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Guns

Special
**HANDLOADING
SECTION**

12 PAGES OF
HOW TO



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By JAMES E. SERVEN
and JAMES M. TRIGGS

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J. Triggs

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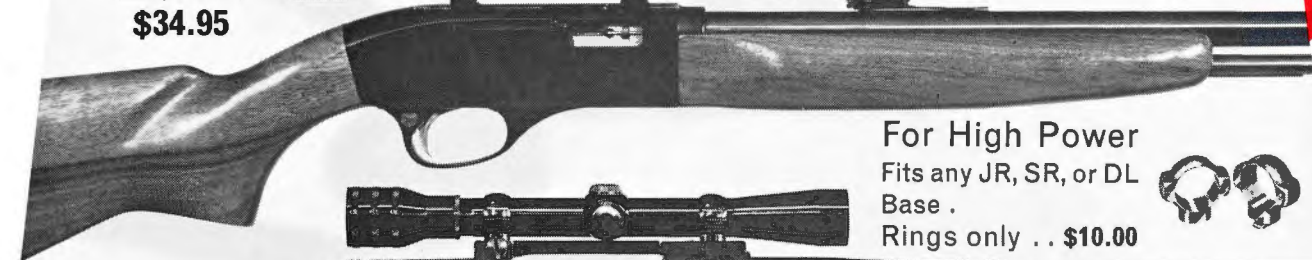
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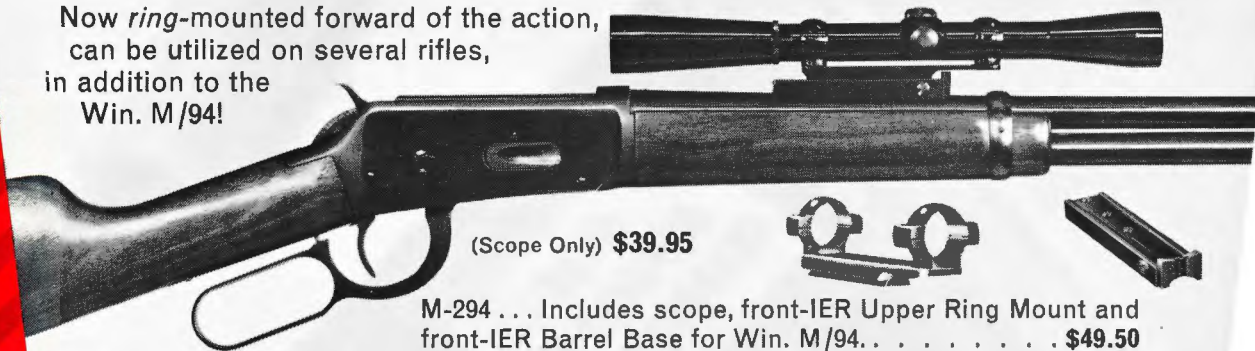


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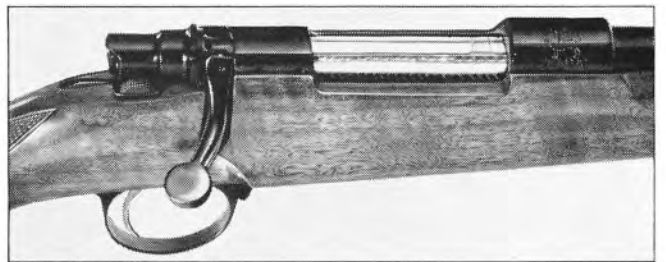
WRITE FOR OUR NEW 1965 FOLDER



Dawn of an exciting new era for sportsmen *...the "Ultrarifle" by* **H&R**



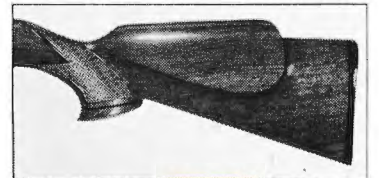
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8 mm HUNGARIAN.....	7.50
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**KNOW YOUR
 LAWMAKERS**

