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# Guns

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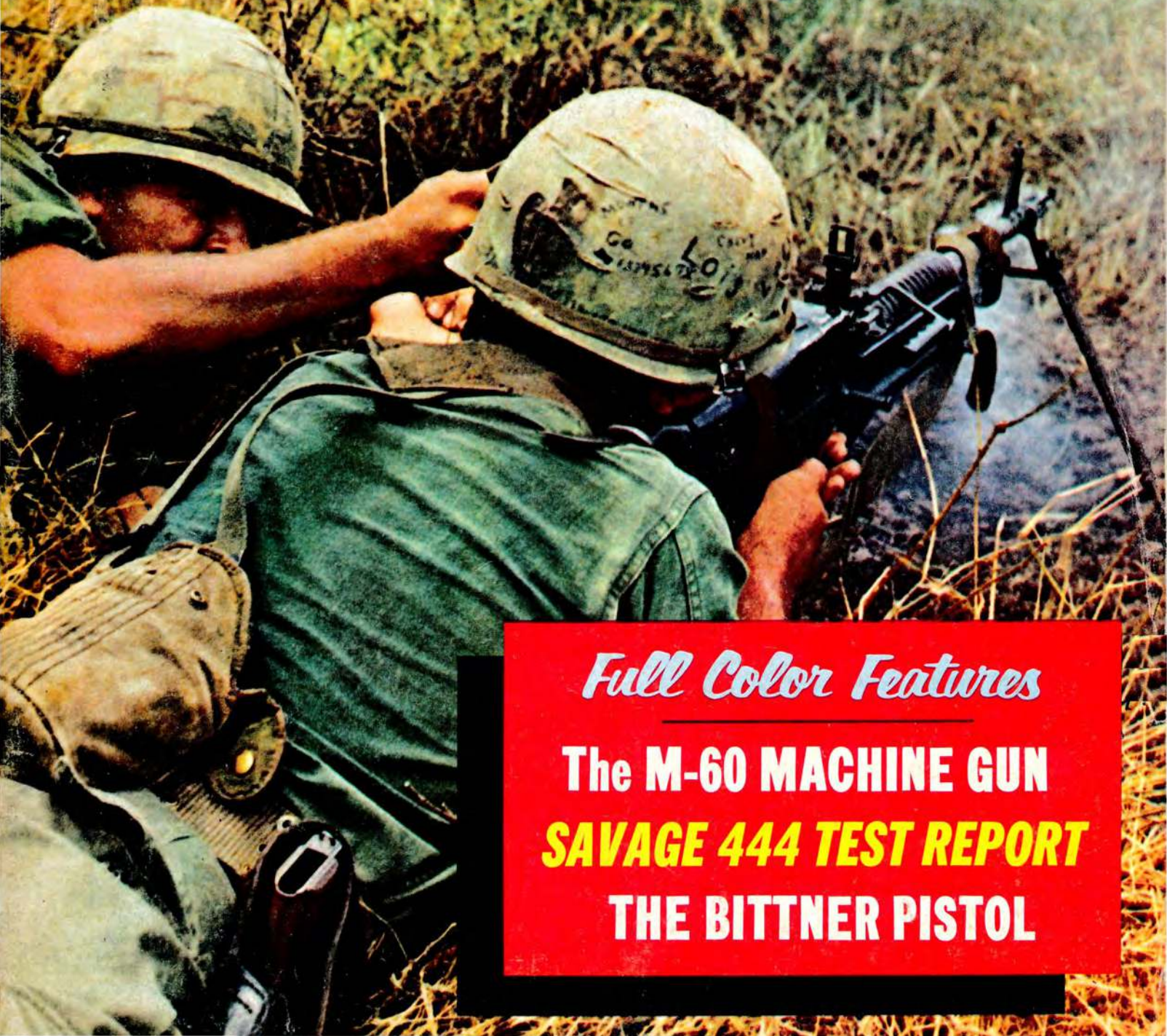
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*(Details on page 43)*



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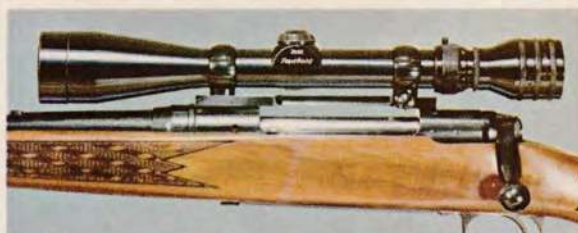


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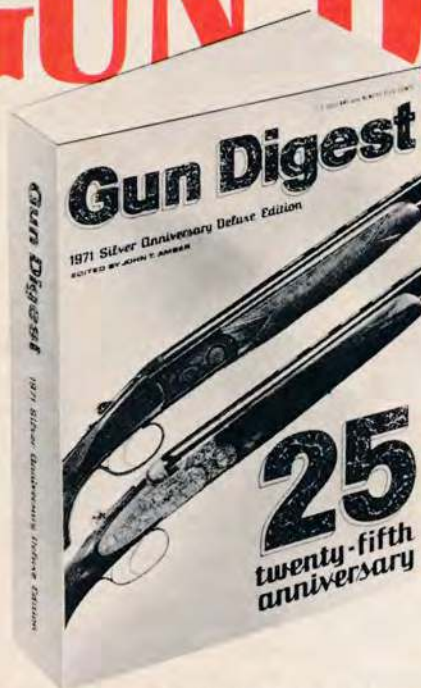
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John T. Amber edited this anniversary edition, and no man on earth is better qualified. Be it ballistics, history, design, firing characteristics, engraving, actions, sights, ammo, inventors — if it has to do with guns, Amber has mastered it.

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Backing Amber is a lineup of writers who are giants in the field of shooting sports. Names such as Warren Page, Jim Hack, Robert F. Denny, Bob Hagel, Ken Waters, dozens more. They will have you hunting red deer in Austria and antelope in Wyoming; teach you gun stock checkering and precision handloading; introduce you to the new Mannlicher and the old rifles that settled the West; instruct, inform and entertain you on every aspect of firearms. There are features for the hunter. For the hobbyist. For skeet and trap fans. A full arsenal of facts, features and gun lore to turn on anyone who's ever tickled a trigger.

### DRESSED FOR THE OCCASION

Gun Digest '71 is a truly handsome volume. Its sparkling silver covers carry full-color photographs showing superb examples of the gun engraver's art. Inside: 32 more pages of full-color photographs of rifles, hand guns and accessories, with hundreds more photos, illustrations and drawings

throughout. *Extra added attraction:* a comprehensive catalog section with latest models and prices.

### A BOOK THAT'S A BARGAIN AT LESS THAN \$7

Admittedly, this is our most expensive Gun Digest. But expensive compared to what? There's never been a book like it. From cover to cover, we've lavished more care, more color, more cost on this issue than any of the 24 before it. Chances are, it will continue to increase in value as a collector's prize. It's a book headed for a place in gun history. Nevertheless, if you don't find Gun Digest '71 to be all we've promised and more, return it where you bought it and your money will be promptly refunded.

### HORS D'OEUVRES:

**GUNS OF THE WESTERN HISTORY MAKERS**, James E. Serven. "In all the annals of the frontier and pioneer; of struggles that wrested the continent from its savage owners and made it a freehold of civilization, the rifle has been the instrument of destiny and the symbol of progress."  
Augustus C. Buell

**THE DOUBLE BARRELED GUN**, Merrill K. Lindsay. Double barreled guns and rifles have come a long way since 1500—about when the first twin-tubes were made. Here's a thorough review of the many systems developed over four centuries, with a bow to the resurgent interest in doubles today.

**ROUGH COUNTRY ANTELOPE**, Bob Hagel. High country pronghorn pursuit is antelope hunting at its best. Up there you can stalk them as you would a Bighorn sheep—and they're every bit as hard to come up on.

**THE QUIET GUN**, Donald Hamilton. Shooters who don't wear ear protectors are inviting

dire trouble. Not only may hearing suffer, says Matt Helm's creator, but worse problems may develop. Here's a tale of deer hunting with a difference!

**PLUS: VARMINT RIFLE VARIABLES** by John R. Sundra; **WHAT INTERCHANGEABLE 9mms?** by George C. Nonte, Jr.; **THE ISRAELI ARMY—A History of Small Arms, Tactics and Training** by Dr. Eugene Sockut; **YE COMPLETE EXTERIOR BALLISTICS or RETAINED EFFICIENCY OF RIFLE CARTRIDGES** by Ken Waters—and more!

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# TRIGGER TALK

## RUSSIANS ARE COMING!

A NON-VIOLENT shooting match will take place between U.S. and Russian personnel in October; not on a battle field, but on the grounds of the huge range complex in Phoenix, Arizona. The occasion will be the 40th World Shooting Championships, and the dates will be October 17th through the 27th.

In the past, the host country has supported these championship matches with range facilities, monetary contributions, etc. Egypt, in 1968, built a whole new range set-up for the matches there. Sad to say, the U.S. Government has turned its back on these matches, and no federal support has been offered.

The burden of hosting these matches has fallen into the hands of the National Rifle Association, and they need the support of every American shooter. It is seldom that we ask our readers to contribute to a cause, but we are asking this time.

Send contributions to: NRA World Championship Fund, 1600 Rhode Island Ave. N.W., Washington, D.C. Those who contribute less than \$5 will be sent a colorful decal; contributions of \$5 to \$25 will entitle you to a cloth emblem; and contributions over \$25 will bring a handsome wall plaque.

\* \* \*

All of our readers will recall the special 8-page color feature on Miniature Guns which we published in April of 1969. This feature was authored by Merrill Lindsay, who has now added much new material, many new color photos, and put it together in book form. It is now available, and well worth the \$6.95. If you like guns, you'll really enjoy this book; if you like miniatures, this is a must. See the ad offering in this issue.

### THE COVER

Taken at the 25th Infantry Div. "Ambush Academy" at Cu Chi, Vietnam, this photo shows that the M-60 evidently makes one hell of a fine ambush weapon. Details on the M-60 will be found on page 37. U.S. Army Photo.

SEPTEMBER, 1970

Vol. XVI, No. 0-09

George E. von Rosen  
Publisher

# Guns

FINEST IN THE FIREARMS FIELD

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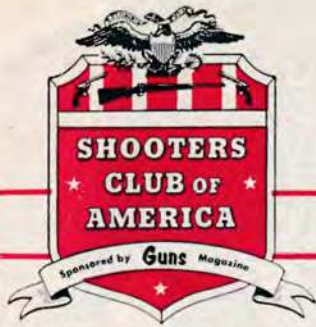
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News from the...

# SHOOTERS CLUB OF AMERICA

Dedicated to the Constitutional Right of Every Citizen to Keep and Bear Arms

## AMERICA'S FOUNDING FATHERS WANTED ALL CITIZENS TO KEEP GUNS IN THEIR HOMES.

America has many serious problems in this modern age of fast change and transition. We will have to work very hard, and we will have to think clearly about our situation and the future. Fortunately for us, America was founded and conceived by some of the best political thinkers in the Western World, and they left a vast storehouse of good advice that can be used as a guiding lighthouse to help us navigate through these troubled waters we now find ourselves embroiled in.

THE SHOOTERS CLUB OF AMERICA and its many members are working for the preservation of principles that made America the greatest country in the world.

THE SHOOTERS CLUB OF AMERICA members believe that if we keep continuing to disregard, subvert and mutilate the philosophical ideals that the American Constitution is based on, then the day will come when the whole structure of our present system will be diverted into something else because it was eaten away from the inside and changed in little bits and pieces.

There are unfortunately many, many examples to show that the old ideals of our founding fathers are being adulterated under the false slogan of necessity. We will concentrate our attention on the question of our rights, as private citizens, to own and keep weapons. The great and courageous men who won our freedom with their own heroism and wrote our Constitution definitely and unequivocally wanted us (the individual citizen) to own and have guns in our homes. They were realistic and critical thinkers who believed that (1) America was founded for the American people, and not for the Washington bureaucracy and their helpers, (2) the individual armed citizen is the ultimate safeguard against a tyrannical central government. To quote just one source: "If the representatives of the people betray their constituents, there is then no resource left but in the exertion of the original right of self-defense which is paramount to all positive forms of government. In the single state, if the persons entrusted with supreme power become usurpers, the citizens must rush tumultuously to arms, without concert, without system, and without resource, except in their courage and despair." (Alexander Hamilton 1787 Federalist Paper 28)

Today, undistinguished and morally stained people like Senator Dodd are busy eroding the basic philosophy that our country is built upon. The Senator and his fellow travelers are trying to destroy our "original right of self-defense which is paramount to all positive forms of government." We want everyone of our

members to write Senator Dodd and ask him: "What real guarantee do we, the American people, have that a selfish usurper central bureaucracy will not come to power in this country as has been the case in so many other nations?"

He will probably write back and say that the American people need not worry because of the brilliant system of checks and balances that our founding fathers established. This is the same system of safeguards that he, and his helpers, are working so hard to subvert and destroy.

Senator Dodd should go to the library and read the writings of Thomas Jefferson, Alexander Hamilton, Ben Franklin, George Washington and James Madison. He might then have respect for the Constitutional philosophy that proposes the power and the wealth of America belongs to the American people.

The solution to our present problems of crime in the streets is clear. All you have to do is to go back to the basic principles of our Constitution and put them into practice. If our founding fathers were alive today, they would say that there are only so many resources available in America for the solution of our problems, and the central government is bleeding the people for its own purposes. When the central government starts to use its resources for helping the small individual American citizen with his individual problems, and when the Military starts to use some of its vast resources for helping the individual with his individual problems, then crime in the streets will start to subside because its basic cause will start to be rectified. The good and clear thinking people who built America would say that our country is for the American citizen, and not for the personal aggrandizement and personal pet projects of the upper Washington administration and all their many non-American foreign friends.

It is very easy for someone like Mr. Dodd to propose some very ineffective (and potentially disastrous) anti-gun legislation that is aimed only at symptoms and not at the real cause of the disease. It will take a courageous and extremely patriotic Senator to challenge the vast personal interests of some of his fellow Congressman, and the massive Washington centered bureaucracy and tell them that their fun time is over and the time has come for a return of American tax money to the American public for the correction of our own problems.

THE SHOOTERS CLUB OF AMERICA is interested in electing people like Hamilton and Jefferson to Congress, and getting the many private privilege promoters and bureaucracy thieves like Mr. Dodd out. We at SCA now need the help of everyone who wants the return of America to the American people. Fill out the enclosed blank on this page and send it in today.

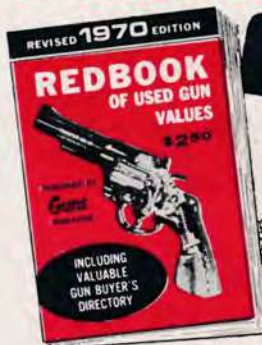
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The funny part is—it turned out to be beautiful.

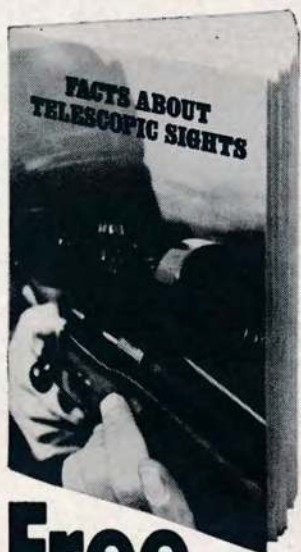
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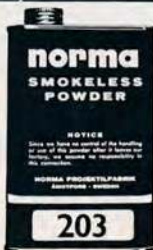
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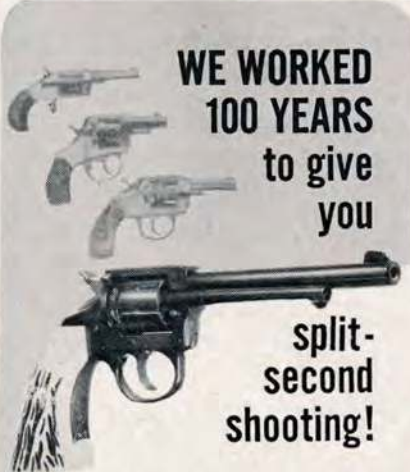
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# CROSSFIRE

### At Last!

I was extremely gratified to read in the April "Our Man In Washington" column that the idiotic "object d' art" movie that the IRS turned out has been cancelled. I saw parts of it on television and was revolted at the thought of *my* tax money being used for such trash. It's about time somebody woke-up and started thinking about what the IRS is trying to do to the innocent individuals who *are* abiding by the laws. I think the best policy for those who want to keep their guns is to become a criminal. The law doesn't bother them!

Richard B. Turner  
Albany, Georgia

Somehow I find it hard to believe that the upper echelon of the IRS allowed the tax-payers money to be "thrown to the wind" with the making of that so called explanatory film on the Gun Control Act of 1968. I am an avid follower of Guns and I'm glad to have been informed in advance of what to expect from our "Great White Fathers" in the Treasury Department. Let's all get on the ball and stifle any more attempts at explaining the new law. All it did this time was cost us money. Thank you, Guns, for the preview!

Jim Lynch  
Albuquerque, N. M.

### 1863 Borchardt?

Your beautiful coverage of "Milestones in the Design of Automatic Pistols" by James B. Stewart was a wonderful addition to my growing library of "frame-able" color prints from Guns. The only bone I have to pick with you guys is just how in blazes did you goof with the date of 1863? In the text it says the gun is the model 1893.

D. K. Calhoun  
Wilmette, Ill.

*Ed. Note: Sorry for the typo. We noticed it after the issue went into print and it was then too late.*

### Jawdat Lives!

Guns Magazine has done it again! You have published another excellent article by Nameer Jawdat, whoever that is. C'mon, which one of you is using that crazy name? All kidding aside, "The Right And The Joy" was a masterpiece of penmanship that illustrates the feelings and thoughts of many, many people involved in the shooting game. Congratulations on a job well done.

John T. McLachlan  
Memphis, Tenn.

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# Mr. Gun Owner— Right now is your minute of decision.

Ask yourself this question: "Shouldn't I support NRA as vigorously as NRA supports my shooting interests?"

As a gun owner, you know that the best shooting is enjoyed by gunners who know how to shoot accurately and handle their guns safely, and that the best hunting is made possible by good conservation and good game management practices. And as a shooting enthusiast, you are certainly aware that in the name of "gun control" there are some well-intentioned but ill-informed people who are anxious to erode the gunning and hunting privileges that you enjoy today.

**For 99 years, the National Rifle Association has consistently promoted better education in shooting skills and firearms safety, better conservation, better game management, the development of better gun-sports equipment and the protection of shooters' privileges.**

These were the basic aims of NRA's founders, and they remain to this day, the basic aims of this national, non-profit organization.

All the other benefits that NRA offers its membership—warm, good fellowship, friendly competitive tournament shoots, awards for hunters, firearms information and many, many others—are simply the evolutionary by-products of nearly a century devoted to serving the best interests of America's responsible gun owners.

## You need NRA—and NRA needs you!

Never before in history has the threat to the rights and privileges of responsible gun owners been so great as today! Never before have *you*, as a responsible gun owner, needed NRA's efforts to preserve and protect your shooting interests as today! And never before has NRA needed *your* active, cooperative support as today!

NRA's responsibilities to you as a shooting enthusiast are never ending, and must be maintained on a *continuing basis*. To achieve this, NRA has set a goal of one new member every minute, around the clock and around the calendar. Let's start our march to this goal by signing *you* up for NRA membership—right this minute!

# NRA has to win it— one new member every minute!



**Here are a few of the dozen or more benefits you'll enjoy as an NRA member:** An annual subscription to "The American Rifleman," the illustrated monthly magazine that entertains and educates more than a million sportsmen-readers • Prompt answers by experts to all your firearms questions • Firearms safety courses from which over 3 million shooters have benefited • Hunting information in the form of bulletins on gun laws, hunting dates, game availability, shooting preserves • Low cost gun and personal accident insurance • National, regional and local recreational shooting tournaments • Annual awards for hunters in all categories • The brand, spanking new directory of qualified and approved hunting guides, outfitters and hunting camp operators in North America—and much, much more!

So, Mr. Sportsman—if you *really care* about preserving—now and *in the future*—the shooting privileges and freedoms you enjoy today, you owe it to yourself to join and support NRA—the big, strong, long-established organization that, in cooperation with many other leading organizations, is so effectively fighting to maintain these freedoms for you!

**FILL OUT, CLIP AND MAIL YOUR NRA MEMBERSHIP APPLICATION NOW. (SEND NO MONEY—NRA WILL BILL YOU LATER, IF YOU WISH)**



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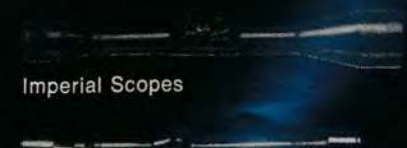


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## HANDLOADING BENCH

By MAJ. GEO. C. NONTE

**I**T SEEMS that now and then we get so snowed under with today's plethora of modern tools and equipment we forget how it used to be. A fellow stopped by the other day in a terrible fluff. He'd been all over town trying to buy, beg, or borrow a set of loading dies for the 6.5mm Mauser (6.5X55mm) and none was to be had. Having failed to obtain a die set, he resigned himself to going without ammunition; in his mind it simply wasn't possible to load his fired cases without a full set of modern goodies.

You'll miss a lot of fun and waste a lot of money if you take that approach. It seems rather foolish to spend twelve or thirteen dollars for a full new set of dies to load only a few boxes of ammunition you may not need again for years. Maybe it's just for a trading gun you want to play with before moving it on. That expensive die set won't add a thing to the gun's value, and you can't sell it for more than half what you paid.

Can't be avoided, you say? Sure it can. More often than not, if you've an average amount of equipment, there are items on your bench that will serve to get the job done *without* buying anything new.

Consider the forlorn fellow just mentioned. In chatting with him a bit, I discovered he owned a set of 6.5mm Remington dies and that he contemplated using cases he's previously fired in that 6.5mm Mauser. This nearly solved his problem, for the Remington sizing die could do a normal job of resizing and expanding the Mauser case necks; all that was required, since the cases were going back into the same gun. The seating die would also do the job if adjusted correctly. All this is possible because the 6.5mm Remington case is roughly the same length, but slightly greater in diameter than the Mauser, but neck diameters are identical. Thus a die that will resize the neck of one will do it for the other. For the same reasons, the seating die will handle the Mauser case and bullet.

He didn't, though, have a 6.5X55mm shell holder—and the rim of that caliber doesn't quite match any other.

This would give the impression he couldn't get by without a new shell holder. Not quite. Some lots of brass are a bit small in rim diameter so will fit into a .30-06 shell holder that runs a bit over minimum. The only way to find out is to try them. If that doesn't work, a .30-30 or .41 Magnum holder will do the job, though the fit is loose enough to require careful hand alignment during priming.

With all that information on hand, our frustrated Mauser shooter betook himself home, then phoned me a couple hours later to tell me he'd successfully loaded a hundred rounds.

Many a loading job can be pulled out of the hat the same way. For example: .45-70 or .458 cases can be neck sized and have bullets seated in .45 ACP or .45 Colt dies; 8mm/06 in 8X57mm dies; 7X57mm in .284 Winchester dies; .30-06, .30-40 in .308 Winchester dies; .244 or 6mm Remington in .243 Winchester. The list is as long as your arm.

How do you find out what will interchange? Two ways. First, you can compare cartridge dimensions in a reference such as Frank Barnes' "Cartridges of the World," or my "Cartridge Conversions." The other is to simply compare cartridges visually—not as accurate, perhaps, but usually adequate.

There are plenty of other cheap and simple loading techniques, often overlooked simply because we are exposed to such a magnificent variety of sophisticated equipment. For example, you don't really *need* a \$20 powder measure. Sure, it's a great convenience, but a simple scale and a few home-made charge cups will do a fine job. You'll be trading a little time for the price of a measure. If you'd like to save even the cost of the scale, then get just a set of Lee plastic charge dippers. They will probably meet 90% of the powder charge requirements you might have, except for ultra-light or extra-large ones.

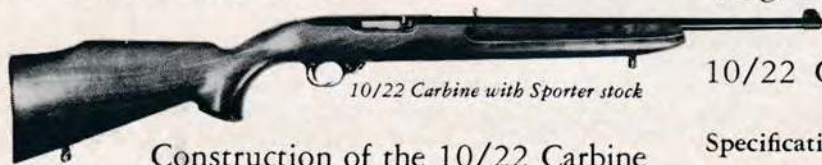
There's another way to save money on loading dies, too. Instead of standard 7/8 X 14 bullet seating dies, buy the Lyman tong tool type or the

(Continued on page 14)

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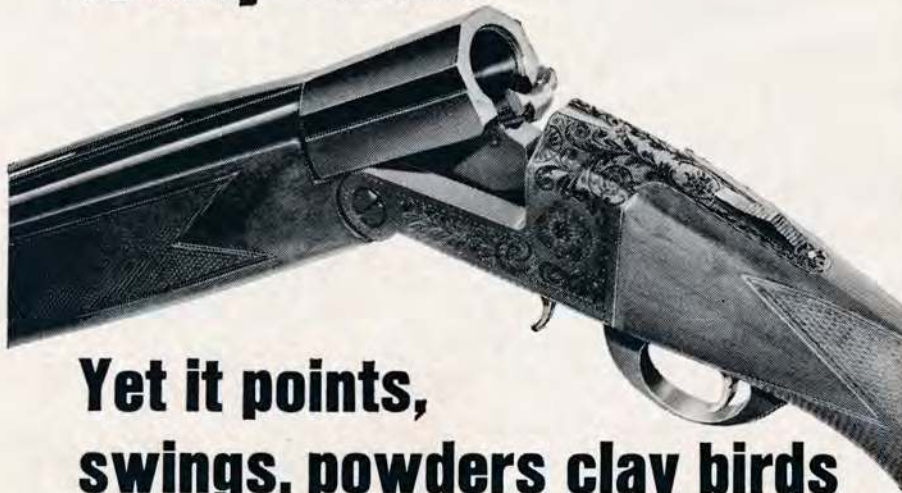
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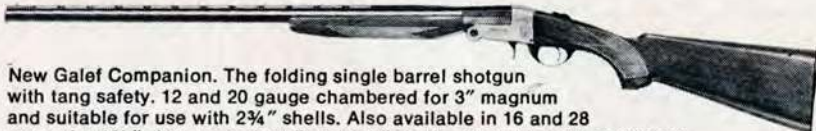
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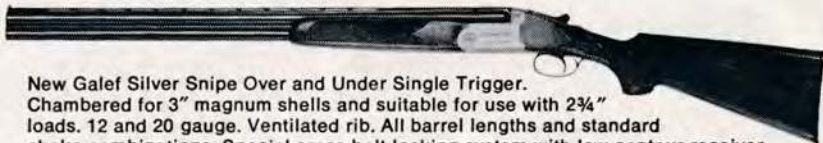


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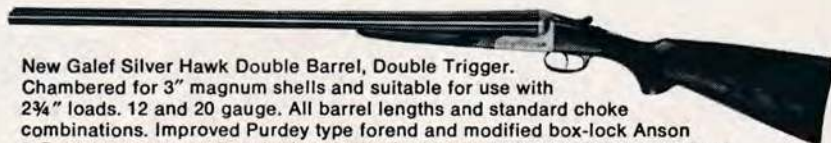
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## HANDLOADING BENCH

(Continued from page 12)

SAECO "Stubby" seaters. You can then use a single .30 caliber die for seating bullets in any .30 caliber cartridge. The same applies to any other caliber. This will almost cut die costs in half. A bit more can be saved by buying stripped sizing dies with a single expander for each caliber. Then you simply install the expander in whatever die is being used. A single .30 expander will take care of everything from .30-30 to .300 Weatherby, and so on.

