

Win a Free Gun.

UNIVERSAL .30 CAL. CARBINE with SCOPE

-See Page 77

YOU

CAN BE

PISTOL SHOT!

CASELESS AMMUNITION

NEW-But is it Good?

Book Excerpt:

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Bausch & Lomb, Rochester, N.Y.14602.



Bausch & Lomb announces the Trophy scopes. Four new models with internal adjustments.





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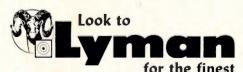
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TRIGGER TALK

OUR COLOR SECTION this month is filled with delightful photos from one of the most handsome books I have ever seen. You can imagine what a job it was picking only a few color photos from the several hundred in the book. I like to think that the readers of Guns Magazine-many of whom have been with us since we first began publishing in 1955-are the cream of the gun owners in the U.S. And because they are, they appreciate the kind of material we present. If I am right, then each and every reader will want to get a copy of the book from which these color photos were taken, "100 Great Guns," published by Walker & Co. You can order from the book department of Guns Magazine (see ad on page 78). "100 Great Guns" is too new to be listed there, but it is now available.

Wow! Our readers sure took to the free gun contest in the April issue. We received thousands of entries, and a lot of praise for the idea. OK, there is another contest for you this month (see page 77) in which you may win a brand new Universal .30 Carbine, complete with scope and mounts. We'll have more of these in future issues, and will continue to have them as long as you are interested in a chance to win a free gun.

In the May issue, we failed to give credit to the artist who painted the fine schematic of the Mauser pistol. This was the work of Bill Carr, of the Art Department of California State College. By the way, just got word that Joe Albanese, of the Gun Department of Abercrombie & Fitch, Chicago, is now the owner of the original drawing and the Mauser pistol used as a subject-lucky fellow!

If you've been reading the newspapers, you could not have missed all of the talk about the Viet Cong's AK-47 Assault rifle. Next month, we take a real hard look at this "fantastic" weapon and compare it to our GI's M-16. Also in the next issue, a look-in color-at the Sahara Gun Show; a test report on scoped handguns, and a few surprises.

THE COVER

This Undercover revolver by Charter Arms is a specially engraved model which is valued at \$3,000. It will be used for promotional purposes. The engraving and inlaying design are symbolic of the use by law enforcement personnel. Engraving by A. A. White Co. Photo courtesy Charter Arms Corp.

JUNE, 1968 Vol. XIV, No. 8-06

George E. von Rosen Publisher



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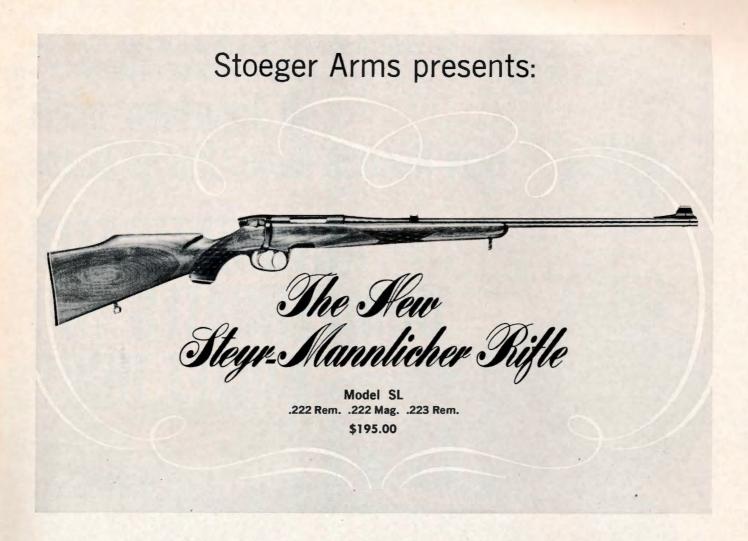
Sanford HerzogProduction Manager

M. Gross Ass't Circulation Mgr.

Sally LogesSubscription Mgr.

EDITORIAL OFFICES: Jerome Rakusan, 8150 N. Central Park, Skokie, III. 60076, ORchard 5-5602. E. B. Mann, 1020 Parkland Pl., S. E., Albuquerque 87108, N. M. EAST COAST REPRESENTATIVE: Eugene L. Pollock, 150 E. 52nd St., New York, N. Y. 10022, PL 3-1780. WEST COAST: Office temporarily closed. Collect calls solicited to National Office (below). NATIONAL ADV. OFFICES, 8150 N. Central Park Ave., Skokie, III., 60076, ORchard 5-6010.

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The makers of the great Mannlicher-Schoenauer give you a great new gun... their first in 22 years. Not only that, they spent 10 years perfecting this .22 caliber beauty. The barrel is a masterpiece of hammer-forging for perfect accuracy and tolerance. The receiver is solid, equipped with a detachable rotary-drum box magazine of 5-shot capacity. The bolt mechanism is unique, with six locking lugs, gracefully tapered tail piece, cocking indicator and a recessed face.

Just a few moments with this gun will convince you that the Model SL has all the magnificent machining Mannlicher enthusiasts rave about. And then some. See it...hold it... buy it at your gun dealer's. And enjoy some way-out shooting.



Rotary detachable box type, 5 shot capacity - inspection window at back of mag-

SPECIFICATIONS SPECIFICATIONS
Calibers: 222 Remington, 222 Remington
Magnum & 223 Remington. Available
in July: 22/250, .225 Win., .243, 270,
.308, 30/06
Barrel Length: 2356 inches
Twist: 1 turn in 14 inches, right hand
Lands & Grooves: 6
Barrel: hammer-forged
Sights: open rear ramp front with hood

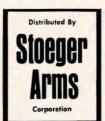
Sights: open rear, ramp front with hood, .080" gold bead
Sight Radius: 15½ inches Bolt: 6 locking lugs, two gas ports at side of bolt body, cocking indicator, recessed bolt face Ejector: located in bolt face Safety: locks bolt and sear Receiver: drilled and tapped for scope Trigger: choice of adjustable single or

double-set trigger: Stock: Monte Carlo type with check piece, epoxy finished, with skip-line hand checkering, 22 lines per inch length of Pull: 14% inches with double trigger.

Swivels: European type, 1 inch

Weight: 6 lbs., 4 oz.





5

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up to 350 yards.

4x AUTO/RANGE has same specifications as 6x described herein with the exceptions following: 350 yard range compensation . . . 31' field of view . . . 8.5mm exit pupil.

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The key to the system is this rotating trajectory cam (A) that is attached to the range ring (B) and rides on the special pivotal-action mount rail (C). As the range ring is turned to move the stadia wires that bracket the target, the cam turns, too, tilting the scope to effect an elevation correction that compensates for bullet drop. IT'S FAST, EASY AND FOOLPROOF.

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This is the most significant advance in riflescopes in more than 100 years—U. S. Patent No. 3,340,614. The Auto/Range compensates for bullet trajectory AUTOMATICALLY, enabling you to realize all the accuracy built into your rifle... to make the most of your shooting skill—whatever the range, whatever the load. You get the assurance of ALL-AMERICAN craftsmanship... the precision and reliability accounting for Realist leadership among U. S. makers of surveying instruments and fine optical equipment.

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the body area of many varmints.

As shown

drawings, the critical 18" area is bracketed between stadia wires which are adjusted by turning the scope's range-compensating ring. At the same time—in the same motion—the exclusive rotating cam tilts the scope, creating an elevation adjustment which compensates for bullet drop when you raise to center crosshair and aim at the point of expected impact. No need to "hold over" at any range up to 500 yards.

Every Cam Design is Customized

Automatic compensation for bullet drop is accomplished by the custom engineered trajectory cam which is part

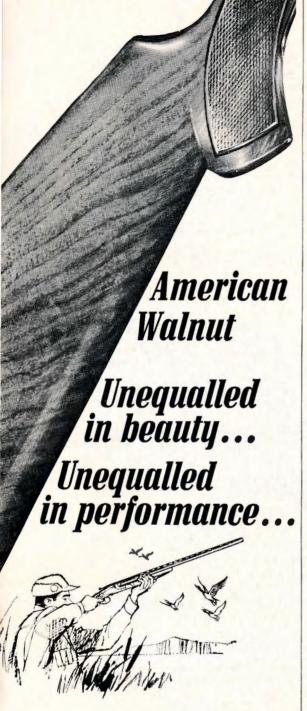


in the sequence

of every Auto/Range scope. The configuration of every cam model is designed only for use with a specific bullet caliber, weight and type. Cam design is determined by actual firing tests and bullet drop measurements—not by manufacturer's computed ballistic information. Exaggerated drawing (I) illustrates a cam designed for use with a 30.06 cartridge, which has a relatively high trajectory; drawing (II) would be for a flatter trajectory cartridge such as 7 mm Remington magnum. Cams can be interchanged in seconds, permitting scope to be used with a variety of cartridges. Separate cams for most popular calibers and bullet weights are available.

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6 power magnification . . . 9 lens optical system—hard coated for maximum brightness . . . constant centered



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CROSSFIRE

Some Goof, I'll Say!

Boy did your "expert" goof in the April 1968 "Panel of Experts" department. In answer to Mr. Thomas of Burbank, "GN" states that, "There is no double action .44 Magnum revolver on the market." He probably meant no Colt 44 Magnum DA revolver. But I'm sure he didn't intentionally omit the Smith & Wesson Model 29!

It's a fine revolver—and it is truly a shame Colt doesn't make a .44 Magnum.

Miles S. Vaughn Tucson, Arizona

Hundreds of readers caught this error, and wrote, telling us of the S&W M29. Nonte knew of the gun, the editor also knew of it, but the last proof reader evidently did not. Sorry about that Smith & Wesson!—Editor.

Fast Draw Clubs

Do you know of any Fast Draw clubs in the St. Louis Mo. area. I am very much interested in fast draw but I haven't been able to find any clubs here.

Hope you can help me.

Richard Dulany 8791 Boyce Pl. St. Louis, Mo.

Editor's Note to Fast Draw clubs: In order to help fast draw enthusiasts in your area find a good club, GUNS Magazine will run your clubs name and address in Crossfire—if you will supply us the information.

Flak Jackets

I just finished reading the "Guns and the Law" section of your fine magazine. I was particularly interested in this article because of my prior experience with standard issue military type flak jackets.

Contrary to the popular opinions held by the men who were in my M.P. unit, this type of vest does offer sufficient protection. A fellow M.P. avoided a perforated posterior by sitting on a flak vest during a chapper ride from Bien Hoa to Saigon. My friend thought this vest was the living end. No pun intended.

Robert S. Anderson Franklin, Mass.

Fred Lambert - Lawman

I have just received the February issue of GUNS Magazine. I am very interested in the article about Fred Lambert — Western Lawman. I was very interested in the life of Mr. Lambert.

Keep up the good work with the magazine's content so it will always be the number one magazine. Thank you.

Michael S. Race Brooklyn, N. Y.

Vet Praises M-16

While reading the March issue of GUNS I was very surprised to find a letter I wrote to you on 25 June 67 while serving in the Mekong Delta. In the article by Carl Wolff, "Will NATO Kill The M-16?" my letter along with several newspaper articles had been used as a cover page.

Since the first time I fired an M-16 I've been a firm believer in its usefulness as a shoulder weapon and every time I used mine in action I came out believing in it just a little more.

I feel that if more people would pay more attention to the suggestions of the G.I.'s that have used the weapon in Viet Nam a quicker solution to the problem would be found.

I would like to cite an incident that justifies my faith in the M-16.

On the night of 30 Sept 67 while

GUNS • JUNE 1968

dropping demolition charges in the My Tho River around two civilian dredges that were working there I was unfortunate enough to have a charge detonate prematurely, with the results that the boat was sunk and I've been in the hospital ever since.

About a week later my CO visited and I was told that four days later, when Navy divers brought our boat up out of 60 feet of water, that my rifle functioned perfectly even though they simply poured out the water—and fired the original ammunition. I can't think of a more severe test of a military weapon.

I don't claim that every M-16 is as reliable, but any weapon that can go through that has got to be good. I'd like to see an M-14 that can take that kind of punishment.

Sp/4 Don A. Hughes Ft. Gordon, Georgia

Good Old .30 M-1 Carbine

I take exception to the remark of Sgt. R. P. Rosenthal about the mediocre performance of the .30 M-1 Carbine. Any gun is only as good as the man behind it. As a 44 month veteran of the Pacific theater during WWII, I am a firm believer in this little Carbine. True, it will not stand up in accuracy to the Springfield, 1917 Enfield or the Gerand but for close quarters and brush fighting they served their purpose—and were very effective.

The reason a lot of men berated this little Carbine was because they had never learned to shoot. I own one, a Winchester, and have put 19 out of 20 shots in a six inch bull at 100 yds. with it.

As for power, it will penetrate 1/8" of steel at 100 yds. With a 110 grain SP Spitzer it will tear a 3/4" hole in a deer at 150 yds. I have yet to fail to kill with the first shot at 100 yds. or under.

D. K. Conely Arkansas City, Kansas

Underground Pistol

I am writing to you in regard to your article on the .45 caliber "Underground Pistol." I had owned one of these that I had purchased from another soldier while serving in Korea in 1951. I fired it a few times but since it left much to be desired in accuracy, I sold it. Your article was most interesting and took me back to a forgotten period of my Army service.

Lionel Mattos Sunnyside, Calif.



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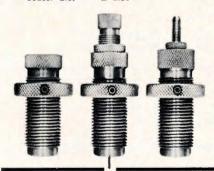


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HANDLOADING BENCH

By MAJ. GEO. C. NONTE

THERE IS ONE TIME during the year when the handloader can (figuratively) be in Hog Heaven—if only he can get to Chicago (or, for next year, Houston) and sneak into The National Sporting Goods Association Trade Show. There will be found every major—and quite a few smaller—handloading equipment manufacturers displaying all their wares, with emphasis on new developments they'll be marketing in the near future. A lot of the personalities you read about in this game show up there, too.

This year the big gathering was held in February at Navy Pier in "The Windy City" and we were there with our usual bells on. Just to give you an idea of what we ran into there, let's repeat our first leisurely walk down the aisles and call them as we saw them.

One of the first booths was occupied by Jim's Powder Baffles, Rathdrum, Idaho. Jim was attending for the first time, showing (and selling) his sheet-aluminum baffles which improve uniformity of powder and shot charges when placed in shotshell tool reservoirs. We've tried them, and they do work.

Along the way, we ran into genial Jim O'Neill at the Hercules Powder display. Though nothing new was being offered this year, it's always a pleasure to talk to the people there and to see the interest they take in our favorite hobby. They told us the excellent ReLoder powders, introduced a couple years back, have been very well accepted by handloaders.

Lee Jurras, of Super-Vel Cartridge, was there to show his very effective jacketed, soft-point, light weight handgun bullets. They range from the 110-gr. .357" diameter for .38 Special and .357 Magnum up to the 180-gr. .44 Magnum. All are intended to be driven at velocities of 1600-1800 fps at pressures safe in modern handguns. We've done quite a bit of shooting with them, and they really do pack a wallop.

Not much farther along was another first-time exhibitor—The Handloader

Magazine. This bi-monthly publication caters strictly to the home hull-stuffer and contains more handloading dope in each issue than any other gun-field book around. It's primarily a subscription magazine and appears on very few newsstands. The display attracted a lot of attention, but that may have been at least partially due to the attractive young ladies that could usually be found there selling subscriptions.

Pacific Gun Sight Company was there in full force, displaying a complete new line of blue handloading equipment. As many of you may have noticed, Pacific hasn't been marketing tools for several months. That inactivity has come to an end with the development of the new line described below:

The DL 155 is an improved version of the older DL 150 and sells for \$59.50. It's a conventional 5-station shotshell tool with detachable powder and shot charge bar/reservoir unit. Cases must be manually moved from station to station. The charge bar is of the interchangeable-bushing type, and due to different diameters, bushings can't be inadvertently reversed. Available in all popular gauges, the DL 155 can be adapted to load 3-inch shells and economically converted to other gauges. Up to 200 rounds per hour can be produced.

Next in line is the DL 266 at \$119.50—a 5-station, straight-line tool requiring manual movement of shells from station to station. The frame is of H-type construction with shellholders situated on a bar that rises to meet the dies. An auto primer feed is standard. The tool may be switched to left-hand operation by moving the hefty handle to the left side.

The top of the Pacific shotshell line is represented by the DL 366, a \$179.50, circular, progressive tool which carries shells from station to station in an 8-position, rotating shell plate. Plate indexing is by hand and the plate rises to meet the dies. Once all plate positions are filled, each handle-stroke produces a loaded shell so

long as components are fed properly. Powder and shot charges are dropped automatically as a cam actuates the charge bar. Auto primer feed is also standard. Only cases and wads need to be fed manually. This is a massive, heavy-duty tool that will load up to 600 rounds per hour if the operator does his part. The DL 366 is available in all popular gauges and gauge-change kits cost \$39.50 each.

Pacific's new metallic reloading tool stable contains two presses—the "Power C" and "Multi-Power C." The former is a more-or-less conventional open C-type press at \$23.50, less shellholder and dies. It functions on the downstroke and the handle is angled to the right for convenience of operation.

The Multi-Power C is quite similar to the Power C, but has the right front of the "C" closed to make it an O-type press. It is also fitted with a compound linkage which provides for higher mechanical advantage than the simple crank system used on most presses. Price is \$35.50, less die and shellholder.

Both Pacific metallic presses accept standard %x14 dies and all Pacific (as well as some other makes) accessories and come equipped with universaltype, swinging-priming arm.

Also new at Pacific is a line of accessories too extensive to describe here if we are to save space for other manufacturers' wares. An excellent new catalog is available from Pacific on request

Eagle Products Co. displayed its new "SKEET MASTER" shotshell loading tool-a massive, \$79.95 unit that should stand up well. It is a more-or-less conventional 5-station tool of heavy construction and excellent workmanship. The head, containing dies and tools for all stations travels, and is brought down over the case in the base. All charging and case movement must be accomplished manually. A self-aligning crimp starter is standard, and either plastic or paper shells may be loaded with equal ease. An excellent and somewhat unusual feature of this tool is a spade-grip handle. This is much easier to use than the usual bar handle. This tool was actually first announced about a year ago, but has just now become available in quantity. Of course, Eagle continues its line of metallic press, powder measure, etc.

SAC (Sullivan Arms Corp.) showed the extremely simple "Safari" economy shotshell loading tool. It is unique in that it is basically a lever pivoted to a fixed base, with three arms pivoted to the lever. The shell is

(Continued on page 70)

WHO HAS THE MOST ADVANCED SCOPE FEATURES FOR 1968?









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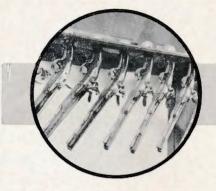


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GUN RACK

Feinwerkbau Model 65

The German-made Feinwerkbau Model 65 air pistol, .177 cal., is a smaller version of the M150 rifle by the same manufacturer. This is a target pistol with a micrometered rear sight movable to 1/16" adjustments. The front post is a patridge by type, 1/8" in width. The trigger pull is adjustable, not only for weight, but for travel and backlash. Greatest innovation in the Feinwerkbau arms is the elimination of vibration; or as the airgun shooters like to call it "recoil." This pistol, when the trigger is pressed, releases not only the sear but also the whole top assembly and this "floats" for ap-



prox. 1/32" while the driving spring is uncoiling. This counter movement of the action dampens the vibration and markedly improves accuracy.

The Model 65 weighs 42 oz., and with a 71/2-inch barrel has a sighting radius of 14 inches, a stock-to-barrel angle of 34 degrees, a trigger pull of 18 oz., and a velocity of 412 fps on the Oehler chronograph. Accuracy is 3/2" for 10 shots at 33 feet. This is an average for five 10-shot groups, fired from the bench with a sandbag rest. Offhand scores, again at the regulation 10-meter distance, have run 86 to 91 for 100 shots. This is very probably the most highly refined of all air pistols. Sold by Bob Law, ARH Co., Grantsville, West Va. 26147-Col. Charles Askins

Webley Starting Pistol

Most readers are familiar with the various makes of foreign blank pistols which appeared several years ago. These were, for the most part, German and Italian made, and were offered for prices ranging from \$5.00 to \$15.00. Some were good, and some were not. Now there is a new blank



pistol offered by dealers which is imported from England by General Sportcraft Co., Ltd., 140 Woodbine Street, Dept. G-6, Bergenfield, N.J.