**Congressman Ralph J. Rivers
 Alaska**



Since coming to Congress, I have opposed legislation which would require the registration of firearms by private individuals. I have not, however, been opposed to legislation which relates to the shipment of firearms in interstate or foreign commerce by gun manufacturers or dealers. The Federal Firearms Act has been on the statute books since 1938 and has always required that "licensed dealers shall maintain such permanent records of importation, shipment, and other disposal of firearms and ammunition as the Secretary of the Treasury shall prescribe." There is no requirement therein that individual owners of guns must register their weapons, and I would oppose legislation to establish such a requirement.

**Congressman Thomas M. Pelly
 1st District, Washington**

This will acknowledge and thank you for your letter of recent date in which you request a statement of my views regarding the anti-gun legislation which will no doubt come before Congress again this year.

You may be sure that any restrictive legislation in this field will meet with my strong opposition. I feel that any such legislation would be an attempt to abrogate our right to bear arms as guaranteed by the Constitution.

**Congressman John J. Rhodes
 1st District, Arizona**

The framers of the Constitution recognized the fact that an armed citizenry is the best insurance against tyranny. That is the reason they made sure that the basic document of our government guaranteed the right of the people to keep and bear arms. The truth is as valid today as it was in 1788. Any aggressor whether foreign or domestic, must take into account the physical force represented by Americans using their own private arms and ammunition who are bolstered with a love of liberty and determination to keep it.



**Congressman Howard W. Robison
 33rd District, New York**

With regard to the Second Amendment, my personal view is that the magazine and other interested groups would be well advised not to adamantly oppose all legislation in the field of firearms transport or registration. I have not yet decided myself what type of legislation would be most feasible and effective without violating the Second Amendment, but I do believe that the completely uncontrolled interstate and foreign commerce in weapons is not healthy and that firearms legislation could be effected so as not to violate the Second Amendment.

Readers Note: All Congressmen may be addressed at "House Office Building," and all Senators at "Senate Office Building," both at "Washington 25, D.C." Address all Governors at: State Capital, name of capital city, name of State.

Guns

FINEST IN THE FIREARMS FIELD

APRIL, 1965
Vol. XI, No. 4-124

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NATIONAL ADV. OFFICES, 8150 N. Central Park Ave., Skokie, Ill., ORchard 5-6967

GUNS Magazine is published monthly by Publishers' Development Corp., 8150 N. Central Park Avenue, Skokie, Illinois. Second class postage paid at Skokie, Illinois, and at additional mailing offices. SUBSCRIPTIONS: One year (12 issues), \$8.00. Single monthly copies 50c. CHANGE OF ADDRESS: Four weeks' notice required on all changes. Send old address as well as new. CONTRIBUTORS submitting manuscripts, photographs or drawings do so at their own risk. Material cannot be returned unless accompanied by sufficient postage. PAYMENT will be made at rates current at time of publication and will cover reproduction in any or all GUNS Magazine editions. ADVERTISING RATES furnished on request. Copyright 1965, Publishers' Development Corporation. All rights reserved. Title to this publication passes to subscriber only on delivery to his address.

THE COVER

Here, for the first time, the artistry of James M. Triggs and the skilled pen of James E. Serven have been combined to present to you the history of the Volcanic guns. GUNS Magazine takes pride and pleasure in presenting this significant article which constitutes the first of a series of these collaborations between writer and artist in the gun field.

Ask L. G. Rackel, 1964 Wimbledon Winner,* about Sierra Bullets . . .



"Your Matchkings were very good to me each time I squeezed the trigger of the .300 H & H magnum rifle in the 1964 National Match 1000 yd. Wimbledon Cup and Leech Cup competitions . . . A possible 100 with 13 V's in the Wimbledon got me into that shoot-off. In the first shoot-off I compiled a score of 50 and 9 V's. The shot-by-shot shoot-off lasted for 9 rounds in which I took 8 V's and one five. This adds up to 79 Matchkings fired for record at 1000 yards, all of which were in the bulls eye. Of this total 59 went through the V-ring."

