musketry fire. Aimed fire will always be of value, but is hard to obtain from the average infantryman and not always possible to use in battle.

Our generals do not delude themselves by supposing that any significant part of our small arms fire in battle is aimed. We are fighting our wars with showers of bullets. Actually, we have done so throughout the major part of our history.

While we can take pride in the accuracy of some of our riflemen, let's be equally proud of the fact that we lead the world in producing bullets and delivering them on the field of battle. Washington's Continental infantry sprayed bullets over the countryside effectively with their smoothbore muskets; they won our independence for us. Aimed fire was an important auxiliary during the Revolution. It's the same today, but it's still musketry that wins. ◉

GRAY GHOSTS OF THE TWILIGHT

(Continued from page 32)

hid behind a clump of buck brush just good shooting distance away.

They began to jump birds and I could hear the incessant popping of their guns, though I couldn't tell what the results were. However, the amount of gun fodder they were burning didn't indicate a high score. Flushed birds began to work back towards me and as they fluttered into the juniper I started dropping them. An hour later they came back—out of ammunition.

One had fired 57 shells and had three birds. The other had used 49 and scored four times. These guys were good shots, too. One I've seen take his limit of pheasants with an equal number of shots consistently.

My nine birds out of eleven shots increased my standing considerably. I never did tell them how I did it, and they were too hot and bothered about their own poor showings to ask. The best thing that came out of the hunt was the acquisition of a couple of hunting partners who feel about doves the way I do and appreciate the fine sporting qualities of the bird.

Like every other game bird or animal, doves have suffered from over-shooting in the past. A good many thousands are still killed each year. This not only attests to the bird's fine sporting qualities, but to its wide range. It's the only game bird found in all 48 states. Since it is migratory by nature, it presented a problem in game management. Protected birds in one state would fly south to one where they were not protected. It was obviously an unfair situation which allowed sportsmen of one state to capitalize on shooting that those in another state were forbidden.

Then the federal government stepped in and took control on the basis of their migratory habits and the situation improved. There will never, of course, be the type of shooting we used to have 25 years ago when I first started experiencing the disappointment of not being able to outwit doves. There are just too many hunters. However, I'm somewhat reconciled to that fact, and am now content if I can get one good dove hunt a year, or even one every two years.

There is another method of hunting these elusive little critters which I haven't mentioned. It furnishes the wildest shooting I've ever experienced. Some gunners express disapproval of it, but as far as I can tell, the dove population suffers no more damage than from other methods. I'm talking of evening shoots at a watering place. Along about sundown when there's the poorest light, they come streaking in brush-top high—elusive wisps of gray in the twilight. More than one hunter comes away from a water hole with the feeling that he's been shooting at ghosts.

Last fall four of us located a dandy waterhole way out in the sagebrush desert of central Oregon. It was just a trickle of windmill pumped water oozing through the pumice sand in a line-cabin corral. It was surrounded by fences, a windmill and a number of weatherbeaten old buildings. The hunt was memorable both from the intensity of the shooting we enjoyed and the scarcity of birds in the bag when the hunt was over.

Legal hunting time in Oregon ends at sunset. Doves don't start coming into a water hole until sunset. Which presents quite a problem. In this case we were aided and abetted by a range of mountains to the west which brought an actual sunset about 20 minutes before legal sunset.

We arrived at the water hole a little early and had a half hour or so before sunset. This gave us time for a bit of exploration. The remains of a patch of dry-land wheat looked promising after a couple of cruising doves flew in. I headed for them but they flushed out of range. Then, just to be good fellows, they circled back and gave me a shot which I flubbed.

I feel bad when I miss such shots at pheasants or ducks, but on doves I more or less expect it.

I squatted behind a thin screen of standing stubble as other birds came in ragged bunches of two's and three's. By the time the sun was resting on the tips of the western hills, I had six birds and was very pleased with myself.

The four of us scattered around the buildings to cover all approaches and I was particular to place buildings between myself and the others, both for my own protection as well as that of the other hunters. When doves start coming into a watering place, it's like a swarm of bees after a bowl of honey. They're all over the place and pay little attention to hunters. Which, contrary to what one might think, actually makes them harder to hit. They'll fly right at you. You swing frantically trying to get on them and even if you make it, you can't shoot. They're so close you blow them to bits or miss them altogether.