This pistol is made by the world famous Webley & Scott, and is called the Mark 2. I have handled a great many blank pistols, but the Mark 2 proved a revelation. First, it is extremely well-made, and its weight of 18 oz. gives it a feeling of solid construction. Next, it is convertible; it will handle .22 RF blanks with one magazine and .32 CF blanks with another. Some of the other features of the Mark 2 are: a small window in the frame which tells you how many shots have been fired; and a small, extendible rod makes the task of removing spent cases a snap.

During test firing, some 200 of the .22 blanks were shot without a single misfire or jam, and a box of .32's went through the pistol with nary a snag. I hadn't realized what a difference there was in the report of the .32 blank compared to the .22's. If you have need of a blank pistol; whether for dog training, sporting events, theatricals, or whatever, here's one pistol that will let you choose a report to suit your need. Price, complete with two magazines, \$27.00.

.22 Lee Enfield

I have always enjoyed shooting .22 rifles-not in competition, but in the sport of plinking and some small game hunting. And I, unlike many others, think that most military rifles are handsome. I made it a point to get an M-22 Springfield, and felt that this was a really great .22. Now I have been shooting another, the .22 version of the Short Model Lee Enfield. These have recently been offered by Century Arms, 3 Federal St., St. Albans, Vermont, at prices from \$29.95 to \$35 depending on condition.

The .22 SMLE I received is one of the better ones, being in unissued



condition. And, it is an almost identical twin to the .303 caliber No. Mark III. This is not a boy's rifle; it is full size, and weighs just a bit over 8 lbs. It is a single shot and while I have not yet begun, I hope that I'll be able to add a clip magazine to it in the future. On the range, the .22 Enfield worked like a charm. Accuracy was hard to judge, since the day I chose to shoot was windy and cold. However, this

Objectively, there is not a thing wrong with the 700. It functioned perfectly, gave accuracy along with the best, and the loading of pellets and CO₂ cylinders was simple and effortless. The accuracy, as I mentioned, was excellent. In fact, some of the 5-shot groups were so good, I think they were flukes; if not, then accuracy was outstanding.

About the only disturbing point about the Crosman 700 was the stock. It is nicely proportioned, and fits well, but it has slab sides. I like a stock to have some roundness to it. The cocking knob also bothered me somewhat. It should have either a less powerful spring, or if this is not possible, should be made longer; it was difficult for some of the youngsters shooting this gun to get it cocked. Even I had several bad times when my fingers slipped off the cocking knob. But these are minor points, and rather personal ones at that. After I did my shooting, I gave the 700 to a local scout group. They have really given this gun a workout, and still no complaints. These scouts are all working toward NRA qualification, and several have already shot their scores with the 700. The 700 and the 707, are now ced below \$27.00.

SPECIAL \$7.00 BONUS OFFER

paw Conversions, 26 Portland, Oregon, is iness in the conver-L-460 (the little acfor the medium cali-L-61 (for the magid. I have had a lot h Barber's converhpaw and have had hesters, Remingtons His changeover of a agnum is one of the atisfactory jobs he irber is an old hand He is the acknowl-:his highly specialreally commenced 720, 722 and 725. He eat many 700's. He bobble on any rifle him, I can tell you, u cannot talk him auser and he hates ave tried him with rsen and with the ner of which he will e a fine Sako and ig over to the port l master gunes Askins.

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Panel of Experts

Cased Tranters Revolver

I have a cased Tranters double action percussion engraved pistol of approximately .38 caliber. The case is complete with all accessories and has a medallion on the cover of the case giving the following information: "Gen. Jefferson C. Davis of Indiana Aug. 2, 1878, #12953T." The pistol looks as though it is unfired. I have Jefferson C. Davis' military records from the National Archives, and also records from the Adjutant General's Office, State of Indiana.

I have written several others letters to establish by whom it was presented and may have this information soon. Would you send me your appraised valuation.

> Don Williams Rapid City, S. D.

Your Jeff Davis cased Tranters revolver sounds like a great item. For me to be able to give you a valuation on the set, I would have to be very sure of its authenticity. As you can see, a cased Tranters as yours without its history of belonging to Gen. Davis would only be worth around \$175, but if yours can be proved to have belonged to the General, the value would increase ten fold. Good luck on your letters establishing by whom it was presented and to whom.—R.M.

Choosing an S&W

I plan to purchase a handgun for field shooting and small game hunting. I have decided upon a Smith and Wesson .357 Magnum with a six-inch barrel. My problem is in deciding which of the Smith and Wesson models to choose. It is my understanding that the Model 27 .357 Magnum and the Model 28 Highway Patrolman are nearly identical; the difference being

the finish. I had decided on the Highway Patrolman for its sturdiness and reliability. For my purposes, the higher priced Model 27 seemed to possess no advantages.

Recently I was told the Model 19 .357 Combat Magnum is more accurate than the Model 27 or Highway Patrolman due to a shorter lock time. Accuracy, of course, would be of considerable consequence in small game hunting. In your opinion, which of the Smith and Wesson .357 Magnums would best fulfill my needs?

Michael K. Lanning Salem, Oregon

You'll find that the factory names of the three guns in question are a fair index of their intended purposes: "Highway Patrolman" for the Highway Police, "Combat Magnum" for combat, and the Model 27 as the original—for those that want the "best." I would suggest the Model 27; the price difference is small, worth it, and you can get the 8-34" barrel, the barrel length for which the cartridge was designed and the best for hunting.—S.B.

.303 Loads

I am thinking about taking up reloading on a small beginner's scale. I would like some advice on a couple of things. Do you have any loading data available on 130 and 150 grain .303 British ammo? Are the 130's the smallest bullet you can get for use in a .303? What are the ballistics of these two?

Up until now, I've been using standard 180 and 215 grain commercial stuff. However, I don't think it has quite enough punch. Would the 130 grain stuff put velocity up around 2700 to 2800 fps? Also, is a Lee Loader designed for .303 sufficient to use with almost any handload? How good is it? Any information you can give me would be greatly appreciated. Thank you for your time and trouble.

R. W. Leslie West Brookfield, Mass.

Use 43.0 grains of DuPont 4064 powder and a 150 grain bullet for 2700 feet per second velocity. The same charge of powder will drive the 130 grain bullet nearly 2850 fps, which is quite near the velocity you want. If you must have a lighter bullet, the 100 grain Speer .30 caliber Plinker bullet can be driven at 3000 fps with 46 grains of 4064. None of these are maximum loads, but I would recommend you not try to increase them until you have obtained considerable experience in handloading. Providing you stick to moderate loads like those just mentioned, the Lee Loader will do very nicely, though it is slow to operate.-G.N.

Slotterbeck Combination Gun

I have a three barrel percussion gun built by C. Slotterbeck, San Francisco, Calif. May 18, 1868, is stamped on the barrel. The gun is in shooting condition. The two barrels on top are approximately 16 gauge; the rifle barrel in the center under the shotgun barrels is about .38 caliber. The gun has two hammers on top for the shotgun and one hammer on the bottom for the rifle. There are only two triggers; the front trigger operates the right shotgun barrel and the rifle. It also has a nice curly figured stock, but I don't know what type of wood. Some people say it could be apple tree stump.

Could you tell be the worth of this gun?

Tilmon Phifer Sporta, Tenn.

Your Slotterbeck sounds like a nice collectors item. If it is in good shape and stock in fine condition, I would place a collectors value of around \$250 on it. Condition is the most important thing, and if it is in the above mentioned condition, it should bring this amount or more.—R.M.

A Few Thousandths

I have a 98 mm Mauser rifle in good shape except for one thing—the chamber will not accept the go-gauge, so naturally it is a tight chamber. Only one or two rounds out of a certain lot will feed through the chamber. Without reaming the chamber or moving the barrel can I have the bolt faced off a few thousandths to correct it, or can I change the bolts?

Joseph Nicholson Silver Spring, Md.

Mauser M-98 rifles with tight headspace are quite common, even the ones with matching number bolts. If the bolt closes on a few rounds, as you say, it isn't lacking much. You could probably clean off the bolt face yourself by working a few hours with a stone about 32" thick, 12" wide and the length doesn't matter as long as you can hold it. Remove the bolt sleeve-striker unit, plug the firing pin hole with a little cotton to prevent grit from entering. Keep oil on the stone and work with the stone's narrow edge flat on the bolt face through the shrowd opening. A rotary motion is best. Keep the stone trimmed so its corner is sharp and covers the entire bolt face.

If your bolt matches the rifle, I'd keep it. Also, to match correct head-space on bolt exchanges it is necessary to have access to a number of bolts.—w.s.

Marston

I have what I think is an antique pistol. It has three barrels superimposed, a brass frame, and a spur trigger. On the left side of the frame, it is stamped "Wm. W. Marston Pat. May 26, 1857 New York City. Improved 1864." There are no other markings.

On the right side it has a dial which selects the barrel to be fired. To open, there is a button on top of the frame. When twisted this allows the barrels to drop open on a hinge at the bottom. As the barrels drop, fingers fixed to the right side of the frame engage the rim of the cartridge to eject the empties. The lock is grooved to act as the rear sight. The barrels are three inches long and have six lands. The bottom of the grooves measure .319 inch.

Please give me some dope on this gun, especially as to its approximate value. It is in NRA fair condition.

> Harry C. Bartels Portland, Oregon

The Model 1864 Marston does qualify as an antique, but is not valued as much as the First Model which had a sliding dagger blade of the left side. In NRA fair condition your gun should be worth \$65 to \$75.—S.B.



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16 GUNS • JUNE 1968

OUR MAN IN







By CARL WOLFF

A TIME FOR RECONSIDERATION

The time has come for pro-gun forces to reconsider their legislation. A hard look at the language shows some shakey ground, legally. And, the legislative approach must be considered.

There are two kinds of gun laws. One, supported by the pro-gun forces, seeks to regulate sales. The other, supported by anti-gunners, seeks to ban or outlaw sales, and even the rights of ownership

are questioned.

Until now, spokesmen for the shooting sportsman have been supporting the socalled Hruska compromise. Very much like the original Dodd bill, this measure would leave undisturbed the sale of shotguns and rifles to adults through interstate commerce. However, handguns would require a local police registration.

The anti-gunners will tell you their measure only stops the interstate sale of all guns to the public. What they do not say is that the term "interstate commerce" (as defined in the latest Dodd-Celler bill) includes "commerce between points within the same state." It cannot be a certainty that persons, other than those holding federal licenses, could sell or buy without moving the firearm through a federal licensee.

The trouble with the pro-gun idea of regulating is the way in which the regulating is proposed. It is not possible, constitutionally, for federal law to dictate the duties of local law enforcement officers. Previously, however, it was possible for federal law to require notification of local police.

This was changed by a Supreme Court

decision earlier this year. The court held as unconstitutional requiring the registration of an otherwise illegal firearm. This leaves the idea of a Federal law requiring the registration of handguns with local police without constitutional base. And, anti-gunners have a fondness for amendments. There have been some seven versions of the so-called Dodd bill within the past five The anti-gunners will use the recent court decision to substitute an amendment totally banning interstate (remember the definition) sales.

One salvation for the pro-gun forces is to take a new approach: propose that all interstate sales of firearms be conducted through the mail, making the local postmaster responsible for delivering the firearm in accordance with local law.

There are a long list of advantages: This could well put a stop to the clamor for federal law. Afterward, regulation would be a local matter. In areas where there are no local regulations, interstate transactions could continue unobstructed. The only obstruction would be where such transactions are now illegal.

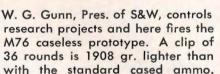
This course of action would provide a vehicle for local laws tailored to the needs of each community. Obviously, if New York City needs one set of regulations and New York State needs another. what about our rural areas, especially in the far West?

The regulation of gun sales by mail would also get around a major stumbling block, that of federal law not being constitutionally able to direct a local official. Since the (Continued on page 69)

GUNS JUNE 1968 17 CASELESS AMIMO:

NEW, BUT IS IT GOOD?

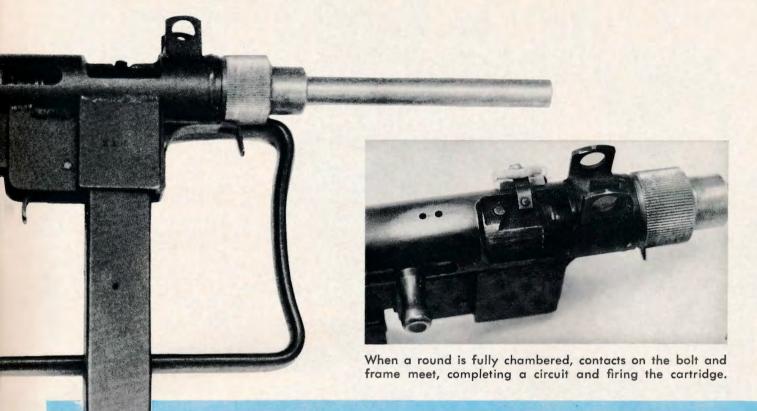




By JAN STEVENSON

A FTER POURING about eleven hundred rounds through it, I felt quite at home with the Smith & Wesson submachine gun. I snapped a new magazine in place, drew back the bolt, and blasted out a series of five to seven round bursts, from the hip, until the weapon was empty. Cyclic rate this time seemed a bit erratic—there wasn't the clean, even 720 rpm ripoff that the M76 usually delivers. Most surprising of all, there was no cascade of empty cases arcing out of the breech. Nothing came out of the ejection port but little pipe-puffs of smoke, for this prototype chopper fired caseless ammo, the hottest item in small arms research today.

Two is company—Frankford Arsenal has been toying with caseless ammo for the past twenty years, and Daisy bought their development from the Belgian chemical engineer Jules Van Langenhoven in 1961—but now with S&W throwing the weight of their impressive research and development department behind the caseless concept, three is going to make quite a competitive crowd. Frankford has already booted caseless ammo up to a higher priority level, and there's little doubt that Daisy will be pouring on the overtime to keep their lead over S&W and to sew up the commercial market while it's still in their pocket. Is the familiar brass cartridge case on the way out?



SERIES OF RECENT PATENTS

3,345,945
STIY CASELESS CARTRIDGE, ladelphia, Pa., and John J. Scanlod J., assignors to the United Statement by the Secretary of the Array, 1965, Ser. No. 477,044
lms. (Cl. 102—38)



 A uniform density molded caseless cartridge con prising a tubular molded propellant having a tapered elernal neck portion at a forward end and a base portion. at a rearward end.

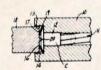
- a projectile secured in said cartridge at said neck tion,
- a combustible primer plug secured within said cartridg

COMBUSTIBLE CASELESS AMMUNITION
Joseph B. Quinlan, Phaledelphia, Pa., and John J. Scanlon, Jr., Willingboro, N.J., assignors to the United States of America as represented by the Secretary of the Army
Filed Aug. 3, 1965, Ser. No. 477,047
8 Claima. (Cl. 192—38)



1. An integrated, caseless molded small arms rou omprising a molded mass having a forward recess a rearward recess, a projectic secured in said forwar base containing

BREECH SEAL FOR FIREARMS UTILIZING
CASELESS AMMUNITION
Marcus Ramsay, New Haven, Coun., assignor to Olin
Mathleson Chemical Corporation, a corporation of
Virginia Filed Mar. 28, 1966, Ser. No. 538,078 5 Claims. (Cl. 89—26)



1. In a firearm of the type utilizing caseless amm tion, a breech gas seal device comprising in combination a barrel begins a bore receiving and chambering

3,353,438

DEVICE FOR MOLDING CASELESS AMMUNITION John J. Scanlon, Jr., Burlington County, N.J., and Joseph B. Quinlan, Philadelphia County, Pa., assignors to the United States of America as represented by the Secretary of the Army
Filed Aug. 1, 1966, Ser. No. 569,530

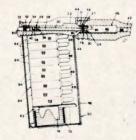
5 Claims. (Cl. 86—1)



A device for molding propellant cylinders for use a caseless ammunition including, a first cylindrical member having axial opening therethere.

therethrou

3,345,770
AUTOMATIC RIFLE FOR FIRING
CASELESS AMMUNITION
John J. Scanlon, Jr., Willingboro, N.J., assignor to the
United States of America as represented by the Secretary of the Army
Filed Oct. 7, 1966, Ser. No. 586,004
7 Claims. (Cl. 42—18)



 In an automatic rifle for firing caseless ammunition including the combination of a magazine having a plu-rality of rounds therein; a chamber for receiving said rounds; and a bolt for transferring said rounds from said magazine to said chamber, the improvement wherein said

magazine to said champer, the improvement of the bolt comprises means for sealing said chamber, said bolt having a passageway through the center thereof, a firing pin slidable within said passageway, and means on a rear portion of said firing pin for sealing

- said passageway; wherein said chamber comprises a feed ramp for guiding said cas therein; and

a sealing area adjacent said for eases from escap

CASELESS AMMO



Bullet with anchor nubbin; normal round; after chambering; heat tested.

becomes a number one designer's pain. Daisy uses an ingenious valve arrangement, at the cost of some complexity. The old timers toyed with all manner of rubber, fiber, leather, and brass plugs and washers with sparse success. Frankford has gone the same route with a precisely machined boltface plug utilizing ring washers to take up the slack, but evidently they're not thoroughly happy with this arrangement. Smith & Wesson blithely ignores the obturation problem, depending on their long, slightly tapered, bolt head to minimize rearward gas leakage.

This approach is like poking your finger in the dike to stave off the flood, but S&W can get away with it because the 9mm Parabellum round with which they are working is a pistol cartridge developing pressures nowhere near the 40-50,000 psi level with which Frankford is wrestling. Using a heavy breechblock, the M76 prototype has no need of a locked breech, hence headspace problems are virtually nil-the bolt keeps on closing till it rubs shoul-



Let's take a look then at where we're headed, why we're headed there, and what some of the roadblocks are. The caseless story starts some two decades ago when, as the Germans pulled back to Berlin, the U.S., like the Soviets, sent technical teams in to poke around in the still smoking rubble to see what they could uncover in the way of technological one-upmanship. Prototype caseless 7.92mm cartridges, among other projects, came to light, and the significance of this was hardly wasted on Col. Rene Studler, chief of Army Ordnance's Small Arms Branch. He brought the notion back to the States, and instituted the Frankford research program which has recently yielded Uncle Sam several patents both for caseless cartridges and for weapons to fire them. The idea evidently is to get the government's twenty years of snail's-pace brainwork properly protected before Smith and Daisy walk off with all the marbles.

Why all the interest? Drum beaters for the caseless cause say that eliminating the hull will ring in a new era of dramatic, super-simplified arms. Eliminate the case, and its attendant disadvantages, says one authority, and gun designers could "run wild."

This is a thorough crockful. The fact is that in most instances, and from a weapons design standpoint, caseless ammo is a great leap backwards. What we're doing is backtracking to the days of the Sharps, the Volcanic, and the Dreyse Needle Gun, and hoping that science and technology have advanced to such a point that we'll now be able to overcome the problems that only the development of the brass cartridge solved for us then.

Take obturation of the breech for example. The brass case conveniently expands to seal the bore against rearward gas escape; then when the bullet has left and pressure falls off, it obligingly retracts for easy extraction. Were it not for this sealing of the breech, superheated gasses would rush back through the action wreaking general havoc on gun and shooter alike.

With no handy hull to do the job, obturation of the breech once again ders with the chamber all the way around, and the breech is thus more or less obturated. You expect a bit of backwash from an SMG anyway, and the amount S&W's caseless chopper delivers is hardly objectionable.

When S&W turns their attention to duplicating the ballistics of the 5.56mm or 7.62mm NATO round, as Frankford is doing, obturation will be the major problem to deal with. But at present they're in the pleasant circumstance of being able to ignore it while directing their attention to resolving the boatload of other problems that the caseless concept presents.