Much the same applies to shell holders. Admittedly, if the case is being resized full length, the shell holder must grip it as closely as possible to withdraw it from the die without deforming the rim. For neck sizing and bullet seating, though, a less perfect fit will do in a pinch. Try the case in each of your shell holders until you find one it will enter. For example, the .44 Spl. and Magnum will usually go into a .30-40 holder; .380 ACP will fit in the .222; 8mm Krag into .45-70; and so on.

As I said, there are lots of ways to load new calibers without spending a batch of money for new dies and accessories. Study the problem and you'll be surprised how simple the solution often is.

When you're ready to melt down a large quantity of scrap lead such as wheel weights or pipe, the average casting furnace isn't much help. It's best to handle this sort of scrap in lots of 50 or 100 pounds, blending each batch carefully to the desired hardness, then casting ingots for later use in the electric pot. The best thing I've found for this work is a gasoline plumber's furnace. If you insist on going first cabin, go ahead and buy a new one from a plumbing supply house. The price isn't terribly high, but high enough! By shopping around among the local plumbing contractors you'll probably be able to find a unit that has seen better days and has been discarded. I've bought them for as little as five bucks, and on one occasion, merely for hauling it away. Usually all they require is extensive cleaning and removal of a few pounds of spilled lead; perhaps new seals in the air pumps.

Rejuvenation requires a couple or three hours and thereafter you have a fine lead melter. It works just like an oversize gasoline blowtorch, so should only be used in a well ventilated area.



# Panel of Experts

1. Each question should be sent directly to the panel member best suited to solve your problem. Mail questions directly to the expert at the address shown below.
2. Each question—only one question per letter, please—must be accompanied by a self-addressed stamped envelope and \$1.00.
3. You will receive the answer to your question directly from the expert. Our panel will select the most interesting questions for publication in this column, but you don't have to wait for the magazine to get your answer.
4. Letters with questions which do not have \$1.00 will be disregarded; those without a self-addressed envelope will be answered in the magazine, and not directly.

We have enlarged the staff of our Panel of Experts to give you the best possible service on your questions. Remember, write directly to the expert at the address below—do not send questions to GUNS Magazine—and be sure to include the \$1.00 and the self addressed envelope.

Robert Mandel—Antique Arms  
P.O. Box 499, Wilmette, Ill. 60091  
Shelley Braverman—Modern Arms; Forensic ballistics  
Dept. Q, Athens, New York 12015  
William Schumaker—Gunsmithing  
208 W. Fifth, Dept. Q, Colville, Washington 99114  
Les Bowman—Hunting  
Box 286, Bountiful, Utah 84010  
Maj. George C. Nonte—Handloading  
P.O. Box 3302, Dept. Q, Peoria, Illinois 61614  
George E. Virgines—Fast Draw  
P.O. Box 2014, Northlake, Illinois 60614  
Maj. R. O. Ackerman—Black Powder Shooting  
9627 Arvada Ave. NE, Dept. Q, Albuquerque, New Mexico 87112  
Dick Miller—Trap & Skeet  
Casa Correo Sta., P.O. Box 21276, Dept. Q, Concord, Calif. 95421

## .38-40 Colt Loads

I have a Colt New Service in .38-40 and the only shells I can get for it are the 180 grain soft point. Would they be too powerful for this gun? I bought a Lyman mould but it casts .404 bullets. I slugged my barrel and it is .400 and the cylinder is .401. Is it safe to use these bullets. Can you give me some safe loads to use in this gun? It is in excellent condition.

Harold J. Howard  
Ronan, Montana

Your .38-40 caliber Colt New Service revolver is safe for use with any standard factory-loaded .38-40 ammunition not marked "hi-velocity" or "only for M1892 Winchester."

Generally speaking, you will encounter no serious difficulty in using .404" diameter bullets in the .38-40 providing they are adequately lubricated and you do not attempt maximum loads. At one time it was common practice to shoot cast bullets as much as .003" over barrel groove diameter. All things considered, Hercules Unique and Bullseye powders are best in this caliber for medium and light loads respectively. Hercules

2400 can be used for heaviest loads, but does not work well otherwise. The relatively small powder charge in this case is not as advantageous. I suggest you stick with the loads given in the Lyman Handbook.—G.N.

## 3-Groove .17-223

I plan to have a .17-223 rifle built and have heard about the 3-groove barrel mentioned in some articles that has elliptical rifling with 3 grooves, but no sharp corners. Seemingly, this would be ideal for the .17 caliber rifles with their inherent problems. Can you enlighten me on this subject as I have heard that you have done some experimenting with the .17's.

A. Ramunni  
Easton, Pa.

The 3-groove barrel .17 caliber rifle that I have written about has been and is still one of my favorites. It has the regular rifling, though. The width of the grooves are twice the width of the lands. This seems to reduce friction considerably.

The proposed elliptical type of rifling has worked out fine in the various .224's and the .30 caliber, but so far it

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## QUESTIONS & ANSWERS

(Continued from page 15)

has not been right for the .17 caliber. I believe this is due to the wrong number of so called grooves and the depth of them. New buttons are now being made and will be tried soon. Such rifling makes for ultra-smooth barrels and will help eliminate much of the metal fouling problems of the .17 L.B.

### Pack Box Dimensions

Can you give me the proper dimensions for packboxes or pack panniers. I would like to make a pair for a forthcoming hunt, if possible.

J. B. Hebbard  
Elmhurst, N.Y.

My favorite boxes were 22" long, 11" wide and 17" high. These will hold all that a packer wants to carry on one side of a horse. I used 3/4" exterior plywood for the ends, 1/2" plywood for the sides and bottom. I reinforced the inside top edge with a strip of 3/16" plywood 3" wide and reinforced the outside edge with a strip of plain pine or fir, 1" by 2". This outside reinforcement was to keep the pack ropes from breaking the sides. I used no tops. L.B.

### Model 70 Receivers

I recently purchased a Winchester Model 70 Featherweight in .30-06. The serial number is 502165. Does this gun have the so-called "cast" receiver? At what number did Winchester go to the cast receiver?

William Robins  
Goldsboro, N.C.

I don't know where the rumor about cast receivers for the Winchester Model 70 started, but every now and then I'd hear it mentioned; when your question arrived, I decided it was time to settle this, once and for all.

Mr. B. W. Pardee of Winchester writes me as follows—"The Model 70 rifle has always been, and is now, being manufactured using machined parts only. At no time was the receiver of same ever produced from a casting."—S.B.

### .22 vs. .38

I have long been a fast draw fan and have done a lot of work with the Colt Frontier Scout in .22. Do you recommend that I should stay with the .22 or go to something bigger such as a .38 or .45?

R. A. Polis  
N. Wildwood, N.J.

If you are going to join in competi-

tive Fast Draw shooting, I would definitely suggest that you outfit yourself with a Fast Draw holster and a Colt Single Action Army revolver, caliber .45, with a 4 3/4 inch barrel. Try the standard grips first, later, if you think it would be an asset, you can change the grips.

You can buy either a new or used Colt from a gun shop that is a Colt dealer. They can advise you on the price.—G.E.V.

### British Proofs

I have just acquired a Luger pistol with what appears to be British proofs on it. It is a DWM and the markings on the underside of the barrel are as follows: "9M/M 752, 15 TONS PER (square)." On the left side of the barrel at the chamber is "BNP" with a small crown. The gun is marked 1917. Serial numbers (8142) all match and the finish appears to be a black parkerizing. Barrel length is 3 7/8" and the gun is in very good condition. Any information would be greatly appreciated.

John E. Turner  
Concord, N. C.

It is difficult to diagnose a gun such as your Luger "by remote control" but it would seem that, at one time, your gun was imported into British jurisdiction and subjected to the proof tests required for subsequent local sale.

The finish you describe seems similar to a special (secret) enamel developed by the French for military use circa 1930; they used it on their 1935 Model Automatic Pistol—and it would seem that someone used it on yours.—S.B.

### Take-down Model 99

I have a rifle that I purchased a few years back that I would like to get some history on. It is a Savage Model G-99 take-down. It has a checkered forearm and pistol grip, it is in .300 Savage, and it has a matching .410 gauge barrel. Also included with the gun is a Winchester scope marked "A5". Other sights are a King folding rear sight and a folding leaf middle sight. The rifle came in a hard case.

Perry Going  
Caruthersville, Mo.

You have what Savage called the "300 Savage Combination Kit" and was available about forty years ago, at which time the price was \$67.00. Unfortunately, take-down rifles do not seem to appeal to American users and



very few are made today.

Value of your outfit would depend to a large extent on condition; in very good condition, in and out, it would approximately \$75-100.00.—SB.

### Black Powder Laws

An article in the March issue of Guns has aroused my interest in black powder shooting. I would like to build one of the Dixie kits but don't know the laws pertaining to black powder guns. Also, how does the cost of shooting one of these guns compare to that of modern firearms?

M. R. Montague  
S. Hadley Falls, Mass.

The Federal law against shipment of a firearm directly to a purchaser does NOT apply to muzzle loaders, although some dealers interpret it incorrectly.

The approximate cost of shooting one shot in a muzzle loader would be about 2½ cents for a .45 rifle, if you cast your own balls from scrap lead. A revolver would be less. This has gone up recently, but still compares favorably with a .22 at just under 2 cents, and a high-powered rifle cartridge which may retail for 16 cents or a great deal more than that. My arithmetic is based upon average retail prices for modest quantities.—R.O.A.

### .220 Swift Brass

The 1970 Winchester catalog discloses that they no longer produce ammunition for the .220 Swift. Remington hasn't made it for some time either. From what readily obtainable case can .220 Swift brass be formed? What about case capacity and pressures?

Thomas Martin  
Houston, Texas

While both Winchester and Remington have discontinued manufacture of the .220 Swift cartridge and components, it is not uncommon to find stocks of these items on the shelves of various dealers and distributors.

However, this need not present any difficulties. Norma/Precision imports Swedish-made loaded cartridges and empty cases and distributes them in this country. Any Norma dealer should be able to meet your needs.

While the .220 Swift case can be formed from .30-06 or .308 Winchester brass, the operation is quite difficult and requires an extensive forming die set and neck reaming die which is available from RCBS, Inc. You will obtain much more satisfactory results at less cost and effort by procuring Norma cases.—G.N.

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# OUR MAN IN WASHINGTON



By CARL WOLFF

## PISTOL TAX LEGISLATION TO BUILD SHOOTING RANGES MUST PASS

The so-called "pistol tax legislation" pending before the House and Senate of Congress must become law. The proposed law would take the existing tax on pistols and handguns and earmark it for Federal-State assistance for hunters safety training and would promote long-range planning for the preservation of natural wildlife habitats and conservation.

In the House, the bill is H.R. 12475 introduced by Congressman John Dingell (D.-Mich.). In the Senate, the bill is S. 3860 introduced by Senator Hugh Scott (R.-Pa.).

Of special interest to shooters is the following section:

"Each State may use the funds apportioned to it under section 4 (h) of this Act to pay up to 50 per centum of the cost of a hunter safety program and the construction, operation, and maintenance of public outdoor target ranges, as part of such program. The non-Federal share of such costs may be derived from license fees paid by hunters, but not from other Federal grant programs.

"The Secretary (of Treasury) shall issue not later than the 120th day after the effective date of this subsection such regulations as he deems advisable relative to the criteria for the establishment of hunter safety programs and public outdoor target ranges under this subsection."

The House measure is pending before the Merchant Marine and Fisheries Committee. Public hearings have been held by the Dingell Subcommittee, and the measure is awaiting full committee action. A list of members follows:

DEMOCRATS—Edward A. Garmatz (Mary-

land) Chairman, Leonor Sullivan, Mo., Frank Clark, Pa., Thomas Ashley, Ohio, John Dingell, Mich., Alton Lennon, N. C., Thomas Downing, Va., James Byrne, Pa., Paul Rogers, Fla., Frank Stubblefield, Ky., John Murphy, N. Y., William St. Onge, Conn., Joseph Karth, Minn., William Hathaway, Maine, Walter Jones, N. C., Richard Hanna, Calif., Robert Leggett, Calif., Michael Feighan, Ohio, Frank Annunzio, Ill., Speedy Long, La., Mario Biaggi, N. Y.

REPUBLICANS—William S. Mailliard, Calif., Thomas Pelly, Wash., Charles Mosher, Ohio, James Grover, Jr., N. Y., Hastings Keith, Mass., Robert Watkins, Pa., Henry Schaderberg, Wisc., John Dellenback, Ore., Howard Pollock, Alaska, Philip Ruppe, Mich., Daniel Button, N. Y., George Goodling, Pa., William Bray, Ind., Paul McCluskey, Jr., Calif., Louis Frey, Jr., Fla., Jack McDonald, Mich.

In the Senate, the measure has been referred to the Commerce Committee. A list of members follows:

DEMOCRATS—Warren Magnuson (Wash.) Chairman, John Pastore, R. I., Vance Hartke, Ind., Philip Hart, Mich., Howard Cannon, Nevada, Russell Long, La., Frank Moss, Utah, Ernest Hollings, S. C., Daniel Inouye, Hawaii, Joseph Tydings, Md., William Spong, Jr., Va.

REPUBLICANS—Norris Cotton, N. H., Hugh Scott, Pa., Winston Prouty, Vt., James Pearson, Kans., Robert Griffin, Mich., Howard Baker, Jr., Tenn., Charles Goodell, N. Y., Marlow Cook, Ky.

It is very important that all lawmakers know the feelings of the shooting sportsmen with regards to this piece of pending action. (Continued on next page)

If one of the committee members represents you, he must know the sportsmen he represents is aware he is in a position to help. All bills before Congress die this fall when the 91st Congress dissolves itself. While all members of the Congress will be called upon to vote 'yes' or 'no' when the measure comes before their respective houses, it is in committee that bills die. For this reason the above committees are very important.

The background is this: The shooting sportsman has long lead the fight in the preservation of natural environments and the conservation of wildlife through the payment of hunting license fees. In 1937, the Congress acted to assist this movement further by passing legislation establishing the wildlife restoration fund. This legislation insured that the license fees paid by hunters would be used for the conservation efforts of State fish and game departments by making this a condition to receiving Federal assistance for approved wildlife restoration.

But here again, the hunter was called upon to pay the bill for the preservation of nature. The source of the federal funds for this financial assistance was a manufacturer's excise tax on sporting firearms, shells, and cartridges which had been levied

by the Revenue Act of 1932.

Like the legislation now pending, this was not a new tax, but rather the application of the proceeds of an earlier tax to purposes closely allied to the interest of the people who ultimately paid the tax. So we had the shooting sportsmen contributing to the preservation and restoration of natural environments and wildlife not only through the annual license fees which they paid for the support of their State fish and game departments, but also through the taxes that they paid on some of the equipment and materials which they used in pursuing the sports of hunting and target-shooting.

In addition, since 1934, the hunter has been supporting the conservation of migratory birds, a program of the Federal Government, through the annual purchase of migratory bird hunting stamps.

The pending legislation would, for the first time, bring to the wildlife restoration fund, the proceeds for the Federal 10-percent excise tax which for many years has been levied on the purchase of pistols and revolvers. This tax now goes to general revenues. If you, as a shooter, want a public shooting range write to your senators and congressman.

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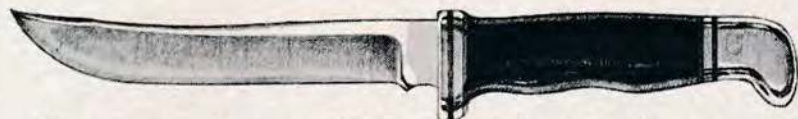
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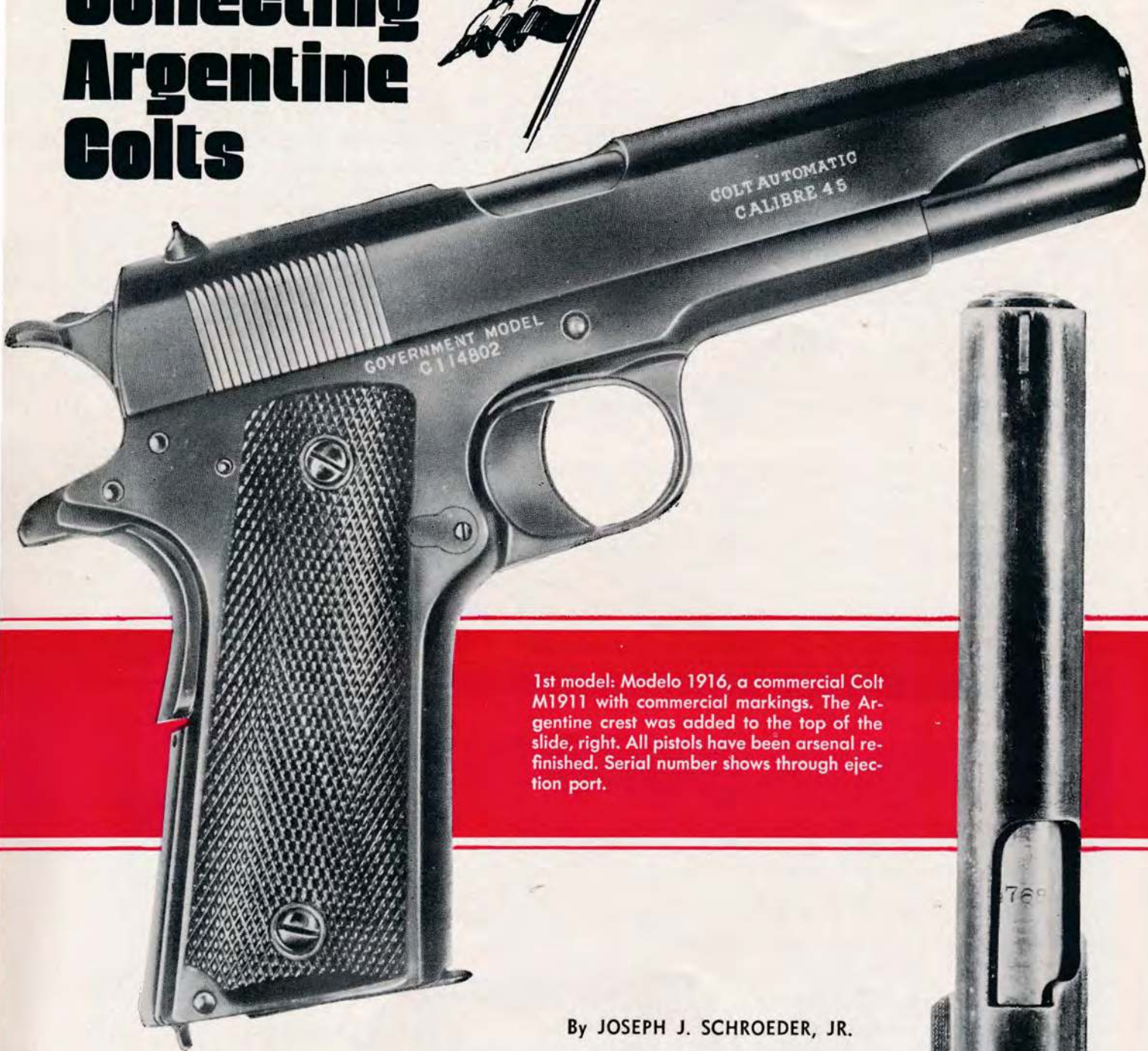
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# BUCK KNIVES

famous for holding an edge

# Collecting Argentine Colts



1st model: Modelo 1916, a commercial Colt M1911 with commercial markings. The Argentine crest was added to the top of the slide, right. All pistols have been arsenal refinished. Serial number shows through ejection port.

By JOSEPH J. SCHROEDER, JR.

ARGENTINA was one of the earliest countries in South America—in fact, one of the earliest in the world—to adopt the self-loading pistol as its official military side-arm. The weapon was the 1905 Mannlicher: a compact, beautifully made and sweet shooting pistol made by Waffenfabrik Steyr in Austria. These pistols are well-known to American collectors, since a portion of the remaining stock that had been held in reserve by the Argentine army were disposed of to an American surplus dealer in the late 1950's and many were sold in this country. Originally, all of these Argentine-issue Mannlichers bore the Argentine crest on their right sides, but the crest on all but a very few was defaced as required by Argentine law at the time they were sold.

Apparently, the Argentines found the .30 caliber Mannlicher (along with some .38 Colt revolvers they also were using) suffered from the same problem that had plagued the U.S. Army with its .38 revolvers in the Philippines: lack of stopping power. Reviewing the same considerations which lead the United States in the early 1900's to undertake to select a new military handgun, they reached the decision to adopt also Colt's Model



1911 as the new Argentine service pistol. Discussions were begun with Colt, samples procured and tested, and in 1916 the Colt .45 automatic was introduced into Argentine service as the *Modelo 1916*.

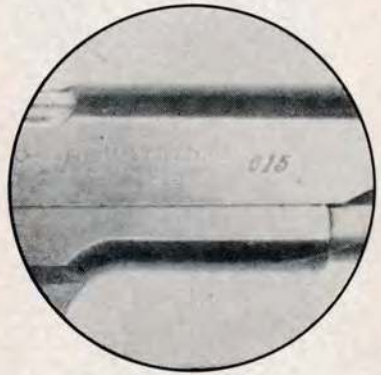
The first Argentine order was for only 1,000 pistols, and these were numbered along with Colt's commercial production. Their commercial serial numbers ranged from C20001 to C21000; Argentine issue numbers 1 through 1000. Specimens ranging from C20010 through C20991 have been examined, and C20893 is illustrated. The only distinctive marking that these pistols bear is the Argentine crest, usually accompanied by the Argentine issue number, on top of the slide.

Apparently the *Modelo 1916* proved to be satisfactory in use, for eventually a second order was placed for 10,000 pistols. However, this order was not filled until 1922 or 1923, perhaps due to U.S. government demands on Colt production while World War I was raging. Commercial serial numbers on pistols delivered on the second order range from C110001 through C120000, with a very few higher numbers noted (probably purchased later for replacement purposes).

In the meantime, development work



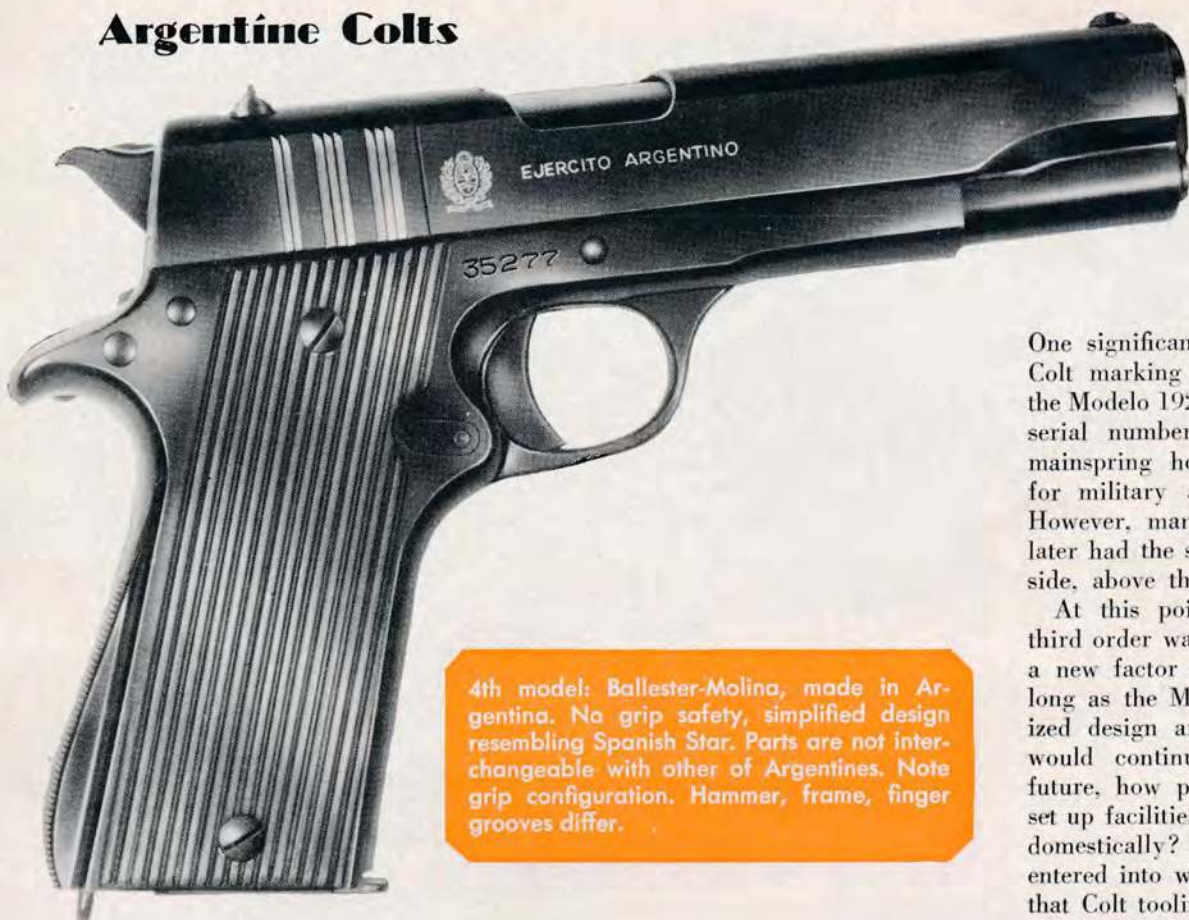
**2nd model: Colt-made Model 1911A1. Designated Modelo 1927 and numbered specially for Argentine government. Right side of slide is specially marked with Argentine crest. Numbered on barrel, slide, frame.**



**3rd model: Argentine manufactured Modelo 1927 "Systema Colt" follows U.S. M1911A1 closely. Manufactured on Colt's machinery in Argentina. See text for details on markings.**



## Argentine Colts



4th model: Ballester-Molina, made in Argentina. No grip safety, simplified design resembling Spanish Star. Parts are not interchangeable with other of Argentines. Note grip configuration. Hammer, frame, finger grooves differ.



on various improvements for the 1911 was proceeding at Colt, culminating in 1925 with the introduction of the improved Model 1911A1. Noting the changes that Colt had introduced in "their" service pistol, Argentina designated the new model the *Modelo 1927* and placed another order with Colt.

With this new order came a significant change in marking and numbering. Noting that Colt's commercial serial numbers were not over 150,000 and therefore likely to confuse inventory records if used, pistols supplied on the *Modelo 1927* order were speci-

fied to be numbered in their own separate series. Serial numbers started at 1, and apparently 10,000 pistols were involved as inventory records show numbers running to 9973, with only one "stray" over 10,000 listed. Complete standard commercial Colt markings were carried on the left side of the pistol slide, the serial appears in large numerals on the top of both the slide and the exposed portion of the barrel, and the Argentine crest with

EJERCITO ARGENTINO  
COLT CAL. 45 MOD. 1927

is found on the right side of the slide.