*



This world famous 1000 yd. contest has been won by riflemen using Sierra Bullets in the last 11 out of 12 matches.



Mr. Rackel used Sierra's 190 gr. Match-king H.P. (one of four 30 cal. Matchking Bullets).

SIERRA BULLETS

10532 S. Painter Ave., Santa Fe Springs, Calif.



CROSSFIRE

Schumaker Fan

I would like to tell you how much I enjoyed the article in the December 1964, issue of GUNS entitled "How to Waterproof Your Stock" by William Schumaker. I felt the article was well written and also beautifully illustrated. An article done such as this is truly an invaluable aid to the home hobbyist who wants to tackle such a job.

Also, I had the pleasure of seeing Mr. Schumaker's custom built rifles while passing through Colville, Washington, last year. Needless to say, the rifles were works of art.

Am looking forward to many more articles by William Schumaker.

Russ Corbett
Willits, Calif.

Safari Note

In your last special "Safari" issue, in January, I had the pleasure of seeing my firm listed as safari organizer in the Ivory Coast and Upper Volta. I intend to improve my services in the Ivory Coast with a new modern camp in the forest along the seashore, with a special hunting reserve granted to me by the government. There are also good possibilities for big fishing in this area.

Congratulations on your wonderful magazine.

P. Barre
Box 1882
Abidjan (Ivory Coast)
Africa

Southpaw Woes

I have been a subscriber to your magazine for a long time, and I must say that I like what you print very much. I have a little gripe to express, and it would please me if you would publish it in your Crossfire column.

In the past few years, it seems that the southpaw shooter is being forgotten as far as the big name gun makers are concerned. The Winchester and Remington bolt action rifles made in the past were perfect for everybody, with their simple high comb stock. But then they had to add a cheek piece on most models, solely for the right-handed shooter. Now, when we left-handers want a rifle we usually have to order a barreled action and wait a long time to get it stocked by some gunsmith. All we need now is for the handgun makers to do the same thing and we will really be left out in the cold.

Claude M. Neifert Jr.
Tamaqua, Pa.

Ex New Yorker

Tonight, I picked up your magazine, and when I read about Mr. Felicetti and W.H. Tantum, my blood boiled again. I am an ex New Yorker, and I intend to keep it that way . . . I have a little advice for those who still live in New York and who want to be able to own a gun, as the 2nd Amendment provides. That is to move out to one of the other 49 states. . .

L. C. Jordan
Racine, Wisc.

We believe that if only a small part of the effort it would take to execute a mass exodus of shooters from New York were put toward fighting the infamous Sullivan Law, a lot more would be accomplished. Boiling blood is not conducive to straight thinking, and a calm, logical approach to New Yorkers' gun problem is needed now, more than ever.—Editor

Pro-Gun Law

Enclosed find a check to cover membership for my 13 year old son and myself in the Shooters Club of America.

I have taught my son all I could regarding our rights to keep and bear arms, and I feel that only through hard work and perseverance will the shooters of America ever get a Pro-Gun Law passed. You may rest assured we are behind your efforts all the way.

Robert E. Young
Orangevale, Calif.

Shooters Club of America

Please send me promotional material for recruiting new members. I am going to try to sign up as many as possible. This year promises many anti-gun laws, and it is about time that we took the offensive instead of sitting back and letting our rights be taken away.

Phil Bloom
Los Angeles, Calif.

Please send me information on the Shooters Club of America. Do you charter clubs throughout the country?

Paul Doerr
Valejo, Calif.

Material is on the way to these readers. Mr. Doerr's question brings up an interesting thought. If there are any clubs that would be interested in an SCA charter, it may come to be. Drop us a line, and let us know your thoughts on this idea.—Editor

\$1,000,000 OFFER! FOR GUNS READERS!