Back to the nuts and bolts of designing. Dispensing with the brass case means that the weapon needs no extractor or ejector. The firing cycle needn't be timed around the necessity of kicking out empty shells; thus a major cause of jams and malfunctions is eliminated, and the weapon is hence much "simpler", or is it?

What happens when you have a misfire, or chamber a round and then decide not to fire? How do you get the round out of the chamber? Easy enough-you knock it out with a ramrod! It is facetiously suggested to S&W that they mount a hinged ramrod under the barrel of the M76 for this purpose and (Continued on page 48)



The National Maritime Museum, Greenwich, England.

Guns visits

The National Maritime Museum

By ROBERT MANDEL

I o me, one of the finest museums that I have ever had the pleasure of paying a much too short visit to, was the National Maritime Museum in Greenwich, England, Founded in 1934, by an Act of Parliament, to illustrate the maritime history of Great Britain, it is filled with valuable Nelson relics from Queen Mary's private collection; pictures, relics, and ship models from the Greenwich Hospital and Admiralty and Royal Naval College; and the Admirality has since transferred the official sheer draughts from which the ships of the Royal Navy were built between the years 1700 and 1911. Contained in this great museum are the Naval Medals from the collection of Lord Sandwich; Mr. H. H. Brindley's casts of medieval ship seals; and the Nelson relics of Sir Malcolm Stewart and the Reverend Hugh Nelson-Ward.

Every department of the Museum has been enriched in many ways by (Continued on page 70)



The museum is rich with evidence of England's naval prowess.



Edged weapons are much in evidence; these are ornate presentation swords.







GUNS Antique Arms Editor, Bob Mandel, views a large model of a 17th Century Man-O'-War.

WWW.



Clavers Ophins

By CHARLES ASKINS

WHAT WILL THE GUNS OF THE FUTURE BE LIKE? ONE THING IS CERTAIN; THINGS ARE SURELY GOING TO CHANGE.

A CENTURY AGO, Peter Paul Mauser developed a pretty fair turning bolt rifle. We've been living with it ever since—and happily, too. We have what we call the Mauser rifle but most of the other types that latch up the breech with a turning action are so close to the Mauser they can all be lumped together.

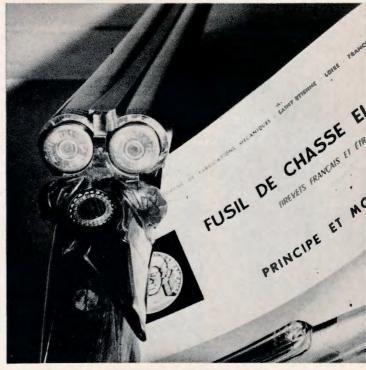
The Mauser type of breech-up has one thing going for it and that is good strength. When the locking lugs turn into the receiver ring the closure is quite secure. Beyond this the action is slow and cumbersome, and it requires four separate movements to unlatch, eject, chamber and lock up the breech. Just like molasses. Slow, man. But the action provides a rifle that is tightly breeched because it is not springy.

Before the first Mauser came along the rifle of the day was a single shot. Shooters lived with the one-shot number for many decades. Then they went through a period when the lever action repeaters got the nod. This gun got the greatest useage from the tag end of the Civil War until the mid-20s. You can still see some of them around even now; such as the old Model 94 carbine, which is good for 100 yards but better at 65.

Shotguns have shown even less change. The garden variety scatter gun has always been a double barrel with the tubes lying side-by-each. There are old timers around



The Armalite shotgun has a light alloy receiver and barrel, plastic stock, and is very advanced in design.



Guns are going electric! A dry cell in the buttstock provides power for ignition in this French shotgun.



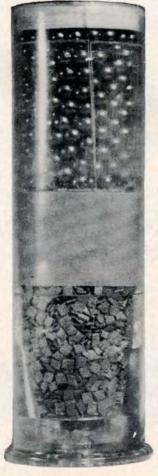
who like this kind of a smoothbore, but they are in the minority. From two-barrel types we went to the pump action repeaters and ultimately the self-loading shotgun. Since World War II there has been a rising enthusiasm for the over-and-under model. It is a sort of prestige gun, purchased not so much because the shooter thinks he will hit more with it, but because he thinks it is the "in" gun. This sudden affection will run its course, I'd predict.

What will the scattergun of the middle 80's look like? Will it be a spittin' image of the Parker, a fine old double with Circassian stock and four hundred bucks worth of engraving; or will it be a superb Browning over/under; or perhaps the modernized version of the sturdy Winchester Model 12 pump repeater? What it might be like we'll dis-

cuss in a moment.

Six-shooters are in evolution, too. Revolvers have been around for more than 130 years and remain virtually unchanged from the model Sam Colt hashed up in 1836. The greatest improvement has been a double action feature and this is mighty close to a century in existence. The automatic pistol is looked on by many pistoleros as newfangled and highly unreliable. Self-loaders were old hat when the Cubans sank the battleship Maine in Havana Harbor. Older than both the 6-gun and the automatic is the single shot handgun. There has been a resurgence of these grandma types here lately. Maybe by 1985 all our handguns will go bang only one time and will then have to be recharged. And then again, (Continued on page 71)







Respect for self-loaders was developed in the military and was carried into civilian life. The plastic shell (left) has no brass head.

Gun Engraving-AT MODERATE PRICES

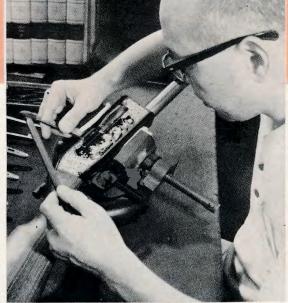


A gun bears Ogawa's name, Signature engraving.

By ROBERT MANDEL

JUST A FEW days ago, I examined a group of modern rifles, shotguns and pistols that had just been returned from the engravers. A few had the standard type of scroll engraving, but a large number had been most tastefully decorated with gold or silver scenes and inlays. Picking up a Winchester Model 94 Carbine I carefully evaluated the rifle and the engraving work that was put into it. The receiver, barrel and lever were covered with wonderfully executed scroll work, and inlays in 24 karat gold portrayed a jumping deer on one side and a charging boar on the other.

After close examination I concluded that the price



Every Ogawa work is an original, as he uses his talent rather than templates or tracings.



Simple but appealing scroll work and leaves enhance this trigger guard and floor plate.







REI/Ogawa offers a variety of engraving, from "simple" scroll work (top) to scroll work with gold inlays portraying various game scenes. Work in Ogawa's "Signature Grade" is even more intricate and precise.



would be somewhere around \$475 for this quality engraving and inlay work. Then, looking up at Bob Izenstark, owner of REI Engravings, I casually asked, "How much would you ask for a job like this?"

With a slight smile Bob replied, "Around \$250 in 24 karat gold and if in silver, around \$175. Thought it would be much more, didn't you?"

After telling Bob that I thought he was out of his

mind to be losing money on a job such as this, I asked him how such high quality work could be produced at what I considered ridiculously low prices. His answer was Mr. Ogawa, Master Engraver of Japan.

He then told me a little about the man that had done this exceptional job of engraving.

It seems that while still in his teens Ogawa became obsessed with the challenge of firearms engraving. Although some jewelry engraving was being practiced in Japan at the time, the art of arms engraving had never been tried. It was obviously a strong compulsion that led Ogawa to follow the long, hard, tedious and, in fact, uncertain road that leads to the status of Master Engraver. But his tremendous energy and an enduring patience helped him attain his goal.

Because Japan was then so remote, in various ways, (Continued on page 62)



Trigger guard and floor plate moderately engraved with scroll and Big Horn.





Gluck gives some tips on tightening up a group.

YOU CAN BE A BETTER PISTOL SHOOTER!

A few thought-provoking tips that could boost your handgun scores

By HAROLD GLUCK

A S PISTOL INSTRUCTOR FOR TWO CLUBS—one for police, the other for civilians, my main job is to take people who had never handled a gun before, and mould them into respectable target shooters. This is not too difficult, for it depends on teaching the fundamentals. What really interests me are the problems of good target shooters who are in a scoring rut.

Recently, a young man came to the range with just such a problem. "I'm a good shooter," he announced. "Watch me on the range." He spoke the truth, he was good. However, although his scores would never go below 90, he could never quite get them above 94.

"I want to shoot better, and I'll do anything you suggest. If I have to practice every day of the week, I'll do it."

In studying this young man's case, I started with one basic assumption: that he knew all of the basic techniques; how to sight, how to breathe, etc. So I had to look at those factors which could help him get the extra points needed to put him in the championship class. Let's start with the idea of practice. This young man—let's call him Bill—is willing to devote a lot of time to practice. "Practice makes perfect," he says with a grin.

We get so use to repeating slogans and phrases that we are often blind to the limitations and the conditions surrounding them. Sure, "Practice makes perfect," provided you practice what is correct! If not, you are merely reinforcing an error. What is correct advice in shooting? Unfortunately, a lot of information has been handed down

over the years in regard to techniques involved in pistol shooting, and accepted as gospel truth, without people wondering if the information has been tested scientifically.

I have heard men on the range tell shooters, "Hold your breath as you squeeze the trigger." Is that scientifically correct? Or take this one, "You go home and practice with dumbbells or with an old iron. You have to learn to lock your hand at the elbow, so that you can hold your pistol steady." Is that scientifically correct?

If we are going to use the concept of "Practice makes perfect," it should follow that whatever the shooter does on the range must be scientifically correct and not just a bit of "foolish folklore" handed down over the years.

What I now want to consider are two phases of practice. One is physical; namely to eliminate or compensate for physical conditions that would keep the shooter from getting a higher score. The other is psychological; to try to find the mental blocks that would keep him from getting a higher score and if possible, eliminate them. I say "if possible" because this is tough and in some situations it is nearly impossible to accomplish this goal.

So we start with phase one, and we can lay down a general principle: The physical condition consists of the clothing and the body of the person concerned. The more comfortable and at ease the person is, the less distracting will be physical features which hinder him in concentrating on his shooting. Let me just list some from my experiences.

(Continued on page 53)

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ODGOOM—The Powder Man



Hodgdon and lab technician Tom Browne ready a pressure barrel during tests for the #20 Data Book.

THOUSANDS OF RELOADERS KNOW OF HODGDON POWDERS: HERE IS A LOOK AT THE MAN BEHIND THE BUSINESS.

By RON TERRELL

K NOWN BY RELOADERS throughout the country as "The Powder Man," Bruce Hodgdon has done much to promote the shooting sports. His company, Hodgdon Powder Co., Inc., is recognized as a primary source of supply for powders used in reloading rifle, pistol and shotshell ammunition.

At the end of his hitch with Uncle Sam's Navy in 1945, Hodgdon resumed the interest and activity in commercial reloading that he had started in 1940. In 1947, he made his first large purchase of military surplus powder. Powder storage, even in the farming area around Shawnee Mission and Olathe, Kansas, was something of a problem. People then—and now—had the notion that gunpowder was a dangerous commodity to have around. Keeping a gallon can of gasoline in the garage for the lawnmower presents more of a safety hazard than does keeping several pounds of gunpowder on a reloading bench. However, people hesitate slightly when you ask them to store 50,000 pounds of it out behind their barn.

After reaching an agreement with a friendly farmer in the area, Hodgdon got under way by storing that first lot of 4895—all 50,000 lbs. of it—in a railroad boxcar. This same boxcar was used until it burned in 1955. Since then, Hodgdon has purchased 132 acres of land and built 23 concrete block and metal buildings as powder magazines. A new packaging and shipping building has also been built on this land and four full-time men are kept busy filling and shipping orders.

One problem, not generally associated with powder storage, that had to be dealt with was keeping brush and undergrowth down in order to minimize the fire hazard. Being a native Missourian, he enclosed the 50 acres around the magazines with a woven wire fence and acquired 14 Missouri hillbilly goats to keep the brush cropped close.

That first purchase of 4895 powder was only the start. Since then Hodgdon's has made a wide variety of pistol, shotgun and rifle powders available to reloaders—more than 16 types— at substantially reduced prices.

The Hodgdon family has been active in guns and shooting for many years. The elder Hodgdon was raised in Joplin, Missouri, by a father who loaded his own ammunition. During a conversation about storage life of powder, Bruce mentioned that he has half a can of Laflin & Rand powder purchased by his father in 1910—and it's still good. The two younger Hodgdons, John and Robert, became officers of the corporation upon graduation from college. John has been in charge of inventory and shipping since 1959 and Robert's responsibility is advertising, catalog and management. Both boys' active interest dates back, in Bruce's words, "to when they were big enough to use a hammer in nailing up boxes to ship our powder".

Up until 1952, the Hodgdons were operating out of the basement of an old farmhouse. The area is now occupied by service stations, apartment houses, restaurants and other commercial enterprises, but at the time it was purchased, it was out in the country. By 1952 more space was needed so the first building—a shipping office and testing lab—was built.

Tom Browne, Hodgdon's lab technician, is his oldest

full-time employee—in years of service. Tom had been interested in muzzle loading shotguns since high school. He bought his powder from Hodgdon and hung around talking guns, shooting and reloading. Although he had no formal training in the field prior to this, he started working for Hodgdon and has been with him for 12 years now. In addition to his responsibility as lab technician, compiling the material for each new Data Book (#20 is the latest) and operating the pressure gun, he also works in shipping.

Hodgdon's lab set-up includes the expected chronograph, reloading presses and dies, complete assortment of his powders, a variety of bullets and primers, and some 30 different pressure barrels, ranging in rifle caliber from the .222 to .444 Marlin, .38 Special, .357 Magnum, .44 Special and Magnum, and .45 ACP in pistols, and the 12, 16 and 20 gauges in shotguns. One innovation Hodgdon uses in shotgun testing is a thin piece of copper wire through the middle of the pipe used to chronograph the shotgun loads. For rifle and pistol calibers he uses screens printed for him by Culp Printing Company, Kansas City, Missouri.

Bruce Hodgdon has not been without his problems, however. Probably, the greatest cause of concern anyone in the powder business can have is fire. In a matter of minutes, a large supply of your stock in trade can go up in smoke—even if it's smokeless powder. Only three fires have occurred in his business since he started in 1947 but they were expensive ones. In 1955, the boxcar used for powder storage burned. Another powder magazine was struck by lightning in 1966. Early in the same year, a fire got started in the retail store at his main office building. Aerosol spray cans fed the flames and the heat was so intense it melted the steel heads (Continued on page 63)



Bruce Hodgdon feels that the use of his fiber can and a wooden storage cabinet help to minimize fire hazard.

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Du Kon man

By LES BOWMAN

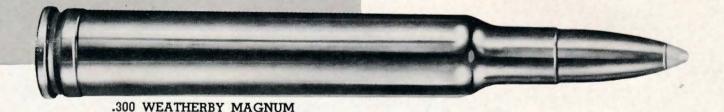
I DO NOT BELIEVE I will get an argument out of anyone when I say that the most popular all around caliber used by North American hunters is the .30 caliber. There are more .30 caliber rifles in actual use in the 50 States than any other caliber used for the hunting of game. We can start with the .30-30, the .30-40, the .300 Savage, the .308 Winchester and the .30-06. Then there is the fast growing group of .300 Magnums, the .300 Weatherby Magnum, the .300 Winchester Magnum and the .308 Norma Magnum. Production rifles are chambered for all these cartridges except the .30-40 Krag and ammunition is still made for this one.

There have been quite a number of reasons given as to just why the .30-06 is such a popular caliber, one of these being the fact that so many of the young men received military training using this caliber and naturally turned to a rifle size they were familiar with when they wanted a big game rifle. Many hunters just gravitated up the scale from long use of the .30-30 and .30-40.

However, the principal reason for the popularity of the .30 caliber, in whatever case or form it was placed, is the fact that it is as near an ideal caliber size as one could desire.

Today the .30-30 Winchester Model 1894, first made over 70 years ago, is still a good selling article, still being bought for a using rifle, although the majority of these rifles are now sold as commemoration guns, bought by gun collectors and shooters who grew up with this caliber.

The first improvement from the .30-30 was the army's .30-40 Krag and this was also the beginning of the popularity of the bolt action rifle in our country. Although the Krag was a clumsy looking gun compared to present day standards, it had one of the slickest, smoothest working actions ever put in a bolt action rifle. The .30-40 Krag was manufactured from about 1893 to as late as WWI. The luge quantities of this rifle, made for the military, were



The VERSATILE

offered to the public for prices as low as \$1.50 each, after the war. Powerful enough for any North American game, they were very popular commercially until the .30-06 took over.

Cartridge size and shape designations used by the different manufacturers and originators have always been somewhat confusing to the general public and with so many new cartridges coming out in the past few years they have become even more perplexing. The .30 caliber is one of the easiest of all to identify and recognize if one just remembers that this caliber has a .300 bore size and a .308 rifling diameter, regardless of the cartridge case it is put in.

A hole of ,300 diameter is first drilled through a bar stock barrel blank and then a number of grooves or riflings are cut in the drilled barrel so they are approximately .004 deep, in the metal. To properly fill this grooved barrel a bullet of .308 diameter is necessary. Some cartridges were designated by the bore size of the hole drilled through the barrel and others by the groove or true bullet diameter. In some cases an additional number is used for powder capacity in grains, as in the .30-30 (.30 caliber bore size and 30 grains of powder), or the .30-40 Krag (.30 caliber bore size and 40 grains of powder). Krag is the name of the designer. Then there is the .300 Savage cartride, which is .300 inch or .30 caliber bore size and is a case designed by Savage Arms Company.

The .30-06 came out some years before the .300 Savage but it is a larger capacity case. It was designed by and for the military and the .06 designation, which nearly every one uses, was from the year the army adopted it. A short lived army version, used just prior to the .30-06 was the .30 Army Model 1903. Actually it was only a minor change from the .30-03 to the .06, the World War I rifle that so many shooters of this time grew up with and learned to use so well. As a military rifle it lasted through World War II.

(Continued on page 64)





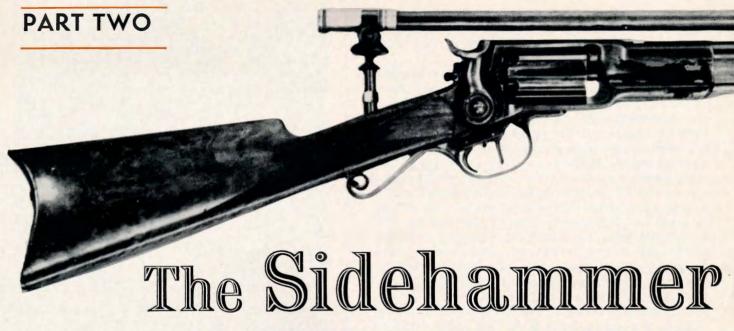
Bowman took chucks with a .308 and light bullets. Abdorezza of Iran used a .300 Wby. on a buffalo.

31

THE MOST POPULAR ALL AROUND CALIBER WITH NORTH AMERICAN HUNTERS IS—

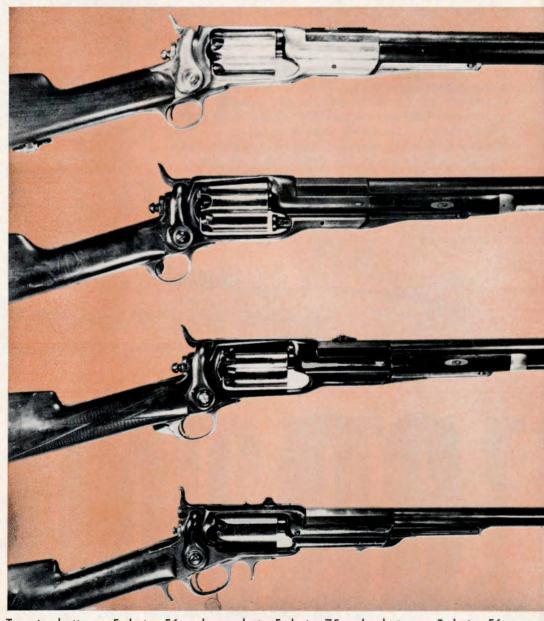
30 CALIBER

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The Evolution of COLT LONG ARMS

Second of a three part study of Colt-made rifles and shotguns, from the first revolving cylinder models, through the early cartridge era, to the modern M-16



Top to bottom: 5-shot, .56 cal. musket; 5-shot, .75 cal. shotgun; 5-shot, .56 cal. sporting rifle; 6-shot, .36 cal. sporting rifle, first model, no fore-end.