A flurry of shots from the pair guarding the opposite side marked the arrival of the first bunch of thirsty birds. It was almost impossible to see them against the dark eastern sky but against the bright orange sunset they were silhouettes that appeared suddenly out of nowhere. It was difficult to judge how far away they were. I snapped at a crossing bird that dodged out of the way of the shot, or so it seemed, and missed a high one going overhead. The rest of the crew kept up a steady bombardment but I was sure they were having about the same luck as myself.

A bunch of six came boring in, crisscrossing their lines of flight. I never could make up my mind which to shoot at and let them buzz on unmolested. A loner came in low and lit on a fence post ten feet away. I flushed it and then just to mix me up it dived to the ground and put the fence between us.

A couple of singles gave me good crossing shots against the glowing sky. I dropped them both and then proceeded to miss six straight.

By now birds were coming from all directions and I was having trouble picking targets. Mostly they were too close. If you've ever tried to line up on a bird that zooms into view at ten yards, heads right for you and then goes on by like a wisp of smoke in a strong wind, you'll know what I mean.

I dropped another that made the mistake of giving me a straight away and then we were all done. Official sunset had arrived.

When we tallied results for the evening, the score was not impressive, if one reckons his fun by the amount of game in the pile.

Once again the mourning dove had proved to me that he's no pantywaist songbird but is, instead, a tough character that'll make you wonder more than once whether or not you're shooting blanks. ◉

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CARTRIDGES

(Continued from page 36)

marked "18-Infallible—¾ C 7 ½-U.M.C." Still another interesting point is that part of the lot was the same size, but were marked "UMC Co. No 20 Nitro Club" instead of "No. 18." Apparently these were the first manufactured, made before they had a special headstamp die made up, so they merely used an old 20 gauge die and let it go at that.

It was first thought that these were experimentals from the time that they were introducing the 410 gauge. However, the European shells seemed to discount this theory. I wrote to the Remington Company in the faint hopes that they might be able to dig out some history on the shell. They very kindly did their best and came up with the fact that these particular shells were made in 1904. While they don't know what guns they were intended for, they were quite sure that the lot was made up for export.

Question Marks

"I just ran across a box of old cartridges marked 'Winchester Single Shot, Marlin and Ballard rifles, 32 Caliber, 40 Grains Powder, 165 Grains Grooved Bullets.' They seem to be just plain lead bullet cartridges as far as I can see. What's with this 'Grooved Bullet' business." A. J. New York City.

At the time those cartridges were made, they had two systems of lubrication for the bullets. The ones with the paper-patched bullets generally had a disc of lubricant placed in the case, separated from the powder charge by a wad, directly under the bullet. The other type with the grooved bullets had several grooves cast in the bullet—these were packed with the lubricant before being loaded in the case. For a while, they used to have the grooves out in the open, but the grease would either be worn off, or collect dirt, so most of them used the system where the grooves were covered by the case of the cartridge.

"I recently bought a '45-75-420-2i/10 Sharps Str. PP Cartridge' and when I got it here it was headstamped 'WRACO 45-70.' I hollered but the fellow showed me the original box. What happened?" O. N. Memphis, Tenn.

No, it's legitimate all right. Because of the ease in getting army ammunition or cases, the 45-70 Sharps was very popular with many buffalo hunters. In order to get a bit more power out of the load, they would sometimes add an extra 5 grains of powder. Then the companies began furnishing this load.

"What's this 22 short 'Spotlight' cartridge that I have seen listed as a World War I training cartridge? Who made it, and how did it work?"—J. D., Grand Rapids, Mich.

The cartridge itself is actually a 22 short hollow-point, with the cavity in the bullet partially filled with a pellet of magnesium compound. When these bullets hit a metal or concrete target, the heat from the impact would ignite the magnesium and produce a nice little flash. The idea behind the project was to teach the troops the art of instinctive aiming, when it was too dark to use sights. After the war, there were quite a lot of these cartridges left, and they were sold by the director of civilian marksmanship back in the '30s, for a very low price—about a dollar a thousand. ◉

TRIGGER TALK

NEXT to the 15 million Americans who have hunting licenses, the largest number of gun-minded men in the U.S. are the 3,300,541 youths in the armed services. Their thorough training in the use of firearms has qualified them as the best-educated single group in the nation on the subject of guns. It is to these men in arms that GUNS monthly devotes at least one key article on military weapons and tactics.