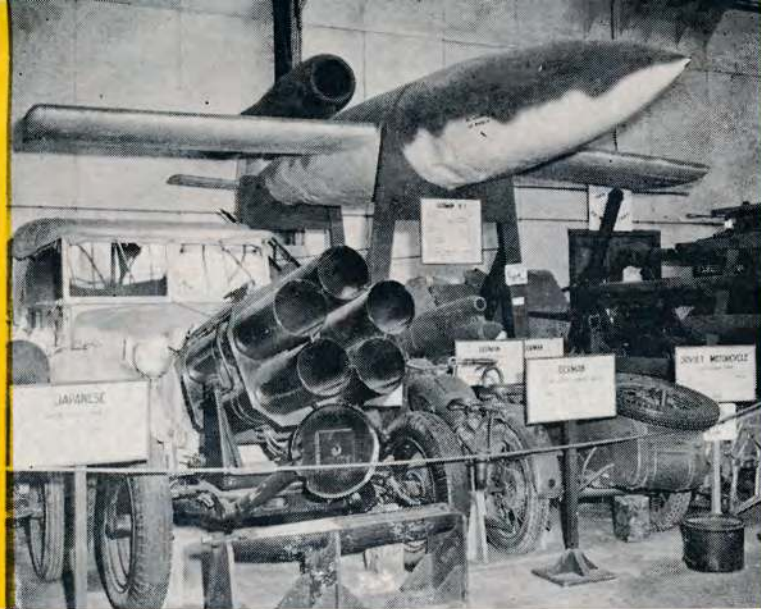
One significant departure from usual Colt marking procedure is found on the *Modelo 1927* frame. The only frame serial number is *inside*, under the mainspring housing—rather unhandy for military armorers in the field! However, many *Modelo 1927* frames later had the serial added to the right side, above the trigger.

At this point—perhaps while this third order was still being delivered—a new factor entered the picture. As long as the *Model 1927* was a stabilized design and government demand would continue for the foreseeable future, how practical would it be to set up facilities to produce the weapon domestically? Again negotiations were entered into with Colt, with the result that Colt tooling and technicians were sent to Buenos Aires to set up a Colt production line for the Argentine government. After no more than the usual number of problems the new "Colt" plant was set up, and with Colt supervisory personnel in charge the Colt machinery was soon turning out *Modelo 1927*s mechanically identical to those produced in Hartford. On the left side of their slides, however, these Argentine Colts bore the initials D.G. F.M.—(F.M.A.P.), denoting *Direccion General de Fabricaciones Militares*, the Argentine government ordnance agency, and their place of manufacture, the *Fabrica Militar de Armas Portatiles* in Rosario. The slide right side, on the other hand, was still marked with the crest but the legend was changed to

EJERCITO ARGENTINO  
SIST. COLT CAL. 11.25 mm  
MOD. 1927

Note that the caliber is now shown in *millimeters* rather than in *inches*.

Additional markings on the Argentine-made *1927*s are most confusing. Some are marked with the serial number only on the top of the slide and barrel, while others are additionally serialized on the right side of the slide and sometimes the frame. Pistols with low numbers show the most variety: Number (Continued on page 72)



The German V-1 rocket and other equipment, now in mothballs.

# Jarrett of Aberdeen

By HAROLD A. MURTZ

## *G. B. Jarrett, curator and founder of the world's greatest museum.*

NOT FAR FROM the sprawling city of Washington, D. C. lies a piece of government property that is probably one of the world's greatest collections of weapons, The Ordnance Museum: Aberdeen Proving Ground, APG, as it is commonly known, is the testing station for the United States Armed Forces.

The museum was started just after World War I with an accumulation of captured war materiel sent there for testing and evaluation. There is one man whose interest in munitions, armament, light weapons, etc. can be called responsible for this present formation of the greatest collection of destruction; Colonel George Burling Jarrett, USAR, Ret.

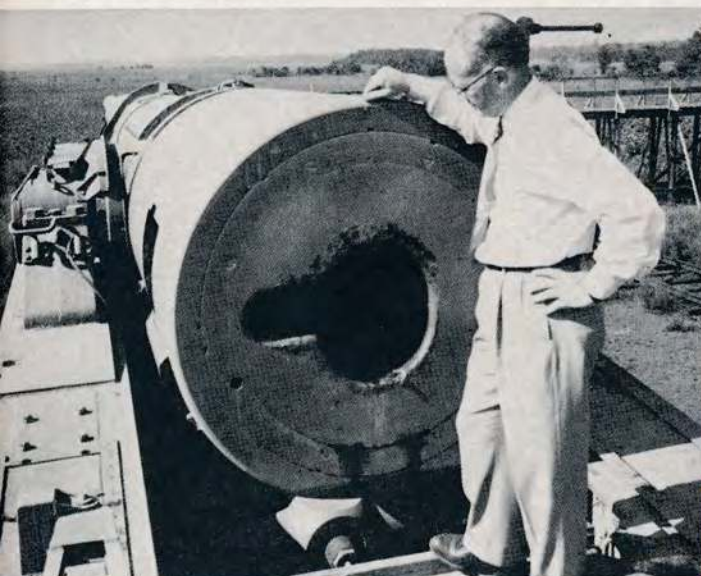
Jarrett was one of the first reserve officers to be called to duty in 1939 during the emergency period prior to the attack on Pearl Harbor and the first reserve officer to join the staff and faculty of the Ordnance School at APG. This was at the request of Col. Julian S. Hatcher, commandant of that school, who had known Jarrett since shortly after W.W. I.

Known by his close friends as Burling, his middle name, Jarrett grew up among Civil War trophies of guns, battle field equipment and cannons. The more he saw of this equipment, the more he wanted to learn about it, and how it worked. During WWI Jarrett's friends who were over seas sent him war souvenirs in the form of small equipment that had been captured.

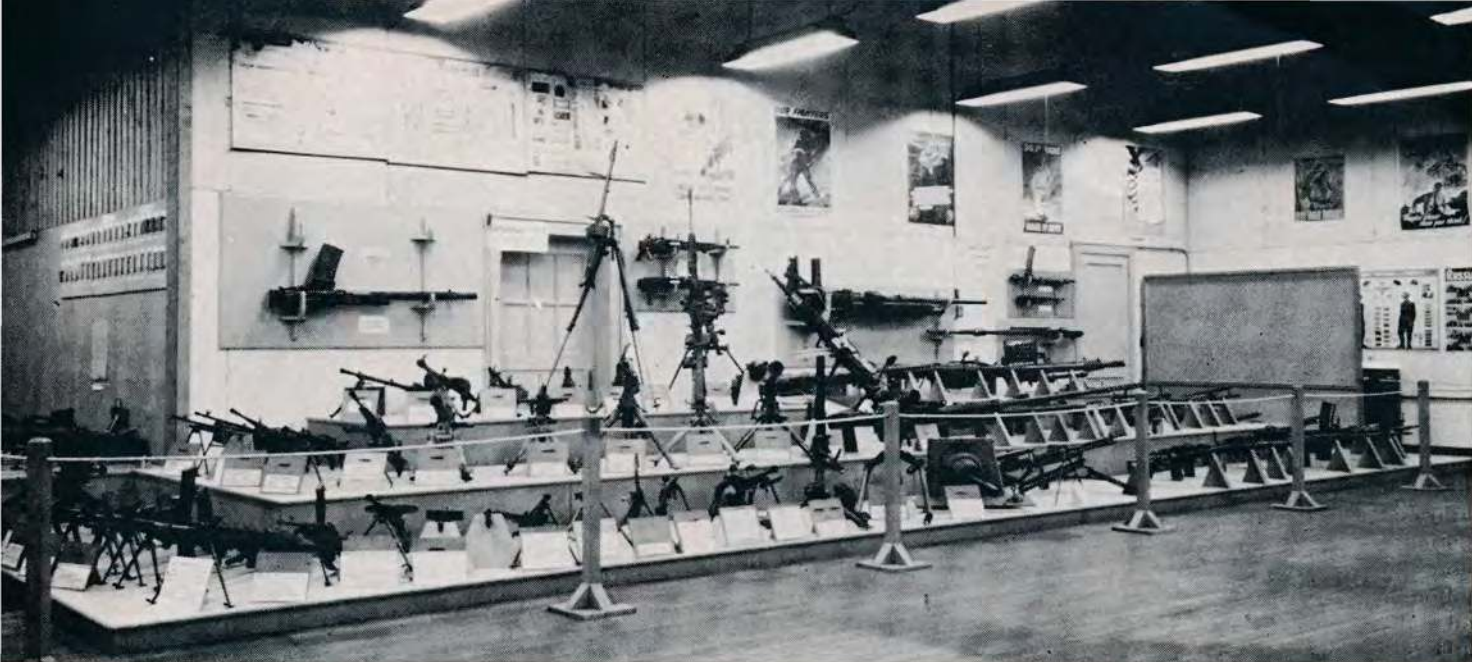
While a young man in school, he spent the summers of 1918 and 1919



Colonel George Burling Jarrett in Museum office, about 1965.



Left: Jarrett standing by breech of the 28cm K5E German railway gun called "Anzio Annie." Above: Overall view of gun captured by 5th Army in Italy, shipped to APG, 1944.



*Small arms of all types imaginable can be found in this museum . . .*



Jarrett comparing U.S. M-3 "Grease Gun" to Russian PPSH.

working at the New York Shipbuilding Co. yards, where welcome funds accrued to buy relics of WWI. Nearby was Camp Dix, New Jersey and returning soldiers sold many war curios after the War. In 1922, he went to Europe to wander all over the battle fields of The Great War and to see for himself what had taken place. At that time much of the wreckage of the conflict was still left, and he collected everything he could find in the way of guns, ammunition, and anything that had to do with the war. Somehow he sent these things home.

In the 1920 period while he was wandering through Europe, many surplus stores and merchants here and

abroad got into the business of selling used Army materiel. Jarrett became quite well known among these dealers and bought many items from them, and in the process, he even worked out trades in return for identifying pieces of salvaged equipment.

By 1930, Jarrett had collected more war curios than most museums had in stock. In that year, Jarrett opened "The Jarrett Museum of World War I History" on the Steel Pier at Atlantic City, starting with about 31½ tons of equipment. By 1939 he owned over 75 tons.

Jarrett's interest lay not only in ground warfare equipment, but also in that of the air. On July 4th, 1931





when the Steel Pier was to present a dramatic crashing of a WWI Thomas-Morse Scout airplane into the sea, he talked the pier authorities into using another plane so that he could have the Scout. Later he acquired a Sopwith Camel and then made up the first replica Fokker triplane. Because of the tremendous size of his collection of curios, the Steel Pier could hold no more. His father-in-law then gave him space at his large farm in Moorestown, New Jersey. Here, Jarrett rebuilt the planes and other pieces for the museum.

Lieutenant Jarrett collected not only nine (9) airplanes during this period but also twelve artillery pieces two of which weighed 5 tons each, and stored them at the farm. The Army gave him a 6 ton tank which, according to army regulations, had been rendered unserviceable, but together with his brother-in-law, they put it back into running condition. It never ran well but did move. With all this war material at the farm, Jarrett staged shows on an annual basis for the Governor, the State Adjutant General and other dignitaries as well as many guests from New Jersey.

In 1927 he joined the Army Ordnance Association because he wanted to learn everything there was to know about devices of war. He received a reserve commission in that same year. With his commission he trained at APG for two week periods in 1927, 28, 32, and 36. The Italian military attache in Washington gave him gifts of guns, uniforms, a library, and a desk in 1937, a big break for him.

During training hours at APG, Jarrett was an (Continued on page 66)

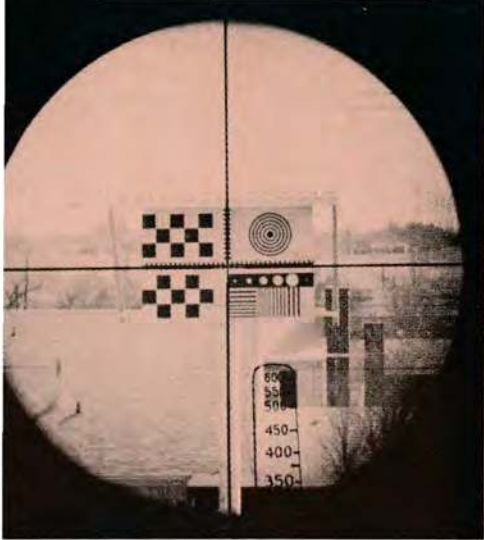


*as well as armor from every fighting nation.*



This is where it all began back in 1919. Material from the Great War was shipped back, studied and stored. Some of it was lost to scrap drives during two later wars, but most of it still remains.





# THE MAKING OF A RIFLESCOPE

By MAJ. GEORGE C. NONTE

**T**HE TELESCOPIC sight of today is a far cry from the slender, rifle-length sheet metal tubes and their few bits of glass found on target rifles of American Civil War vintage. Simply pressing lenses with a dowel against brass collars inside a sheet metal tube won't do these days.

The modern scope, whether of fixed or variable magnification, is a relatively complex and sophisticated mechanism. The optical principles are quite old, but lenses are now computer-designed and the mechanical components are remarkably compact and are produced to amazingly close tolerances. The scope is actually much more complex and manufactured with greater precision than the rifle upon which it is mounted. People who complain about scope prices should keep that in mind.

In order to look into just how scopes are made so precisely, we visited the Redfield Gun Sight Company plant in Denver. The great popularity of Redfield scopes, particularly its variables which require especially fine workmanship, make it a logical firm to visit, as does the fact that this firm has made its mark on the scope field in barely a decade.

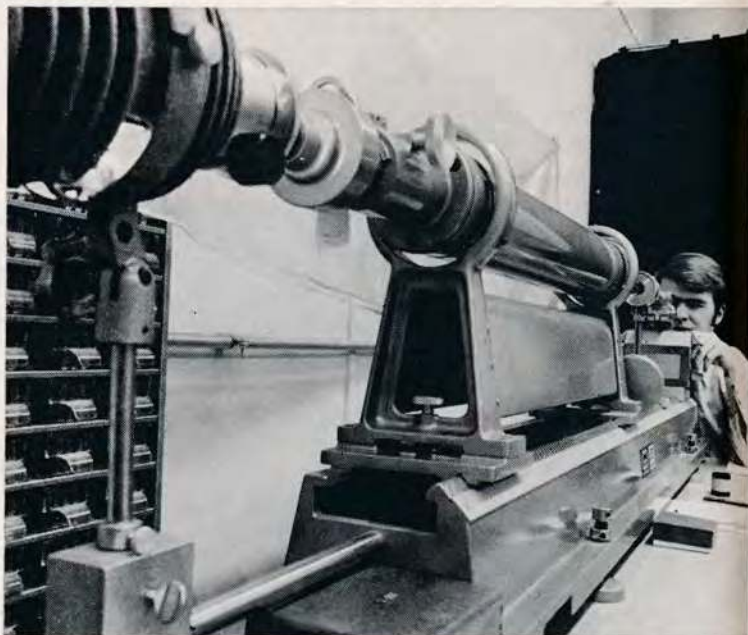
Redfield obtains lenses from top lens makers and produces most major mechanical components, utilizing outside vendors for only a few minor parts. The quality control program begins with parts and materials arriving at the plant. Raw materials—metals, plastics, sealants, etc.—are tested in various ways to determine that they meet basic specifications. Vendor-supplied parts are fully inspected to insure that material, dimensions, finish, hardness, and all other important characteristics are in accordance with drawings and specifications. In line with standard industrial practice, this "acceptance inspection" is conducted on a "sampling" basis.

Of all incoming materials, lenses receive the most careful scrutiny. Upon receipt, lenses are inspected 100% (every piece inspected individually). Certain characteristics are often checked on a special device called an "optical bench." Basically, this device is used to check the critical focal length of the lens, but other inspections may be conducted on this machine if a requirement for them crops up. At this same time, lenses are visually inspected for shipping damage such as chips or scratches and for what are called "beauty" defects. These are irregularities in the glass which appear to the skilled inspector as "squiggles;" dark or light spots or streaks in the coating. Unless such defects are right in the center of the field of view they don't alter performance—but they *are* visible to the user and are

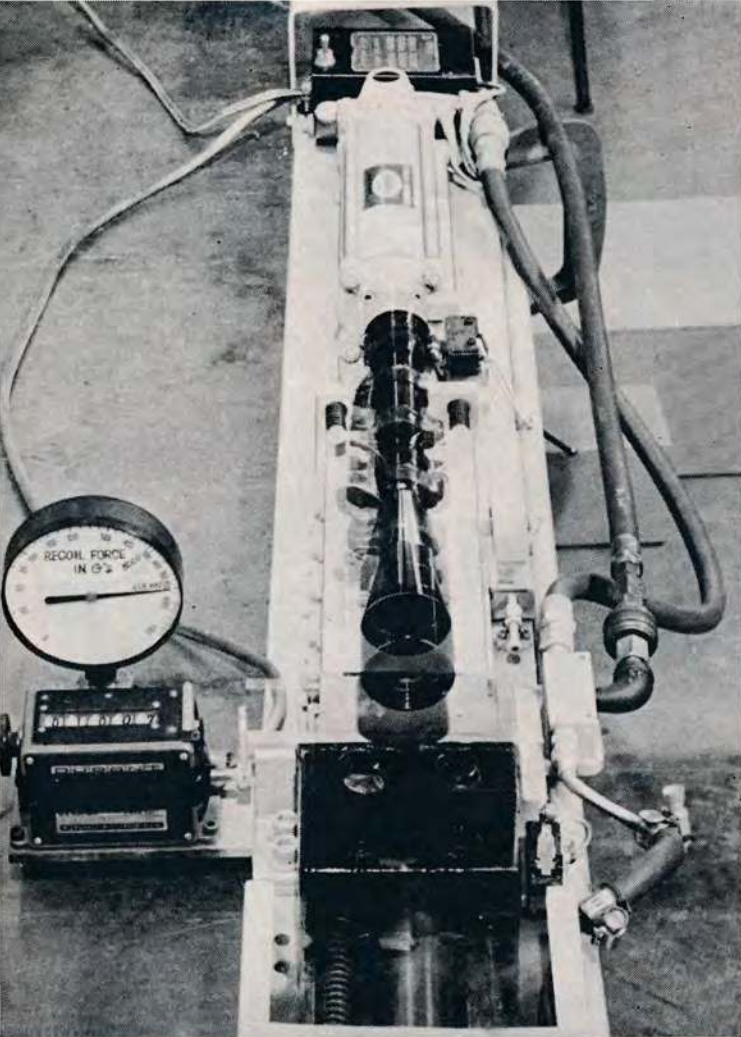
therefore undesirable. These defects assume several forms and only a well-experienced inspector can see and identify the lesser ones. This is an area where precise instructions are less important than the judgement of the inspector. All lens inspection is done under high intensity light against a dark background. Defects are clearly marked with colored crayon or ink to insure an unacceptable lens does not accidentally find its way into a scope. Lenses are relatively susceptible to handling damage, so are cleaned and visually inspected at several stages of scope construction.

No matter how good the lenses, the performance, durability, and reliability of a scope are dependent upon its mechanical design and construction. Internal adjustments and power-varying mechanisms require particularly close—but free—fits and tolerances. In these areas, tolerances as low as plus or minus 1/10,000 inch are held by Redfield. Only a vigorous quality control program can produce consistent work of this caliber.

The erector lens cell, which is the heart of any variable



Quality control is an important function at Redfield. Here, a trained technician is using a sophisticated optical bench capable of testing all optical aspects of lenses for aberrations of all kinds, concentricity and overall quality.



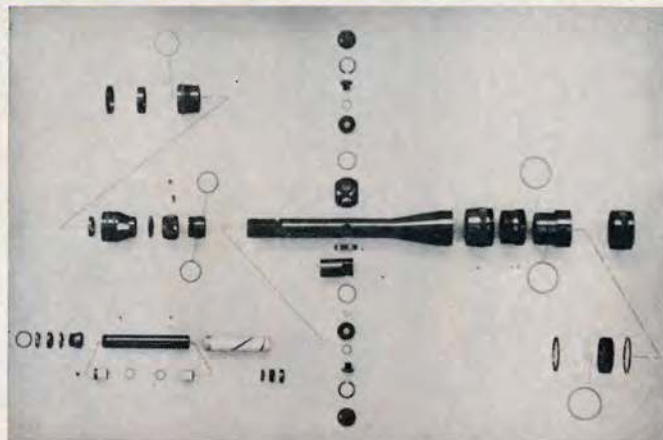
This machine tests the amount of recoil force a scope can take simulating recoil of a rifle.

scope, consists of concentric, rotating tubes into which are fitted two or more lenses. The relative position of the lenses is changed to vary magnification, but lens alignment must remain perfect and there must be no free play which would allow apparent image shift and resultant change in point of impact. Tolerances are held closest in this portion of the scope, where it was once necessary to selectively match and fit individual parts to obtain the required degree of precision. Now, more advanced production and inspection methods are used and selective fitting is no longer necessary.

Each individual part is carefully gauged by experienced inspectors. Much of the precision of gauging is dependent upon the "feel" that the inspector has developed. Where only 1/10,000 inch is involved, the mere fact that a gauge will or won't pass through or over a part doesn't tell the story—the degree of resistance felt by the inspector tells him whether the part is acceptable. This sort of feel is obtained only through years of experience. Major parts of the power-varying mechanism is subject to this sort of inspection. Records indicate that this new method produces better results than the selective fitting previously utilized.

Tubular scope bodies, turrets, ocular and objective bells and other parts are produced from raw materials by conventional methods at Redfield. Periodically while a machine is running, an inspector selects sample parts at random and checks all dimensions and characteristics. If

Component parts of the Redfield 4X-12X "Accu-Range" telescopic sight.



Cutaway of the same scope showing the path that light rays follow.

the part is OK—and it normally is—the entire batch is released for the next operation. If not, every piece made since the last inspection is inspected and rejected or accepted on an individual basis. Several critical inspection criteria are plotted on a Quality Control Chart maintained for different process. Upper and lower tolerance limits are shown on the chart. When the inspection plots show a fairly level line between limits, all is well. But, should the line start inclining significantly toward either limit, the process is shut down and corrected before any unsatisfactory parts are produced. Charts are reviewed periodically and, where practical, tolerances are tightened to produce even more uniform parts.

After machining, some parts are tumbled or polished and again visually inspected for burrs and surface imperfections. If heat treatment or hardening is involved, its correctness is checked by use of a diamond-point hardness tester. When surface finishes are applied, as in the case of the scope tubes, the finish is tested for thickness, uniformity of coverage and color, and for resistance to abrasion and impact. These inspections are normally conducted on a sampling basis.

Completed critical parts are stored until assembly in racks that prevent handling damage; other parts go into bins or transfer pans. All parts move into the special assembly room which is known in industry as a "clean room." This room is supplied (Continued on page 63)



# TAMING THE

By HARRY O. DEAN

The Remington 5mm rimfire cartridge has been announced as a new item for 1970. Is it good? It sure is! But "new" it's not! The five millimeter Remington Rim Fire Magnum is over *two years* old. It was to be introduced as a new feature for 1968, but the design was final long before that. Why the delay? What happened during the two years of silence in between? Here's the low-down on the twenty caliber cartridge that was almost too good to be true!

There is an old saying: "If ya wanna learn *all* about Lions, just walk right into the cage." In this case, I pointed the nose of my station wagon toward the Remington works in Ilion, New York. When it comes to fine guns, this is where they are born and this is where they are built. You've heard the old story about how the best guns are made. You have to start with the best steels and fine wood and so on. Hogwash! That all comes later. What you really must start out with are the best engineers! They're the magic ingredient. Without them you simply

take the best steel and the best wood and blend them together to make the best junk. Remington has no such problems. Two of the top reasons met me at the door in the persons of Wayne Leek and Mike Walker. Wayne heads up the Remington Research and Development Department. Mike Walker is equally well known as a cartridge and gun designer and expert bench rest shooter. When you mix these prime ingredients, add a selected staff and stir well, you have the makings of a top grade engineering team. These are the men who designed the 5mm Magnum.

Let's start with the name. As you probably know, the world is slowly going metric. A high percentage of the rifle cartridges used all over the globe are designated in metric numbers. Britain and the United States are the most notable exceptions. For far too long we have clung to a silly measuring system that is based on a one foot measurement which is divided into *twelve* parts, *three* of which make a yard. All oddball increments! It would be



The author mounted his 8X scope on this Remington 591 clip repeater.

To inspect the massive lock-up system, a receiver was cut in half to show the locking lugs. Note the extractor on the bolt.

A few years back Remington introduced the new 5mm Rim Fire cartridge with a new rifle to go with it, inheriting the problems of . . .

# TINY TORNADO

all the more ludicrous except for the fact that we have grown so used to it. To attain decent manufacturing tolerances we had to take some "metric" type steps and divide the inch into tenths, hundredths and thousandths. Now we can begin to appreciate the good sense of the metric system. Everything is measured in multiples of tenths, hundredths, thousandths and so on! As more and more non-metric countries drift toward the superior metric system, America must comply or drown. Our 7.62mm military cartridge is a prime example. We have relinquished the old .30 caliber designation.

The 5mm is really .20 caliber. Remington is too modern to call it a .204 so let's all enjoy it as the 5mm rimfire. If you keep a notebook of technical cartridge and ballistic data, you can file this article between the .17 caliber and the .22's.

Now for a study on the case design. What are the problems? Designers like Wayne Leek and Mike Walker have to start with a basic thought and then sit down with a group of their engineers and try to pick the nits out of it.

Object: a rimfire cartridge with high performance, varmint shooting accuracy, a stable and effective projectile, superiority to present rimfire and magnum rimfire cartridges, plus a price range between current rimfies and the smallest practical centerfire. That last statement referred to the .22 Hornet. This meant a larger rimfire cartridge



The series 580 bolt, left, has dual extractors for .22's while the 590 bolt (5mm) has a big hook.

case than those currently in production. Now it so happens that for many years Remington has produced ammunition for a cartridge called the .22 W.R.F. (Winchester Rim Fire) and it is still listed in the current catalog. This is a rather old but *(Continued on page 54)*



Left to right: Factory 5mm; two black anodized dummies; three silver-colored high PSI proof cartridges.



# GUNS and the LAW

## PEPPER FOGGER

A BASIC PRINCIPLE in police use of tear gas is that, when you have to use it—*use plenty*. Don't dribble out a few grenades and then sit back waiting for something favorable to result. Generally, it won't. Many times the rioters throw back the grenades and the mob is only incited to more violence. The tear gas cloud should cover the entire area with no clear gaps or holes, permitting rioters to continue their attack, bunch up, or reorganize. This is difficult to achieve in a moving situation with hand thrown grenades.

The most practical answer to this tactical problem is the revolutionary, new Pepper Fog disperser. It produces on demand, tremendous fog-like concentrations of riot gases and obscuring smoke. When used with the highly effective military riot agent, CS, the gas cloud has a distinctive pungent, pepper like odor. Hence the name. Thus, like the Chemical Mace, Fogger is another idiom now added to the law enforcement-press lexicon and weapon terminology, when relating to police employment of massive amounts of smoke and non-lethal, irritant riot agents.

The first successful police employment of the Pepper Fog device took place at the Republican National Convention in Miami Beach, Florida, during the spring of 1968. Several months later it was used with great tactical success during campus disturbances at the University of California. Though then relatively new, Pepper Fogger devices were on the scene at the time of the Democratic Convention in Chicago, in the fall of 1968. It is reported

that they were not used due to political and other factors. Hindsight indicates that had these units been utilized, enabling large smoke and tear gas concentrations to disperse and deny areas to the masses of rioters, the charge of "police riot" and "brutality" against the Chicago Police would probably never have been made. The "Chicago Seven" trial might not have ever taken place.

During the past two years, Pepper Fogger devices have become standard riot equipment in hundreds of county, city and state law enforcement agencies. Police in as widely separated areas of the world such as Uruguay and South Korea have been equally enthusiastic in their reports of successful tactical employment. It is predictable that within the foreseeable future, the Pepper Fog tear gas dispenser will almost entirely replace burning grenades as the basic means

of quickly laying down tactically effective, sizeable and continuous tear gas concentrations.