Colt half-stock sporting rifle, serial 1340; .36 caliber, 5-shot, 30" barrel. Note the double set triggers, full length scope, offset hammers. Note also deluxe checkered stock and scroll type trigger guard. From the Robert Q. Sutherland collection, photo by Dick Millard.

Guns of Col. Colt by JAMES E. SERVEN

At the Hartford factory new models of revolving cylinder rifles, carbines and shotguns were produced to attract the military and civilian trade.

A FTER THE COLLAPSE of the Patent Arms Manufacturing Company at Paterson, N. J., in 1842, the production of Colt arms came to an abrupt halt. For almost five years Samuel Colt tried without success to revive interest in his "revolving guns"—then, late in 1846, came his golden opportunity.

Just as the Seminole War had induced the government to purchase a few Colt repeating rifles, now the Mexican War brought action again. Fighting men in influence such as Colonel Harney, Ben McCullough, Sam Walker and Jack Hays, all having had favorable experience with the Paterson-made arms, urged the Ordnance Department to obtain a quantity of Colt's pistols to arm mounted troops. Repeating pistols were desired for use against Mexico's mounted lancers and other forces.

Captain Sam Walker, transferred from the Texas Rangers to a regiment of U. S. Mounted Riflemen in 1846, was sent to negotiate with Colt. The result was a government order for 1000 newly-designed big six-shot pistols, which came to be called the "Whitneyville-Walker" Colts. Having no factory of his own, Colt made a contract with Eli Whitney for manufacture of the pistols at Whitneyville, Conn. Delivery was made in 1847; the pistols looked good and the government was in a mood to place additional orders.

With money in his pockets and cheered by a revived interest in arms of his construction, Colt headed for Hartford. In a short time he was in the armsmaking business, and at last his own name was over the door. More government orders came in and Sam Colt was on his way to proving that the Paterson failure was a matter of unfavorable circumstances rather than a worthless product.

While shoulder arms were given major attention by the government when Colt's patent arms were produced at Paterson, the emphasis now changed to pistols, and pistol orders kept the wheels turning busily in Colt's expanding arms operations. But Samuel Colt was not satisfied merely with the role of pistolmaker. He was determined to pro-

duce successful rifles, carbines and shotguns on his revolving principle.

In 1855, Elisha K. Root, Colt's factory superintendent, designed a model with a radically new bridged frame—a lock-frame that was solidly reinforced by an iron strap over the cylinder. The forward portion of this new frame was threaded to receive the barrel.

The unbridged lock-frame customary for Colt pistols was satisfactory for attaching a light pistol barrel, but attaching a long, heavy rifle barrel to that kind of lock-frame, with reliance on its being held securely in place by a small, easily removed key inserted through a slot in the cylinder spindle—well, that was something quite different. The unbridged lock-frame had been one of the major faults of the heavy Paterson-made cylinder rifles.

In Root's design, with the barrel securely screwed into the forward part of a solid bridged frame, a much stronger union of all the major parts was accomplished. One of the novel features of this design was a sharply angled side hammer. Combined with the designer's name, this gave the rifle its popular designation, "the Root Sidehammer."

the rifle its popular designation, "the Root Sidehammer." Colt's first broadside for his "New Model Patent Rifle and Pistol" was published in 1858. It contained a listing



From these buildings along the Connecticut River at Hartford, Colt arms were shipped all over the world.

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COLT LONG ARMS

of one rifle model only. This was a sixshot sporting model of .36 caliber and available in short 15" and 18" carbine barrels or longer rifle barrels up to 30". Unique features of this gun, found in no others, were a patent bullet lubricator attached by metal straps to the left side (just ahead of the cylinder) and a cleaning rod that was held along the left side of the barrel by an eyelet stud at the muzzle and by a threaded stud in the frame near the recoil shield. Another feature, found on but few other models, was a trigger guard with projecting prongs on either side of the

trigger bow. These prongs would permit a surer grip with the trigger hand and the supporting hand could be placed between the bow and forward prong, thus keeping both hands back of the chamber mouths in case of an acci-

dental multiple discharge from the cylinder.

The six-shot round cylinder was decorated with a fancy scene designed by W. L. Ormsby. It pictured a hunter and four deer, two of which the hunter had already laid low. There were also the words COLT'S PATENT SPORTING RIFLE and the serial number. It should perhaps be noted that this was the only standard Hartford-made model (except for a few full-stock sporting rifles which followed immediately) whose cylinder had a truly cylindrical surface. On other guns, the cylinders were fluted, permitting no engraving-merely a Sept. 10, 1850 patent date in one flute. This patent was unrelated to the gun itself, having to do with cylinder locking pins and locking grooves. The fluting reduced the weight and did not impair the cylinder's strength to any great degree. Equally important, the fluted cylinder provided faster heat dissipation, an important factor in rapid firing.

As previously mentioned, the hammer was a very unusual feature. It was attached on the right side and sharply curved inward at the top so that the nose could enter a mortise in the frame and fire the chamber then in line with the barrel.

Unlike the Paterson-made arms, the line between the military and sporting arms in the Hartford-made cylinder guns was quite clearly drawn. The initial sidehammer model having been a sporting gun, it will give better continuity to this narrative if we continue with the sporting arms rather than intermingle the two types in the strictly chronological order of production.

The cumbersome nature of the attached rod and patent lubricator, a heavy cylinder with non-replaceable, integral nipples and the absence of any fore-end to protect the hand from excessive barrel heat were faults of the first model that led to development of several more practical sporting rifle models along with a five-shot shotgun.

The second sporting model was made without the wiping rod and lubricator. It was equipped with a wood forestock which extended under the barrel almost to the muzzle. Although this model had somewhat the appearance of a military arm, Colt advertised it as a sporting rifle and offered it in .36 and .44 calibers. Not many were made of this pattern.

On rifles of the Colt sidehammer type the cylinder pin was withdrawn from the rear. Latching this pin securely was a problem that plagued the Colt people and several changes in method were made, the first improvement taking place in this second model. Another efficiency change was made in the latch which held the loading lever, replacing a spring-loaded ball friction latch with the so-called "Navy latch" which held the lever more securely. A small hole, forming a gas port, was drilled in the strap over the cylinder immediately above the chamber mouth, a feature to be found in all the Hartford cylinder rifles except the first sporting model whose rear sight was mounted in the bridge above the cylinder.

Colt's third and final sporting design for cylinder rifles was a very handsome gun with a short metalcapped wood forestock. Rifles of this kind had a smooth dark blue finish; sometimes they were engraved and stocked with selected wood, the butt stock nicely checkered at the wrist.

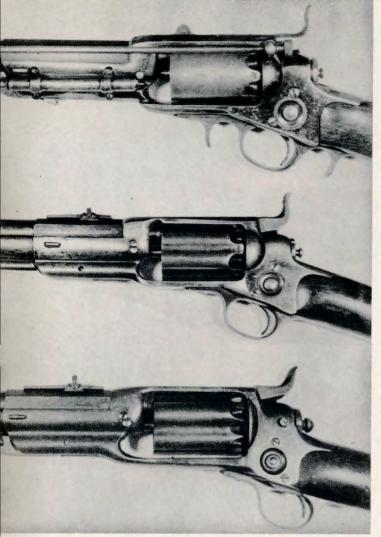
By this time the rear sight had been moved forward from the top-strap over the cylinder to the short flat at the breech of the barrel (which was round for the major portion of its length). A variety of sights was available—even telescope sights. A metal-tipped wiping rod was held under the barrel by a channel in the forestock and two ferrules. In addition to the .36 and .44 calibers initially offered, a .56 caliber rifle was introduced for big game hunting. This larger gun required a five-shot cylinder whereas the guns of smaller caliber were equipped with a six-shot cylinder.

Having reached what was thought to be the ultimate in a sporting rifle, Colt now turned his attention to shotguns. In general outline the shotguns resembled the half-stock sporting rifles but a larger frame and a longer five-shot



fluted cylinder were required. Removable nipples were standard with these and all Colt arms of this period with fluted cylinders. The shotgun calibers were .60 and .75 smoothbore, barrels from 27" to 36" in length. The big .75 caliber gun was fitted with a flared plunger for tamping down the powder, shot and wadding when loading without removing the cylinder. Colt had developed "Combustible Envelope Cartridges" for his rifles, and he followed through by making up prepared charges for shotguns. These encased loads were put up, five to the packet, with the powder and shot contained separately in different colored papers.

One of Colt's price lists stated, "In the 5-shot Breachloading Ball and Shotgun, the principle of Colt's pistols and rifles is retained with several variations to make it more suitable for the service of sportsmen in every clime.



The three basic Root patent sidehammer rifles. First Model, shown at top, had attached bullet lubricator.

salesman with an unproved product to sell. Now he was Colonel Colt (although the military title was an honorary state militia appointment). Samuel Colt had become a man of the world; he had given a paper before the Institute of Engineers in London and had established a factory and branch offices there. The famous artist George Catlin produced a series of pictures in which Colt pistols and rifles were shown in various services from shooting buffalo on the American plains to shooting peccary in Brazil. All in all, Colt was now an important industrialist and his firearms were known around the world.

Colt's established position made quite a difference in the attitude of the U. S. Ordnance Department. By 1856 they had purchased thousands of Colt Dragoon and Colt Navy pistols. They were therefore not reluctant to give Colt's patent revolving rifles a trial, and 101 were delivered for field tests on January 17, 1857. These were .44 caliber rifles with a 315/16" round barrel and a wood forestock running almost to the muzzle. A triangular bayonet was furnished with the gun. Col. W. A. Thornton, who had inspected Colt's Paterson-made arms and his "Whitneyville-Walker" pistols, also put his W.A.T. inspector's stamp on these guns.

Subsequent to this trial order and from 1857 to 1866 approximately 5500 revolving cylinder guns were pur-



Five shot military musket of the type used in the Civil War by the renown Berdan's "Sharpshooters."

It is smooth Bore, of increased caliber, and can be used either with cartridges or Powder Flask, Shot or Ball. . . . In a recent trial, at a distance of thirty yards, it put one hundred and seventy pellets in a circle twelve inches in diameter, penetrating seventy-five sheets of ordinary brown paper; the charge used being $1\frac{1}{4}$ ounces of No. 6 shot and two drachms of powder."

A box containing one thousand .75 caliber paper shotgun cartridges cost \$32.50. A wad cutter and nipple wrench were furnished without charge. The .75 bore gun with a 33" barrel weighed 10 pounds and cost \$50 in 1867. It is certain that not many were sold, for these were the days of the popular and reliable double barrel muzzleloading shotguns.

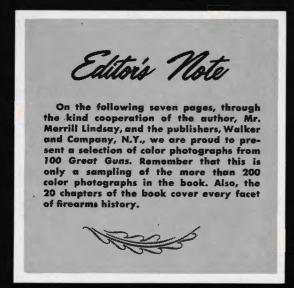
Turning now to the military models we find that Colt had somewhat more success with the army brass than in previous years. He was no longer a brash 21-year old chased by the U. S. Ordnance Department. Some were for issue to the militia and others were for the regular army.

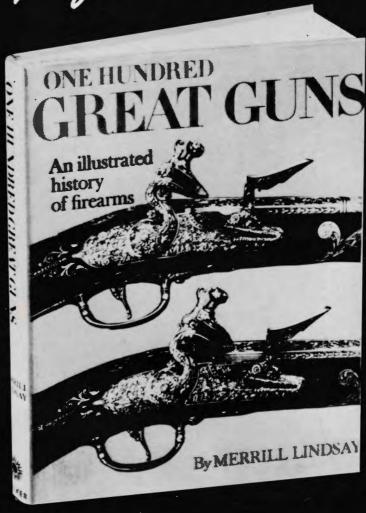
During the War between the States, Col. Hiram Berdan's sharpshooters were issued Colt revolving rifles although they had requested Sharps rifles. Colt claimed that, at a trial by the Board of Ordnance at Washington, shots from his rifle penetrated 14 one-inch pine boards whereas the Sharps penetrated only 9. The Colt rifles in Berdan's command gave a good account of themselves in the Battle of Big Bethel on March 27, 1862, the first engagement of the war in which repeating rifles were used by combat troops. The "Fifth Connecticut Rifles" was armed with Colt revolving cylinder guns, as were some other units.

Barrels on the Colt full-stock cylinder rifles classified as military models varied from 24'' to $37\frac{1}{2}''$. The $31\frac{5}{16}''$ and $37\frac{1}{2}''$ barrel lengths were the U. S. army favorites

(Continued on page 56)

A Guns Magazine Color Excerpt from





SELDOM IN THE history of firearms books has any book received as much acclaim and exposure as 100 Great Guns. And, seldom has any book been more deserving. This is a big book—big in actual size (10½ x 13") and big in scope. It is, beyond all doubt, a great gun book.

The more than 370 pages are filled with gun lore, covering the earliest weaponry and the latest firearms developments, and filled, too, with some of the most handsome color photography I have ever seen; more than 200 color photos in all.

100 Great Guns, in addition to being a printed monument to firearms development, is also testimonial to the

many years of labor—albeit a labor of love—for the author, Merrill Lindsay, and the photographer, Bruce Pendelton. They traveled far and wide, visiting more than 14 different museums, in all parts of the world, to find examples of the great guns pictured.

In addition to the galaxy of color photographs and the other excellent illustrative matter, the words written by Mr. Lindsay flow together to bring the reader more than mere firearms facts. They spin the tale of the men and the weapons which make up the story of the wonderful world of guns. 100 Great Guns is more than a book; it is 100 great gun books under one cover.—J.R.

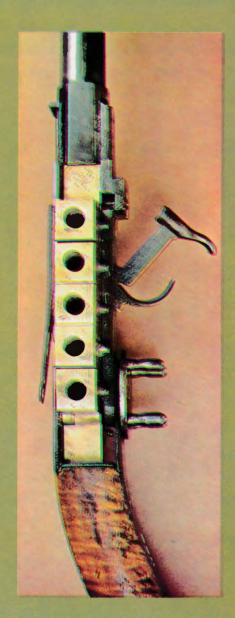
Reading maketh a full man, conference a ready man, and writing an exact man.

-John Ruskin

Top: Volcanic rifle, patented in 1854. Center: Presentation Henry rifle, serial No. 1443. Bottom: Presentation Winchester '66; gold-plated receiver inscribed to H. Reynolds. Harry Sefried collection.







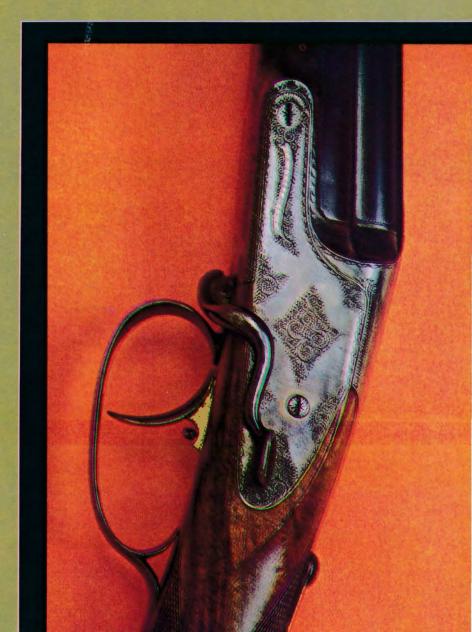
Bennett under-hammer breechloading percussion chain rifle, with linked chamber blocks. Ser ial No. 2240, .40 caliber. West Point Museum.

Three Ripoll miquelets. Miniature pair of kit pistols (about 5"long), and heavy horseman's pistol. From the Joe Kindig, Jr. Collection.

Fine single shot rifle marked with "I.D. Moritz-Sohn, Leipzig" on the receiver, "J. P. Sauer & Sohn, Suhl" on the barrel. Caliber, .44 Magnum (11x56R) Serial No. 43124. From the Harry Sefried gun collection.



Dardick pistol, which shoots round bullets in triangular cases (Trounds). Made during the early 1960's. From Harry Sefried collection.

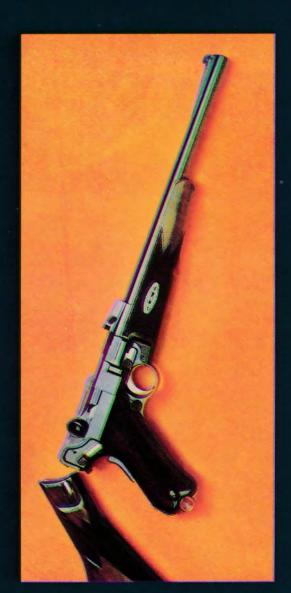




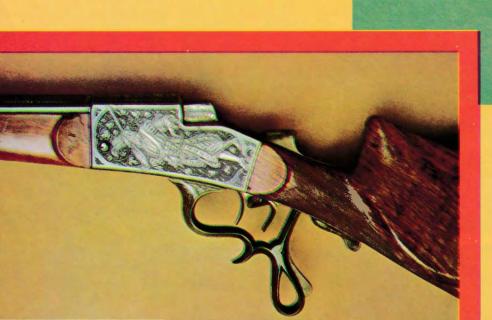


THE KENTUCKY RIFLE

Kentucky rifles from the collection of Joe Kindig, Jr. Top to bottom: York, or Lancaster, Pa., circa 1770, maker unknown. 2. Lancaster, circa 1820; the horse head patch box is signed M. Fordnay. 3. Signed M. Aldenderfer 1809; Berks County, 4. "Samuel Pannabecker," Lancaster, circa 1815, 5. "G. (George) Eister," York, Pa., circa 1795, 6. "P. Smith" wender or swivel breech, 1825.



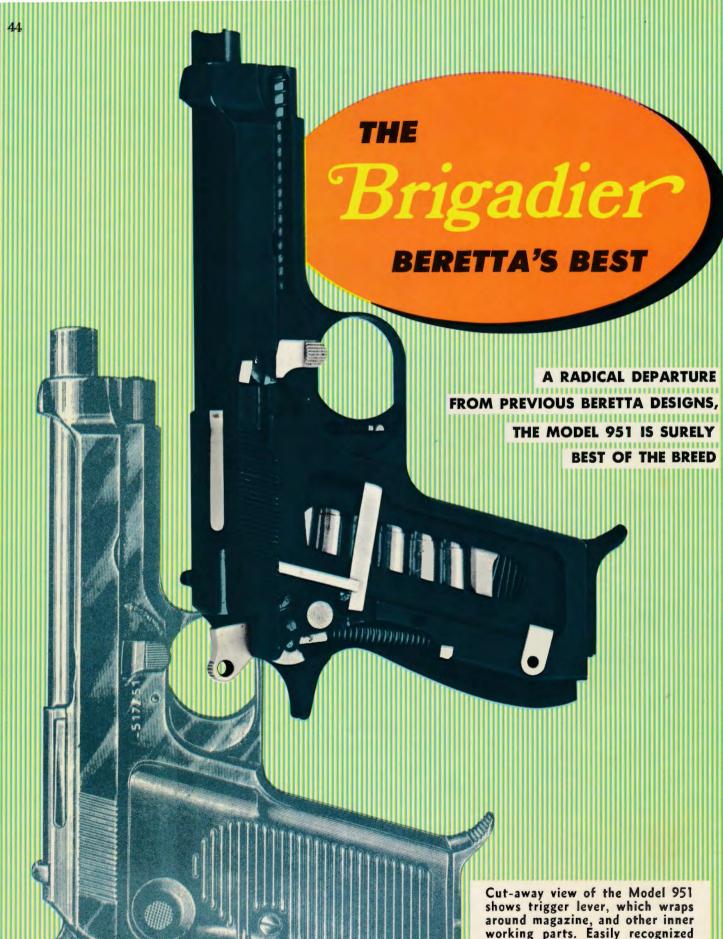
The Luger, a classic auto pistol, is shown here in the rare carbine form, with the detachable shoulder stock.