In this issue the highly-informative story on "Aimed Fire Versus Mass Fire" on page 8 is typical of this continuing series. Its discussion of the history of small arms fire represents some careful research by writer Jac Weller. Located in Princeton, N. J., where he has his own machine shop and private shooting range, Weller has a wealth of experience in the gun field that includes much work in ordnance manufacture. He is a mechanical engineering graduate from Princeton and during the war was one of the first U.S. engineers employed by the British Purchasing Commission. Later he served in supervisory jobs in arms-making at American Type Founders, Eastern Aircraft and Atlantic Diesel Corp.

Most of Weller's postwar work has been in private research. He has designed and made in his shop a shoulder arm firing a .50 caliber MG cartridge, once scored a 14-inch group at 1,100 yards and will shortly describe this weapon in a GUNS article. Weller has been an honorary curator of the West Point Museum, working on historical field artillery pieces.

Recognizing that many American arms developments had their beginnings in England, Weller spent an entire summer visiting British military establishments and looking at ancient arms in their museums. As a member of GUNS editorial advisory board, Weller will contribute often to these pages.

In the realm of the military, next month GUNS turns back the pages of history to probe into one of the most-publicized battles of the last century—Custer's last stand against the Sioux Indians in the Dakotas. The legend that no one survived that battle has long been accepted. But GUNS has discovered a survivor—Custer's last man, you might call him. Don't miss his story in the July issue.

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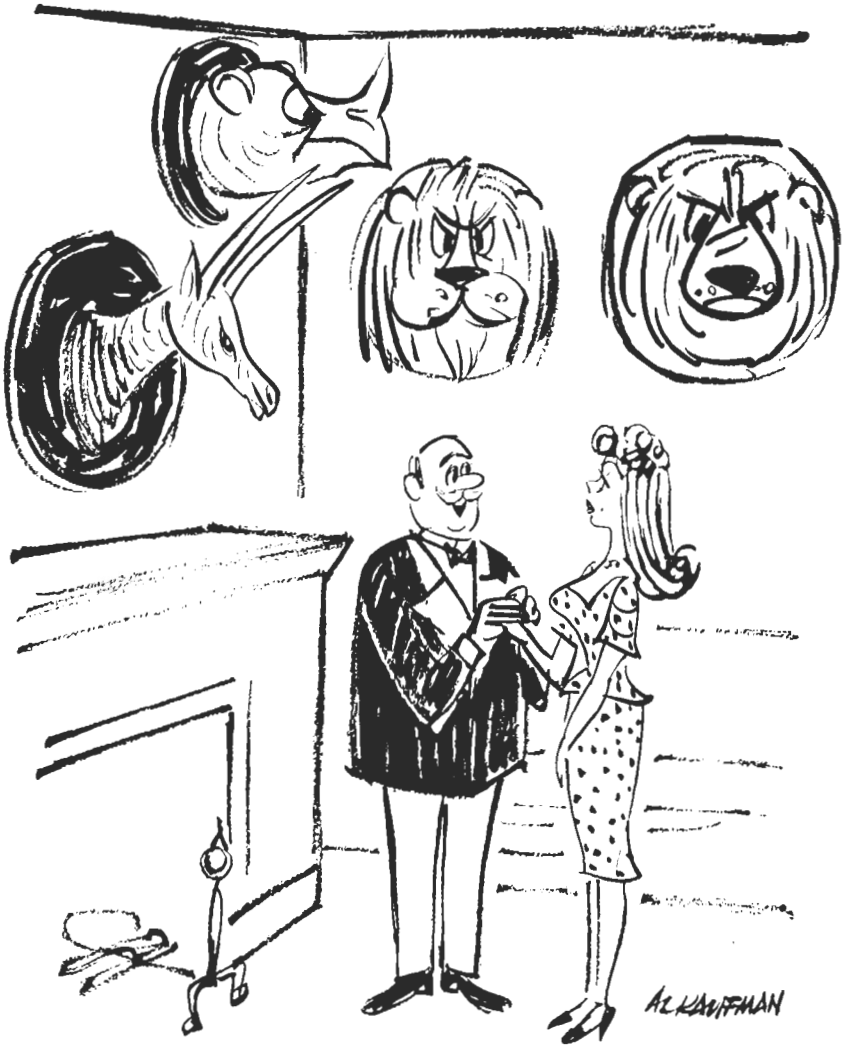