As covered in the April article, the tear gas grenade is only one of several means of liberating non-lethal riot chemicals into the air. Grenades are individually expensive, of one shot nature, and once thrown, there is no way to turn them off. There are good and bad grenades when rated as to their efficiency and tactical merit and other deleterious side effects. There is a continuing tactical reason for police use of *non-flammable, non-burning, non-fragmenting* grenades that can be safely thrown amongst rioters, used in buildings, launched, and dropped from helicopters. However, the burning grenade that starts fires, can be thrown back, and takes too much time to deliver its loading is still relied upon by the Army, National Guard and many civil law enforcement agencies. In terms of modern police needs and technology it is too costly and obsolete for most police purposes. Likewise, current military, air-pressure type tear dust disperser units, enabling quick deployment of large gas concentrations of fine tear gas particles are too costly, unwieldy, hard to maintain and have not been made available in any quantity for State Guard purposes. Over the past years they have not been available to civil police. The situation was such that until the recent advent of the Pepper Fogger and some of the newer, civilian designed, nitrogen powered, back pack, tear dust disperser's, nothing but use of large quantities of burning grenades has been available



The MkXII Pepper Fogger weighs 19 pounds empty, 27 loaded. It is 52" long and 14" high and handles easily with one hand. This enables it to be carried very easily in a car.



By COL. REX APPEGATE

to world police for the build up of sizeable and continuous gas concentrations.

Millions of T.V. screens have recently depicted the events at Kent, Ohio, where four students were killed and others wounded by rifle fire. The guardsmen were reported in the press to have exhausted their apparently meager supply of gas grenades and then had to resort to gunfire for protective purposes. In the Kent action, and in many others televised during recent weeks, students could be seen

throwing back the burning grenades, avoiding the visible gas clouds emitting from grenades burning on the ground, continuing violent rock throwing actions, etc. At the time this is written, the investigation as to the tragic events at Kent has not been completed. However, the writer is certain, that had the new Pepper Fogger dispersers been available and used by the Guard, like in Chicago, the whole tragic affair could possibly have been averted and the mob dispersed in a non-lethal manner.

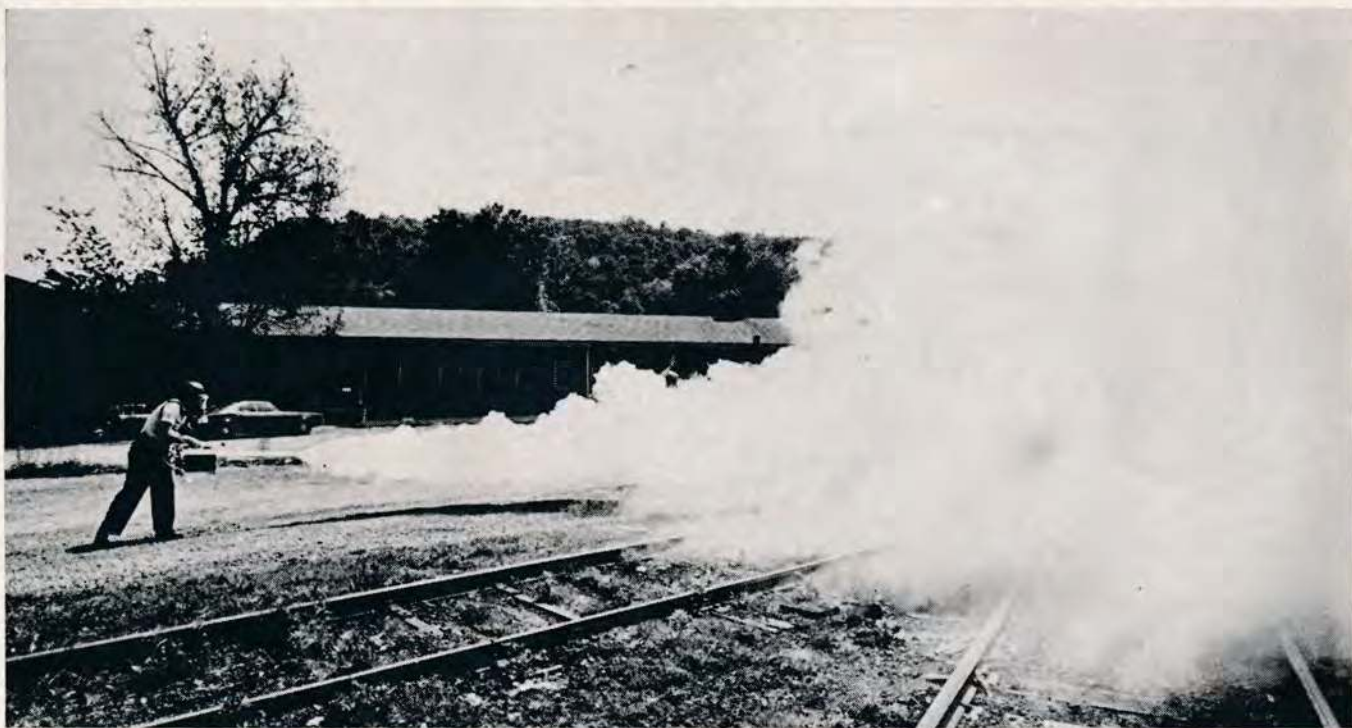
The Pepper Fogger is a device employing the resonant pulse-jet principle to create inert smoke and tear fog. It is a special adaptation of a principle in use over the past few years for dissemination of insecticides and similar agents. The police version consists of a single moving part, and utilizes a single spark plug. Initial ignition is from an A-type lantern battery, and it uses a regular grade gasoline as fuel. In addition to the fuel tank, the unit contains a separate tank for the inert, obscuring smoke or tear gas formulation.

The starting procedure is simple. With the fuel valve closed and ignition button depressed, the pump plunger in the carrying handle is given a few strokes to clear the combustion chamber. The fuel valve is then opened, the ignition button depressed again and held down while the pump is given a few more strokes. This starts the pulse-jet operation. Once started, combustion is self perpetuating and the ignition button is released. When activated, the generator produces a

continuous roaring, rumbling noise caused by heated air and gas passing from the discharge nozzle. Police experience shows that this distinctive roaring noise has a definite deterrent psychological effect on rioters. The fuel tank and the formulation tank are pressurized once the generator begins operation. By pulling up a lever, under the carrying handle, the liquid smoke or tear gas formulation is discharged into the hot, high velocity exhaust stream where it is instantly atomized and vaporized, leaving the nozzle into the cooler air, in a dense fog-form of smoke or gas concentration. This is a very efficient form of gas dissemination and there is little loss of or break down of the chemicals during the liquid formulation—gas vapor process. Ninety-five percent efficiency in dissemination of the tear gas chemicals is achieved; in the burning grenade this is estimated to be about 20-30 per cent. The density of the gas or smoke concentration can be dialed enabling complete control of the potency of the tear and smoke agent. Finger-tip trigger control enables the operator to deliver small bursts of gas or a continuous discharge of the agent, at will.

The fuel tank holds one fifth gallon of regular grade gasoline and operates the unit for approximately forty five minutes. The liquid formulation can be regulated as to density so that the machine can consume from one to seven gallons an hour. The unit can be refilled in the field while still operating, if necessary. One gal-

*(Continued on page 62)*



The single operator can completely wipe out a street, wall to wall, making it untenable to rioting elements.

# Do You Really Need Handloads?

In practically any hunting story you will read that to get the best kill, you need to handload all of your ammunition. With today's factory ammo, performance is the best available.

**H**ANDLOADING has been around a long, long time. The muzzle loaders and breech loaders were hand-loaded. Powder was poured into the muzzle, in carefully measured amounts, a cast ball of lead was rammed in on top and presto, handloading. Breech loaded weapons were those loaded at the breech but it was still handloading. Even with the advent of the brass cartridge case, handloading continued. In fact, many rifles were sold with complete loading equipment.

In the west, where a gun was considered a necessity, and hunting was a way of life for many, handloading was essential. Components were freighted overland, powder from Pennsylvania and other eastern States and lead from as far east as Illinois. Lead was a principal item of expense and this was always salvaged if at all possible. I remember some of those old time Buffalo hunters telling me how they spent much time and effort in recovering every bullet they could from the carcass and in the evenings how they melted and recast the lead into new bullets for the next days hunting.

Handloading was even done for the large bore lever actions that followed the big bore single shot Buffalo rifles. One manufacturer made heavy brass cases called "Ever-life". During my teen years I spent several winters trapping in the Trinity mountains of northern California. We used an old homestead cabin for headquarters and in one corner of the kitchen, left there by the owner, was some of the old, .40-82's, .45-70's and, .45-90's, etc. A shelf near by held loading equipment and components.

We didn't do any handloading for our new, modern, high power rifles because the ammunition at that time wasn't at all expensive. In fact, about this time handloading was pretty well going out of vogue. The large companies practically dropped out of component sales and actually discouraged the practice of handloading. This reluctance to sell components continued through WWII, but by the end of the war shooters began to find out that factory ammunition was hard to obtain and experimenters started buying tools and loading dies. Handloading became a flourishing business again.

Some of these small companies that started more or less as a hobby, like Hornady and R.C.B.S. are now selling internationally. The large ammunition factories, realizing the sales potential of loading components also began marketing these products and now they all issue component catalogues.

The large ammunition factories really began to improve their factory loads. The Remington Power-Lokt, Winchester Power-Point and others, have certainly increased the accuracy level of factory-made ammunition. Today, it really takes an expert to make bullets and hand loads that would be any better than the best of the factory ammuni-



With the exception of the one box of .222 Remington Varmint loads, cartridges lined up read, from left to right: High Power Magnums; Medium Power Magnums and standard loads; Varmint, predator and light game. All are good for the game for which they were intended. Latest offering from the factory is 5mm Remington, a hot new shell.



By  
LES BOWMAN



tion now available to the buying public.

The increase in accuracy and availability of good factory made ammunition has not eliminated the art of handloading. There are a number of reasons why it is going to stay around. It costs less; it's an interesting occupation; and in making your own loads it is possible to get higher power, faster and flatter shooting loads for many calibers. However, there are some calibers that, in commercial loadings, are so near the maximum allowable velocity level, one really does not get enough extra ballistic performance, by handloading—if proper safety loads are adhered to. Also, consistency of accuracy of most factory loads is now good enough that only the bench rest shooters could find any advantage in using handloads instead of factory loads.

I have read a number of articles that insist that each rifle is a law unto its self and a load for each rifle should be made especially for that particular gun. This is going pretty far out and although I admit that some loads made by individuals may produce a bit more accuracy, the fact is that factory loads today will shoot with all the necessary killing accuracy that a hunter needs. I own considerably more big game rifles, in many calibers, than the average hunter, and I do not have one that I can't walk into a store and buy a box of ammo for, in the right weight and proper bullet structure for the type of game I intend to hunt.

The majority of shooters do not handload and don't ever intend to. They prefer to buy new ammunition for all their uses. This is really a better and safer situation than if inexperienced person attempted to handload. The new factory ammunition is far better, safer and more accurate than poorly made handloads. I know three very experienced and excellent Alaskan guides who hunt all types of the northern big game animals, including Grizzly, Brown and Polar bear. These professional guides will not use handloads in their rifles used as a backup gun for the hunter. At sometime they have all seen rather bad results from the use of poorly made handloads. These men stake their life and reputation on fresh factory loads.

In general, factory loads produce a bit less velocity than that of most handloads, but certainly not enough to make any difference in the power. Most modern factory loads are loaded to the safe maximums, for all weather or gun

conditions. Many handloads exceed these safe maximums by a large margin.

I am not advocating the abolishment of handloading, as I am certainly one of the most dedicated handloaders in the country. About 95% of the ammunition I use are handloads. To be perfectly honest, there is little doubt but that I would get just as much game if I used factory loads, but I really enjoy loading my own ammunition and I have the proper equipment and materials to do so. Also, I've been doing it long enough to have acquired a bit of the necessary know-how.

I will not and do not recommend anyone using handloads if they have no idea who loaded them or where they came from. I have been using a local gun club's shooting range for the last 6 months and have watched hundreds of shooters practicing on this range. I have seen many examples of poor handloading right here. Blown cases, separated or split cases caused by improper inspection of the used cases and components, wrong powders or too high loadings and just bad loading techniques. Fortunately, there were no serious injuries.

It is an interesting and enjoyable hobby to do reloading. It is also safe, practical and lowers the cost of shooting very considerably. However, there are probably thousands who do not have the time to reload, even if they would like to do so. And there are many thousand of others who wouldn't want to be bothered by this aspect of shooting. The large ammunition factories have solved this problem for these shooters. In the last few years they have improved their products in every way. The bullets they now use are made more accurately—in size, concentricity, weight and structure. The powders they use are the best, and provide consistent performance for all conditions.

Primers have also been improved. Some are labeled Magnum primers, intended to produce more consistent ignition to the slower progressive burning powders and at all temperatures. Drawing of the metallic cases has been improved, resulting in more consistent case capacity, and internal case design has also been improved. Handloaders often have trouble holding a case to the correct size, in order to make cham- (Continued to page 57)

The pronghorn was a mite more than 400 yards away and the wind was kicking up to 20 mph. It was a cross wind and none too steady; it blew in gusts and one second it would be humming in your ear and the next it would drop off to a murmur. The rifle was a sturdy antelope gun, the .25-06, with a stiff handload which would give the 120-gr bullet some 3100 fps velocity. The gunner got into a solid prone position and with the vari-power scope cranked up to its highest mark, squeezed off the shot. The bullet missed the big buck. The wind carried it off the target and it struck under the animal's neck. "Didn't you hold into the wind?" I wanted to know. The shooter shook his head dismally.

We know quite a bit about the fall of the bullet over

any given range; the velocity and energy at the target; what to expect from the slug when it strikes; and the accuracy potential—but when it comes to our knowledge of the wind most of us are a bunch of rank amateurs. There is less solid information on bullet drift caused by the breezes than anything that effects the bullet's flight. And this shouldn't be, for when the shooter fires beyond 200 yards the wind is a sizeable factor.

One time on the ice of the Chukchi Sea I watched Charley Reneau shoot at a Polar bear. This bruin was about 325 yards and did not see us. Charley got into a comfortable belly-down position atop a pressure ridge and took long and careful aim at this bear. There was about a 30 mph wind blowing right off the Arctic Pole. He aimed

# WHEN THE WIND



Askins making a wind test. He is holding a strip of tissue that is blowing smartly but is not completely straightened out; a wind of about 10 miles per hour.

his shot from a .300 magnum at the shoulder and the bullet hit the bear in the liver. Reneau was an excellent game shot and I am satisfied he did not make any allowances for the strong crosswind which was directly at 3 o'clock. The bullet hit the game a long way from where it was intended, probably partly due to a sketchy letoff on the part of the gunner but also by that 30-mile-per-hour gale. The marksman should have held off for the wind. But how much? It is an intriguing question.

Col. Townsend Whelen, in writing about wind deflection said: "It is believed there isn't any branch of exterior ballistics in which there is more need for future investigation than wind deflection." An idea of windage is absolutely vital to the big game hunter, to the long range target marksman, to the smallbore shooter and the benchrest. All are adversely effected, and unless they have been schooled to treat with the wind it will prove catastrophic to them sooner or later. The Army once developed a wind bucking bullet; the 172-gr. .30 caliber. It had a 9-degree boat-tail, and with its 2700 fps MV was a good wind bucker. A formula was worked out for doping the wind with this load and while it was not exact, it worked with fair accuracy.

It was found that if the marksman multiplied the range in yards times the wind in miles per hour and then divided by 10 he came up with a sight setting which was read in quarter minutes of wind guage correction. Thus 5 X 10—the 5 being 500 yards of range times 10, the velocity of the wind—divided by 10 gave an answer of 5 which was read as quarter points. This was for a wind blowing from either 3 or 9 o'clock. For winds from 1, 5, 7 or 11 o'clock, the correction was only half as much. For 2, 4, 8 or 10 o'clock it was  $\frac{7}{8}$ ths the full reading. This worked pretty well but the only hitch was how good the shooter was on judging the velocity of the breezes. If the 10 mph wind was actually blowing only 5 mph or maybe 15 mph his calculations were not so hot.



Askins holding onto his hat in a 20 mph wind.

*Charles Askins*

By CHARLES ASKINS



# BLOWS

**Most hunters can  
predict the drop of their  
bullets, but few know  
the effects of wind drift**

Head winds cause a bullet to strike fractionally lower on the target and tail winds will see it hit a mite higher. These differences are so small as to very well be ignored. It is the cross-breeze, the wind which strikes at right angles, that can play havoc. And yet these do small harm to the big bore rifleman until he gets out to 300 yards and beyond. At 400, 500 and 600 yards wind is a serious factor, and though the shooter may guess the trajectory of his falling slug he will indeed have to conjure up all his wizardry as a wind dooper to decide how much hold-off to allow to hit the game.

Shooters on varmints and predators with their high speed twenty-two calibers have real trouble from 175 yards outward. At 300 and 400 yards the wind is of major consideration and unless the individual knows his stuff he will miss more often than not—and more for faulty wind correction than from a poor aim.

Target shooters make a study of the wind, probably give it more time and application than any other gunners. They learn a lot about it and are thus able to cope with its vagaries. Winds are said to blow steadily but in truth they vary as much as 5 mph every few seconds; too, the direction is seldom constant. The wind will vary from



Some ranges provide wind ribbons on stakes to give a shooter some indication of the direction and strength. Ribbons can sometimes be helpful, also are deceiving.

what appears to be 3 o'clock as much as 1 to 5 o'clock and this together with differences in velocity make it exceedingly hard to dope accurately. The targetman watches the wind through a spotting scope. If the scope is over 10X it will show the mirage. This mirage is seen as it were a stream rippling over pebbles in the bottom; or as water when it comes to a boil. Not only will the scope indicate its direction but also its speed. At intervals it seems to come to a boil or swirl. At these times it has no direction but simmers much like a cauldron. An anemometer is an instrument to read wind speeds and altho it has little application on a target range it is worth a good deal to teach the shooter what winds of different velocities feel like. And what appearance such things as weeds, grass, dust, bushes and the trees may have under the influence of winds of 5, 10, and 15 miles per hour.

It used to be that a series of range flags would be staked out from the firing point to the target and the marksman would then try to dope the wind from the appearance of the flags. This was some help except during those times when the wind at the firing point would, according to the nearby flag, be blowing from 8 o'clock and at the butts the marker there would indi- (Continued on page 50)

# WIFE OF A "GUN NUT"

By ELEANOR TUCKMANTEL

YOU'VE HEARD OF golf widows and fishermen's wives, but do you realize there are thousands of "gun nuts" wives like me? You know, the man who is a gun enthusiast, who never knows when it's your birthday, or anniversary, but knows the exact date pheasant shooting starts and when the deer season is beginning, etc. Or, they may not even go hunting, but are just crazy about guns. They always go to some neighboring gun show, or go to hometown matches, rifle ranges for target, skeet or trap shooting. God forbid, when out with another couple, you discover both men interested in firearms and the rest of the evening is spent listening to what gun each other has, how it shoots, where they go to get enjoyment out of it, ammunition and all the other boring factors. Then of course they always check the "want to sell" ads in the newspapers and find

gotten a lot more use out of than that rusty old musket. Then again, perhaps it's a common interest with your son or sons, so you sit home thinking, "Ahhh . . . togetherness, this is bridging that generation gap, so important for father-son activities. Regardless, you stay home and reason, "Oh well, he could be out playing golf every Sunday and holidays like a lot of your girlfriends' husbands, or picking up a cute blond at a bar. This is a nice clean hobby . . . and harmless.

I won't tell you which one of these I was . . . for I'm not sure myself. My husband brought home these silly looking pistols, shotguns, or rifle every so often and I tried to pretend some interest since you might have thought he discovered gold, but still with misgivings, thinking of him paying good money for such old relics. My son and husband would go off on a Saturday or Sunday afternoon for "plinking" once in awhile . . . and once or twice a year on a hunting trip. I always had so much to do at home, with them out of my hair, I never minded that.

Then all of a sudden I reached my "Autumn years." I no longer had a family to raise. My husband and I were kind of like strangers. Life was a repeat of get up, make breakfast . . . husband came home . . . ate dinner . . . watch TV . . . go to bed. Weekends were boring too, in spite of many friends who come too late for dinner and left too late . . . or going to their house and sitting on uncomfortable chairs, making small talk and thinking how you now owed them a dinner in return. Once in awhile we'd go to a movie, or dine out. Conversation . . . kids, work, whose marriages were on the rocks.

Then you'd see the weekend of deer season and the bright eyes of your tired old husband light up . . . or the hustle and bustle of the day the gun show was right in your town . . . and off he'd go . . . and there you sat.

Looking back I remember being asked half-heartedly most of the time "You don't want to go do you?" of which he always knew the reply.

On one of these next occasions my hubby asked me the same matter-of-fact question and I nearly floored him (and myself too) when I decided to go along. This was the turning point of my life . . . and I recommend this highly to young or older women wherever they are.

When you walk into a gun show for the first time it's like nothing . . . like one big flea market and you look for the closest bench to sit down and wait for your old man to wander around. But then you look at the men, and their merchandise . . . some for sale . . . some just for display as they are that proud of their possessions they want to share it with everyone. They are happy, friendly people. They cherished every piece of war souvenirs that have been handed down from generation to generation. You thought your husband stupid with 8 or 10 firearms stuck in the closet. Here were men that had 30 or 40 and some pretty sharp looking, rare and valuable looking collections. Some of the men dressed in Western style or Civil War attire. You realize it's not play acting, but they are living the part of the past that went along with their great, great interest in history. These things took them years of looking . . . planning, working into a pattern. I was so greatly impressed. *(Continued on page 69)*

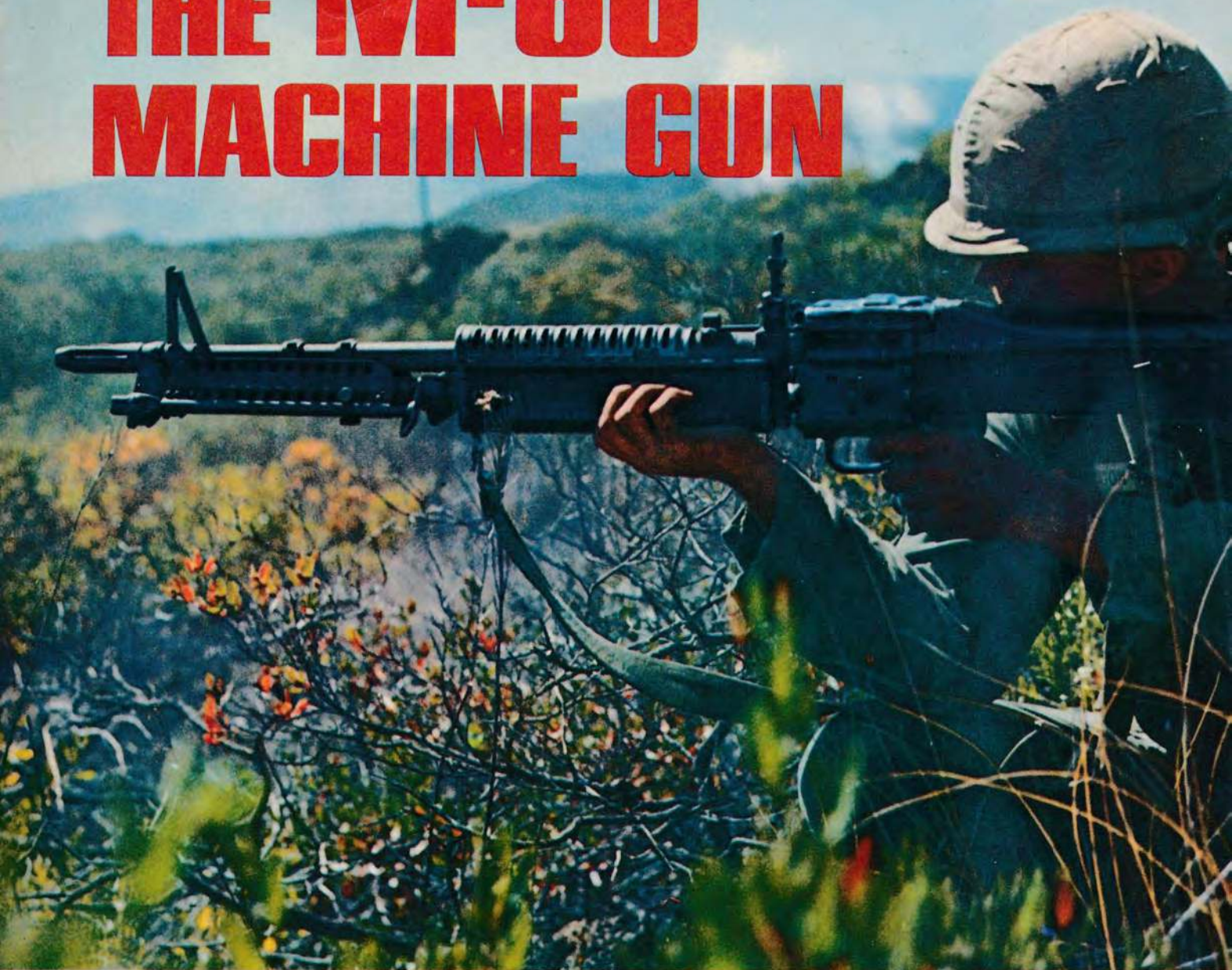


"You look for the closest bench to sit down and wait for your old man."

a good buy for an 1863 Springfield rifle and completely skip the sacrifice ad on the frost-free refrigerator freezer you've been wanting for so long.

Your reaction could vary from being *disgusted* with their childish hobby for ancient guns that they can't shoot worth a darn—visualizing a nice dress you could have

# THE M-60 MACHINE GUN



**The M-60 Light Machine Gun  
is a sturdy and reliable member  
of the world's arsenal of freedom.**

By HAROLD A. MURTZ

SHORTLY AFTER World War II the need was seen in the United States War Department for a new weapon to simplify logistical problems and to better equip our combat troops. Problems were encountered during the war in supplying ammunition, parts, etc. for the many Brownings that were in use at that time. Also the Brownings were not as simple to operate as was necessary in fire-fights and adjustments were rather critical to insure proper functioning of them under all circumstances.

Another factor against the Brownings, although they served extremely well, was their size and weight. The latter

being the most important. One might be able to say that we did the best we could with what we had on hand. But, when you take into consideration the types of weapons being used against our troops, mainly by Germany, our frontline weapons left quite a bit to be desired. The excellent designs of both the MG-34 and MG-42 were vastly superior and cheaper and easier to produce, than any of our Light Machine Guns or Heavy Machine Guns. The remarkable FG-42, produced in small quantities for German paratroops, appears to have started it all with the wide use of stampings and machine screw parts. The designation

# M-60 Machine Gun

of "FG" stems from the German verbiage of "Fallschirm-Jaeger Gewehr," or paratroop machine rifle.

Development of the M-60 Machine Gun in the United States began in the early mid-50's after the Korean War. The World War II Brownings were lacking in firepower mobility and the basic reliability needed to stop the mass "human-wave" attacks experienced in Korea. War Department and high government officials envisioned this kind of warfare was the present threat and authorized developmental work to begin.

Since the formation of NATO, it was decided by the member powers that a standard type of ammunition was to be used, in conjunction with a standardized type of arm. Also since experimental work was presently being conducted on a large scale with shoulder weapons using the NATO cartridge, the new machine gun should be developed with this cartridge/caliber in mind.