Sempert-Krieghoff schuetzen rifle, system Marrkolbe. Serial No. 7635, chambered for 8.15 x 46R cartridge. From the collection of the author.



Bergman auto pistol, Model 1894, caliber 7.65, 5-shot. Below is the first of the semiautomatic pistols, invented by Hugo Borchardt, and made by Lowe of Berlin. These guns, serial nos. 5294 and 5286, from the collection of Musee d'Armes, Liege.



working parts. Easily recognized are the recoil spring and guide, and the hammer spring and guide.

By J. B. WOOD

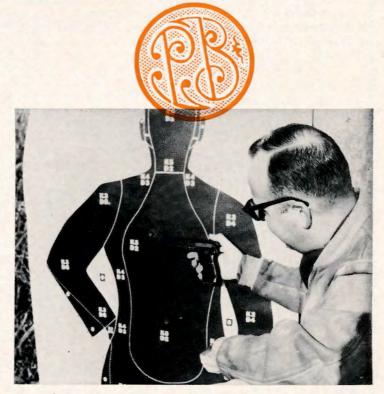
TEARLY 300 YEARS have passed since the first Beretta firearm was made, in 1680, and the Beretta Company has grown into a sprawling complex of spotlessly clean workshops at Gardone, near Brescia, in the valley of the Trompia River. At the turn of the century, young Pietro Beretta was traveling extensively, studying firearms manufacturing in the new industrial light that was beginning in Europe. When he assumed control in 1903, he immediately began to modernize the factory according to his experience. The name had come full circle. The first Pietro Beretta had begun the factory in the 17th century, and the last Pietro Beretta had transformed it into the modern industrial concern it is today.

Looking forward to the increasing acceptance of the automatic pistol, Beretta employed Signore Tullio Marengoni as chief designer. Time has proved the wisdom of this choice. Signore Marengoni's earliest design produced by Beretta was the Model 1915, the first automatic pistol officially adopted by all Italian armed forces. (The Glisenti 1910 Pistol preceded it, but was used mainly by officers, special troops, and the Navy.) The Model 1915 was a major breakthrough in firearms design, combining a simplicity and ruggedness that have characterized Beretta arms ever since. The caliber was 9 mm Glisenti, a scaled-down in power version of the 9 mm Luger round. This being an unlocked, blow-back system, a heavy buffer spring was added in the frame to encounter and cushion the slide extension during recoil. This was an adequate provision for the cartridge used, but did not prevent the unsupported forward portion of the magazine being dented by the inertial movement of the rounds during recoil. The Model 1915 was also made in 7.65 mm.

In 1923, the second Marengoni design was produced, and the Beretta pistol began to assume the appearance with which we are familiar today. The hammer was moved outside, and the awkward side safety redesigned for easier operation. The cartridge was still 9 mm Glisenti, the action still straight blowback with an impact buffer. The magazine, however, was now of slightly heavier steel, correcting the weakness of the Model 1915. (Continued on page 60)



From the Beretta factory comes a test target, the Brigadier pistol, a spare magazine, proof firing tag, and container.



Out of five shots from the hip at 25 yds., two shots hit the lower torso, two the chest and one the shoulder area.



H OW FAST SHOULD you shoot skeet and/or trap targets? A quick answer: fast enough to make sure that you break them!

One of the first problems that faces the new shooter in both trap and skeet is how fast to shoot the target. And, since by the time this issue of GUNS reaches print the weather over most of this continent will have attracted many new recruits to the clay target games, I have some words for the beginner (and for some veterans). Most new shooters do not break targets very quickly. It can generally be said that you could sit in the clubhouse and identify the new shooters on a squad by the fact that their targets fly farther than those of the veterans before being shot at or broken. It usually follows that as the neophyte gains experience and confidence, the tempo of shooting increases in direct proportion.

On the other side of the coin, the veteran shooter has been known to get carried away by the spirit of the thing, and shoot targets a mite more quickly than necessary. I've seen critical targets missed (and missed some myself) simply because the shooter fired away as soon as he could see the white of the (target's) eyes.

Like I said, you should shoot targets fast enough to break them. If your scores improve by shooting more quickly, shoot fast. If the number of X's on the score pad improves with a little more deliberation, then deliberate.

There are obvious advantages to shooting as fast as the shooter's reflexes, eyesight, and ability will permit. The advantages of fast shooting are easily apparent on a windy day. If a target can be fired at before the wind has a chance to overcome the effect of the trap spring, it's a lot eas-

ier to break. Another advantage of fast shooting is one which is often overlooked by the most veteran of gunners. That is the farther a target flies (especially in trap), the greater the angle. And, the greater the angle, the more difficult a target is to break. This is elementary physics, and also the reason that another yard in handicap trap often stymies the shooter.

Said in another way, if you are shooting 16-yard trap, and are overly deliberate, in effect you are shooting at the same angles you would get from 19 or 20 yards.

There are, of course, some obvious disadvantages to shooting too fast beyond that of not getting a good target picture. As the shot mass leaves your gun muzzle it forms into a cone with the open or leading edge increasing in diameter in proportion to the distance of flight. In other words, you have a wider pattern thirty yards from the muzzle than you have at twenty yards. Within reasonable limits, it is safe to say that you might miss a target at twenty yards that the wider spread of the pattern would pick up at thirty yards.

At this point, I shall explain that I'm not trying to offer a treatise on exterior ballistics, but only trying to make clear some of the reasons for shooting either faster or slower.

There are, as might be expected, some glaring exceptions to everything that I have said about shooting either fast or slow. I will recall one of these exceptions in trap. One year at Herschell Cheek's fine club in Clinton, Indiana, one of my Southern Indiana buddies was in a shoot-off for the state handicap championship. His opponent was one of those shooters who broke the target just as it appeared over the traphouse. My buddy habitually broke his targets just as they were about to hit the ground after

maximum flight. Some of the Southern Indiana group could not bear to watch because they were sure that on each target our friend was not going to shoot in time, and that he would lose the target. In the face of much that I have said, my friend, the slower-than-molasses shooter, won. During my competitive skeet days, in the late forties and early fifities, one of the toughest skeet gunners in Indiana and the Mid-West was also one of the slowest. He habitually shot the incomer on station seven practically as it was resting on the gun muzzle. It took iron nerves and a strong constitution to follow him through a round of skeet, and it would have surely brought about the early demise of anyone who dared wager money on his performance. But the fact remains that he was good-very good.

All of which leads to the conclusion that the ideal shooting speed for most of us lies somewhere between the two extremes. If your shooting tempo is obviously slower than most of the people on your squad, or whom you have watched shooting, you may find that speeding your shots will put more broken targets on the score pad. If, on the other hand, you have slipped into the habit of trying to shoot them off the trap arm, as I have observed too many short-timers try, you can put higher figures on the board by at least taking time to make sure of your sight picture.

And one more observation that can be helpful to the new shooter: try to develop as nearly as possible the same timing for each shot. In other words, don't shoot one target quickly, and another one slowly. You will find that higher scores go to those shooters who have developed a rather regular pattern of timing, both of getting off the shot and pulling the trigger.

Especially in trap, you will notice that your own scores will pick up if you are on a squad in which each shooter gets off his shot at about the same intervals as the rest of the squad, and breaks his birds at about the same distance from the trap. This last bit of advice should not, however, be taken to mean that you should let a squad shooting at a markedly different tempo than yours throw your timing off. If you must shoot slowly to break targets, and you are thrown in with a bang-bang squad, then shoot slowly (or the reverse, for a fast shot on a slow squad). It is a joy and a thing of beauty to be a member of a uniformly timed squad, but it is not always possible and you must develop the faculty for running your own race.

In anticipation of some trapgumers clobbering me for seeming to give carte blanche to the "nervous nellie" shooter who adjusts his glasses, hitches up his trousers, removes a speck from the gun muzzle, takes three sighting pictures, tries the stock position three times, changes foot position twice, coughs, and studies the landscape and/or ground intently between each shot, I'm not. Neither am I giving carte blanche to the eager beaver on the next post who is snicking a shell home in his chamber just as you call for your bird. This can drive strong men to drink, and cause a lot of missed targets.

What I do mean is that each shooter owes the rest of the squad the courtesy of being ready to shoot in turn, and hopefully at about the same interval between shots. I do not mean that a slow target-gatherer should let a fast squad spoil his timing, nor should the shooter who must shoot when his sight picture is right let a slower-shooting squad throw off his timing.

There is one more observation re-lated to shooting etiquette that deserves to be made each year about this time when clay target shooting is coming into full swing. This observation is that you owe it to yourself and the members of your squad, as well as the club where you are shooting, to be ready for shooting when your name is called. You owe it to yourself because it is an accepted fact that you can't shoot up to your potential if you arrive at the post all flustered and out of breath when your squad was ready but you were not. Find out where you shoot, when you shoot, and be ready. Not only can your late and flustered arrival pull down your score, it can put your squad-mates on edge, and divert their minds from the business at hand, which is to shoot the best score they can. Also, your late arrival can cost the club money (which many can ill afford) because your delay might eliminate the starting of one or more squads later in the day.

And, beyond the obvious advantages of arriving on time—to you, your squad, and the club—there is another plus for early arrival. An early arrival can give you, in many cases, the only opportunity you will have to know your squad members as persons rather than competitors. This, I kid you not, may mean more to you than all the shooting you will ever do. Undoubtedly some of the finest people in the world shoot trap and skeet. Why not take time to know them!



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CASELESS AMMO

(Continued from page 20)

every executive present, from R&D on up to Sales, visibly shuddered. I imagine the same scene has taken place at Daisy. At any rate both plants are hot at work designing extraction systems. But nothing they come up with will be as elementary as the little hook that does the job for the brass case.

Caseless ammo will never be something you can roll at home, concocting a round that delivers precisely the ballistic performance you desire. Without the brass case, ammunition will be strictly over the counter and take it or leave it, a situation not apt to charm the sporting gentry.

It follows then that aside from the .22 caliber plinking market that Daisy is busily corraling, the number one caseless customer will be the military. And designing a caseless cartridge that will toe up to the Army's performance specs is going to cause more Excedrin headaches than the sinking of the Titanic did for the Shipbuilders' Association. The brass case performs functions far more important than just serving as a powder jug with the primer conveniently attached to one end and the projectile poked into the other.

Take the simple matter of robustness. A metallic cartridge can withstand tremendous abuse in shipment and field use, besides the battering it takes in automatic mechanisms. The caseless round is a fragile item by comparison. The standard cartridge is virtually waterproof, and few battles have been called off for rain since it was adopted. Caseless rounds expose the propellent itself to the elements.

Not least amongst the virtues of the brass case is its serving as an insulator. Cartridge combustion temperature peak often runs in the neighborhood of 5,000° F. (Several times the melting point of steel, and about half the estimated surface temperature of the sun.) With most of our automatic small arms chugging at 600-900 rpm, the weapon heats up rapidly. Cartridge cookoff can be a real problem, and it's certainly not impossible to melt the barrel with sustained firing -General Hatcher did so several times. Without the brass case, things can only get worse, for much of the residual chamber heat is expelled with the empty case, and the freshly chambered round helps cool things off while at the same time its case protects the powder charge from cooking off. Even under the worst circumstances, the brass case will delay cookoff for 10 seconds.

With all this going against it, the obvious question is "Who wants caseless ammo?" The brass case is beyond doubt the greatest thing that's happened to firearms, so why backtrack? The main reason is that the case costs money. Brass is about 30 percent zinc and 70 percent copper, and the latter item is chronically in short supply. We've yet to fight a war without running unnervingly short on brass, and with greater and greater volumes of full-auto firepower being used, we may yet be forced to melt down grandma's candelabra. Besides the cost of raw materials, a centerfire brass case requires several dozen manufacturing steps, and winds up whole-hogging the cost of the loaded round. In war, this considerable investment is invariably lost when the round is fired.

As an indication of how much brass we strew around various jungles, Uncle Sam's favorite paddy sweeper is "Puff the Magic Dragon;" a C-47 fitted with four 5.56mm Miniguns, each firing at 6,000 rpm. That's 24,000 hulls a minute this gunship spits out -more than 320 pounds of empty cases. But evidently it's not enough, for Gen. Bruce Holloway, Air Force Chief of Staff, recently stated that the old C-47's are being replaced with C-119's carrying five instead of four guns, for 30,000 rounds a minute of firepower. They'll carry more ammo than the C-47's, so they can hang in and fight longer, General Holloway noted.

Phantoms and such mount 20mm Vulcans, also at 6,000 rpm each. The cartridge case for this round (God knows what it costs) weighs a stunning 1,820 grains. So for one minute's firing, each gun produces 1560 pounds of loose brass which has to be retained on board to avoid airframe damage. Ejecting hulls against G-forces of aircraft manuver, and chuting the empties back for storage can be a designer's nightmare.

In addition to cost, there's the matter of logistics. Supplying an Army that burns ammo like ours does is an enormous problem, especially if supplies have to be airlifted for any distance. Frankford's experimental rounds are 50 percent lighter than the norm, and 37 percent less bulky. There's not a G.I. extant that wouldn't feel better toting twice as much ammo

as he can presently stand up under. It's obvious then that although caseless ammunition will be a monumental trial to develop to the point that it can effectively replace conventional fodder, the process is a virtual necessity. The brass case, blessedly useful and convenient though it is, has to go. What are we doing to hasten its departure?

The Frankford team has had twenty years to mull the problem over, and for most of that time, seem to have done little more. They've gone at it the hard way by concentrating on high intensity loads—7.62mm—and their prototype stuff is complex in the extreme.

The government longhairs start with standard granular rifle powder (Col. Crossman mentioned 4895), which they partially dissolve with a solvent, enough to make a workable mass, but not enough to lose the burning characteristics of the individual grains. They mould sundry items out of this gumbo-support tubes, sleeves, propellent plugs, etc., each of a slightly different nature and composition. The whole jigsaw puzzle is assembled and glued together with a combustible binder which permeates the whole assembly. A consumeable percussion primer unit is seated in the base, while the projectile protrudes from the front. The final product looks like a stubby little black ceramic bottleneck cartridge.

Smith & Wesson has taken a radically different approach. They're a profit-making outfit by philosophy, and their research and development department is known for its awesomely fast reaction time. Now that Smith is interested in caseless, things will be happening. There'll be no two decades of foot dragging at the Springfield plant.

S&W got involved in 1966, when Hubert Usel, an Austrian research engineer approached them with his caseless ammunition project on which he had already worked for several years, William G. Gunn, President of S&W, keeps constant track of which way the wind is shifting, and promptly bought the action. Usel was hired on and spent three weeks at the S&W plant in December of 1966 getting Gunn's research crew cranked off. Since then, Usel has been dividing his time about equally between Springfield and Austria, and should by now have unimpeachable jet-set credentials.

Hubert Usel, at 40 years of age, is a slender, dynamic, intense fellow, and seems to have trouble keeping his shirt tucked in. I had a brilliant physics professor once with the same problem, so it must be a direct yardstick of scientific brainpower. Hubert runs Usel Laboratories, an electrochemical research outfit headquartered in Inzing, Austria, in the Tyrols about seventeen kilometers west of Innsbruck. His previous inventions have been things like leakproof nickel-cadmium batteries and weightless pack. Usel cobbled up an all-electric gun, and it worked, the only problem being that in order to achieve a worthwhile muzzle velocity, he would have to plug it in to the Grand Coulee Generator. Having failed to get the total answer from electrical power, Usel's training told him to turn to chemistry, and in 1964 he began

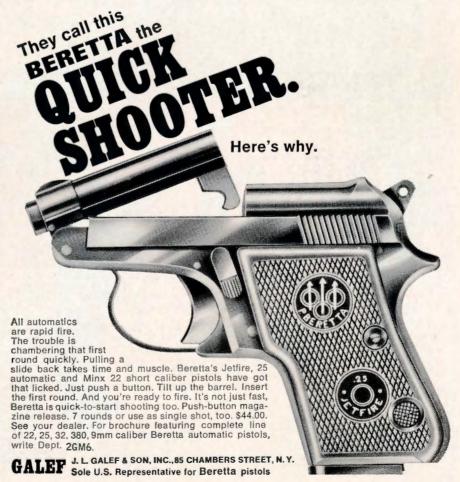


Smith and Wesson's M76 submachine gun, modified for experimental caseless ammunition, uses electrical ignition system.

bricks, and he sidled up to caseless ammo by an unbelievable route.

It occured to him that gunpowder could be eliminated, and a weapon could discharge projectiles by electrical power, presumably from a battery working on a propellent. After two years the project was shaping up, and Smith & Wesson picked up the ball.

To date, S&W has been working exclusively with the 9mm Parabellum as a base round, firing 124-gr. jacketed





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bullets, differing from the norm only in having a teat extruded from the base to which the propellent plug is attached. The S&W round uses 6 gr. of propellent for a total cartridge weight of 130 gr., as compared to 183 gr. for a standard round. The weight savings then is about 1/3, and compares unfavorably with Frankford's only because the 7.62mm contains a lot more brass, proportionately, than the Parabellum. Usel's load chronographs at 1133 fps from an eight inch barrel, and because only the one propellent mixture has thus far been used, and because S&W hasn't yet completed the static fixtures for full ballistic testing, there's little of substance to be added.

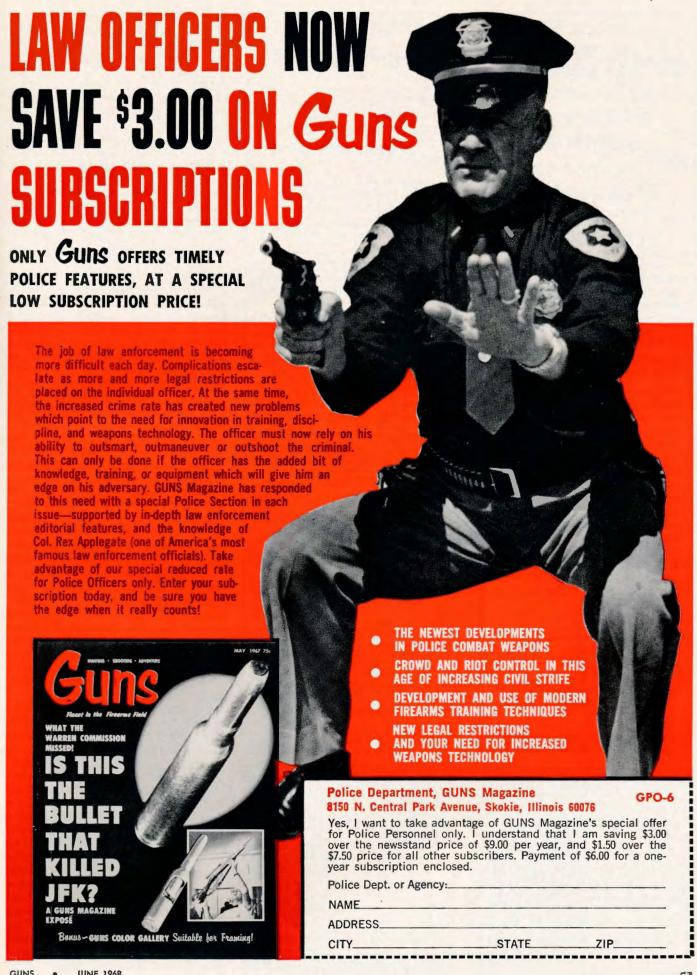
Usel is enthusiastic about his concoction and states that by varying the propellent composition he will be able to duplicate any pressure-time curve and any burning rate in the book for virtually any caliber. In addition he feels he can considerably improve on standard powder performance by producing much longer, lower pressure-time curves than conventional powders will give, and still maintain complete combustion. Only time will serve up answers, but for the moment, it's hard to argue with the guy who invented the stuff.

As for the composition of the propellent, S&W is thoroughly mum. The safest bet is that it's some type of nitrocellulose derivative, particularly since it appears to be somewhat fiberous. Its manufacture is purest simplicity. Smith & Wesson just mixes up a tubful like Macbeth's witches, extrudes it, compresses the pellets to proper dimension on the base of the bullets, and trundles them into the oven to cure. No bonding agent is used, since the mess is thoroughly homogenous. The result is a hard, tough, nugget of power that stands the gaff of an SMG mechanism with no tendency to chip, crack, or separate that I could detect. If it chances to work out to Usel's rosy predictions, this item will be so much better than Frankford's convoluted cartridge that comparisons will seem ludicrous.