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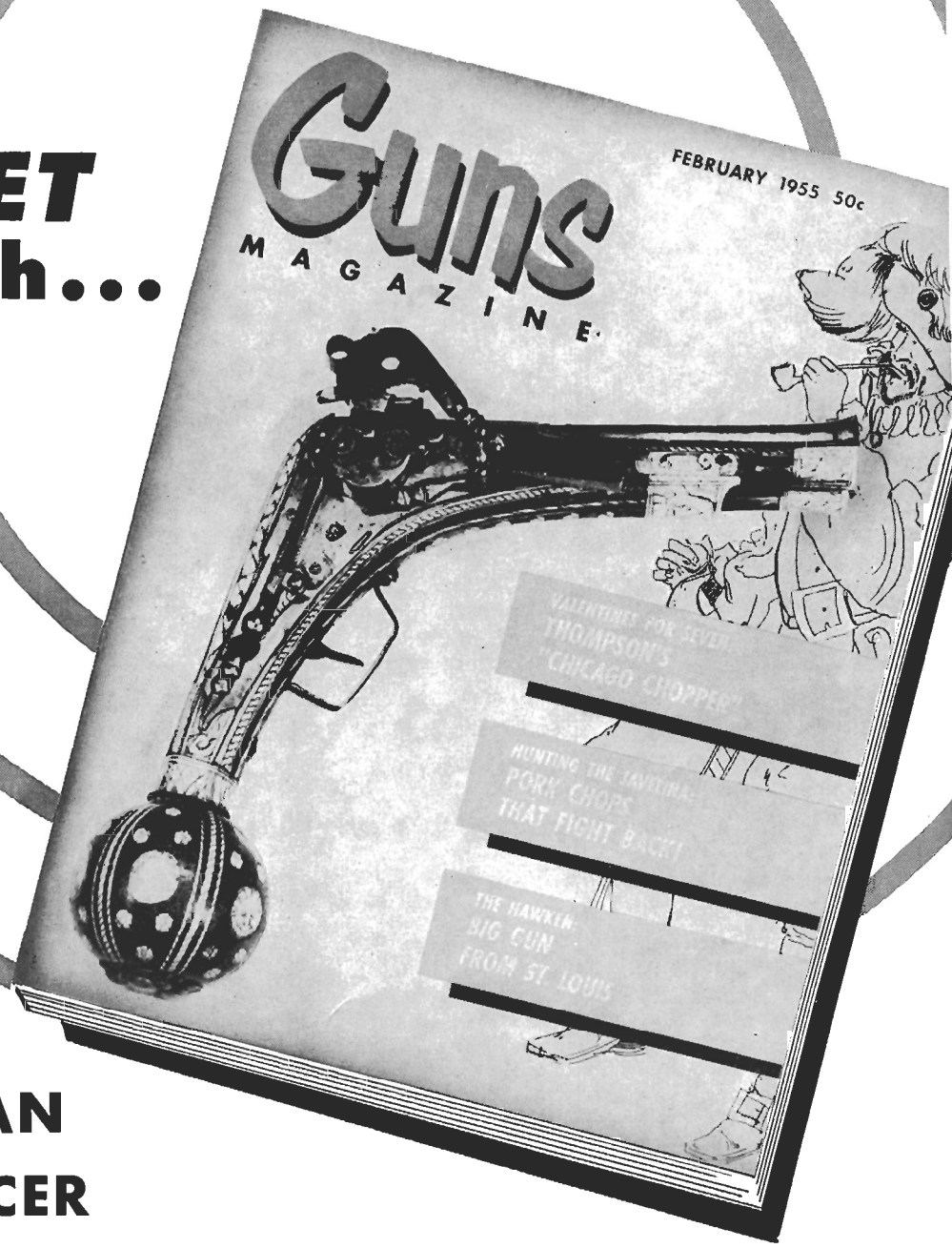

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