Throughout all of its developmental stages, the end product that was to be later dubbed the M-60 went through many design variations and many series' of weapon configurations. The first of this series was designated the T-44 and was essentially a combination of the operating mechanism of the German FG-42 and the feed (belt-type) of the MG-42. Later on, the T-44 evolved into the T-52 and then into the T-161 series. The gun underwent design changes and modifications and beginning with the T-161E1, stress was placed on the ease and lowered costs of manufacture. From the "E1" model it progressed up through the T-161E2 and was finally adopted as the T-161E3 or M60, 7.62 mm NATO.

One consideration taken into view in designing the M60 was that of "comfort" to the shooter, especially if the gun was to be used in extremely cold areas. Again, in the Korean War, when shooting or handling the weapon in sub-zero temperatures the skin has a disconcerting tendency to stick to metal that has been subjected to extreme cold. One can liken this to the removing of ice cube trays from

the freezer with wet or damp hands. If the side of the face or cheek of the shooter were to come in contact with this super-cold metal during firing, the result would not only be quite painful, but it would also "deadline" the trooper to the extent that he might have to be sent back to an aid station or even home and out of action.

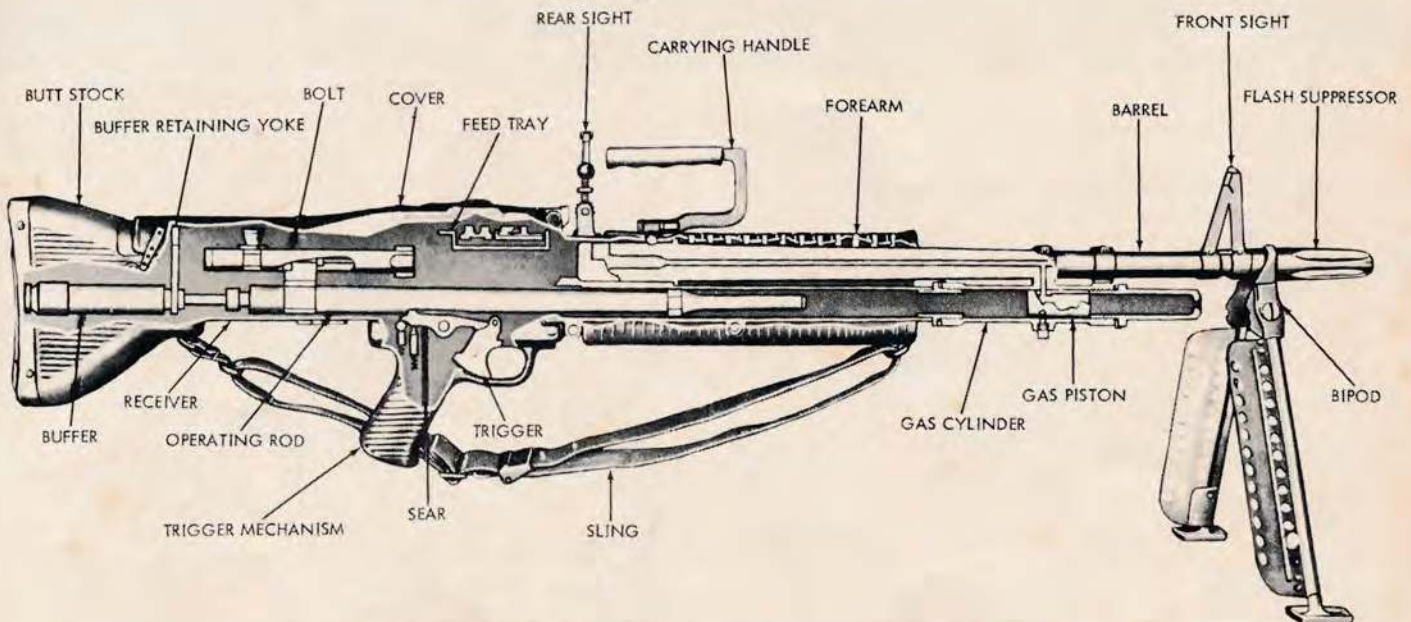
To overcome this probability, the technicians provided a neoprene covering for the receiver assembly cover, butt-stock and the forearm. Surprisingly this covering holds up quite well under hard useage and appears to be almost impervious to most anything. In training, however, users are admonished to keep bore solvent and oil off of the neoprene for obvious reasons.

In its final accepted form the M60 is a welded and stamped, link-belt fed Light Machine Gun that weighs 23 pounds. This, compared to the M1917 Browning water-cooled machine gun at a little over 40 pounds (dry) is a substantially lighter and more mobile weapon. Even the "light" versions of the Brownings at a little over 30 pounds cannot compare favorably. Fixed firing versions of the M60 are lighter, too. The tripod for the M60 weighs in at 25 pounds as it is made of titanium alloys. The old M1917 tripod tips the scale at 48 pounds! At a total of 48 pounds, the M60 on a tripod mount is a very valuable weapon and can be effectively employed by even one man, if necessary.

Included in the 23 pound weight is an adjustable bipod that is permanently attached to the barrel. Strong and durable, the bipod provides a base for accurate fire and folds up under the barrel for carrying and mounting on the tripod.

While the mechanism of the gun does not provide for selective fire, the relatively slow rate of fire of 550 to 600 allows the shooter to tap off single shots after a little practice.

One of the main parent designs from which the M60 was taken is the MG42 that fired a fantastic (for the period) 1200 rounds per minute. The feelings of officialdom in the United States has always been that the rifleman should conserve ammunition, shoot for maximum accuracy and prolong the life of the weapon. This is probably the



Sectional view of the M-60 Machine Gun with bipod legs extended.



The German MG-42 was the main parent design of the M-60.

main reason(s) for the low rate of fire in the M60.

The quick change barrel feature of the M60 was borrowed from the German MG-34 and is extremely effective in its intended use. The assistant gunner need not even touch the hot barrel as he can simply grasp either the bipod or the front sight assembly and yank the barrel out of the receiver.

Disassembly of this weapon is quite simple as the only tool needed is that in the form of a cartridge. The catch on the buttplate assembly is depressed with the bullet point and the butt slides straight back. Springs, bolt assembly and gas piston can be withdrawn from the back after pressure has been relieved from the buffer retaining yoke. The trigger and pistol grip mechanism is removed by unspringing a flat retaining clip and pushing out a cross pin.

The gas system on the M60 is that of the captive gas piston type, much like that used on the M14. In this system, a measured amount of gas tapped off of the port in the barrel is captured in the cylinder. After the gas has operated the bolt/cocking mechanism, the gas is bled off through ports in the cylinder, uncovered by the piston during its rearward travel. Dirt and powder residue is also blown clear of the cylinder during this operation.

Sights on the M60 are graduated in meters and the weapon is supplied sighted-in at 100 meters. Because our NATO allies use the metric system on their weapons, we chose to follow suit and graduate our fire control charts accordingly.

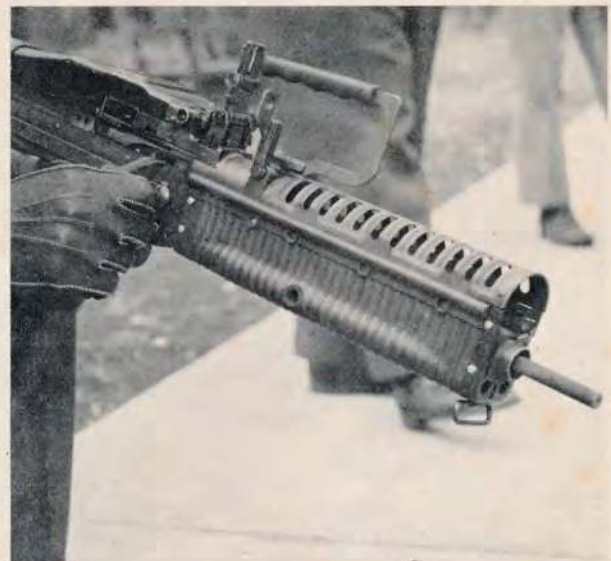
During the notoriously stiff acceptance tests through which a weapon must pass to become accepted for military use in the United States, a firing/function test of 20,000 rounds was employed. One-hundred round bursts were fired with one minute interval cooling-off periods. Although the M60 was designed with the quick-change barrel for use in situations just like this where the barrel would overheat, it was found not necessary to change barrels. The first 9" of the barrel are made of Stellite, a super-strong and corrosion resistant metal developed by the Haynes Stellite Co. Even when the barrel was fired to a point where it turned red with the heat generated from continued firing, the rifling did not wash-out! Although this quick-change barrel is not the best on the market, lack of funds from Congress stifled further development of a better system.

Since the adoption of the M60 machine gun in the late 1950's the gun has been effectively employed around the world as our front line machine gun. Some swear at it,

most swear by it because of its reliability and usefulness. In the jungles of Viet Nam the M60 has proven itself to be a first-rate member of the arsenal of freedom.



Above: The trigger group is easily removed from the receiver group by unspringing a flat spring and removing the cross pin shown. Below: Large lever near the carrying handle is merely pushed up for the quick removal of the barrel assembly.



## Test Report:

# SAVAGE MODEL 444

By Wallace Labisky

EXISTING in the role of a "sleeper" for many years, the over-under shotgun is now coming on very strongly among skeet, trap and upland shooters. In response to this surge of fresh interest in what is actually a greybeard design, several of the biggest names in U.S. firearms have tossed their hats into the stack-barrel ring, not to mention a whole covey of bonafide importers. The unique side to all this is that none of the O/U's branded with a domestic label is manufactured on these shores.

The reason is primarily one of economy. If crafted at home instead of abroad, competitive pricing would be



### SPECIFICATIONS

**ACTION TYPE:** Hammerless, box-lock, superposed double with selective ejectors.

**GAUGE & CHAMBERS:** 12, 2¾ inches.

**BARRELS & CHOKE:** 26 inches, IMP CYL (under) and MOD (over).

**TRIGGER:** Selective single, recoil operated.

**SAFETY:** Thumb-slide on upper tang, automatic.

**SIGHTS:** White-metal beads front (.115 inch) and center (.096 inch) on ventilated rib.

**WEIGHT:** 7 pounds, empty (test gun).

**OVERALL LENGTH:** 42⅞ inches (26-inch bbls.).

**BUTTSTOCK & FORE-END:** Select European walnut; pistol grip; wide-groove fore-end; hand-cut checkering on grip and fore-end.

**TEST GUN STOCK DIMENSIONS:** Length of pull, 14⅞"; drop at comb, 1⅞"; drop at heel, 2⅞"; downpitch, 1⅞"; cast-off at heel approx. ¼".

**PRICE:** \$289.50.

**MFR:** Fabbrica Bresciana Armi, Brescia, Italy.

**REMARKS:** Offered only in 12 gauge with 2¾-inch chambers. Other available barrel lengths and chokes are 26-inch SKEET/SKEET; 28-inch and 30-inch MOD/FULL.



## FREE!

YOU CAN WIN THIS  
**SAVAGE MODEL 444**  
PLUS A CHANCE AT 142  
OTHER PRIZES

(Details on page 43)



impossible. Most O/U's would probably end up wearing an ultra-posh price tag like that found on Winchester's Model 21 side-by-side, and to afford one you'd have to be at least the first cousin of a maharajah.

Back in 1968, Savage Arms decided the time was ripe to go for a piece of the O/U action. Enlisting the facilities of Fabbrica Bresciana Armi, an Italian arms firm located in Brescia, the famous Indian-head trademark appeared that year on a field grade O/U that was designated the Model 440. Close on its heels came a companion model called the 440-T, designed for the trap-shooting clan.

Since then Savage has added a deluxe smokepole called the Model 444. Basically, this is the same gun as the 440, but with certain practical and prestigious uptown extras—namely, selective ejectors, a revamped wide-groove fore-end, plus a moderate dash of engraving. All three models in the "Four-Forty" series now have a selective single trigger combined with a uniquely-designed barrel selector that is not integral with the safety.

I had an itch to take a long look at one of the FBA-built O/U's, so I got in touch with John Marsman, Savage's public relations chief, and requested a Model 444 for test purposes. Quite

coincidentally, the gun arrived just a few days prior to the gathering of the Labisky clan for the Snake Creek Owl Hunters' Association claybird tournament—an annual family fun-shoot involving crazy-angle doubles which are shot from a gun-down position to simulate field conditions. Here was an excellent opportunity to wring out the new O/U in terms of handling and pointing.

All hands had a go at the clays with the 444. There was, of course, a good deal of nit-picking based purely on personal bias, but not a single shooter came up with what might pass as caustic criticism. And that, in itself, tells





In this view, the lower barrel has ejected a case; top barrel has extracted unfired shell.



The unique barrel selector of the Model 444 is handy, but does take some getting used to.



Monoblock breech houses major parts of the ejector system.

a great deal, to my thinking. The scores we posted are really immaterial. Let's just say that everyone shot the gun reasonably well; and yours truly, by some stroke of good fortune, walked off with the coffee-mug trophy.

Later I took the 26-inch barreled IC & MOD test gun into western South Dakota for a few days of early-season gunning on sharp-tailed grouse. Here again it did a fine job of carrying the mail.

However, at this juncture I might point out that some scattergunners may find the 444's stock as having a wee bit too much drop. This was the situation in my case. The 15/8" and 25/8" at comb and heel, respectively, occasionally resulted in dropping only the bird's leg(s). Fortunately, when this happened, I always managed to wrap things up properly with a fast second barrel. So the only thing that suffered was my shots-per-bird average.

A lion's share of today's stack-barrel guns are built around a box-lock action and the 444 is no exception. And being an under-bolted gun, it also follows the well-trodden path taken by Browning and a number of others. The test gun was carefully checked for bolt fit, the smoke test revealing even contact on both surfaces of the divided lug cut. The bites are tapered slightly to compensate for wear, and this action should continue to "breech up" tightly, even after many, many years of hard use.

Barrel joining at the breech is via the monoblock method, a practice which provides exceptional strength and which is now commonly found on European-built O/U's. The barrels pivot on a trunnion arrangement featuring replaceable pins. Stock joining shows the ultra-modern approach with a husky, longitudinal through-bolt.

Frame depth at the standing breech runs 2.570 inches (about 2 9/16). Cocking is handled by a round arm positioned centrally on the floor of the frame and actuated by a camming stud on the fore-end iron. This arrangement leaves the bottom of the frame solid—no "trap doors" to permit the entry of dust, moisture or foreign material.

An action feature deserving applause is that pushing the top lever over serves to retract the firing pins. The withdrawal occurs even before the action "cracks" open. This completely eliminates any possibility of the pins hanging in the primer indents and contributing to balky opening of the gun.

Coil-type mainsprings are used, these being specially tempered for fast, dependable hammer fall. As this report is written, the test gun still enjoys a clean bill of health in that respect, having digested about 300 rounds of assorted handloads and factory fodder without a misfire.

The Savage-FBA ejector system strikes this double-gun buff as being top-drawer. Except for the trip rods running diagonally through the frame walls, the system is contained largely by the monoblock.

The one-piece ejectors are dovetailed to the monoblock flats, and the monoblock is tunneled on each side to accommodate a pair of coil springs and plungers—these parts providing direct power for both extraction and ejection. The design incorporates a camming action which prevents the ejectors from dragging across the action face as the gun is being closed. Disassembly of the major parts for once-a-year cleaning and oiling doesn't require the services of a gunsmith: any "kitchen" gun tinkerer can do this in a jiffy.

Unfired shells are lifted only a scant  $\frac{1}{8}$  inch, and this leads to a bit of fumbling when trying to remove them with a gloved hand. On the credit side, ejection of spent hulls is accomplished with plenty of power to spare.

In examining this ejector system it appeared, at first glance, that by removing the coil springs and their plungers it might be possible to convert to plain extractors. But it just won't work out. Unless the ejector is under spring tension, its cam shoulder refuses to smoothly mate with its slot in the frame wall and damage to the ejector is likely to occur. So handloaders will just have to learn to grab those hulls before they go into orbit.

Regarding the 444's barrel selector, Savage states that it "may require a little getting used to." And, indeed, it surely does require just that. But once you get the "hang" of it, there's no real sweat.

The selector is in the form of a small lever protruding from a slotway left of center in the top tang. Its position is far enough forward so that it's not likely to be disturbed during manipulation of the thumb-slide safety, yet it's still within easy reach of the shooter's thumb. When the selector is in its rearmost position, the under barrel will (Continued on page 60)

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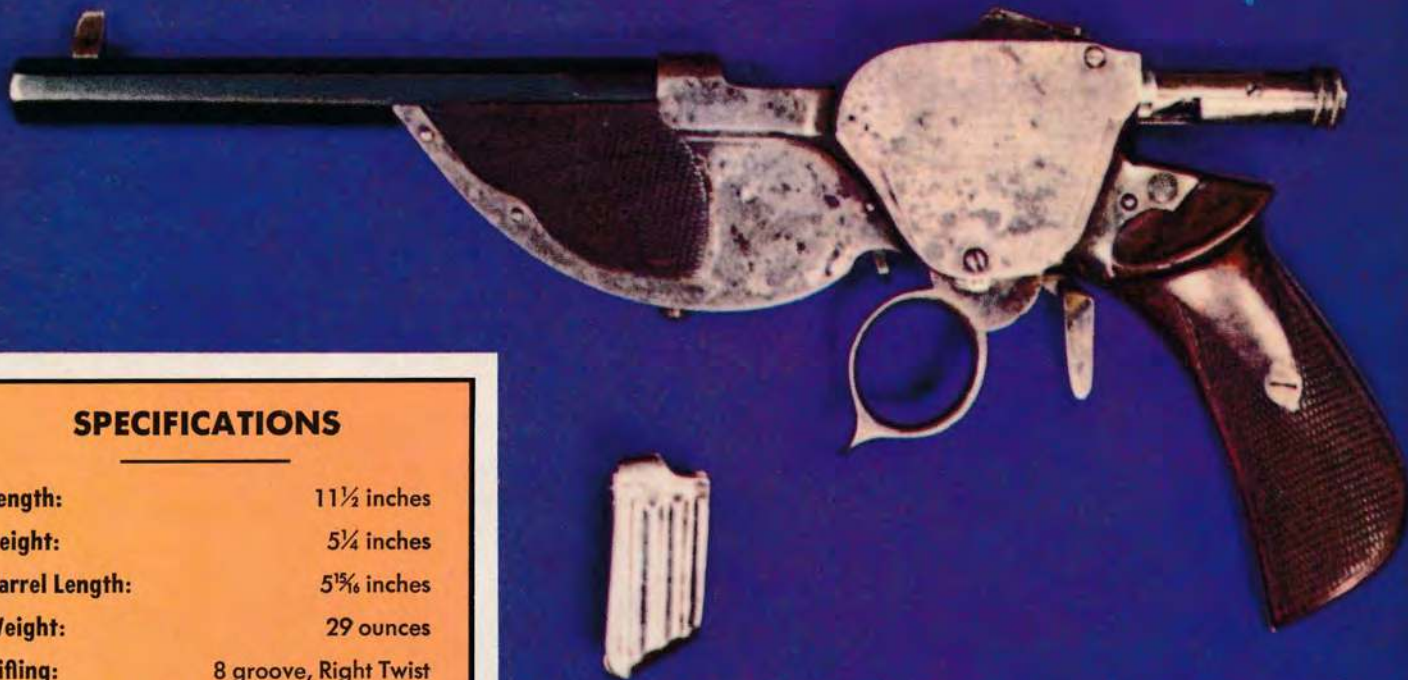
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GM-9 Sept. GUNS Magazine

...DO NOT USE ENVELOPE

# The BITTNER PISTOL



## SPECIFICATIONS

Length:	11½ inches
Height:	5¼ inches
Barrel Length:	5⅝ inches
Weight:	29 ounces
Rifling:	8 groove, Right Twist
Magazine Capacity:	4 Rounds

By J. B. WOOD

SEVERAL YEARS AGO, when I first examined a Bittner, my immediate reaction was: Why? The year its manufacture was begun, 1893, also saw the birth of the Borchardt, the first successful automatic pistol. The next year, 1894, the self-loading Mannlicher emerged. Two years later, in 1896, the Bergmann and the well-known Mauser were marketed. Even before 1893, there were experimental self-loading designs by Schmeisser, Schonberger, Schwarzlose, and others.

Therefore, the question, Why, in the year of the first successful automatic pistol, produce a lever-action clip-fed handgun? Perhaps, in those early days when Gustav Bittner set up shop in Weipert, Bohemia, some people were still uncertain about the future of the new self-loaders, yet were searching for something less bulky and faster loading than the revolver.

The mechanism which Bittner employed was not of his own design, though he no doubt added a few modifications. The earliest application I can find is in the Lauman-Schonberger of 1891, so perhaps Herr Lauman or Herr Schonberger should receive credit for the basic action.

Other contemporary pistols with very similar systems were the Passler-Seidl and the Schulhof.

The Bittner system works like this: A ring-type lever, slotted to admit the straight trigger at the rear, is pivoted in the frame and has an upper arm which directly contacts a stud on the left side of the cylindrical bolt or breech block. The lever arm is irregularly slotted to allow for the arc of the lever, and to provide a camming action to turn the bolt. Immediately to the rear of the lever stud on the bolt is a single rectangular locking lug, which during the final fraction of lever movement is cammed down to bear on a solid shoulder in the frame. The bolt is turned counter-clockwise about twenty degrees into locking position.

The striker, detained by a frame-mounted sear, is cocked as the bolt closes. Through the upper rear portion of the frame is a crossbolt type button safety, perhaps one of its earliest applications in a handgun. If the safety is in "fire" position, pushed to the right, the last rearward movement of the lever ring will admit the trigger through its slotted back, and the pistol will fire. The effect is much

the same as a double-action pull in a revolver. If single action fire is desired, it is necessary to push the crossbolt left to "safe" position before operating the lever, releasing it only when firing is intended. When the pistol is cocked, the tip of the striker spring guide protrudes slightly from the rear endcap of the bolt, acting as an indicator.

The magazine system is almost pure Mannlicher, very similar to the popular military rifles of that era. A spring-powered lifter is depressed as a clip of four cartridges is inserted from the top. The formed sheet-steel clip is retained by a pivoted latch at the rear of the magazine well, and the lifter feeds the cartridges up as the bolt is cycled. After the clip is empty, pushing forward on the latch allows the clip to fall or be withdrawn from the lower opening.

The 7.7 mm Bittner cartridge, having been in very limited production by the Rheinisch Westfalische Sprengstoff, is even more rare than the pistol. The owner of the Bittner pictured with this article had not even one round, nor could I locate any. According to information in White and Munhall's excellent book on cartridge identification, the 7.7 mm Bittner had a rimmed brass case with a slight taper, an 85-grain jacketed bullet, and a two-hole Berdan primer. I was surprised to note that the powder load was smokeless, since this type was just coming into use at that time.

In order to have a cartridge to photograph for this article, I made up a dummy round. I found that the best beginning was a .32-20 WCF case, which has a rim diameter of .408. The original Bittner rim measured .390, neck .319, head .337, and length .665. The .32-20 case was trimmed and turned to these dimensions, and a .32 ACP bullet added to complete the inert round you see in the photos. No attempt was made to work up a shootable cartridge, because of the rarity of the pistol and the absence of any loading data.

The 7.7 mm caliber designation is the same, but whether the Bittner cartridge was also the one used in the Passler-Seidl and Lauman-Schonberger pistols is a matter of speculation. It might be well to note in this regard that the "7.7 mm" cartridge for the Clair pistol of the same era was actually the 8 mm Model 1892 French revolver round.

Disassembly of the Bittner is relatively simple, and re-assembly has only one rough spot. On the left side of the receiver is a large plate retained by two small screws, removal of which will expose the lever and bolt locking mechanism, and a partial view of the sear and trigger engagement. Easing the lever off its large pivot stud in the frame will free its upper arm from the bolt, and allow the bolt to be withdrawn to the rear. By backing out the small set screw on its left side, the end cap may be removed from the bolt to free the striker and its spring. I do not recommend that the non-gunsmith proceed beyond this point. The wooden fore-end and grips are so closely hand-fitted to the frame that unskilled removal would likely cause breakage of the delicate edges.

The classic phrase "reassemble in reverse order" may be applied to the Bittner, with one exception: When replacing the lever on its pivot stud in the frame, care must be taken to also fit its upper arm slot over the operating stud on the bolt, and the heavy lever detent spring, which enters from the grip frame area, must be pried upward to clear the inside base of the lever.

It is interesting to note that the striker spring is the only helical coil type used in the entire design. All others are heavy blade type, most

(Continued on page 71)



The Bittner cartridge clip and detail of the Bittner trademark on right side. Note "engraving" on screws.



Close-up of the trigger guard lever ring. Slot at the rear of the ring is for the unusually shaped trigger.



The 7.7mm Bittner, second from left, shown in comparison with .32 S&W, left, 9mm and .45 ACP cartridges.



# Beware of the Wary Crow

By E. MILTON GRASSELL

**For some exciting off-season shooting, the crow offers the best practice for the hunter**

**W**HAT CAN the shotgun enthusiast shoot during the long off-season game period? Sam Inkley has one answer. He says, "Hunt crows".

And that's exactly what we were doing in January, less than one week after duck and goose season closed. We had no intentions of letting our shotguns gather dust until the bird season opened in the fall—eight months away.

Sam had planned this trip. Jack Sanderson and I were his guests. Both Sam and Jack are from Portland, Oregon. I live 85 miles south in a small college community—Corvallis.

Sam has hunted crows in Washington and Oregon for twenty years. He was no novice, nor was Jack Sanderson when it came to crow hunting. For me, I had tried crow hunting a couple of times, but the crows—whose intelligence I quickly learned to respect—had nearly always out-smarted me. So for that reason, I purposefully brought two pieces of artillery—my gun and my camera. And my intentions were to shoot my camera more than the gun. Why? To learn how two good crow hunters go about it and to have a photographic record for review when it's all over!

Did I learn anything? You bet I did. This is how Sam and Jack tackle crow hunting.

The first important thing is scouting. Sam had driven out the day be-

fore to scout this area. You have to know where the crows are. More specifically, you need to know where they roost, feed, and loaf; otherwise, the hunting is pretty spotty. And, of course, the fly-ways among these areas are always good.

Both Jack and Sam have hunted the roosting areas where there is always plenty of fast shooting—*while it lasts*. But they found it doesn't last long. That is, the crows are smart—smart enough, as a rule, to find a new roosting area. They seldom use the area again after it's once been hunted. For that reason, it is better to shoot on a flyway several miles from where they roost. This will enable you to shoot at the flock all winter.

Another good spot is the feeding area. That's what Sam prefers and that's what he selected for this trip. And, the feeding grounds that he selected was the city dumps. Garbage dumps provide lots of food for these scavengers. And remember! When you are hunting here you are not tramping down expensive agricultural crops or scaring the farmer's cattle. Sam, and Jack, too, have found that hunting is permitted in many city and county dumps whenever they are located outside the city limits—and most of them are. When hunting was not permitted, they have been able to hunt the flyways to the dumps on farmland.

We arrived early and set-up while it was still dark. This was not to keep our arrival secret; it was to give us time to get all set-up and be ready to shoot when the first crows arrived for breakfast.