What really sets the S&W development apart from other approaches is that it ignites electrically. To the base of the propellent plug is affixed a primer disk, the composition of which is hyper-secret. An electrode in the bolt face replaces the firing pin, and when the bolt slams fully home, a circuit is closed firing the round. As the bolt begins to recoil, the circuit is broken again.

The M76 test weapons were an electrician's delight, and the underslung battery housing gave them a slightly

(Continued on page 52)







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pregnant look. A switch was set into the left grip panel, and wires ran along the side of the weapon to the contact point above the bolt. Eventually everything will go inside, and one engineer regarded the weapon somewhat dolorously, noting, "If we had known we were going to have to string wires in the M76, we would have left a bit more room in there."

At present, a Burgess 30 volt U20 photoflash battery is used as a power source, and one test gun has been in use for over four months with no shortage of juice. In final models the battery will probably mount inside the pistol grip, and will switch to the trigger so that battery drain will take place only when the trigger is actually depressed to fire. Battery life should then be measureable in years, barring leakage, even if the gun is in almost constant use.

Early prototypes gave misfires when firing residue fouled the electrodes, but that was cured by a cleaner-burning propellent. However, the obvious questions surfaced: What happens when you get mud on them; what about shorting when the weapon is drenched? The thought occurred that maybe Usel had been hung up on the electrical approach since his first experiments, and that perhaps this was the wrong way to set things off.

Smith & Wesson countered by asking what happens to conventional weapons when the bolt face or chamber get caked with mud. Obviously S&W believes that by the time they're ready to sell a line of weapons for caseless ammo, they'll have them debugged to the point that the reliability factor will speak for itself. They are confident that their electrical chopper will keep firing when conventional weapons fail. If so, it's hard to argue with the logic behind electrical ignition.

Certainly, percussion primed caseless ammo is more a hazard in shipment. S&W's primer disk is completely insensitive to impact, and is no more heat sensitive than the propellent proper. Assumedly, static electricity will have no effect, and it will ignite only from a lightning bolt or a direct zap from the firing electrode. Percussion priming also weakens the base of a caseless cartridge, and is much more complex an operation in manufacturing than Usel's approach. Certainly electric ignition, since it's a new endeavor, presents a lot of bugs to be worked out, but Smith & Wesson may well be on the right track.

What about all the other roadblocks we were talking about? As for brute durability, caseless may never compare with metallics, but the S&W cartridge seems pretty sturdy stuff. Any blow likely to do it much damage would probably bend a brass case to the point that it couldn't be chambered. The stuff will not chip or shatter—S&W's headspacing arrangement proves that. The round, lacking a case, headspaces the ogive of the bullet against the lands of the rifling. When the bolt slams shut, the propellent is given a hearty smack on the rear, mashing it down about 1/10th shorter than it was before, and engraving the rifling on the guilding metal of the ogive. And although running the battered round through the magazine again might not be the best notion since, among other reasons, the primer might not have a solid bearing on the electrode second time around, the propellent is far from collapsing on the job even after such a pounding.

Waterproofing the propellent was another imperative, since we can hardly go back to the days when "Keep your powder dry" was the universal military slogan. S&W proved they have this one pretty well licked by heaving a loaded magazine into a pail of water and letting it soak for ten minutes. All 36 waterlogged

rounds fired without complaint. When the ignition system catches up, S&W plans a full program of firing tests under a water spray.

Fireproofing the power plug proved to be more of a pain than waterproofing. Back in the primitive days of Usel's brainchild, it wasn't rare for the magazine to light up halfway through a full-auto burst and leave the firer with a smouldering clip full of loose bullets. No danger, but it sure did smoke up the range. The answer, of course, was a fireproof coating, and Hubert tried everything from shellac on up. The requirement was that the propellent be highly fire resistant, yet the coating had to be thorougly consumed on discharge lest the chamber gum up eventually. These conflicting criteria have vet to be resolved.

These are the problems that still must be reconciled, and it will be quite awhile yet before caseless ammo for military useage gets out of the experimental stage. Yet we are now far enough along to state that the days of the metallic cartridge in war are strictly numbered. If Smith & Wesson has anything to do with it, brass will be for polishing, not for shooting.

BETTER PISTOL SHOOTING

(Continued from page 27)

The clothing worn on the range may be a hindrance to the shooter. Tom wore a tight fitting coat which interfered with his gun hand as he aimed. He could have taken the coat off, but he wanted to wear a coat. So the suggestion was made that he get a shooter's coat or a golf jacket with a free swinging sleeve. He did, and Tom's score went up!

Jack ran the heels down on an old pair of shoes he wore to the range. He was slightly off balance at times. Alas, we didn't spot those heels for some weeks. And you can get awfully uncomfortable in tight fitting shoes. Either get a special pair of shoes for the range or keep your heels in good condition.

I like a range where they have lockers so the men can change into shooting clothing. Wear whatever you find is most comfortable for you. One fellow enjoyed his coveralls very much; fine, if this helps his shooting.

Actually we can't often separate the physical from the psychological. A bodily discomfort can cause a mental reaction. And the reverse is also true; a mental block of some kind can cause a physical discomfort. Some shooters don't know what to do with

the non-shooting arm, for instance. Some men put the hand in the back pocket; others link a thumb around a belt; some drop it limp at the side; and there are those who bend it at the hip. Whatever is most comfortable for you—that's what you do. Just how can you tell when it is most comfortable? Well, when the arm ceases to exist, and you never think about it while on the shooting range.

If your hand is uncomfortable while gripping your pistol, you are going to worry about it and not concentrate on the shooting as you should. The size of your hand, and how the pistol fits, can be an important factor in comfort. If you can purchase a pair of pistol grips that fit, get them. Or, if you can afford it, get a pair of custom-made grips. Sometimes, I think the fact that a man has a pair of custom grips gives him a psychological boost, and his score will go up.

I will admit that I have a problem with the police officer who has to shoot on the range with his service gun and standard grips. He may be allowed a grip adaptor, which may solve the problem. If not, he has to do his best to find the most comfort-

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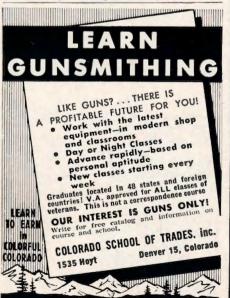
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able grip under the circumstances.

There are other physical factors that may contribute to a lack of scoring advancement. Have an eye checkup periodically. If you wear glasses, you might find a stronger lens a boon in shooting for that higher score. We have men who come to the night range after a hard day's work. Some find shooting a kind of physical and mental relaxation. Others find they have to sit down and relax a bit before getting on the range.

In studying the psychological factors, we really have a tough situation. Under ideal conditions a man should be able to tell himself what it is that bothers him when he is on the range. And from some talks I have had with men, this can be done. Sometimes it is a long task but with effort it can be accomplished. So let's look at some of these psychological problems; maybe you can recognize one you have.

Louis hit the 80's and no higher. Then one day he announced he was going to leave the club. Why? Because his wife bitterly opposed pistol shooting. There it was; all the time he was on the range, his subconscious held the fear of the conflict with his wife. What to do? I suggested that he and his wife and I and my wife go out for a Sunday picnic. I chose a spot with a range where we could picnic and shoot. Meanwhile, my wife went into action. She told Louis' wife she was a shooter, and how much she enjoyed it. But Louis' wife wanted nothing to do with handguns, so my wife gave her instructions in rifle shooting. End result, Louis remained in the club, his shooting scores went up, and he went with his wife from time to time to the rifle range.

In some people, even though they are good shots, there is still a fear of bodily danger on the range, and generally you can pin it down to the possibility of eye injury. Shatterproof eyeglasses are a must, even for those who do not have this fear in their subconscious. Here is where the fear of a physical injury does have a psychological effect.

The next item is one that drives me nuts! Even in this day and age a lot of folks have certain superstitions. As an example, Mike believes Thursday is his lucky day. Put a match on

that day and he knows he'll do fine; other days, his scores will drop. Sid claims that the number three is his lucky number. He pleads to be number three man on a range during a shooting match, otherwise, his score will go down. Burt has a rabbit's foot in his shooting case. He touches it before going into a shooting match. If it should be lost, I guess the world might come to an end.

Maybe you have one of these in your system. What to do about it? Actually, the man conditions himself to believe such things are true, and the process of unconditioning can hit him hard. If you can get it out of your system without adding a new psychological factor, then do so.

Now Bill-and others like him who want to be top shooters-face a psychological problem that is sometimes known as "The Perfectionist Com-



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plex." Before you condemn him, take a good look at yourself. It's not a matter of life or death. (Though to a police officer it might be at that.) Remember, you are just putting holes on a sheet of paper closer and closer together. Take it in its stride. When you find you are no longer enjoying the shooting and it has become sort of an obsession taking control of you, that's a danger sign. Remember, too, that both physically and psychologically you are a human being. And human beings aren't perfect. Keep trying to improve, but ask yourself what you'll do after you hit 100.

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COLT'S SIDEHAMMER GUNS

(Continued from page 35)

and these guns were produced in .56 caliber. Other full-stock rifles were made in .36, .44 and .50 caliber, and even a few experimental pieces were tried in .40 caliber and a whopping big .64 caliber.

Under the military heading also must come the carbines, although many civilians used carbines for sporting purposes. The carbine designs, being primarily intended for the cavalry (as indicated by old Colt literature), we shall treat them in that light. The standard carbine models had no forestocks, Barrels were short-15", 18" or 21". A saddle ring was fastened to a stud in the frame on the left side. A few carbines, believed to be primarily for civilian use, were fitted with sling swivels on the underside of the frame and butt-stock. Calibers were the .36. .44 and .56 standard used in rifle models. Carbines were the least expensive of all the Colt cylinder arms, selling to dealers from \$30 to \$35 in 1860.

In 1859 Colt sold 62 carbines (with their appendages) to the U. S. for \$32.50 each. And these were a very special model, known to collectors as the "Artillery Model." They had a 24" barrel with a wood fore-stock extending under the barrel to within 6 or 8 inches of the muzzle. Near the muzzle on the right side of the barrel, was a stud designed to secure a saber bayonet. Few were made, and they are consequently a rare collector's item today.

An interesting study may be made of the subtle changes in the lock frame of these Colt sidehammer guns as production progressed. One of the more obvious changes is in the positioning of the trigger. On the fullstock artillery carbines, some standard carbines, on the shotguns and large bore rifles, and on the long barrel military rifles it will be noted that the trigger is about an inch back of the hammer rather than directly under it as on most of the sporting models. It was found that this position permitted a firmer grip around the wrist of the stock and a steadier trigger pull.

In general, the soldiers did not take favorably to Colt's cylinder rifles because of their reported tendency to discharge more than one chamber at once and by reason of the flash and escaping gas so close to the face, at the juncture of barrel and chamber. But many recognized authorities disagreed with these views, claiming that carelessness and ignorance were the cause of any problems rather than the construction of the gun itself.

Captain Hans Busk of the Victoria Rifles, a prominent English writer, had a very favorable opinion of Colt's rifles. In his book *The Rifle and How* to *Use It* published in 1862, he wrote:

"I may now briefly advert to the 'repeating principle,' as applied to firearms in general, but more especially to pistols and rifled carbines. It is to our Trans-atlantic friends that we are indebted for the perfection of these weapons; for though, more than two centuries ago, various attempts were made to produce a series of successive discharges from one arm without the necessity for reloading, it is to Colonel Colt's perseverance, energy, and mechanical skill that the merit is due of having successfully vanquished all the difficulties that presented themselves in their construction.

"Innumerable were the objections he had to contend with at the outset. Many sneered at the idea as preposterous. "They would always





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be liable to get out of order. . . . They would take too long to reload. . . . They would, besides, always be missing fire,' etc. Colonel Colt fortunately did not, as many under the circumstances would have done, sit down and wage an idle paper war with his opponents. He set to work and demonstrated that none of them knew anything of the subject on which they were all so confident. It was, however, natural that prejudice should be roused against such an innovation. No invention of any value was ever yet otherwise received."

One of the most enthusiastic advocates of Colt's cylinder rifles was H. W. S. Cleveland, a respected American sportsman, arms expert and writer. In his book Hints to Rifleman published in 1864, he had this to say on the subject:

"Colt's rifle is constructed on the same general principle as his pistols. A revolving chamber receives the charges, which may be either loose powder and ball, or cartridges; a rammer which is moved by a lever. insures their being sent home perfectly true, and the balls fit so exactly to the bore of the chambers as to close them hermetically. The caliber of the barrel being .02 of an inch less than that of the chambers, the ball is necessarily forced to fit itself exactly to the grooves, which are seven in number, and cut with a gain twist. The charge is fired with a cap, and the working of all the parts is beautifully simple and exact. The excellence of the material and workmanship of these guns require no setting forth at my hands, as the reputation of Colt's arms is established in all four quarters of the globe; but it may not be amiss to state the fact that I have in my possession one of his rifles which I have had in frequent use for more than two years, and from which I have fired over three thousand shots, and it has never been in the least degree out of order, has never been in the hands of the gunsmith, and as evidence that it maintains its precision unimpaired, I may mention the fact that I have recently, with open sights, placed ten successive shots in a nine-inch ring, at 200 yards.

"I find the apprehension to be very generally prevalent that these guns are unsafe, from the liability to accidental discharge of other chambers than the one which is in line with the barrel. This prejudice has arisen from the fact that such danger did exist with the first pattern of gun, but, as now constructed, such an accident may be said to

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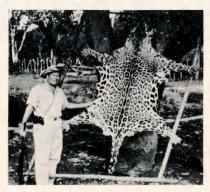
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GUNS JUNE 1968 57

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"Another objection which is brought against Colt's rifle, is the theoretical one that much of its force must be lost by the escape of gas between the chambers and barrel, to which it is a sufficient reply to state the fact that its penetration is superior to that of any gun using the same weight of powder and lead.

"Frank Forester's criticisms on Colt's rifles were directed at the first model, and have no application reliable and certain weapon to fire that I have ever used, and I cannot resist the force of my conviction that if I were alone upon the prairies, and expected an attack from a body of Indians, I am not acquainted with any arm I would as soon have in my hands as this.

"To this I will add that I have never used any gun whose performance has proved so invariably satisfactory in all respects as Colt's rifle."

From the faraway Cape of Good Hope this favorable news of Colt's cylinder rifles was reported:

"On my recommendation, Mr. Chapman, one of our Central African travellers, whose name, coupled with his brother's, is well known in the geographical world, took with him, on his last expedition to the



As an alternative to sidehammer carbines, Colt devised shoulder stocks for his various pistols.

to the improved weapon. He asserts, however, that any gun which admits the slightest escape of the 'gaseous ignited fluid, at the moment of discharge, must speedily suffer from the wearing away of the metallic faces at the point of junction'; and speaking of Sharps' rifle, he says: 'I cannot doubt that, after a few hundred shots, the efficiency of the weapon would be seriously affected by the burning away or melting of the metal.' This is a very plausible theory, but it does not stand the test of practice, at least with Colt's gun, for after firing, as I have stated, over three thousand rounds from the one in my possession, an examination with a powerful magnifying glass fails to reveal the slightest evidence of abrasion, either of the barrel or the chambers."

Captain R. B. Marcy, U.S.A. in his hand book for overland expeditions published in 1859 and called *The Prairie Traveler*, provided this advice on the subject of firearms:

"For my own part I took upon Colt's rifle as a most excellent arm for border service, It is the most interior, one of your carbines (56-100ths caliber), which I selected from Rawbone's Shop. I tried it here first, and found it carried admirably, both in accuracy and distance; I could reach 1000 yards easy.

"His brother, lately returned from the interior, tells me he heard of the wonders performed with the gun everywhere (he himself is still absent, when he returns we shall hear something more). He began to practise with it on board ship, going up to Walwich Bay, and used to pick off the sea-fowl as they flew past the vessel, with as much ease as he would have with a shotgun. At Walwich Bay, and among the hunters up there, he beat every rifle brought against him. The consequence of this is, that Mr. F. Green, the best elephant hunter we have, has just started to the interior, taking one of the rifles (a longer one) with him."

It is amply apparent that the Hartford-made Colt cylinder arms had some merit. But with the passage of time and a parting of the mists of partisan opinions, the fact emerges that while the Root sidehammer revolving cylinder shoulder arms were much more reliable than the early Paterson-made guns, they did not represent one of the better mechanical systems in Colt percussion arms history. A relatively few—about 15,000—were sold.

Only one other type of cap and ball rifle was to come from the workbenches in the sprawling brick buildings on Hartford's "South Meadow" that now housed the great Colt enterprise. This was the single shot caplock rifled musket similar to Springfield models of 1861, 1863, and 1864. One of the last contracts negotiated personally by Samuel Colt was made on July 5, 1861 when he contracted with the federal government to supply 25,000 Model 1861 rifled muskets. These were the first of over 100,000 such guns that the Colt company would supply in the war effort.

Samuel Colt was not destined to see the completion of this contract or at the same time to witness the final throes of cap and ball arms manufacture. The demise of the caplock would doubtless have brought a sense of sadness to the normally ebullient Yankee armsmaker. Caplock arms had been the product with which he had built his 1847 nest egg of a few thousand dollars into a multimillion dollar industrial empire. Immediately on the horizon were the rising fortunes of metallic cartridge breechloaders, soon to be demonstrated in the war by the Spencer and Henry repeaters.

On January 14, 1862, flags at Hartford flew at half-mast. Their most prominent citizen, not yet 48 years old, was dead. On that day the Putnam Phalanx, drums muffled and arms reversed, escorted the body of Samuel Colt to the Colt burial ground.

Behind him Colt left a life filled with a mixture of failure and success, exuberance and sadness. He also left a well-trained and efficiently staffed organization which, like Tombstone in my home state, was too tough to die. The enterprise to which Colt had given his energies and his name would still be among the leaders in the arms industry for more than a century after Samuel Colt had gone down the long trail,

Editor's Note:

Next month the 132 year saga of Colt's shoulder arms will be concluded with an interesting review of Colt breechloaders from the Civil War to the present.





BERETTA'S BRIGADIER

(Continued from page 45)









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And now we come to the Beretta most everyone knows, the Model 1934. Marengoni changed the cartridge to 9 mm Corto (short), a round more logically suited to his original unlocked design. As most of you know, this is practically identical to, and interchangeable with, our .380 ACP cartridge. With the reduced power, the buffer was unnecessary, and was left out. Size was reduced; the angle of handle was increased slightly, and the backstrap shape improved. The combination safety lever and slide stop was redesigned to swing 180° to off position. This must have been a military requirement, as it was not as convenient to operate as the 80° swing of the Model 1923 lever. The grips were of black molded composition material, with metal backing plates which curled up around the edges and made them virtually unbreakable. An extension was added to the magazine floorplate, furnishing a rest for the small finger, an excellent feature which has been much copied since. Though external dimensions had been reduced, thickness of frame sides and other points was proportionately cut, maintaining the rugged construction. The open-sided magazine which first appeared on the 7.65 mm Model 1915 was retained, and the method of barrel mounting was the same as the Model 1923. A point for mild criticism was the combination of a top-mounted extractor and centrally located ejector. The system works perfectly, but when the Model 1934 is fired from waist level the fired cases are thrown fairly close to the shooter's head.

By our military standards, the size and cartridge of the Model 1934 are not considered adequate. As a personal protection arm, however, I rate it far above all others in this caliber, including those which have the dubious "advantage" of double action. With its strength, simplicity, reliability and freedom from chronic parts failure, it is in a class of its own.

About five years after the end of World War II, most of the nations which had some part in that conflict began to update their sidearms, and the trend was toward locked-breech pistols in 9 mm parabellum (Luger). In 1951 Signore Marengoni completed the design of Beretta's pistol in that

caliber: the Brigadier. Factory designation: Model 951.