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Monte Carlo Walnut stock with cheekpiece. Williams "Guide" sight. Hinged floor plate. Hooded ramp front sight. Adjustable Sako trigger with thumb safety. 5-shot. 24" barrel. 44 1/2" overall. Wt. 7 1/2 lbs. FN Mauser 400 action. Guaranteed for 1 year by Firearms International. In .243 Win. .270 Win. .7mm Rem. 30/06 or 300 Win. Magnum. State choice. **\$99⁸⁸**

C23-2213. Rifle only.....\$122.88
C23-2214. With 4X 1" scope, mounted.....\$126.88
C23-2215. With 2 1/2-8X, 1" CH var. scope.....\$126.88
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Selected Model 1917 barreled actions. Custom features include: Monte Carlo American Walnut stock with cheekpiece. Reblued and polished like new. Recoil elevator rear sight and hooded ramp front sight. Notched barrel. Brass lug for shock absorption. Barrel cut to 22". Receiver drilled and tapped for scopes. Wt. 8 lbs. 42" overall. 5-shot capacity. **\$59⁹⁵**

C23-3225. Rifle without sling or scope.....\$89.95
C23-3226. Rifle with Tasco 1" 2 1/2-8X 32mm CH variable power scope, installed.....\$99.95
C23-3227. Sporter Deluxe Rifle without scope, with 17" sling swivels and leather sling, 16 line hand checkering with border on pistol grip and forend.....\$69.95
C23-3228. Deluxe Sporter Rifle above with Tasco 1 1/2-8X, 32mm CH Variable scope, installed.....\$99.95

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The Model 1903 Springfield is a bolt action rifle of excellent design and accuracy. Custom features include: Monte Carlo American Walnut stock; entire barrel and action reblued and polished; hooded ramp front sight with gold bead. Recoil pad. Brass lug for shock absorption. 4-groove barrel shortened to 22". Bolt polished and follower beveled. Action drilled and bolt handle modified for scope. Only high number actions. Wt. 8 lbs. 41 1/2" overall. Cal. 30/06. 5-shot. **\$69⁹⁵**

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C23-3223. Deluxe Sporter, without scope, with 17" sling and 16 line hand checkering on the pistol grip and forend.....\$79.95
C23-3224. Deluxe Sporter Rifle above with Tasco 1 1/2-8X, 32mm CH variable scope, installed.....\$109.95

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U. S. SPRINGFIELD M1903-A3 30/06 CAL. MILITARY RIFLE

All with high number nickel receivers, milled working parts. Made in Gov't arsenals. 5-shot magazine. Adjustable rear peep sight, blade front sight. 43 1/4" overall. 8.69 lbs. NRA Good Condition. **\$39⁷⁸**

C24-1789. Rifle only.....\$72.00
E26-1000. 120 rds. 30/06 ammo.....\$72.00

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.303 CAL. BRITISH ENFIELD SPORTER

NRA Good Condition. Sporterized stock balances well, permits fast handling. Rear sight adjustable. Blade front sight. Brass butt plate. 10-shot removable clip. Sling swivels, 44 1/2" overall. .303 British caliber. Rifle only, without scope. **\$21⁷⁸**

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C23-3213. With 3 1/2" 3X-7X 20mm Variable scope, installed, ready to shoot.....\$37.50
E20-1359. .303 British Milt. Ammo, 100 rds.....\$7.50

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All NRA Good or Better. Military rifle, 6 shot, top loading, overall 46 3/4", peep rear sight, blade front sight, foot on magazine. Turn-down bolt. American Walnut stock. Milled parts. **\$29⁷⁸**

C20-33. Rifle by Eddystone.....\$34.95
C20-34-M1917. Rifle made by Remington or Winchester.....\$34.95

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C22-2255.....\$109.99

MATADOR DOUBLE BARREL 10 GA. MAGNUM

Shoots 2 7/8" H.V. or 3 1/2" Magnum shells. 32" full choked barrels. Double trigger. Auto ejectors. 49" overall. 9 1/2 lbs. Same features as above. **\$127.78**