Sam felt the best place to set-up was in a heavily-wooded area among the cottonwood trees and Hazel brush. This was just behind an eight-foot levee on one end of the dumps. This would give us the best natural camouflage, although it was a considerable distance from the flyway between the roosting and eating grounds. But Sam figured that crows, being easier to call than ducks—and possessing a lot more curiosity—would fly over and investigate our efforts unless they were hungrier than usual. That was his strategy—and it worked!

We set decoys on the levee, and in low and high trees. In order to get the decoys up high, Sam used a 20-foot bamboo pole. Simple wire hooks added to the decoys made them easy to fasten on high limbs. All totaled, we had 24 crow decoys spread out for about ten yards. Then, Sam set out the crow's natural enemy—an owl decoy—about 40 feet away.

Sam used to use a live owl. He had a leash on its leg and would place it in about the same position as he had placed the owl decoy. Sam said, "That live owl really brought in the crows. But, he was lots of bother. For exam-



ple, it took one pigeon a day to feed him. And he was too mean. Too dangerous to have around . . . particularly with the kids in our neighborhood."

Sam hasn't used a live owl in two years, but with his electronic calling equipment the wary crows come in anyway. I asked Sam if he had ever tried calling. He answered, "Yes, but I never seemed to get the 'hang' of it. I like to hunt crows. But without decoys and good calling, crow hunting is pretty slow. That's why I use the record player."

Sam had a record ready. A "greeting" record. We waited for the sky to lighten and the crows to come. We didn't have to wait long either.

Sam, crouched among the deciduous trees, had the turntable within arms reach. He started the battery powered machine, turned up the volume, and a greeting "claw-claw-claw" came out of the loudspeaker centrally located among the decoys.

Would the hungry crows, coming in on the flyway over a quarter of a mile away, hear the greeting? Would they



answer? Would they come to our deeks?

Yes! You bet they did! There were 23 in the flock. The first crow, a straight incomer, was headed just where we wanted him. The others were following. Jack was ready with his Browning 12-gauge over-and-under; Sam was just about ready to release the safety on his Model 21; I was 20 feet to the rear ducked behind an impromptu set-up with my camera cocked. I can't say just what Sam and Jack were thinking, but I fully expected to get an action picture with a minimum of three or four dead crows falling in mid-air. To shorten a long story, we were all disappointed.

What happened? Well, it all boiled down to this. There was only one spot in the open that was any good for picture-taking. So with a few sticks and my raincoat, I threw up a quicky blind. My host had been too polite to tell me that it didn't look natural to man or crow—and when it comes to intelligence, crows seem to out-smart ducks. Those crows left for one reason—I spooked them.



I started to pile some brush around my blind, but more hungry crows were zooming in for breakfast. I had to do something and do it fast. This is what I did.

I quickly rolled up my raincoat, and knocked down the supporting sticks, and tossed them back on the pile where I had gotten them. Then I dove into a thicket of Hazel brush. This was no good for picture-taking, but at least I wasn't sticking out like a danger signal any longer. This only took a few minutes, but seemed like an hour, and of course those crows didn't come anywhere near us—while I was moving about. But things soon looked better. A third group was on the way.

Sam was crouched on his knees, low to the ground. In his camouflage raincoat, I had to agree that he blended in well with the deciduous trees and the dry grass. Jack, wearing a neutral-colored gear about 20 feet to the left, seemed to fade into the pile of brush he was crouched in.

Earlier, I had asked why they didn't  
(Continued on page 70)



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**PULL!**

By **DICK MILLER**

**H**OW DO YOU CALL for a clay target? This question might sound like a strange one to the veteran clay target gunner who has long since forgotten his first few times at the gun club, but it's not quite that simple to the novice. After all, if a visitor from another planet were to be suddenly dropped behind the trap line at a skeet or trap shoot, he would very quickly conclude that this sub-species of the human race had very strange ways of communicating with one another.

He would hear such cries as "Pull", "pull it", "let it out", "Mark", "Mark it", "yo", "yow", "yi", "eee-yo", "eee-yi", "now" and a host of other noises which sound suspiciously like the mating call of the lesser pterodactyl, all of which translated into simple English are a command to the puller to push the button.

This leads to the conclusion that since thousands of shooters yell "Pull" when they want a target, why doesn't someone yell "Push" instead, because that is a more accurate description of what happens in this day of push-button living. Of course, the command "Pull" is a hold-over from the days when the puller actually pulled a lever to release the shooter's target. So, why not "Push", today? (facetiously, of course!)

If there is one steadfast rule regarding calling for a target, it is that you should yell something loudly and clearly enough so that the puller cannot mistake your intentions, and can easily hear you. The number one trauma in the life of the target puller is the shooter who does not call loudly enough for the puller to hear him over the crowd or other noises, and then glares at the puller when the target does not appear on command.

Many shooters, especially trapshooters, develop a loud bark or yell which is calculated to galvanize the puller into sudden action and to eliminate slow pulls. Their theory is that a sharp "bark" or similar cry will get a target more quickly than a long, slow, rumbling call, and this theory does have validity in my experience. It is partly for this reason that I am of the "ee-

yipe" school of callers, with emphasis on the "yipe".

I will admit that one friend did tell me that I would be better off yelling "yipe" than "eee-yipe", because some pullers would react more quickly to the "yipe" than they would to the "eee", which may be true. Shooters use other types of calls for many personal reasons. There has always been the theory in trap that finching could be eliminated or sharply reduced if the shooter continues his call until the bird is broken. When I began finching, I tried this, with some success, but finally had to settle, after trying all the other known remedies, for the release trigger.

Another shooter friend once told me after I had a bad day, that when I yelled the "eee" portion of my characteristic "ee-yipe", I jiggled the barrel, which is not good. To keep from jiggling the muzzle, I went to the mating call of the bull elephant, but I still missed targets, so I went back to "eee-yipe" so that at least I could miss them comfortably.

In conclusion, if you are not getting the target when you call for it, you get too many slow pulls, or a puller tells you that he can't hear you, your scores should improve if you will develop a loud, clear, authoritative call that will not only cause the puller to react but will give you confidence. It doesn't really matter what you say, but you should remember that the vocal chords are so formed that some sounds emerge with more ease and clarity than others. A little experimentation should determine the right combination for your personal needs.

• • •

I never cease to marvel at the treasure trove of human interest and color stories that can be found in the seemingly so mundane source as reports of a clay target shoot. And, I can't for the life of me fully understand why the media do not cash in on this feature story gold mine.

It is certainly true that the "man bites dog" approach to news reporting is more prevalent than ever. By that I mean that intense competition and shrinking revenues force the media



to lean heavily on the man bites dog approach.

Try this test on yourself. Pick up your daily newspaper, and notice two news stories. One story said that one of the thousand students at Liberal U set fire to the dean's beard. The other story said that 999 of the thousand students at good old Liberal U crammed the books today in search of an education. Which story will you read first? Will you read the second story at all?

Try another test for kicks. Your favorite TV or radio newscaster intones in dulcet voice that five of the five thousand students at Ivy Hall held a "lie-in" in the chancellor's private bath-tub. Is your attention riveted on the tube or the speaker?

Try it another way. The same favorite newscaster pronounces in pearly tones that 4,995 students at Ivy Hall behaved like ladies and gentlemen, and that the only untoward behavior observed today was that the girls seemed interested in the boys, and the boys obviously were attracted by the coeds. Might you pick this moment to go get a drink or check your bathroom? That's what I mean by today's even greater ascendancy of the old "man bites dog" theory of news reporting. Now, back to the man bites dog element in shoot reports.

The May issue of TRAP & FIELD carried a report of a testimonial shoot for Pliny "Pop" Day, hosted by the National Capital Gun Club of Washington, D. C., on the occasion of his ninetieth birthday. It is not uncommon for society to honor any of its citizens who attain ages past the allotted three score and ten, and perhaps even the account of the shoot was interesting only to shooters, or more especially to the shooters who were there.

But, I read the box score and noticed that this same "Pop" Day was not only physically present for the testimonial in his honor, but shot the program at the age of ninety! Not only did he shoot the program, he broke eighty-one of the hundred 16 yard targets, and cracked seventy-six of the hundred handicap targets. These are not tournament winning scores, but neither were they the lowest recorded for the day, by a lot of people who were a whole lot less than ninety years old.

And there is more. Pop Day has enjoyed trapshooting for more than sixty-five years, more than many lifetimes. How many other sports can offer a man or woman sixty-five years of tournament competition?

The same issue of TRAP & FIELD printed another shoot account which had in it an element long used by sports writers as a favorite man bites

dog story. When a baseball rookie hits a home run his first time at bat in the big leagues, the whole world reads about it the next day. That's a man bites dog story of the first water. If a bell-boy at Wimbledon were to jump out on the center court and win a trophy, we might read about it for weeks.

The first time a caddy would emerge from the gallery and win the U. S. Open in golf could "stop the presses" in most of the known world, and bring about radio and TV bulletins.

So, the media could have had a field day in the process of reporting that during the Florida State Trapshoot at Sarasota Gun Club, Kurt Rexford, a fourteen-year old trap boy crawled out of the traphouse long enough to win two trophies.

Why didn't the exploits of Pop Day and Kurt Rexford get this kind of all-out treatment by the media? Possibly because the media didn't hear about these stories.

I know a lot of newspaper, radio, and TV men. Some of them are the hard-boiled, cynical newshounds stereotyped in movies about hard-boiled cynical newshounds. Most of them are normal people, just as you and me, who do their jobs and do them well. They have one characteristic in common. They all know a good story when they see or hear one.

Their other common characteristic is that they can't know or hear all that's going on, and have to depend on many sources for a tip on a good story. This is true whether they work for a little weekly newspaper or a tiny fifty-watter in the TV or radio field.

I learned this many years ago when I rather diffidently approached the Chicago office of one of the nation's most prestigious news services with a couple of items about shooters and shooting. One of the items made the wires as a full-fledged feature story, and the other made the cover of a Sunday magazine section. Both the stories had been floating around Chicago for months. All they needed for maximum exposure was for them to be brought to the attention of people who could and would do something.

Which of the many man bites dog stories you know about shooters will you pass on to someone you know in the media? And, if your media man wants to know just how big this game of shooting is, you might tell him that in trap alone, there were 567 clubs registering targets (holding sanctioned tournaments) in 1965. Just five years later, there are 928 clubs conducting tournaments. Your media man could see a story in that kind of growth above and beyond the human interest angle.

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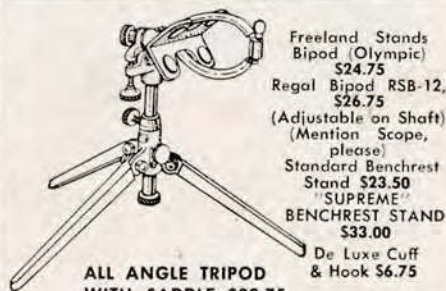
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## SHOOTING IN WIND

(Continued from page 35)

cate it was coming in from 4 o'clock!

In Montana, I used to shoot marmots across a narrow canyon. The range was not more than 350 yards and the game was not particularly wild. Many is the time I have hunkered down in a comfortable jumble of rocks and noted I had a 9 o'clock breeze on my side of the draw while on the other, by observation through the big rifle scope, I could see the wind was blowing up out of the canyon from 6 o'clock. Shooting across that canyon was always a mysterious business and those changeable mountain currents made the game really sporting!

The deflection of the bullet is caused by its lag or air drag. This is measured by the difference in actual flight time and what that time would be if the bullet was fired in a vacuum, where it would lose no velocity but retain its muzzle speed throughout the range. The problem is to reduce the lag and we know something about how to do that.

To begin with, the bullet with the best aerodynamic shape together with good sectional density and a good ballistic coefficient gets down range with less lag time than others not so happily blessed. A lot of experimentation has shown us that bullets with a long spitzer point and a pronounced boattail have the best configuration for wind bucking. Too, the bullet has to have plenty of weight. In the .30 caliber, as example, a weight of 200 grains is the maximum, and those thirty caliber long pointed numbers with 6-deg. or 9-deg. tapered heel, of 168-gr. to 180-gr. are even better.

Then these bullets must be given all the velocity they will stand for with a slug of good ballistic coefficient the higher the velocity the less lag time and the less deflection suffered from the wind gusts.

Like so many things there are some factors in the equation which loom pretty large. While we know that if we take a given bullet of good aerodynamic configuration and increase its weight and at the same time step up the velocity we'll finally reach that point where pressures run too high. Then we've got to either cut back on velocities or reduce the weight of the projectile. We just simply cannot have our cake and eat it too. As an example of this the National Match 7.62mm 168-gr. bullet has the ideal long spitzer point and is boatailed. It can be driven at 2600 fps MV and at 300 meters will indicate a drift of 8½ inches in a 10 mph wind coming from either three or nine o'clock. The 200-gr. bullet, with same shape, and driven at 2450 fps MV will indicate a drift of only 7½ inches. The heavier slug is a trifle the better but you note that we have had to reduce velocities to keep within our pressure limitations.

Again if the 168-gr pointed boat-tail is fired against a 170-gr. round-nose bullet of the kind usually shot in the old .30-30, it looks infinitely better. It will only drift 8½ inches as we have indicated in the 10 mph crosswind. The blunt pointed round-nose will be blown out 20 inches. Here the difference is in aerodynamic design, with the 168-gr. by far the better.

TABLE A

300 Magnum	200-gr	3000 fps MV	64 inches
	180-gr	3150 fps MV	72 inches
	168-gr	3250 fps MV	74 inches
.30' 06	200-gr	2575 fps MV	85 inches
	190-gr	2675 fps MV	88 inches
	180-gr	2700 fps MV	90 inches
	168-gr	2875 fps MV	96 inches
7.62 mm NATO	190-gr	2550 fps MV	92 inches
	180-gr	2600 fps MV	96 inches
	168-gr	2750 fps MV	98 inches
7 mm Magnum	150-gr	3200 fps MV	67 inches
264 Magnum	140-gr	3200 fps MV	60 inches

The long spire-pointed bullet is an accepted design shape for most of our hunting bullets and certainly all of our target loads. Some bullets are much more pointed than others. Few of the hunting types have boat-tail rear ends, this is saved as an exclusive feature of the target load. This tail configuration is for very long range shooting and actually the boat-tail is most fully effective after the slug has dropped below the speed of sound, as when firing at 1,000 yards. Seldom indeed does the huntsman shoot at such long yardages as to see his bullet fall below the speed of sound! For that reason it is a rare hunting round with a tapered heel on the slug.

With some of our more popular hunting cartridges, a fair approximation of the amount of wind drift that will occur in a 10 mph wind at 1,000 yards is shown in Table A.

Some of the old timers had the necessary weight of ball alright but because of a lack of velocity and a poor ballistic shape did not do so well at the long range. The .50 caliber buffalo cartridge with its 500-gr. bullet would drift 3 inches at 100 yards in a 10 mph wind at right angles; and 25 inches at 300 yards, 75 inches at 600 yards and 18 feet at 1,000. How the old buffalo runners compensated not only for the arching trajectory of the 500-gr. slug which had a starting velocity of about 1350 fps, and then calculated the windage at average shooting distances is hard to comprehend. Shots were usually about 200 to 300 yards and even at these distances they had to contend with bullet drift which amounted to from two to three feet.

There are other older cartridges not quite as venerable as the .50 Sharps, that are interesting on the score of wind drift. The .220 Swift, a real whiz of a cartridge thirty-five years ago fired a 48-gr. bullet which had a fine spitzer front end but was woefully weak on the score of sectional density and a decent coefficient of form. Despite these drawbacks the Swift would drift only .7" at 100 yd; 3" at 200 yd; and 12 inches at 400 yd in a 10 mph wind. The average Swift user got pretty clever at holding not on the crow perched high in the yonder snag but along its edge to compensate for the breeze.

The .270, a popular gun since its introduction, with the 130-gr. bullet at 3100 fps MV, could be expected to drift a half-inch at 100 yd; 2 inches at 200 yd; 4.75 inches at 300 yd; and 10 inches at 400 yards. It was a good wind-bucker and the excellent shape of the bullet, even from the first, together with good ballistic coefficient

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accounted for its performance. Another caliber that also started its bullet at 3100 fps MV was the now obsolete .219 Zipper. The cartridge contained a 56-gr. round nose bullet, made for the tubular action of the Winchester Model 64 lever action rifle. While the bullet was kicked off at a good velocity it had mighty little else going for it. It had poor aerodynamic form, what with a blunt front end, little enough weight, poor sectional density and a bum coefficient of form. At 100 yards it would drift in our proverbial 10 mph breeze, by 2 inches; at 200 yards this was up to 6.25 inches; at 400 it was 16 inches.

The muchly abused .30 '06 load with the 110-gr. round nose bullet was still another dog. It got off in high with a 3375 fps MV. But this speed was a sham and an illusion, it tapered off with every passing yard and as velocity was shed the bullet was more and more effected by any cross currents. At 100 yards it would drift 1.60 inches; at 200 yards, 5.6 inches; at 300 yards, 10.50 inches; and at 400 yards 15 inches. I can remember before the war when we did not have all the manufacture of bullets that is such a boom today, we'd load with the 93-gr. .30 cal Luger bullet in the '06. This was supposed to be just the huckleberry for jackrabbits, hawks, crows and buzzards. What the wind would do to the flat-ended slug when it got beyond 200 yards was really pitiful! Another one we sometimes tried was the .32-20 bullet at 100-gr. weight. It was made to be loaded in tubular-magazine guns and had the sorriest possible nose design for wind-bucking.

All this talk about wind drift is very well and the figures, even tho all of them are only approximations and must be taken with a grain of salt, are worth study, the facts are that a fellow has got to know how fast the wind is blowing in any given situation. There is the real rub! We cannot see the wind and can only judge its velocity by what it does to our hands, faces and the back of the neck. By the appearance of things like sailboats, windmills and milady's skirts. By the action of cigaret ashes, dust, moving sand, and leaves, grass, weeds and bushes. One shooter will look down range, feel the currets in his ear, and opine the velocity is 10-12 miles per hour. Another gunner right beside him will reckon it is only 8 mph, with gusts up to 12-14 miles per hour. Who is to say which knows the most about the breezes?

Col. Whelen, writing in "Small Arms Design and Ballistics" offers this little table to determine wind velocities.

1 mph	Hardly appreciable
2 to 4 mph	Light breeze
10 to 12 mph	Stiff breeze
14 to 18 mph	Strong wind
20 to 25 mph	Hard, strong wind. We pull our hats down and lean against it.
Over 30 mph	A gale. Too strong for rifle shooting.

These descriptive terms might be of some use to the target marksman but of not too much worth to the hunter. When he is confronted with a shot which is going to require hold-off he has only scant seconds in which to determine how much deflection he is going to induce in his aim. There isn't the time to either screw in wind-age corrections nor tinker with the scope. He has to hold for it and to do this he must decide very hastily what that hold-off is to be. With the average gunner this is apt to be pretty sketchy. He will have made a hurried estimate of the range, a guess we shall say that it is between 400 and 450 yards—hardly a gunner lives who can estimate more closely—and he knows the wind is coming in at right angles and then he makes another hurried estimate that it is probably fifteen miles per hour. The game is a bull elk, a walloping big rascal, and standing broadside, head down, feeding. The rifle is the 7mm Magnum, with a factory load of 175-gr. Corelokt, driven at the muzzle some 3070 fps, a good wind-bucker and sighted for 200 yards so that at the 4-450 yard range the bullet will drop 20" and wind drift will be 16".

The time to make these calculations is measured in seconds for game, and especially a trophy-size bull wapiti, which is mighty spooky and simply does not stick around while huntsman makes some hasty calculations.

These kind of shots are offered to all of us sooner or later and when they come, the far-thinking sportsman will be ready for them. He will have used care to go into the field with loads that contain a bullet of good aerodynamic configuration, a slug with plenty of weight and good ballistic coefficient, and driven at optimum velocities. Such a bullet as we've been pointing out, is a cracking good wind-bucker. It simplifies the job of hitting at the extreme distances. Beyond this the shooter ought to practice in the wind, learning for himself what happens to his shot at 4, 5 and 600-yd. ranges, and by doing this shooting under conditions of wind he will be learning something about wind velocities. A knowledge bound to stand him in good stead some fine day when the great elk is out there at 450 yards, the wind is 15 mph, and a hit is an absolute must!

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## TAMING THE 5MM

(Continued from page 29)

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good cartridge which has also gone under the name of .22 Remington Special. It is a longer and chunkier round than the standard .22 Long Rifle. Only properly chambered and bored rifles can handle this caliber because of its larger diameter bullet and cartridge case. No rifles have been chambered for this round in many years. Here was a good basic case size from which to start.

It would be foolish of me to dodge around in this story and ignore the Winchester .22 R.F. Magnum. I've tested it, written about it and I like it. I have three rifles for it. Now all my cats are out of the bag and all cards face up. The Winchester folks had parallel problems of design. Their .22 Magnum is basically a lengthened and strengthened .22 W.R.F. case. In fact I have often recommended firing the .22 W.R.F. cartridge in .22 Magnums as a low cost and non-destructive squirrel load. Please remember that bullets for both the .22 Magnum and the .22 W.R.F. are *oversize* in comparison to the standard .22 Long Rifle which measures .222 to .223 in diameter. The .22 Magnum bullet was made .2245 in diameter to preclude the accidental (or intentional) use of this high pressure cartridge in the weaker actions designed for standard .22 cartridges. I'll release another cat by telling you that Remington tooled up for, and produced a small quantity of .22 Winchester Magnum rimfire cartridges. Almost immediately, they thought better of it and recalled the whole batch from the distributors and retailers shelves. You cartridge collectors can stop drooling; they got most of it back! There was no fault with the ammo, just a change of mind. Besides, I like to keep a few secrets to show that I know how. Now then, this digression into the .22 domain has its own purpose. It lets us see that the Remington people had similar thoughts in regard to basic brass. The 5mm Rim Fire Magnum by Remington and the .22 Rim Fire Magnum by Winchester are totally unlike and completely unrelated to one another and yet they were conceived from the same basic brass. While you are figuring that out I will quickly jump back into the problems of the 5mm design.

When a new cartridge is created, there are always a flock of clowns who are anxious to make one up. They often do this with a total disregard for their own safety! They re-cut chambers, screw in different bar-

rels, grind away metal and all too often come up with a gun that will chamber and fire the new round even though the breeching mechanism does not have the proper support nor the strength to *contain* it! Sad to say, these careless creations can result in consequences so dire that they reflect unfavorably on all shooters and cast serious shadows on the shooting sports we all enjoy. Perhaps this is why the Remington engineers decided to undergo the added expense of creating and tooling up for this entirely new bore diameter of twenty caliber or more correctly, the 5mm!

The new size reflected other considerations as well. It was decided that .20 was the smallest practical caliber in a *rimfire* (Note italics) that would give sufficient striking energy through workable bullet weight to properly handle the small game for which it was intended. Further, the smaller diameter combined with a bullet weight similar to standard .22's would result in a higher sectional density and therewith a better ballistic coefficient. These are the technical terms which indicate the bullets ability to retain a higher velocity over extended ranges with the resulting improvement in striking energy at every distance. Simply a matter of momentum. You take advantage of it by making the projectile longer and slimmer to cut down on air resistance and you gain improved performance at game hunting ranges.

The next consideration is the shape of the case. How about a .20 caliber straight case? To hold the necessary powder charge it would have to be too long and ungainly. Workable but wierd. Forget it! We have already hinted at the .22 Remington Special or W.R.F. cartridge case. That was the answer. It became unique when a shoulder was produced by necking down to .20 caliber. This case diameter could hold the required hefty charge of powder. The shouldered shape would improve combustion. The new .20 caliber would guarantee improved ranging performance. That about does it. At this point I will stop referring to the new cartridge as .20 caliber and use the metric designation with which the Remington engineers chose to christen their *new* baby. Meet the 5mm Remington Rim Fire Magnum!

We now find another face in the picture. He is Larry Scott. Larry heads up the Ammunition Design De-

partment for Remington at the Bridgeport, Conn. cartridge division. His staff people are involved in basic design, beefing up the case, working out manufacturing methods and tolerances and any number of associated problems. So far we have a rimfire, shouldered brass case in 5mm that looks just like a baby high power centerfire. Now then, how about a bullet?

Here again, a number of possible combinations come under study and consideration. The final choice was a precision bullet that might at first seem to be too expensive a type for a rimfire round. Remington chose to use the super accurate "Power Lokt" bullet that had already established a fantastic record for accuracy and field performance in powerful centerfire rifles. Never before used in rimfire ammunition, the new bullet is a thin jacketed hollow point with longitudinal nose cuts which extend all the way down to the crimping cannelure. Here was a real performance-plus projectile. The best!

Now we have the new 5mm Magnum, a cartridge created in 1967, prematurely announced in 1968 and proudly possessing the three P's: Precision, Performance and Power! Along with this came an unwanted P; Problems! The birth announcements were withdrawn and all the hoopla of the 5mm fell silent.

It was the plague of the P's. The problem was power, and with it, pressure. The miniature magnum was a tiger that was difficult to cage; "contain" is the proper word. Our engineers, thinking of the shooters safety, realized that they had the most powerful rimfire bolt action rifle anywhere but they were not satisfied. They wanted to seal *this* cartridge head more securely so that any random leak in the cartridge rim or head would offer no problems. This 5mm was easily the hottest rimfire ever created. The standard breech pressure was very close to the operating pressure of a .30-30. The special high pressure proof rounds were giving pressures in the .30-06 range. Remingtons excellent 580 series of .22 rifles had all the breeching strength needed but it was felt that the area around the bolt head, with its twin extractors, was not giving the needed support to the powerful 5mm.

Three rifles had been created to handle the 5mm. They were the 590, a single shot, the 591, a box magazine repeater, and the 592, with a ten round tubular magazine. The bolts, however, were basically the same design as the 580 series in .22 caliber. Test rounds gave evidence of the need for greater support to contain the

5mm and a "hold" order was placed on the new guns. Back to the drawing board!

The problem was to eliminate the extractor slots, retain a tight fit of the firing pin and omit the extractor cut in the barrel that exposed the rim. As it turned out, the extractor hook itself was taken out of the breeching picture. Here's how it was done: The barrel was counterbored to completely enclose the rim in steel. The bolt face, flat, with no cuts, now covers the *entire* base of the cartridge. A new dual action ejector has been closely fitted into the left side of the breech where its inside face becomes a portion of the chamber wall. Its rear surface is part of the rim counterbore. When the bolt is opened, *this* precision ejector bar moves rearward with it to withdraw the cartridge from the chamber about one quarter inch and then snaps back. The extractor hook, on the right side was kept out of contact thus far by riding up a ramp angle to await its turn at work. It now snaps in behind the rim and completes the extraction and ejection of the spent case. It was this engineering modification and the necessary production planning that held the 5mm caliber in limbo and delayed the release of rifles for two years!

Now the rifles are available. The difference in design and the precision fitting of the 590 magnum series as compared with the .22 caliber 580 rifles must be compensated. The new magnums cost about fifteen dollars more in comparable models. I feel that they are well worth it. The single shot has been eliminated. These rifles should be scoped to take advantage of their uncanny accuracy. Many 5mm rifles will stay within one minute of angle (about one inch) in 100 yard groups. Furthermore, the report is so light that it will not be found objectionable in farm areas. It revives the joys and sportsmanship of stalking chucks and crows to within 150 yards with the knowledge that its 38 grain Power-Lokt bullet will deliver the goods. The remaining velocity at that range is greater than a .22 at the muzzle. You'll hear of 200 yard shots but 150 is about the limit for game up to fox.