Production began late in 1952, going into full scale in 1953. There were minor modifications in the design from the early prototypes, judging from section sketches, which show a slightly longer barrel and the older open-sided magazine. Marengoni maintained the Beretta "look" externally, but inside the Model 951 there are radical departures from the older designs. The world's foremost firearms designers have never hesitated to modify and use a proven system, and this was the case with the locking system of the new Beretta, Trimmed of its unnecessary bulk and improved in other ways, it is a more sophisticated version of the vertical swinging block used in the Walther P-38. This is a very efficient system, and I have fired handloads of up to 1500 fps in my Brigadier, with no indication of pre-opening or slide slap on pistol or fired cases.

The functions of safety and slide stop have been separated on the Model 951. The slide stop is positioned well, extending back into the forward top corner of the left grip, within easy reach of the shooter's thumb. A minor word of criticism, here: with the exception of the magazine, this is the only outside formed sheet steel part on the pistol, and when the horizontal milled grooves were cut in its extension, the edges were left quite sharp, as my thumb knows only too well. A little judicious rounding with a fine wheel would easily correct this, however.

The safety is a cross-bolt type, located in the top rear corner of the grips, and acts directly on the sear. In this position, the side of the thumb-knuckle is used to push it in to "off" setting, and this requires some concentration at first. The grip is dished out around the button, but I would suggest trimming away the rear edge of this depression making the off-safe operation a little easier. The grip is sufficiently solid at that point to permit thinning.

Of course, the Model 951 has the usual safety step on the hammer, and, happily, does not have an annoying magazine safety. Thus, it is possible to keep a round ready in the chamber while changing magazines, a feature that could make the difference in a critical situation. Another design point which originated with Walther is the use of grip panels with horizontal

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ridges, curving around to meet over the backstrap. Aside from affording a comfortable grip, this pattern also figures in weight reduction by eliminating a heavy external backstrap. As a result of this and other points, including the use of light "Ergal" alloy in the commercial model frames, the Model 951 can weigh as little as 25.4 ounces, only .3 of an ounce more than the Model 1934! The steel frame military Model 951 weighs 31.4 ounces. Speaking of materials, the slide is forged from a block of chromiumnickel steel, heat-treated after completion. Grips are of microcell plastic, retained by separate screws. All springs are round wire type, either helical coil or shaped otherwise according to function.

The magazine is strongly made of fairly heavy sheet steel, and has the familiar Beretta finger extension on the floorplate. The follower is a solid, machined part, not a piece of bent sheet metal, so often found in some contemporary arms. The magazine catch has been moved to the rear lower corner of the left grip panel, and it is most convenient to depress the button with the thumb while holding the hand beneath the pistol to receive the magazine. Also, the catch in this position and level with the grip surface is unlikely to be subject to accidental release.

The extractor is on the right curve of the slide, and the frame-mounted ejector offset to the left, correcting the vertical ejection mentioned in regard to the Model 1934. The extractor protrudes slightly when there is a round in the chamber, and its top edge is painted red, making it a good loaded indicator by sight or touch.

Supplied with my Model 951 was a target bearing the serial number of the pistol and signed by the Beretta Range Officer. Two five-shot groups were fired at 50 meters, with no indication that a mechanical rest was used, and the maximum group spread was 23/4 inches! A bit skeptical of such performance from a military handgun, I decided to try it at about half the distance, 25 yards. Even though I had not fired it before, my first group measured only 2% inches!

In the hand, the Model 951 has natural pointing qualities akin to the Luger and the SIG Neuhausen pistol. When fired from the hip at the silhouette target, there was no tendency to shoot low, and all five shots scored in a vital area. With the Brigadier, Beretta seems to have achieved that difficult combination: A pistol with aimed-fire capability of almost target grade, and excellent handling qualities for close-in personal defense (Next page) work.



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Recoil was about normal for a 9 mm pistol of this weight. I imagine it would be slightly greater with the alloy-frame commercial model. The crisp trigger pull is perfect at just under four pounds. The straight-line recoil movement of the barrel is a further guarantee of the flawless functioning for which Beretta pistols are noted.

After test firing, the usual clean-up was in order, and the takedown of the Brigadier makes this operation a simple matter: Being sure the pistol is unloaded, remove the magazine and cock the hammer. Then, holding the pistol in the left hand, push back the slide until the semi-circular cut in its lower edge is above the takedown lever on the right side above the trigger. Turn the lever with the right thumb in the direction indicated by the arrow marked on the frame, i.e. up and forward, and the slide and components may be eased off to the front. Remove the recoil spring and its guide, and push the barrel lock plunger. The barrel may then be removed from the underside of the slide. For reassembly, reverse the process, first making sure that the takedown lever is in open position.

A welcome addition to the design of the Brigadier would be an additional recess milled into the left lower edge of the slide to function with the slide latch and hold the slide in position for operation of the takedown latch. Because of the recoil spring tension, it takes a little practice before this operation is done easily. There is essentially little difference in the commercial and military models of Brigadier, except that the latter will usually have the steel frame and the lanyard loop.

The Model 951 is a standard police and military sidearm in Italy, and has been adopted by several other nations. The Beretta Company, however, prefers that all such shipments be kept strictly confidential, and I will respect their wishes in this regard.

For those interested in military accoutrements, the Italian ordnance holster is the usual European type, with flap, and place for the spare magazine. According to the information supplied, it is "attached to the belt", which would seem to indicate a hook or some other non-slip device, similar to our U. S. arrangement.

As of this writing, there are 456 of the Model 951 pistols in this country, including the one I have. The factory has been engaged in full production for various military contracts, but they have informed me that at the present the Brigadier is once again available on the American market. Beretta's agent in the U. S. is J. L. Galef, 85 Chambers Street, New York City.

Pietro Beretta's long and productive life ended on May First, 1957, and his sons Pier Giuseppe and Pier Carlo continue as President and General Manager, respectively, of Armi Beretta. On December 31st, 1957, a few months after Signore Beretta's death, Tullio Marengoni, the designer of a long line of fine Beretta automatics, also passed away. He held the high Italian honorary title "Maestro Del Layoro," conferred on those who have distinguished themselves in engineering research. It was well deserved for all his accomplishments, and especially for the Model 951.

The Brigadier is well-designed, well-made, rugged and accurate. Armi Beretta should be proud of it, and Tullio Marengoni and Pietro Beretta could leave no finer memorial than this, their final design.

GUN ENGRAVING

(Continued from page 25)

from the rest of the world, Ogawa began his work under a severe handicap—he had no one but himself from whom to learn the trade. All of his methods, techniques and even his tools had to come from his own imagination and efforts. As it turned out, his own approach utilized some of both the English and German techniques. To supplement his acquired skill, he entered the university. There he studied art, design and engraving.

All of this experience, knowledge and skill has been applied to his work today. Each gun is begun by first laying out the individual design by hand. Templates, tracings, etc. are not used. This designing of a style or pattern to fit each individual gun requires a high degree of talent and experience. In fact, copy work is acceptable only in the case of matched guns.

All inlay work is done in either sterling silver or 24 karat gold. The inlays are first drawn by hand, then cut into the steel and relieved. Next, the edges of the relieved section are undercut (sometimes called dovetailing). The precious metal is then cut with a jewelers saw to dimensions just slightly larger than the relief. The figure is finally peened to fit tightly

into the relief and undercut. This makes for a truly tight fit so that the inlay will never work loose or fall out. The details of the inlaid figure is then carefully engraved on the gold or silver.

Remembering the hardships he encountered in the learning of his trade, Ogawa established a school for young men who are to be trained as engravers. They reside in the same building in which the work is done and nearly eat and sleep engraving. Training in design and fundamentals begins with the engraving of steel blocks which are then discarded. After the basics are learned, the trainee becomes assistant to an apprentice. As his skill grows, he is advanced to the position of apprentice. Finally, after many years of work, and provided his work is of very high quality, he may

advance to full engraver or Master.

It is because of these training steps that three different grades of engraving are available. The apprentice group does the Prince Grade of work. Master engravers create the Imperial Grade. Ogawa himself is responsible for the Signature Grade. (In addition to his engraving work Ogawa spent over three months in the United States during 1963 to ascertain the tastes of American gun enthusiasts.)

All-in-all, I found engravings done by the Ogawa group to be of first quality and priced far under the going rate of work done in both the U.S. and Europe. If you are interested in quality engraving, at what I think is a modest price, I would suggest you see the REI advertisement in this magazine for more information.

HODGDON—THE POWDER MAN

(Continued from page 29)

on the loading tools. A large number of expensive rifles and shotguns were destroyed in the \$20,000 fire. His foresight in building this retail operation as an insulated, fireproof section, confined the fire to this one area and prevented more serious damage. According to Bruce, the only thing in the store that didn't burn was several cans of gunpowder setting in a glass display case and a wooden cabinet filled with powder. This is an eloquent argument against the cry of some who feel gunpowder is too dangerous to allow in a house.

One point Bruce brought out by way of illustrating his safety procedures used in powder storage and shipment is that his powders are packaged in specially made fiber cans rather than metal. Not only is the cost to the customer less because of this container but fire hazard is much less. To test this point, a fire was started with equal numbers of cans of powder, his fiber can and a "Brand X" metal can. Once enough heat was generated, the powder stored in Hodgdon's containers caught fire-but only one can at a time. Brand X cans ignited and burned simultaneously. The point is: Powder is less volatile than many think but it does burn. So certain storage precautions are in order: Store in wooden boxes or cabinets and try not to keep over 100 lbs. in any one container. Hodgdon feels the use of his fiber can may be just enough delay to allow the fire to be controlled.

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First incorporated in 1952, there are now two corporations. The first one, B. E. Hodgdon, Inc., is the wholesale gun operation. The other, Hodgdon Powder Co., Inc., is the powder buying, packaging, and shipping corporation.

Due to the nature of his product, Hodgdon has had problems in getting it into his customers' hands. Up until 1959, railroads would carry all powder. Then, one after another, they started levying high minimums. Very few truck lines will haul Class B (propellants explosive class). This left Hodgdon literally sitting on a powder keg—thousands of them.

This problem was more or less settled a couple of years ago when Ray Speer, of Speer Bullets fame, got Senator Church of Idaho to set up a meeting with the ICC in Washington, D.C. After a long series of negotiations, approval was finally given for Class C (flammable solids) shipment with a 100 lb. per vehicle limit. Surmounting that obstacle greatly increased Hodgdon's freedom in shipping gunpowder over the country.

Not content with just supplying shooters with the powder they burn, Hodgdon's newest venture is also providing them with a place in which to burn it. Opened in late Fall of 1967 was another Hodgdon corporation: this one, Hodgdon Shooting Ranges, Inc. Located at the same address, 7710 West 50 Highway, Shawnee Mission, Kansas, this entry utilizes some of the most modern safety and comfort innovations. Included in the facilities in addition to the fine range are areas for







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the family: nursery, clubroom and lounge, including color and black and white television sets. An attractive display area houses a retail sales operation. The centrally located control room allows the range director, retired Marine shooter, Dave Chamberlain, to maintain safety control. Utilizing the electronic target transport system, the range director can control each of the 22 firing points, individually for practice sessions, or in unision for tournaments. Each firing point is so constructed that the possibility of

an accident is minimal. The unique bullet trap, slanted up instead of down, allows maximum lead recovery, and therefore good economy.

From commercial ammo loader, to powder man, to shooting range developer, B. E. Hodgdon fills a niche in the shooting sports industry that few others have done. He is a friend of the shooter, a defender of the American way of life, and a strong supporter of the future American's right to participate in the great sports of shooting and hunting.

THE VERSATILE .30 CALIBER

(Continued from page 31)

When the military (NATO) decided to standardize on one caliber for their shoulder arms, with the help of Winchester, they designed a shorter version of the .30-06, called the 7.62 (a metric size). Winchester soon put this on the market in commercial chamberings as the .308 Winchester. It has a bit shorter range and power than the .30-06. The popularity of this .308 for use as a hunting cartridge has become quite evident the past few years. Nearly all arms companies, both local and foreign, now chamber rifles for it.

Sometime back in the early 1920's a Buffalo, New York, inventor brought out a large capacity case using a .30 caliber bullet. This was called the .30 Newton after the designer. Due to a lack of suitable powders and of guns strong enough to safely use it, the cartridge never did become very popular and received little actual use. However, it did prove to be very good for long range use on large heavy types of game. Although it was never called a magnum load it equals our present day magnums in velocity, killing power and case capacities, if new powders and bullets are used.

These are the fore-runners of the popular and fast growing lines of .30 caliber magnums. The first of these and the first one to be called a magnum was from a line of calibers designed and made by Holland & Holland of England. These were first constructed as cartridges for use in Africa. Loaded to guite low velocities by the H & H firm, the .300 H & H scarcely exceeded our . 30-06. The H & H cases were of belted design and the first of this type that received much use in the States. Rigby of England used them in calibers made for use in Africa before H & H made them.

This belted H & H design was imported by a number of our gunmen and hand-loaded for use in custom made rifles. Winchester and Remington then made, loaded and chambered for the .300 H & H, so designated by both these companies. Our domestic loadings are considerably higher than the English but only about 150 F.P.S. more than the standard .30-06.

Right after World War II, a Los Angeles inventor increased the capacity of the .300 H & H case, by fire-forming it in an enlarged chamber. He called this the .300 Weatherby Magnum after his name. At first he crowded the loading potential of the case, to get the most in velocity. One thing he succeeded in doing was to show the larger and older gun and ammunition companies that a .30 caliber bullet could be made to get along real fast. Today, after nearly 20 years of production, starting with a hand made, custom built rifle, the .300 Weatherby is now a machine produced gun and considered by many shooters to be the absolute tops in the .30 caliber hunting round, good for most all types of game. Factory made ammunition for it is readily available.

There is little doubt but that the .300 Weatherby kicked off the demand for cartridges and guns to handle them, in the magnum field. A great deal of credit should go to Roy Weatherby and the way he publicized his .300 Magnum. Today, we can choose from several excellent magnum .30's. Although the .300 H & H is no longer chambered for in this country, ammunition is still available for it from the large factories.

New and modern rifle powders have permitted the shortening of the old H & H case but still retain the straighter side, blown out feature of Weatherby's cartridges. Weatherby had used the long, full sized H & H case that made it necessary to use a special long action, but the newer short cases work through standard size actions originally designed for the .30-06 case and now the velocities of

these new short cartridges are about equal to those of the Weatherby .300.

There were quite a number of wild-cat .300 Magnum cartridges made on short cases before any of the old line gun and amunition companies brought one out. The Norma company of Sweden came out with a short case .300 Magnum cartridge some years ago. Schultz & Larson of Sweden chamber a production rifle for it but the sale of these rifles in the United States has not been numerous. It has never been chambered for by an American gun company, although many custom rifles are made for it.

Shortly after Winchester introduced their .458, .338 and .264 Magnums, they brought out the .300 Winchester Magnum. This has become a very popular .300 Magnum caliber and Remington and other major gun companies chamber for it. Ammunition is made in this caliber by Remington as well as by Winchester. Actually, if hunters of this continent were restricted to one caliber only for the hunting of game, from rabbits to Polar or Brown Bear, the .30 caliber with the various cartridges and bullets available for it could do the job, although in some instances it would be a substitute for one a lot better. In Africa, it would also be an excellent choice for all the game there, with the exception of the big three and if laws allowed the use of it, these could be taken with a .30 Magnum, using the right bullets and in the hands of an expert.

I believe I have, and at times used, every kind of .30 or .308 cartridge made. The kind of rifle I will use, the type of animal I will shoot and the distance at which I may shoot, governs my choice. With the exception of the .30-30, which takes a flat nose bullet to work properly in tubular magazines, all the .30 or .308 caliber rifles mentioned, can or do use the same weight and size bullet.

Nearly always, the choice of a cartridge type is based on the distance of proposed shooting, game to be killed and the type of firearm to be used. For instance, I make frequent summer pack trips with a string of horses back into the wilderness areas. These areas are closed to hunting during this time but a number of occasions could arise that would necessitate the use of a rifle. A horse could be injured in such a manner that it would be necessary to kill him; a bear could start bothering your camp and sometimes they are quite nasty characters; or a varmint or predator should be killed. However, as the gun I carry would not be used except in case of emergency, and as I want one that will fit a scabbard easily and be light to carry, I find that



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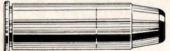
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Div. of General Sporting Goods Corp. SOUTH LANSING, NEW YORK 14882 the best rifle I can have with me for such needs is the 1894 Winchester .30-30 carbine. One of these goes with me on all mountain pack trips in the summer.

For deer hunting, at ranges to 300 yards or so, using open sights or scopes, the .300 Savage or .308 Winchester are good. These are also good for antelope and both these calibers are excellent for sheep, goat or caribou to their energy limits. Both can be used for elk or moose, with the right bullets and at reduced ranges. The .30-06 would come as close as any to being the all around rifle for game. The more or less obsolete .300 H & H really is in the magnum field, and the .300 Winchester, the .308 Norma and the .300 Weatherby are in the same class. These three, with the right loads, are the only production rifles that carry enough energy to 500 yards or more to properly kill animals of the elk class-except for the 7 mm Magnums or Roy Weatherby's .340 or .378. In these two the recoil is much more than I like.

If I were to choose only two .30 caliber rifles for my use, one would be a .30-06 and the other a .300 Winchester or Weatherby. This is a personal choice and based on the bolt action. Some shooters would like the lever action best and could select any one of this excellent rifles type. There are slides and automatics in a number of different makes of rifles. However, the magnums come only in the bolt actions, necessary for strength and accuracy.

After nearly 20 years in the big game outfitting and guiding business, checking thousands of game kills made with many different calibers, cartridges and bullet weights, I have selected a rule of thumb energy figure at point of impact on body hits. These nearly always produce clean kills.

Large deer size animals (includes the Black Bear) 1000 F.P.E.

Elk size animals (includes the smaller inland Grizzly) 1500 F.P.E.

Moose size animals (includes the large Grizzly, Polar and Brown Bear) 2000 F.P.E.

With these figures in mind one can

select a rifle and cartridge in .30 caliber that will efficiently kill any type of North American game animal if they are in the range potential of that load. In fact, the .30 caliber from the .30-06 up can be successfully used on 90% of all African game. It can also be used with lightweight, thin jacket bullets on varmints or predators, or can be handloaded with reduced loads and jacketed or lead bullets for use on turkeys or other light game. There is very little spoiling of game meat with this kind of load.

It's quite easy to understand why I consider the .30 caliber the most versatile of all the calibers.

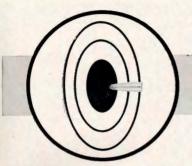
The following tables are approximate for the residual energies. For the most part all are taken from Winchester, Remington or other handbooks and specifications. Except for the 170 gr. bullet in the .30-30 all other figures are based on the use of the best factory loadings. The 180 gr. bullet weight, being the most generally used in the various .30 calibers, were used here for matters of comparison. Except for the .30-30 and the .30-40 where factory loadings are as high as they should ever be in the rifles they were meant for, all the other loads can be considerably improved in handloads by using better loadings and better shaped bullets so far as retained or residual energy is concerned.

No mention has been made throughout this article regarding the .30 Remington. Originally brought out by Remington to compete with the .30-30 it had a bit less performance. It was used mostly in Rem. Automatic rifles though it did have some bolt action rifles chambered for it. No rifles have been made for this cartridge for many years and ammunition for it is getting quite hard to come by.

Also no mention has been made of the .30 Carbine as this one, designed for close in fighting by the military, is entirely unsuited for use on game animals. The cartridges listed in our chart cover the field adequately from low power short range use to the ultimate in long range

shooting.

Cartridges	Bullet Weight	Muzzle Velocity	FPE @ 100 yards	Max. Dis. 1000 FPE		Max. Dis. 2000 FPE
.30-30	170 gr.	2220	1350	200 yds.	90 yds.	55 yds.
.30-40	180	2470	2020	450	275	105
.300 Savage	180	2370	1860	420	210	90
.308 Win.	180	2610	2280	500	325	175
.30-06	180	2700	2440	550	350	220
.300 H & H	180	2920	2850	590	440	290
.300 Win.	180	3070	3250	600 plus	540	400
.308 Norma	180	3100	3275	600 plus	550	410
.300 Wby.	180	3150	3350	600 plus	600	440



POINT BLANK

By COL. CHARLES ASKINS

UR ENGLISH system has been with us as long as there has been an America. It is based for common units of length on the inch, the foot, and the yard. But along with these we have the hand, span, rod, furlong, fathom, line, and point. There are three different kinds of miles, the statute, the nautical, and the international nautical. On the score of dry measure we have the cord, peck, bushel, and barrel. For wet measure we try to get along with the gill, pint, quart, gallon, and barrel. However there are two different sizes of the pint, three of the quart, two of the gallon, three or four of the bushel. And barrel measure covers both dry and liquid.