When the first 5mm Magnums were to be released in 1968, they were to be identified by a red-orange pistol grip cap. The gaudy color was dropped in favor of a cap which resembles East Indian Rosewood. It looks much better and distinguishes the magnum series. Stocks on these rifles are excellently formed with Monte Carlo combs and long, comfortable forearms. Now hear this. The lock time

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on these rifles is so fast that the 5mm bullet is about 3 feet out of the muzzle before the firing pin has struck on the average .22 rifle! It measures 1.7 milliseconds, or about half that of many "target" rifles.

The locking system features six husky lugs spaced in tandem pairs 120 degrees apart. They lock directly into corresponding lug shoulders which are hammer forged into the solid steel receiver. This gives a bolt lift of only 68 degrees for fast operation. To increase bolt enclosure on these magnums, the subtended angle of the ejection port opening has been reduced to just 60 degrees rather than the usual 180 degrees. The deeply curved triggers are set in a release mechanism which gives an extremely crisp and motion-free let off.

Yes, these are fantastic rifles for a fantastic cartridge. It took awhile from birth to final announcement but the people at Remington were doing the proper thing. They waited until every detail was right. This new 5mm cartridge is extremely fascinating to shoot and one I am sure you will like.

I have included the ballistic and sighting data in a separate box for your convenience. The Remington 5mm Rim Fire Magnum, because of its particular breeching needs, may not soon appear on the market from other makers. The cartridge box makes this important statement:

"The 5mm Remington Magnum is a high energy cartridge and must therefore be used only in the Remington Model 591 or 592 Magnum rifle or other rifle properly designed and chambered for this cartridge. It should not be used in a rifle or pistol."

An interesting statement and it means what it says. The ballistics we quote include some pertinent data on wind deflection to assist you in making those tough shots. Summing up, we can guarantee that you will like firing the new 5mm cartridge. It is unlike any rimfire rifle you have ever used. The light report belies its stinging speed, and its high accuracy can hypnotize you into leaving your belching big bores in the rack. It will open a whole new world of shooting sport. Try it!



### Ballistics: 5mm Remington Magnum

Sighting data: I recommend a telescope sight if you are to take full advantage of the high accuracy potential. Sight your 5mm to strike on point of aim at 100 yards. The rise of the bullet at the 50 yard midpoint will be one inch and the bullet will drop about 4 1/4" at the 150 yard range. These figures are very close approximations deviating slightly due to the variations in the height of the scope above the bore. To conserve ammo, a preliminary "roughing in" at around 30 yards will get you on the paper at 100 for the refining shots. Then you use groups of three holes to button it down. Here are the actual figures:

Range (Yards)	Velocity (F.P.S.)	Energy (Ft. Lbs.)	Trajectory (inches) 100 Yd. Zero
0	2100	372	Muzzle
50	1839	285	.9 High
100	1605	217	On aim
150	1400	165	4.3 Low

Right angle wind (15 M.P.H.) deflection at 100 yds = 5.4 inches

There you have it. You just hold on a chucks chest up to 100 yards. At 150 you hold on the head of a sitting chuck and the 38 grain Power-Lokt hollow point will strike the chest. The wind deflection figures will help you estimate holdoff in a breeze. Enjoy your 5mm Magnum!

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## DO YOU NEED HANDLOADS?

(Continued from page 33)

bering and extraction easy, but factory cases and loadings are very uniform and well within these limits.

A problem for many shooters who use only factory ammunition is what particular type of ammunition to purchase for a specific use. Handloaders talk a lot about bullet weight, bullet type, powder and amount, as well as primers used. The handloading game hunter as well as the target shooter does have a large variety of caliber and cartridge sizes to choose from. However, most ammunition companies now make these choices available in their loadings. They make a fairly heavy weight bullet that is used in target work. These bullets are made for accuracy and are not really structured correctly for game use. Usually this weight bullet is one of balanced exterior ballistics, having enough area to allow good barrel contact and stabilization plus windbucking characteristics. Some are open point and others are of nearly solid jackets. The Remington Power-Lokt match bullets are of this type. They can be had in .224 and 6 MM Remington calibers and they are most accurate target bullets and also very good on varmints and predators. Most factory loaded target (match) bullets are made for military match shooting and are limited to the .30-06.

Varmint shooters now have a wide assortment of loads to choose in most small, .224 calibers up to the .30-06. It is important when buying factory loads for game that you get those that carry the "game" structured bullet label. The lighter structured "varmint" bullet may kill game but all too frequently it either disintegrates on impact, spoiling too much edible meat, or does not penetrate deeply enough, allowing a badly wounded animal to escape. Too many shooters buying factory ammunition just go in to a store and ask the clerk for "A box of .243's," or whatever caliber he is looking for. Dealers or the employees too often know very little about the ammunition they sell or the needs of the buyer.

Most of the factory cartridges that use a .224 size bullet are intended for use on targets or varmints only, and not for deer size game animals. In many states the .224 caliber is illegal for use on game. There are .224 bullets that are structured for game of deer size but these are used only by the handloader. In the 6 MM (.243) size only cartridge loadings of 100

grains are intended for game use. Less than this they are for use on targets and varmints only.

In the states, the only .25 caliber commercial ammunition is the new Remington .25-06. Varmint loadings, with 87 grain bullets, are now available, but heavier structured 120 grain game bullets should be on the market by fall.

The 6.5 Remington Magnum was introduced with only the 120 grain loading, intended for light to medium game. They now have a varmint-predator load with 100 grain Power-Lokt bullet on the market. The excellent .264 Winchester rifle's reputation was badly damaged by hunters who used their 100 grain loads for game animals. Although a few instantaneous kills were made, too much wounded game got away. Winchester's advertising definitely warned buyers against using this load for game of deer and antelope size and that it was intended for varmint or predator use only. Their 140 grain load is strictly for game use.

(Continued on page 61)

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cylinders that give 465 FPS muzzle velocity for greater accuracy and impact. Adjustable rear sight, hardwood stock and thumb operated safety. Retail price is \$35.00 and includes cylinder and ammunition. Healthways, Dept. G-9, P.O. Box 45055, Los Angeles, Calif.

REMINGTON ARMS has just announced a special mid-year promotion of its Model 788 bolt action center fire rifle in combination with a quality 4-power scope. The retail price for the package is just \$99.95!



Model 788's included in the combination offer will be available in three highly popular, flat shooting calibers: the 6mm Rem., .243 Win., and .308 Win. The scope, complete with rings and mount is the popular Universal Model UE. Cash in on this extra value combination package today. See the items at your Remington dealer.

THE NEW 20 page catalog, just released by Gun-Ho Sports Cases & Equipment Mfgs., covers every item in the Gun-Ho line including gun and pistol cases, animal kennels, golf bag covers, and gift items. Also featured are national archery



and marksman champions who help field test every Gun-Ho item. Catalog is available free by writing to: Gun-Ho Sports Cases & Equipment Mfgs., Dept. G-9, 110 East Tenth St., St. Paul, Minn. 55101.

# SHOPPING WITH Guns

WITH COMPUTERIZED optics, the newly designed Sentry II provides a surprisingly inexpensive answer when a high-resolution telescope/spotting scope is required. Priced at \$54.50, the Sentry II is ideal for target reading, game finding, and anything else that normally requires the use of optics.



It is 12 $\frac{5}{8}$ " in length and has an objective lens of 50mm. Standard-thread mount boss attaches to camera tripod. May be ordered with 20X, 32X or 48X magnification eyepieces. Bushnell Optical Corp., Dept. PR, 2828 E. Foothill Blvd., Pasadena, Calif. 91107.

GOT ANY SURPLUS rifles around . . . like the 7.5 Swiss? Ammo can be a problem as you may well know. Norma has just received a large shipment of 7.5x55 cases to fit these rifles. List price is \$2.92 per box of 20. Loaded rounds will be available at a later date, along with complete specifications and prices. Shoot that Swiss rifle! Order from Norma-Precision, South Lansing, New York 14822.

THE NAVY ARMS revolving carbine was originally designed as a companion piece to the famous Army Revolver. It is in the same .44 caliber with a choice of a 16", 18" or 20" barrel. Weight is only 5 pounds. The entire gun is finished



in a deep rich custom blue with the exception of the trigger guard which is highly polished brass. Buckhorn rear sight, adjustable blade front sight. Overall 38" with a 20" barrel. Priced at \$125.00 from Navy Arms Co., Dept. G-9, 689 Bergen Blvd., Ridgefield, N.J. 07657.

POTOMAC ARMS has announced they have uncovered a cache of WWII battlefield pick-up helmets. The helmets are of French, Italian, German, and British origin and are ideal for collectors, decorating dens or for anyone wanting to capture the nostalgia of the last all-out global strife.



Potomac is going to sell three helmets at a clip—their choice—so the consumer may possibly receive two alike. The price of the package is a fantastic \$9.95! Potomac Arms Corp., Dept. G-9, P.O. Box 35, Zero Prince Street, Alexandria, Virginia 22313.

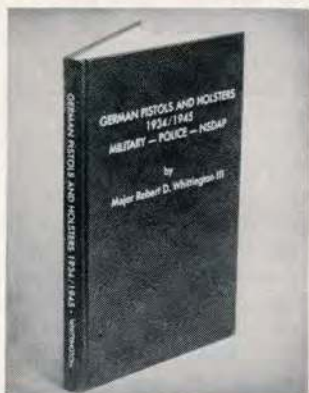
TO FULFILL THE demand for fine custom knives, Buck Knives, Inc. is introducing the new top-of-the-line Kalinga large game knife. New in concept, it embodies all of the high quality craftsmanship found in Buck Knives. The handmade model will retail for \$50.00 including sheath, and is packed in a luxurious velvet satin-lined case.



The knife measures 10 inches overall, with a 5 inch blade of the finest high carbon steel. The unbreakable handle of Micarta has a laminated wood-grain effect for added beauty. Buck Knives, Inc., Dept. G-9 1717 N. Magnolia Ave., El Cajon, Calif. 92021.

# SHOPPING WITH Guns

FOR THE GERMAN equipment collector, this new book, "German Pistols And Holsters 1934/1945, Military-Police-NSDAP", is a must. The book dedicates its 224 pages to the markings and identification of German equipment. Excellent photographs and illustrations throughout. The



author has been closely associated with firearms all of his life and presents his material in a concise and easy to read manner. A must for the collector or mild enthusiast. Brownlee Books, Dept. G-9, Route 1, Box 141, Benton, La. 71006.

PACHMAYR has introduced a pistol grip that gives the shooter sure control for the utmost in shooting accuracy. Made of medium hard rubber with a light-weight steel reinforcing insert, these unbreakable grips will fit all modern Colt and S & W revolvers. The grips may



also be cut or shaped to fit your hand. Available in large and small and in brown or black. For more information write Pachmayr Gun Works, Inc., Dept. G-9, 1220 S. Grand Ave., Los Angeles, Calif. 90015.

POLICE, RANCHERS, farmers and sportsmen who have to carry a rifle or shotgun in a safe and easily accessible place in their car will find Farber's Open End Gun Pouch the ideal accessory. It is fastened to the front seat by three strong



nylon straps and double "D" ring buckles. Easily mounted without tools. Made of highly durable red vinyl, it is lined with soft short nap pile for top gun protection. The Model 840-344 Pouch retails for \$7.95 from Farber Brothers, Inc., Dept. G-9, 821 Linden Ave., Memphis, Tenn. 38101.

THE LATEST OFFERING from Sierra is this new .30 caliber boat-tail, 165 grain bullet in .308 diameter. It has a hollow point designed for balance and quick expansion and deep penetration. The boat-tail configuration cuts drag and results in a flatter trajectory over long distances.



Available at Sierra dealers nationwide for \$5.85 per 100. Sierra Bullets, Dept. G-9, 10532 S. Painter, Santa Fe Springs, Calif.

NOW IN THE OFFING from The Wyoming Armory is a 1906 Smith & Wesson poster reprinted from the original. It is 16"x20" and is perfect for framing. This famous advertisement depicts a man with a matchlock and was distributed by the S & W factory to dealers for window display purposes. Catalog reprints now available are 1901 S & W, 1880 Maynard, 1885 Remington, and 1897 Marlin. Many others will be available in the near future. For more information write The Wyoming Armory, Inc., Dept. G-9, P.O. Box 2361, Cheyenne, Wyoming 82001.

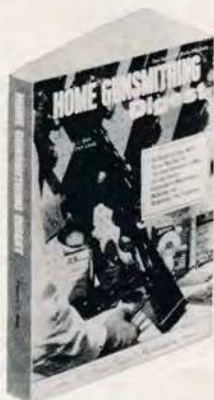
MAGNUM AND STANDARD .22 caliber Derringers in a highly polished nickel finish, set off by ebony grips are now available from High Standard.

Designed for safety as well as performance, the new Derringers are shock-proof and won't discharge even if dropped on hard surfaces. The double



action guns are engineered for easy trigger pull. The new Derringers are 5 inches long, have 3½ inch barrels and weigh only 11 ounces. Prices start at \$42.95 for the standard blued models. High Standard Mfg. Co., Dept. G-9, 1817 Dixwell Ave., Hamden, Conn.

WITH FORTY-FIVE chapters filled with choice morsels for the home gunsmith, this new book, Home Gunsmithing Digest, is a must. Edited by Tommy Bish, the book ranges through tools, techniques and



theory with a freshness that will delight the enthusiast. A must for gun owners interested in maintaining, repairing or reworking their firearms. Gun Digest Co., Dept. G-9, 540 Frontage Road, Northfield, Ill. 60093.

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## TEST REPORT: M-444

(Continued from page 43)

always fire first. The barrel firing sequence is reversed, of course, when the lever is pushed forward. Operation is smooth and easy, and the settings are positive.

It is the mechanical relationship between the selector and the automatic safety that might give rise to some confusion at first. This relationship is such that an over-under firing order cannot be set unless the safety is in the ready-to-fire position. Putting it another way, it's not possible to pre-set for a tight-barrel-first sequence unless the gun is carried with the safety in "off" position.

The other half of the story is that whenever the safety is returned to "safe" position, or whenever the top lever is actuated, the selector lever automatically returns to the under-over sequence. This arrangement is different, to be sure, and as Savage says, it calls for familiarity.

The selective single trigger on the Savage 444 is of the inertia-block type, which is to say that recoil is required for shifting the mechanism to engage the sear of the second barrel. Like practically all recoil-operated triggers, this one provides for manual shifting in the event of a squib load or an inert primer. When this happens, regardless of the firing order setting, the second barrel can be brought into play by simply flicking the safety back to "on," then forward to "off."

No trigger trouble was experienced with the test gun, and the pulls were quite satisfactory. For the under-over sequence, the pulls weigh 4 1/2 and 4 pounds, respectively, and possess almost no perceptible travel. Pulls for the over-under firing order run 3 1/2 pounds (with noticeable smooth travel) and 4 3/4 pounds (crisp). The trigger itself has a blued finish and is smooth faced. The guard is properly shaped at the rear to prevent finger thumping with heavy loads.

Presumably in the interest of holding gun weight to a minimum, the level ventilated rib (no ramp at the breech end) has a diet-thin width measuring only .275 inch both fore and aft. The beads are of white metal, the front one being of .115-inch diameter, the center one running .096 inch. This "slim-jim" sighting plane is surfaced with finely-cut knurling which does a good job of knocking out reflected light.

Speaking of gun weight, at an even

seven pounds (26-inch tubes, empty) this 444 is not what you'd call a dyed-in-the-cloth duck gun; not by any stretch of the imagination. Even the few extra ounces that 30-inch tubes would add wouldn't be enough to adequately tame the punchy short-magnum loads; and a steady diet of 1 1/4-oz. high-velocity fodder would certainly call for screwing on a good recoil pad to tone down buttstock authority. To be sure, the gun itself will easily stand up to the heavy stuff, but that's only half the story. There's still the human element to reckon with. As issued, this smokestick shines best as an upland gun, using either 1 1/8-oz. field or 1 1/4-oz. "pigeon" loads.

Although the 444 runs on the light side for an all-around 12-bore, its weight distribution could hardly be improved. When loaded, the point of balance occurs at the trunnion pins (barrel hinge joint), and this seems to impart just the right amount of muzzle steadiness for dead-on pointing and smooth swing-through. Some shooters prefer their upland guns to balance farther back, arguing that a tendency to muzzle lightness speeds pointing, but personally I find such guns to be much less positive in getting on the bird.

The stocking is classy and well proportioned, with a select grade of straight-grained walnut, medium-dark in color. The pores of the wood are extremely well filled, and the finish is semi-gloss in appearance.

The non-fluted comb has enough fullness to keep it from gouging the shooter's face. Pistol grip measures five inches along the bottom curve (from trigger to butt), is a flat oval in section and has a minimum circumference of 4 3/4 inches. As such, it gives a right comfortable "feel." The grip is not capped. Instead, it is nicely finished off in a sort of squarish style, and to my notion this adds a good deal more class than does capping with cheap plastic.

This scattergun buff considers the fore-end to be superbly shaped for top-flight pointing control. It is squarish in section over the lower half, while the upper sides feature 7/8-inch-wide fluting to accommodate thumb and fingers. Total fore-end length is ten inches. The release is recessed into the bottom surface.

Both the pistol grip and the fore-end are dolled up with what Savage describes as fine-line checkering. Be-

ing true, raised checkering—not die-impressed—it is as functional as it is decorative. The work is of good quality about 22 lines per inch.

The fit of wood to metal at the stock jaws and elsewhere leaves no room for complaint. Barrels and trigger guard carry a conventional blued finish, while that on the frame is dull by comparison—probably the result of lightly sand blasting prior to bluing. Engraving on the frame and barrel-breech area consists largely of scroll-type designs and, in keeping with what seems to be more or less common practice on guns in this three-bill price class, there is just enough of it to thwart the “bald-headed” look.

The Europeans traditionally favor a slightly smaller bore diameter than do the U.S. shotgun makers, so it came as no surprise when the “mike” gave readings of .724 inch for the 444’s under barrel, and .722 inch for the topside tube. These readings, by the way, were taken at a point five inches behind the muzzle.

Choke constriction for the IMP, CYL. barrel checked out at .012 inch, and at .019 inch for the MOD tube. Chokes are of the conical-parallel type, with the sections running about 1¼ inches in length for both tubes. Chambers and bores are hard-chrome lined to eliminate rusting and to simplify the cleaning chore. Chromed bores are usually less prone to a build-up of lead fouling, as well, when using non-shot-cup loads.

Savage bills the forcing cones as being of the long-taper type. My measurements disclosed that they have a length of about ¾ inch. This amounts to an actual increase of about ¼ inch

over what most 12-bore guns have. The theory behind long forcing cones is that fewer pellets are deformed due to jamming as the shot charge is swaged down to bore diameter and this is said to result in increased pattern density. Using No. 7½ shot, my test gun delivered 40-yard patterns that fully agreed with the amounts of specified choke.

Although I have not found it to be a prevalent shortcoming among today’s “name” guns, it’s still a smart move to check out any twin-tube job for barrel alignment. For many years I’ve made it a practice to do this from a rock-steady sandbag rest. This method virtually eliminates human error stemming from a case of “wobbles,” and the only element that can possibly creep in is that nasty bug known as flinchitis.

Insofar as the O/U gun is concerned, if the barrels lack the correct angle of convergence at the muzzle, the under tube is most likely to center its patterns several inches below the point of hold, while the over barrel will throw in the opposite direction. Considering the spread of the pattern, a divergence of only a few inches is of no great concern. Sometimes one barrel will print dead-on, the other one off. Cross-shifting of the shot patterns in the vertical plane (lower barrel shooting high and vice versa) is a much more rare occurrence.

Happily, in this matter of barrel alignment, the Savage 444 test gun not only made the grade, it was a *magna cum laude* situation. Both tubes were in absolutely total agreement. So it’s “hats off” to Fabbrica Bresciana Armi for a job well done.



## DO YOU NEED RELOADS?

(Continued from page 57)

The .270 Winchester loads in 130 grain and 150 grain are for use on game animals from deer size and up. The 100 grain load is a varmint or predator load. Remington also makes varmint or predator loads in the 100 grain size for the .280 Remington and 150 and 165 grain game loads for this same rifle.

The .30-06, and one can include the .300 Savage and the .308 Winchester in this group, using bullets lighter than 150 grains should be used for varmints or heavy type predators only. Loads from 150 to 220 grains are for game.

Next, we have the Magnum loadings, in such rifles as the 7mm Remington Magnum, the .300 Winchester

and the .338 Winchester. The fact that bullets were especially designed for the higher velocities of these new cartridges accounts for a large degree of these rifles’ popularity. It is well to remember that 7mm bullets used in the old 7x57 or the .280 Remington are not structured to stand the Magnum velocities.

Bullets for the 6.5 Remington Magnum and the .264 Winchester are also especially designed for these guns. Many handloaders do not realize this and continue to load bullets made for slower velocity cartridges in these new rifles—with very poor results.

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a .257 Roberts bullet made for 2600 fps, but an entirely new bullet. Probably it will work real well for the handloader in the .257 Weatherby Magnum.

This article is only a brief on the subject of factory loads for different types of game shooting. In general, the lighter game bullet loading is meant for deer size game and heavier bullet loadings are elk size or larger game animals. Most ammunition fac-

ories issue charts or booklets that tell what type game certain loads are for. A request can usually get you this information.

With the excellent factory loadings on the market today, it is foolish to maintain that a hunter must hand-load to get his game. Factory loads are so close in performance to the best of the handloads that it is extremely difficult to tell the difference.

## PEPPER FOGGER

(Continued from page 31)

lon of either the CN or CS liquid gas formulation will release the approximate equivalent volume of a concentration delivered by 40-50 of either civilian or military burning type tear gas grenades. During one hour of continuous operation (consuming seven gallons of formulation) a gas concentration the equivalent to that produced by three hundred burning tear gas grenades can be launched from a single machine.

The cost of a quart of tear formulation is about \$20. Burning tear gas grenades cost, on the average, about ten dollars each, so the economic factor during tactical operations is very significant. In fact, the acquisition cost of the Pepper Fogger unit is amortized by the savings incurred during the first usage when a gas concentration of the volume equivalent of 50 burning grenades, is launched. The contrast between the two methods of gas dissemination and operational cost is somewhat comparable to the spread between a candle and a light bulb.

The rapidity and size of agent cloud development has to be seen to be appreciated. It is at least comparable to that achieved from a large military type smoke pot. Wall to wall coverage of a city street area can take place in seconds. An entire city street for over a block can be wiped out in several minutes. Larger areas can be completely obliterated by using several foggers spread out so their clouds merge, under a favorable wind, so as to cover the entire target area. Tactically, the Pepper Foggers are best used in pairs. Under this concept one unit can be loaded with obscuring smoke, the other with CN or CS formulation. This enables a greater spread of minimum-maximum force capability. The Fogger unit can also be deployed from moving vehicles. The long snout can be placed out windows or doors on either side of a patrol car or from other police vehicles. This

tactic enables rapid clearing and denial of city streets and areas where vehicles can move freely. In fluid situations, where the foggers are moving forward with foot units, it is advisable to place men with each unit to provide protection for the operators. In sniper infested areas the operators should have shotgun protection and wear bullet resistant helmets, vests, and dark uniforms, etc.

There are at present three basic types of liquid loadings available: obscuring smoke for smoke training by police and fire departments and use as a mild degree of force to deny areas or achieve dispersal; CN, the milder, conventional tear gas for the next step up; and the more potent military agent, CS, for the most violent situations. As with all types of airborne chemical agents, best tactical results are achieved from a position upwind of the target area, out of rioter contact and rock throwing range. In a no wind situation, the gas cloud forced from the muzzle will have about a twenty foot range. The light weight and size of the unit enables easy carry and maneuver.

Decontamination of areas subjected to tear gas can be a serious after action police problem. This is not too critical a factor with either smoke or CN. However, areas subjected to military type CS concentrations, either from burning grenades or after use of dust type dispersers, will sometimes remain untenable for days. In inside areas, it may be weeks. CS, when disseminated in the extremely fine micro particle size from the Pepper Fogger does not create this decontamination problem. For this reason increasing numbers of police agencies are favoring the immediate, initial employment of the much more psychologically effective, and more potent, CS irritant agent.

Reports of successful police use from all over the world are constantly coming to the writers attention. Re-

cently in West Virginia, a Pepper Fogger was used through an open window to flush out a dangerous, armed insane man. During Black Panther sympathy disturbances at Yale University, the New Haven

lence. In terms of volume tear gas launch capability situations; a small department with a limited budget can "stand as tall" as larger police organizations.

There has long been a police need



Col. Applegate inspects units ready for shipment.

Police Department is reported to have used six Pepper Fog units to disperse 150 quarts of CS formulation, costing about \$2,800. It was estimated that to achieve the same results with burning grenades, provided a large quantity had been available and the manpower to throw them, over \$60,000 would have had to be expended.

Departments large and small have a definite need for this new gas dispersing device. The smaller the department, the more valuable the Pepper Fogger becomes. Its simple operation, method of dispersion, tactical flexibility and controllability of gas output makes up for lack of police numbers in dangerous, escalating vio-

for an instantaneous tear gas dispensing device that can be turned off and on at will, is relatively inexpensive to operate, quickly refillable in the field, and one that can quickly lay down large volumes of gas agent while at the same time holding enough chemical agent in reserve to meet most foreseeable contingencies. The Pepper Fogger meets all of these basic requirements. The General Ordnance Equipment Corporation of Pittsburgh, Pennsylvania, as in the case of their Chemical Mace, has once again contributed to world law enforcement, a valuable, significant, and highly successful item of police riot weaponry.

## MAKING A SCOPE

(Continued from page 27)

with filtered air at a constant temperature and humidity, at a pressure slightly higher than the atmosphere. This pressure prevents dust and moisture from entering with outside air when a door is opened. Before every shift begins work, the room is thoroughly wiped and vacuumed to remove any dust or debris created by the last shift. Clean clothing is required and dust is removed from worker's shoes as they enter by a special mat. During working hours, the air in this room is completely changed every few minutes and is filtered, dried, and heated or cooled

as necessary to maintain the prescribed conditions. This "clean room" operation is essential during assembly to prevent dirt and/or moisture from being trapped inside the scope.

Inspection is combined with every stage of assembly. Each involved operator is required to clean and inspect all lens surfaces, and to visually inspect all mechanical components. Some critical screws, nuts, and retaining rings are installed with torque-metered tools. Tolerances are marked on the meter faces and the operator is required to insure that every piece is torqued to the proper



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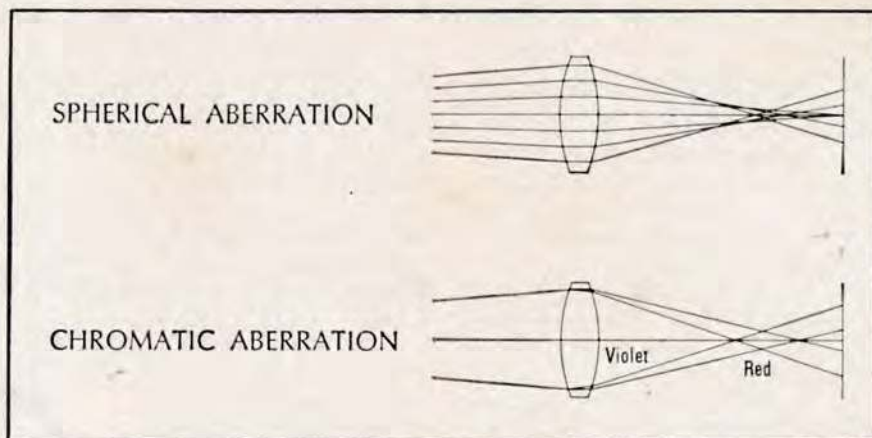
Final inspection is also conducted in the clean room so that any corrective action requiring opening the scope can be accomplished immediately, without allowing dirt or moisture to enter. First comes purging and filling the scope with dry nitrogen under pressure (very dry; dew point -70°F) to drive out all moisture. At the same time the scope is connected to a mer-

curry manometer which is used to determine whether all seals are secure. The manometer will register any loss of pressure which indicates a leak. Most important of all are the performance characteristics. If the performance tests, The scope is placed in a fixture and aligned on several optical test targets. Here the scope is checked for resolution, distortion, and aberrations. Adjustments are checked for positiveness, value, and backlash. Parallax is checked and adjusted to zero value at 100 yards. In the case of variable scopes, checks are made to insure that there is no significant change in parallax or any reticle position shift on target throughout the range of magnification. Throughout all this, all movable items are checked for freedom and smoothness while retaining the necessary resistance to

accidental shifting. Inspectors are also alert for any lens defect that might not have been visible until all the optical elements were assembled and aligned. It is possible for all parts to be within tolerance, yet to produce results out of tolerance after assembly. Statistically this is quite rare, but altogether possible. It is for this reason that final inspection and performance testing must be unusually exacting and entrusted only to the most experienced operators.