There are two systems of weights, the avoirdupois and the troy. The former contains grains, drams, ounces, pounds, hundredweight (short and long) and tons (short and long). In troy weight we find grains, scruples, pennyweight, drams, ounces, and pounds. There are 3 different ounces. two sizes of pounds, and two different tons. A number of measures bear the same names here and in England but differ as to quantity. In New Zealand there is a switch from the pence-shilling-pound monetary system to one based, like metric, on 10. Undoubtedly the New Zealanders and the Aussies. too, will one of these days go the way of Mother England. That is commence and gradual changeover to the metric. When that happens ourselves and our Canuck cousins to the north will be the only nations around the world to cling to our funny, outmoded weights and measures.

It may come as a surprise to you but it is a fact that in the civilized world today only Canada, New Zealand, Australia and ourselves cling to the completely outmoded system of weights and measures which the English gave us during Colonial days. Even the British are swinging over to metric measure.

The metric system was originated in 1799. It is no new thing. It is quite well understood here that it would be strongly advisable to get in step with

the rest of the world. But our efforts in that direction have been puny indeed. The Bureau of Standards has been designated to look into the feasibility of the change-over. Without any guidance except a realization that it would be better, the U. S. Army has converted to metric measurement. Gun bores are now designated in millimeters, firing ranges are laid out in meters, maps are made to the metric scale and in a hundred other ways the military is employing the system common to the rest of the world.

The commercial manufacturers of our sporting rifles are edging into the new designations. Witness such calibers as the 6mm, the 6.5mm, the retention of the 7mm designation, etc. This is fine and everyone is in favor but the truth of the matter is that the average American shooting man is so wholly unfamiliar with metric calibers that he must convert the millimeters to inches before he knows what he is talking about.

Right after WWII when the market was flooded with military surplus shooting irons from the European battlefields the gunsmith was confronted with some realy problems when the new owner wanted to abandon the original barrel and attach a brandnew tube. The receiver was threaded with the metric thread and the Americanmade barrel was threaded after the English system. Just as soon as we set foot outside our continental boundaries we find that the competition won't fire on our targets and laugh at our range distances. They make us fire on metric targets at metric distances. Quite apart from the shooting matches is the business of the Olympic Games. These are all established at metric distances and records worldwide are only recognized on this hasis

Parker Ackley, a wise old hombre, who makes rifle barrels and preaches a lot of wisdom through a series of manuals he has published entitled "Handbook for Shooters and Reload-

(Continued on page 69)



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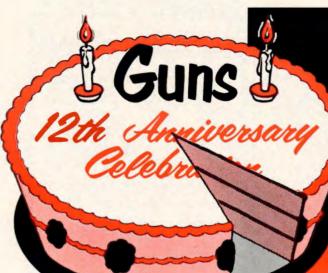
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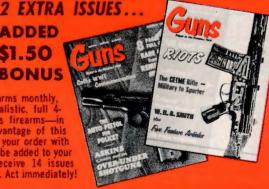
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ers," has a table which indicates that it takes a minimum of 900 ft. lb. of energy to surely kill such game as deer, antelope, sheep, and mountain goat. This figure, mind you, is out where the critter is hit and not at the muzzle. Ackley goes on in this chart to say that the very minimum energy required for big game animals like brown bear, grizzly, and polar bear along with moose ought to be 2,100 foot pounds. With these figures in mind I want to run a table of my own which shows how much wallop some of our better cartridges possess out where the game is struck.

MAN IN WASHINGTON

(Continued from page 17)

post office is a federal institution, it is controlled by federal law, and a federal law ordering a federal institution not to violate local law could meet with no constitutional objection.

There is another interesting point, If a post office should go beyond observing local law, shooting sportsmen of the area would have a ready line of protest, Postmasters are appointed by congressmen, and congressmen are in the business of keeping voters happy.

Even if something can be worked out to write around the registration objection of the Hruska bill, how long will it be before a total ban on firearms is re-introduced? Federal

law has a creeping quality.

Remember back when "gangstertype" weapons such as machine guns and sawed-off shotguns were first regulated through the constitutional means of collecting a \$200 for each firearm? This amounted to registration. Now that the courts have struck down this form of taxation, Senator George Smathers (D-Fla.) has introduced legislation to totally prohibit all such weapons.

Now, handguns are rapidly being advanced as the weapon of the criminal. How long will it be until special federal legislation is proposed to prohibit ownership of the pistol? Then next could come the rifle and, last, the shotgun.

Federal law must be aimed at supporting local laws. No one federal law can regulate firearms in all the different areas of a nation as diversified as the United States.

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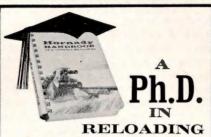
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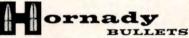
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MARITIME MUSEUM

(Continued from page 21)

items from the Caird Collection of pictures, models, instruments, books, and relics. One section of the museum, called the Queen's House, contains maritime pictures, models, and relics of the sixteenth and seventeenth centuries. Every student of history knows that Drake was an Englishman that singed the King of Spain's beard, metaphorically, and brought home to England much plunder in his little ships whenever he put to sea. His portrait dominates a room in the Queen's House, and by his side is a model of the globe he circumnavigated; the jewel given him by Queen Elizabeth when she knighted him on board the Golden Hind, and the original chest which held the fund started by Drake for the benefit of disabled seaman

In the museum's Caird Galleries, there are over 40,000 volumes on English and other naval history. The Print Room contains over ten thousand prints, several thousand marine drawings and a collection of nearly two

hundred thousand photographs and cuts. In the Navigation Room will be found a comprehensive display of all instruments used in navigation. Nelson Galleries contain naval portraits and battle scenes of the famous English Naval Officer, along with many personal items that belonged to Nelson. The most famous of these is undoubtedly the dress uniform coat which he was wearing on the 21st of October 1805, when a fatal bullet struck him; a bullet fired by a French marksman placed in the mizzen top of the French ship Redoubtable. The bullet hole was plainly visible.

Many other rooms make up this one of a kind museum, and for any lover of the sea, history, and firearms and edged weapons, the National Maritime Museum is a must on your vacation plans. If you go to England, and do not make this wonderous museum one of your stopping places, you will find that your trip will be sadly lacking. It was indeed, something for me to behold.

HANDLOADING BENCH

(Continued from page 11)

placed on the base and all operations are performed on it by pressing proper dies down over it with appropriate lever-attached arms. The Safari comes complete for 12-gauge only, and no accessories are available or necessary. A very simple and economical tool for the penny-wise shooter who can spare the time to do his loading slowly.

SAC also showed the new 20-gauge version of its well-known VARI-WAD—previously available only in 12-bore size. This wad is unique in that by proper assembly of its separate base and shot cup, 3 different wad-column heights can be produced. This avoids the expense of keeping three different wads on hand, which is usually otherwise necessary to accommodate different makes of cases.

Hollywood Reloading, Inc., formerly Hollywood Gun Shop, displayed its new line of sophisticated handloading equipment which we mentioned previously in this column. The examples we saw exhibited extremely good workmanship and required surprisingly little effort in use. The

"Progressive" tools are particularly impressive, though quite high-priced in comparison to average equipment.

The "Automatic" shotshell tool is the ultimate in manually-operated equipment, capable of turning out up to 1800 rounds per hour. A new catalog and brochure is available upon request.

MEC (Mayville Engineering Equipment) has improved and updated its entire line of shotshell tools, though their appearance remains much the same. New models have "50" added to the old designation, thus, the "MEC 600" becomes the "MEC 650." Top of the line is the electric-hydraulically-driven "Hydramec 650," which produces the closest to effortless reloading we've yet experienced.

Lyman (Lyman Gun Sight Co.) is the oldest name in handloading. Conservative over the years by nature, Lyman showed only two new items—a micrometer-adjustable powder charge bar for the "Easy" shotshell loader and a completely redesigned cast bullet lubricator/sizer called the "No. 450." The latter utilizes the principles of the old No. 45, but in an entirely new physical package. Fortunately, it will accept dies for the older No. 45 and will be priced at \$22.50.

New in the handloading business is Bair Manufacturing Co. which just recently introduced a complete line of shotshell, metallic and accessory equipment bearing great resemblance to the old Pacific items. While most of these items have been around quite a while, they are new in the sense that the name is new. For example, the "Kodiak," O-type, compound-linkage press is a dead ringer for the discontinued Pacific "Deluxe PrO" unit. However, improvements are being made and a new prototype was on display. Also on display and scheduled for future production was a 6-station Bair turret-type press. Other items are being planned by Bair, but nothing the boys will let us talk about yet. Like the others, Bair has a nice catalog available upon request.

Texan displayed a new 3-station metallic press and improved versions of the old basic line of shotshell and metallic presses.

The RCBS booth was conspicuous by the absence of genial Fred Huntington. That firm showed several items new since last year, but they've all been covered earlier in this column or "Gun Rack." The one really new item was the "RCBS Reloading Guide," a 40-page basic instructional manual on handloading. This is one book that contains very little loading data, but is long on basic information -something we've found lacking in

another manual or two. This one costs only a buck, and is well worth the

Of course, there were other tool and equipment firms there, but we have space only to hit the high spots. No one has been deliberately left out, even though the foregoing list is far from complete.

In the components field, most bullet makers had one or two new or improved items to show and talk about, but there wasn't anything revolutionary to see. Considering that the two giants and the three major independent makers catalog between them well over 200 different bullets, it's rather hard to come up with any truly new development.

There was, however, excellent news from Winchester with the formal announcement of several new "Ball" powders for handloaders. The new items round out the line begun a number of years ago so that there is now a W-W ball powder to suit every cartridge/load combination within reason. An excellent brochure containing descriptive data on both old and new W-W ball powders is available on request-and it includes basic loading data for most popular calibers for which each powder is suitable.

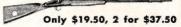
That's about it unless we want to wax long and eloquent about each and every item we examined-not to mention the cocktail parties we attended or the night spots visited-by the way, has anyone from Memphis lost a Gaslight Club key lately?

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WINDS OF CHANGE

(Continued from page 23)

maybe not. . . .

Shooters are as contrary as the Chinese at the conference table: as conservative as a cross between a Goldwater Republican and a Dixie rebel; and as unchanging, hardheaded and status quo as Grandpa Priddy. What was good enough for him in the days of his youth is plenty good enough for him now. That's your shooting man. A boyhood chum, visited after 40 years, was still shooting his .25-35 Remington autoloader. Not only still knocking off the annual venison with this vintage number but he had gone to some pains to acquire all the old Model 8 self-loaders—the .30, the .32 and the .35.

This same hombre buys a new automobile every year and has a new color TV each time an improvement is made. But on the score of shooting irons he sticks by the now thoroughly obsolete Model 8 rifle. His numbers

are legion. How then can we expect much change in the configuration of the American sporting firearm in the succeeding two decades?

The fact is we aren't going to change my old compadre, nor the many thousands of shooting men just like him. But circumstances alter cases. The conservatism of the American shooting man is fast fading. By 1970 this is going to be a young man's country. More than half the population will be less than 25 years of age. If you don't believe this is going to alter things-including hunting firearms-just stick around and watch!

It is symptomatic of the times that today's youth pretty generally rejects the ways, the methods, and the leanings of his oldsters. And its "in" to rebel. You may be sure those more than 50 per cent of the population come the 70's and the 80's won't have any part of our '98 Mauser, nor yet

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the Parkers, the Ithacas and the Model 21's. As for six-shooters, the cylinder model unchanged since Sam'l Colt rounded the Horn, they will be looked on as strictly last year's, man.

In 1936, the Army developed and adopted a self-loading rifle; the Garand, more commonly known as the M-1. By 1945, we had ten million users of the rifle. Troopers came away from the battlefields around the world with a profound respect for the rifle that loaded itself. Many of them had known other types; the turning bolt Mausers (the Springfield and the Enfield among others), and still others had used the lever-operated Winchesters. But even more had no previous experience with guns. They had no preconceived notions and were open to persuasion. The M-1 was a great persuader. It was, perhaps, the most thoroughly reliable military rifle ever made. These fellows returned to civilian pursuits with a warm spot in their hearts for the gun-that-worksitself. When they decided to hunt, an interest kindled with many of them as a result of years of familiarity with the military weapon, they let their prejudice show. They selected not only autoloading rifles but automatic shotguns, too.

These buckos are middleaged fathers today. They have sons who are fighting in Vietnam. These second generation warriors have gotten second generation ordnance which are the refined versions of the older M-1. Our troopers in the jungles from Pleiku to Can Tho are handling and shooting the M-14 and M-16 rifles. In between the 1939-45 show and the present fisticuffs in Indo-China we fought the Korean War. Some four hundred thousand troops were involved. These laddy-os were mostly new to war, even though WW-II had only been finished 5 years. They fought with the M-1.

In a period of 27 years, from 1941 until the present, we've indoctrinated almost eleven million of our citizenry in the intricacies, the virtues, and the peculiar effectiveness of the rifle that loads itself. This grounding has had its effect. We have seen a whole galaxy of shooting irons, rifles, scatterguns and pistols come along in obvious demand from that vast contingent of our younger marksmen. With a public which will include a shooting fraternity growing more youthful by the year, you may be sure you have only seen the beginning. The sporting arm of the 80's is going to function itself.

Automatic firearms among sportsmen have been condemned as not reliable. There is a contingent who contend that the cornsheller types are unsporting. Earlier types have had little aesthetic appeal and this has been a mark against them. That portion of the clan who make a fetish of accuracy in the rifle hoot at the semiauto because it isn't very precise. A considerable amount of this criticism is true. Despite these shortcomings the wave of the future will carry the autoloader. It will be the popular type, sold in greater numbers than any other, and this will extend to all our sporting ordnance, rifles, shotguns and pistols.

Very considerable advances have been made in the development of automatic arms since the end of the Great War. We are in the grip of a tiny little coterie of firearms writers who are, for the most part that is, hipped on the score of accuracy. These hacks tout the obsolescent turning bolt rifles, hold forth at great length on the thoroughly antiquated double-barrel shotgun, and wax eloquent about the 1873 single action 6-gun, and all to the detriment of the thoroughly modern self-operating hardware. This common attitude has tended to hide from the view of the average shooting man the really great strides made in the advancement of the modern sporting firearm-the automatics.

With sporting rifles, the trend has been towards gas operation. This has gone hand in hand with major improvements in the lock-up so that now the self-loader carries its lugs at the forward extremity of the breech bolt and can withstand pressures guite as lofty as the older turning bolt models. In shotguns, the trend likewise has been strongly to gas operation and this has contributed to a happy phenomenon which has seen recoil reduced because of the employment of gas and the mechanical system within the gun. Among handguns, the activity has been of minor key. There have been precious few new models introduced since the end of WW II. Some new cartridges have flashed briefly, numbers like the .44 Magnum, the .22 Jet, the .221 and the .256 Magnum, the most of them rifle cartridges in actuality but adopted to the handgun. The most of them these days have reached a state of obsolescence and are fast sliding into oblivion. The exception, possibly, is the .44 Magnum which vearly is more widely used in little carbines and less widely accepted in handguns.

The most spectacular achievement among one-hand guns this quarter century past has been the acceptance of the .45 auto pistol. An old gun, first announced in 1911, this pistol has been so improved by our ranking pistol

smiths that it now out-shoots any revolver. It is so extraordinarily accurate that it performs quite on a par with the finest of our .22 target models.

The .45 ACP is the oldest active firearm in the military arsenal today. It is retained in active service solely because of its utter dependability. It is the veteran of three major wars. Its reputation is the brightest, the most shining, the most outstanding of any weapon—from handgun to howitzer—the U.S. Army has ever employed.

It is a talking point with any number of our current crop of writers that the revolver is more dependable than the automatic and should be chosen by the fellow who wants to be sure his gun is always going to fire. The cops of the country have been well sold on this one. The record of the .45 auto, stretching backward over more than a half-century, puts the lie to this fine canard.

The handgun of the future, make no mistake about it, will be the self-loading kind.

During the past, in both rifles and shotguns, we have thoroughly tried out various systems to function the action. Some guns have functioned on the long-recoil principle; others on the short-recoil pattern. More recently we've turned to gas and this seems the better. Our last three military rifles have employed gas; our current crop of high-powered rifles and shotguns use the hot stuff to work the action.

In the future we shall relegate both recoil operation and gas functioning to the shelf. Sporting firearms will derive the necessary oomph from a miniaturized motor contained, most probably, in the gunstock. This development is not off in the distant future but is just around the corner. By the late 70's and 80's it will be commonplace.

The firearm action that is shuffled from a power source completely apart from the cartridge is far the better. The electrically powered gun is impervious to such failures as misfires. It operates just as surely whether the cartridge is a quib load, a hangfire, or other abnormality. The electric motor will be adapted to other arms besides the sporting rifle and shotgun. In machine guns it is already forseen that the gunner can deliver almost any rate of fire he needs. He can deliver several thousand rounds per minute or only a couple of hundred.

The current problem with the transistorized power unit in the sporting firearm right at the moment is simply one of size. It takes a hefty kick to function the action. Up until now mo-

tors are too large to be handily contained within the gun. This problem is a relatively minor one and will be licked without difficulty.

Along with the electrically functioned action will be the caseless round. This sort of a cartridge dispenses with the conventional casing. The powder charge is cast in a solid and is joined to the base of the bullet with an adhesive which in effect makes the powder-and-ball a single integral unit. There are many advantages to this development. Foremost among these is the elimination of ejectors and extractors; for after the cartridge is fired there is nothing remaining in the gun chamber. Everything goes out the bore. Along with this is the elimination of the somewhat elaborate system of hammer, sear and firing pin. The best of the caseless rounds presently being developed are electrically detonated and thus eliminate the old percussion system which we have lived with for lo these many

Caseless rounds, of course, are for rifles and handguns. The scattergun for the foreseeable future will necessarily have to employ a shell casing. Plastics will be utilized and the brass or steel head now seen on the plastic shotshell will rapidly disappear.

So far our rifle designers have fought shy of the adaptation of the highly popular belted magnum case to the autoloaders. This is because the bulbous head of the casing presents problems in loading. This one will be licked without difficulty and the self-operating models of the 70's will offer all the magnum loadings—and more—that we use today in the old fashioned turning bolt models.

There is a great deal of developmental work going ahead on calibers below the .22. We shall see pipsqueaks of .12 and .14 calibers, with more accent on the small and intermediate bores in the future, and less interest in those calibers over .350.

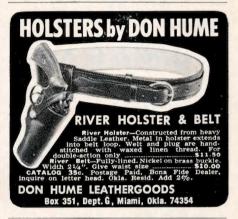
Among shotguns, the stepchildren, 16 gauge, 28 and the .410, will steadily lose popularity in favor of the 12 and the 20 gauges. There is no need for other gauges and, unlike the rifle field where yearly we see new calibers, this will not occur 'mongst the scatterguns.

Pistol calibers are stagnated, but you have already read my thoughts on this in the May issue of Guns Magazine.

These next two decades, spurred along by a nation of youngsters, will produce more revolutionary changes in our sporting firearms than we have seen since the turn of the century. It's going to be great, shooting the firearms of the future!



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Some details on the 10/22: For .22 long rifle cartridge only, regular or high-speed. Barrel length 18½". Overall length 37". Weight 5 pounds. Gold bead front sight. Sliding cross-bolt safety. Price \$54.50. The Sporter is \$64.50, the International \$74.50. Sporter or International with hand-checkered stock \$10 extra.

Write for literature on these and other RUGER® firearms.



STURM, RUGER & Company, Inc.

Southport, Connecticut, U.S.A.