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## JARRETT OF ABERDEEN

(Continued from page 25)

excellent pupil and retained almost everything he learned about weapons and tactics. But during his off-duty hours he was constantly in the APG library pouring over old test reports of every kind of ordnance conceivable.

Jarrett showed so much interest and energy that Colonel Hatcher made him an instructor at APG. Because he had studied the past performances of many test weapons and had read through so much material, Jarrett was able to save the time of many people and dollars for the War Department when they would come up with a "new" idea. He could often tell them if it could work, and if not, why, as a result of the tests done on a similar project. Because he had so much interest in the subject, he was made Chief of the museum in addition to his regular Ordnance School duties. He also assisted Colonel Joseph Kane establish a Bomb Disposal unit at APG in 1941 and help train men to operate it.

Under the Lend Lease Act of Early WWII, the U.S. Army sent a boat load of American light tanks and other equipment and arms to Egypt for British 8th Army use. A large number of support personnel from the U.S. was sent along with the tanks. Jarrett, now a captain, was sent to Egypt as an ammunition advisor for the British GHQ and the 8th Army. He first conducted demonstrations of the new American weapons to the British troops, but soon found a fault with our 75mm tank gun ammunition, intended for use in the then brand new Grant Tank (U.S. M3 medium tank.)

The fuses of the shells would not function properly if the target was hit at any kind of an angle. Jarrett remembered that the fuses of The World War I French 75mm ammunition had a graze action, and learned that the French in Syria had had a supply and these depots were then in British control. Since he knew these would fit the U.S. 75mm shells, he arranged for thousands of the French fuses to be shipped to Cairo. For this and other ammunition work he was awarded the Order of the British Empire.

Working alongside of an Australian ammunition expert, he devised a way of turning down the rotating rotating bands on captured German 7.5cm armor-piercing shells, so that the shells could be used in the U.S. tank guns. Captured German shells were resealed

in the U.S. cases. It was in this way that the British achieved some ammunition equal to that of the Germans for use in the Grant Tanks. After shipping 100 rounds of this ammunition to Aberdeen for study, Jarrett was promoted to the rank of Major.

At this point Jarrett was sent to Eritrea where he went about salvaging captured Italian small arms, machine guns and artillery. He caused British instruction manuals to be written covering the use of American weapons and their ammunition. He organized a tank school near Cairo after the first shipment of M4 medium tanks was delivered, and taught armament and maintenance procedures to the British crews. In his spare time he marked captured items for shipment back to APG which had historical and ordnance technical significance. He also acted in the capacity of a bomb disposal expert, and once, when a large shipment of 105mm ammunition was received in damaged condition because it was badly packed in the U.S., he assisted in organizing a plant with some 5000 natives to reclaim the precious ammunition. To check the ammunition, two spare 105mm howitzer barrels were used. Rounds which failed to seat were taken apart, cases were straightened with wooden mallets on a mandrel, reassembled, rechecked and repacked. The ammunition was intended for the U.S. M7 self propelled Howitzer nicknamed the "Priest" by the British, and just then being introduced in Middle East by the 8th Army.

Beginning in November of 1941, the great tank battles of the desert emphasized the fact that the German 8.8cm anti-aircraft gun being used as an AT weapon, was far superior to anything we had and that British and U.S. armor was highly inadequate. Out of 1276 allied tanks sent to Libya, 674 were damaged and 274 were totally destroyed. Somehow Major Jarrett managed to get a hold of one of the "super guns", took it apart and shipped it off to APG for study. It was actually airmailed along with a 100 rounds of ammunition direct to Aberdeen from Cairo. By examining a great many destroyed and damaged tanks and assorted vehicles, Jarrett learned much about the capabilities of the German guns. He made complete reports, lavishly illustrated with photos, which he had made in his capacity as official photographer for the U.S. mission so that the problems

of inadequate armor protection could be worked out better at home.

Later, in January, 1943, a seven man Ordnance team went to Cairo, and later sent home over 3000 tons of assorted captured equipment for study. This team was the start of the Ordnance Technical Intelligence Teams that were later sent to all theaters of the war.

Prior to his return to the United States, Jarrett was promoted to Lieutenant Colonel to take charge of the Foreign Materiel Branch for the testing of captured enemy equipment which had been set up at Aberdeen. Upon his arrival in the United States, he found that no action had been taken on developing a delayed action fuse for the AP ammunition, and that the 100 rounds of German ammunition had not been tested upon arrival from Cairo. Jarrett raised the kind of hell that was so characteristic of him. Rank meant nothing to him and sacred cows were meant for slaying. Beginning with the Chief of Ordnance and working his way down from the top, backed by pure fact, he brought the "wrath of God" down upon those derelicts. This is the type of action he is so very capable of. Soon after, work began on testing and on the development of the new munition types. American tankers quickly received the needed improved equipment to continue the offensives. But a whole year had been wasted through negligence, at the time.

Before the end of the war, Jarrett was ordered overseas again, this time to Europe. There he worked with interrogation teams and combed the industrial and military areas of what was left of Germany, and became a collector again. Examination of the material that had value to us was begun after much of it was shipped to APG. Thousands of technical films were collected and sent to the Signal Corps Laboratories for copies, so that APG could retain the originals. Among the information gathered was that of the German V-2 rocket from the missile center at Peenemunde.

Before being separated from active duty, Jarrett was offered a permanent position in the Regular Army. Instead he chose to remain as a Civil Service employee at APG, and did so until his retirement in 1966. During the period following WWII, he built up the Foreign Materiel Branch and the Ordnance Museum and during the Korean War, he played an important part in evaluating Chinese and Russian weapons and equipment, comparing it with what the U.S. had, and making improvement suggestions so that our men would have the best

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in the world.

During the Korean War he trained the first Ordnance Technical Intelligence team which went to Korea, but in 1951 the job of training these men went to the Ordnance School. When he found serious shortcomings in our equipment, he was not shy about letting it be known, in spite of incurring the wrath of higher-ups who preferred not to rock the boat.

Also during the Korean conflict, a short sighted "Higher Authority" permitted another scrap drive, much the same as the one which took place during WWII. Many priceless museum pieces were lost to the melting pots as they had been during the first drive.

While he was away helping the war

white movies and tinted each frame, one at a time with a small brush and special paint under a powerful magnifying glass. Even today he is still actively engaged in making movies and slides about interesting ordnance specimens in the Museum or travels to places of note. Being highly skilled in model making, he has made many displays not only for APG but also for other museums around the world.

With all of his official duties Jarrett was able to live a normal social life with his wife and one daughter who is now married to an Army officer. His wife has always been a wonderful asset to him, and she has accompanied him on his many trips to Europe.

For a hard working and dedicated



Jarrett with U.S. T-8 anti-tank gun; never produced.

effort, his own large collection of planes and materiel suffered from lack of care. He had plans to move everything to his Aberdeen home but the high cost of shipping prevented it. Eventually he sold two planes and numerous heavy ordnance pieces and moved most of the rest to Aberdeen. He has seen three of his old planes rebuilt and in air shows around the country, and has the satisfaction of seeing some of his aircraft being cared for at The Aeroflex Museum in Newton, New Jersey, a museum dedicated to preservation of World War I planes.

All through his collecting years, Jarrett has always been a great photographer. Back when color movie film was so costly, he took black and

man such as he is, it was a hard blow to reach retirement age. Even harder was the fact that higher authority decided to do away with the Museum Building and use it for something else. All of its contents would have to be put into mothballs indefinitely. This was the last job that he supervised, and he did it as if it were his own funeral. Shortly after that, APG became just another testing facility now controlled by the Army Material Command. It seems as if all the Defense experts were and are looking ahead and quite apparently they don't seem to be interested in looking back or even looking around to see just what the competition is doing.

Colonel Jarrett disagreed with the authorities and is still doing so after a number of years. He believes wholeheartedly in the United States and they don't come any more dedicated than he is. He did not take this shelving of the museum as final. Instead at present, he is working toward the building of an Ordnance Center of Technology at APG which is being subscribed to by private funds and industrial funds. A non-profit corporation was formed in 1965 to so-

licit these funds. Getting this money and getting permission from the Department of the Army was and is a back-breaking, head pounding job of ever-vigilance. To persuade the Defense officials that the material in the Museum is still extremely valuable to our nation's defense is not an easy task, especially when so often they view it as just scrap iron collecting dust, and taking up valuable land. It cost a lot of lives to get most of this equipment. To destroy it would be so utterly senseless that it almost stuns the mind to think of it. If we don't pause upon our past and the mistakes we have made, we are in trouble. We can benefit not only by the mistakes we have made, but also by those of others who have waged aggression against the United States, and other countries whose sacrifices have made this colossal collection of ordnance possible for study.

If there is no other reason for keeping this Ordnance Museum intact, think of it as a grim reminder of the past and just what can happen to those who are not prepared to fight when necessary, with the most modern and up to date weapons possible. Poland, Czechoslovakia, France, Belgium, Luxembourg, Sweden, China, Malaysia and Burma, are just a few of the unfortunates that got "steamrolled" by the war machines of the late '30's and early '40's. If the United States is not prepared to win, we can't win. Without the aid of such men as Colonel Jarrett and the study-

test facilities which he set up, we cannot evaluate what the enemy plans, and more important, what he is capable of doing, technologically speaking. At this very moment, weapons captured from the Viet Cong are being evaluated and compared with what we have to offer our fighting men.

The Ordnance Museum needs contributions to initiate the new building program to preserve this fantastic array of equipment. Money is needed desperately to build facilities to house the equipment, some of which is now standing outside exposed to the elements. If Mother Nature is allowed to catch-up with the material, there is nothing that can replace the pieces once they are gone. At one time, a huge sale was proposed to raise money for the new building. But this had one great drawback; if portions of the equipment were sold, there would be no choice pieces left to put into the Museum. Fortunately, that idea has since been laid aside. The Ordnance Museum Foundation needs contributions from anyone and everyone. Colonel Jarrett is President of the Foundation collecting these funds, serving in that capacity without remuneration. He seeks only a new home for the collections, that they may be preserved for study by ordnance engineers, or seen by those of the general public who like to inspect such material. Every little bit helps, and donations are tax deductible.



## GUN NUT'S WIFE

(Continued from page 36)

My husband started showing me the difference between Colt and Remington pistols, explained the cap and ball procedures. We went thru magazines at home and he showed me hand loading and bullet molding procedures. I started to recognize authentic guns and reproductions by going to more shows and meets with him. I discovered I shared a new interest in something and a closer relationship with my husband than I had had in twenty-five years, when togetherness was replaced with buying homes, furniture, paying bills and raising children. Things so important and necessary.

On my second or third trip to a gun show, I spied a rifle with such beautiful lines—stock grain so fantastically gorgeous, so light and felt good to hold to my shoulder, and without even knowing what it was, I begged my husband to buy it for me. It turned out to be a small lightweight muzzle loader. That next day

we went out into the country . . . set up targets . . . and he started to fire some of his firearms. He had a big heavy muzzle loader and when it went "BOOOOOOOOOM," and made lots of smoke, I sure did chicken-out about firing mine and was sorry I ever bought it. But he coaxed me to try it and I was scared to death. It didn't hurt a bit and when I found I even hit the target paper, (I didn't even know where I was aiming), I got the biggest thrill and I tried harder the next time. My last shot for the day was dead center in the Bulls Eye, I'll have you know. I saw my husband look at me with such love and pride, since I was not only sharing in the thing he loved to do, but was enjoying it too, that we got even closer in that second.

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club to keep up to date on the hunting information and shooting services, etc. Sometimes we pack a picnic lunch and go all by ourselves. I found no matter how much my husband loves his smoker, he likes to have me by his side.

We have added many more guns to our collection. My hubby got some plain old wood and is working on a beautiful stock for a double barrel he picked up someplace. He got a piece of wood for me too and I am trying my hand at wood carving and

checking. I doubt if I will ever be good enough to try it on some of our stocks, but who knows . . . I sure am enjoying it and it's turning out pretty well, if I do say so myself.

Incidentally . . . I have met some women at these shows who are with their husbands displaying their collections and I envy them that I didn't start sooner. That's why I am writing this now to all you poor, poor wives of "Gun Nuts." If you aren't joining him . . . you should be.

## HUNTER'S NOTEBOOK

(Continued from page 47)

build blinds. They explained it this way. By crouching low behind the levee the crows would be almost in range before they could possibly see any of us. Therefore, if we stayed low and motionless, in the heavily-wooded areas, blinds would be unnecessary. And they were right!

Now, this third group of crows heard the greeting call. I didn't count them, but there must have been over a dozen coming our way. That is, they came our way until they were just out of range. At this point they hesitated until they were sure everything was all right. Then the leader zig-zagged toward our deeks. Five were in range.

Sam said, "Take the first one, Jack." And he did. But the shot broke up the group and they seemed to go in all directions. But before they got out of range, Sam had time to fire and another crow folded in mid-air.

Sam flipped records quickly. This time he had the "fighting" recording going. Sure enough, this brought back the rest of them—at least in our direction if not in range. Then one got brave and zig-zagged for us. Sam pulled the trigger and missed, but his second shot didn't. This made crow number three in a matter of minutes.

Jack started out to pick up the dead crows, but Sam said, "Come back! Here comes a single. You take him, Milt."

This gave me another chance, this


time through my gun sights, to observe this highly intelligent deceptive scavenger. Like his dead predecessors, he, too, seemed to slam on his brakes just slightly beyond gun range and look the whole situation over before coming any closer. When he was finally satisfied that everything was all right—and this seemed like hours to me—he still proceeded with caution. I saw immediately that this was a mighty difficult target. He wasn't flying as fast as pheasants or ducks, but at least they fly straight. This one, like all crows, was going up and down and sideways, too. I fired . . . and missed. I got off one more shot before he was out of range. But this was a lucky crow. He didn't lose a feather.

I felt like a fool, but I didn't have time to feel that way long. More crows had heard the recorded calls. They were heading our way. And we had good shooting.

But it didn't last long. The weather, which is an important factor in crow hunting, changed from bad to worse. The heavy overcast had suddenly changed to rain. Although we all had rain gear, Sam said, "I have never done any good in the rain. Let's pack up and head home." Jack agreed. I'm sure they were right because the flights slacked off. In fact, none were coming or going.

On the way home, Sam pointed out that ordinarily, we would have had good shooting until about 10:00 a.m. Then the crows leave the feeding grounds and find a place to loaf until about 3:00 p.m. He said that he has looked for their loafing areas, but has been unable to find any great number of them in any one spot between 10:00 a.m. and the early afternoon hours. Then about 3:00 p.m. he has found that they return to the feeding grounds for dinner. This gives the hunter some more good shooting. This means good shooting when the crows return into the feeding grounds, as

well as good shooting on the flyways between the feeding areas and the roosting areas. Incidentally the two may be as far as twenty miles apart.

When the weather cooperates and you get in a full day, Sam and Jack assured me that it isn't uncommon for each hunter to kill 60 to 70 crows. And I suppose that's about right. We had just little over an hour of shooting time before the rain caused an absolute halt. When we tallied up, we totaled out 31 crows. Jack had killed 14; Sam had beat him by one. I had two crows and five rolls of exposed film—all with crow pictures. 

## BITTNER

(Continued from page 45)

of them dovetail-keyed into the frame.

Sights are somewhat better than the apparent accuracy capabilities of the pistol. The rear sight has a small V-notch, and is laterally movable in its dovetail by drifting. It can also be elevated by sliding the sight-leaf forward up a short incline. The rather optimistic graduations are 50, 100, and 150 meters. The front sight is a tall, tapered post, with a small cylindrical bead at its top.

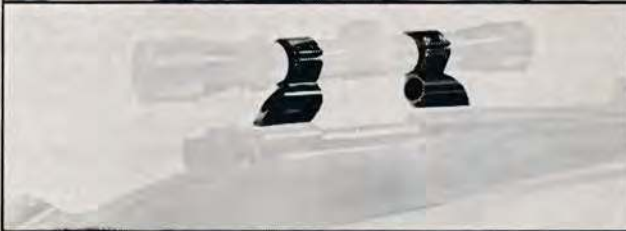
Markings of interest to collectors include the standard Czechoslovakian proof mark above the chamber, the tiny "3" at its center usually reserved for final proof of multi-barreled guns. Perhaps they found the Bittner difficult to categorize. On the left side of the receiver, above the trigger, are "PATENT", convex curved toward the top, and "BITTNER" below it, concave curved toward the top. Beneath this is a small oval, containing an interlocked "GB" above a small "W", initials of the maker and the city of origin. The serial number appears in only one location, on the bottom flat of the octagonal barrel, just forward of the fore-end piece. The number is followed by a decimal point, a space, then another number, "98", also followed by a decimal point. I may be mistaken, but I take this latter number to be the year of manufacture. Actual figures are not available, but the pistol saw very limited production, so perhaps it is not unlikely that less than three thousand pieces were made between 1893 and 1898. The surprising thing would be that a pistol of this type action was still being produced two years after the birth of the excellent Mauser automatic.

Four different assembly numbers appear on various parts: "526" inside frame, on barrel inside fore-end, and

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(in pencil!) inside grips and fore-end piece. A "29" is on lever, inside side-plate, and on trigger; "13" on bolt, and "10" on left upper backstrap, under grip. Separate shop numbers like these are not unusual on European firearms of this period. With the large amount of hand-fitting involved, these numbers insured that the fitted parts would remain matched after the finishing process. The finish, incidentally, is case-hardening on all parts except the barrel, which is blued, and the bolt, which is polished except for the blued end cap.

According to Col. Robert Gardner's "Small Arms Makers," Gustav Bittner continued in business in the same location, manufacturing "rifles, guns, revolvers and automatic pistols" until 1939, at which time either his death, or the advancing Wehrmacht, presumably curtailed his endeavors. As noted previously, the lever-action system he used did not originate with Bittner, but his was probably the last application of it in pistol form. It remains an interesting transition-piece between the revolver and the automatic pistol.

## ARGENTINE COLTS

(Continued from page 22)

00031 has "FM-PT" preceding its serial, number 00033 has simply "FM-FMMCE" in the spots on the frame and side of the slide where the serial would normally appear, while number 00107 has "FM-FMMCE" preceding the serial on the slide side and no markings or initials at all on the frame. It is likely that these particular pistols were test or field evaluation pieces that were issued into regular service after official acceptance of the domestically produced model. Additional support for this theory is the wide variation found in the size and style of the lettering in the slide markings of these apparently early examples.

Many, many Modelo 1927s were made in Rosario. Popularly known in Argentina as the "Sistema Colt," examples bearing serial numbers well into the 70,000s have been noted. In materials and workmanship they are of the highest quality, and while their external finish may not equal that of a pre-war commercial Colt it is at least as good as the finish found on Colt militaries.

Still another variation of the 1911 Colt was produced in Argentina. This is a somewhat simplified version, actually much closer in design and detail to the Spanish "Star" .45 military model than it is to the Modelo 1927, which is known variously as the "Ballester-Molina" and the "Hafdas." Most extensively modified is the

frame, which has no grip safety and some modification of the lockwork to accommodate its lack of a removable mainspring housing. Both hammer and grip frame spur have also been changed, along with the pattern of the finger grooves used to retract the



slide. Apparently these were produced for both military issue and commercial sale, as examples both with and without the government crest have been noted. Their manufacturer was Hispano Argentino Fab. de Automoviles, S.A. in Buenos Aires, hence the "HAFDASA" designation.

One additional major variation in the Argentine .45 automatics will be found. These examples bear very low serial numbers preceded by an "R" and can be any of the previously discussed models. Apparently these pistols have been reworked or remanufactured from salvaged parts, as original markings are missing or incom-

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plete and they have obviously been refinished. They are very rare, probably as it would be quite unusual for a pistol to require such extensive rework that its original number could no longer be used. Only three examples have been examined: Number R0005, a Colt-made Modelo 1927; R0006, a Ballester Molina; and R0009, a 1916.

Still other variations of the Argentine .45 undoubtedly remain to be found, as only a portion of these interesting pistols have yet reached the United States. A visitor to Buenos Aires will have no trouble locating some—they still ride the hips of the Buenos Aires police! With over a dozen distinct variations noted thus far among the four basic Argentine models, a truly dedicated collector could make a career out of collecting only Argentine Colts! Of course it is precisely this—the detection of these many subtle differences and the determination of their meanings—that make gun collecting the fascinating hobby that it is.

The author wishes to thank the officials of Imperial Arms, Lincolnwood, Illinois for their permission to examine their records and photograph examples from their collection.

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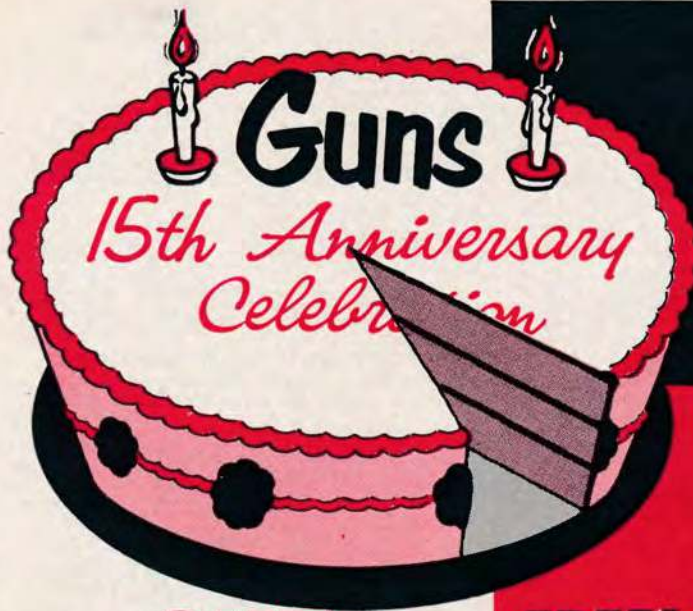
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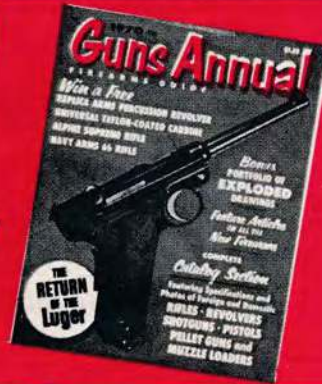


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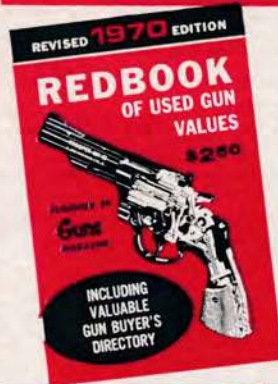
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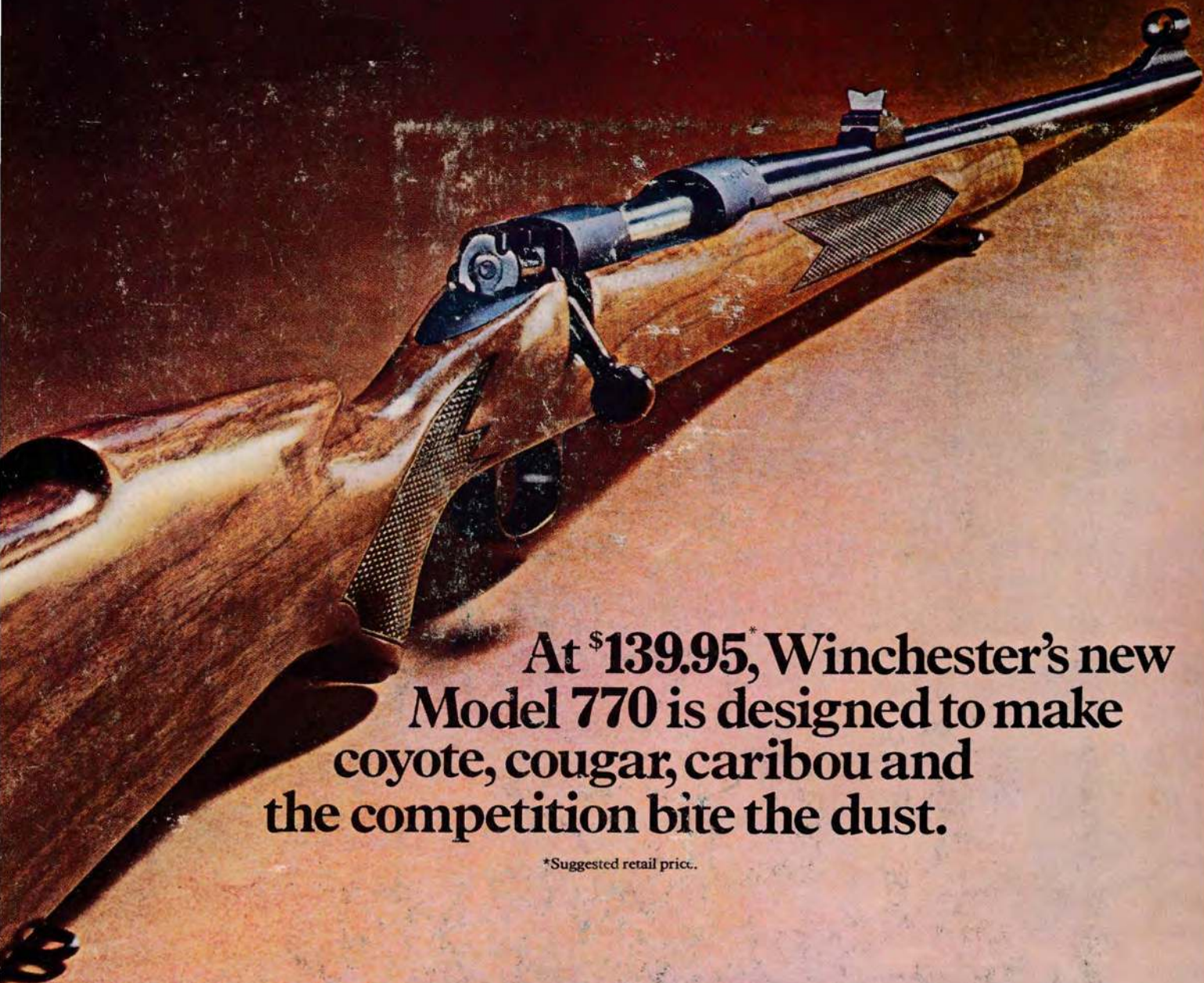
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