C22-3229.....\$127.78
E20-73, 10 Ga. 3 1/2" shells. State #2 or 4. .25 for \$7.20

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GENUINE GOV'T ISSUE U. S. M-1 GARAND SEMI-AUTO RIFLE

Famous World War II Garand. 30/06 cal., semi-automatic. 8 shot rifle. As issued. Original click type aperture sight adjusts from 100 to 1200 yds. 24" barrel. Gas operated auto feed. Overall 42". Wt. 9 1/2 lbs. Handles **\$79⁹⁹**

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C24-3214. In N.R.A. Very Good Condition.....\$88.99
E26-1000. 30/06 ammo. 120 rds.....\$7.20

NEW!

RUGER MODEL 10/22 22 L. R. AUTO LOADING CARBINE with Detachable Rotary Magazine

Handsome finish, fancy lines, perfect balance, superb accuracy. Dual-screw dovetail mounting system. Convenient bolt hold-open latch. American Walnut stock. 37" overall. 18 1/2" barrel. Wt. approx. 7 lbs. 10-shot. **\$54⁵⁰**

C20-2237FF. No shipping or credit charge.....\$54.50
C20-3369. Carbine with 1" 2 1/2-8X x 32mm CH variable scope, mtd.....\$66.50
C20-3261. With 3/4" 3X-7X 20mm Scope.....\$66.50

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3X to 9X-40mm! Brand new! First quality! Made by Tasco! With a twist of the wrist you can have any power you want from 3 to 9. Field of view 1 1/4 ft. to 30 ft. Crosshair reticule. Magnesium fluoride hard coated lenses, windage and elevation click stops, parallax corrected. Nitrogen filled for fog proofing. Large eye piece and objective. 1" tube, cowhide lens caps. Overall 12" x 1 3/4" dia. **\$29⁹⁹**

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B27-2145. Tasco Deerslayer. 4X. Crosshair reticule. \$17.99

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Weaver "K4" scopes—perfect for shooting where the mark is small and the range is long. Hard coated lenses for brilliant wide field and needle sharp definition. Protected windage and elevation. 1/4" click adjustments for accuracy. 1" tube diameter. **\$27⁷⁵**

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C20-1483. TASCOS TOP MOUNTING.....\$4.88
C20-1031. WEAVER TOP DETACHABLE MOUNT. Can be removed in seconds. Includes base.....\$7.95

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Handloading Tools that save you hundreds of dollars on shotshells and cartridges!

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Includes powder, and shot measures, decapper, capper, wadding tool, resistor, crimper, instructions, and charge table. **\$75⁰⁰**

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410 Ga.—3". 12 or 20 Ga.—3". \$10.95
B20-834. 10 Ga. 3 1/2" Magnum. \$10.95
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HANDLOADING BENCH

By KENT BELLAH



DO YOU WANT THE world's most accurate .38? It's a \$234.50 Clark Long Slide. James E. Clark, 7424G Broadacres Rd., Shreveport, La., is one of the nation's finest pistolsmiths. He converts the nation's best factory pistols, made by Colt, Ruger, and Hi-Standard, and special Clark Colt Kits, into superb custom guns. Clark has set or broken 56 pistol records since 1950!

He was the only civilian to hold National Champion, made in 1958. He made National Civilian Champ six times. Jim was the fifth man to top 2600, with 2602 in 1950. He aimed at the 2650 Club in 1961. His aim was good, with 2652 points. But his shooting ability is exceeded by his superb pistolsmithing.

Clark's M59 was top gun in its day. Bill Blankenship, U.S.A., set a World's Record Centerfire Aggregate with it, 891 x 41X in 1960. It helped spark Colt's .38 Gold Cup, and S & W's Model 52, that can't compete with it. Clark's new Model 61 is better, and only a bit higher than factory guns. Made with special Colt Kits, they are guaranteed to group 10 shots in 2.5" or less at 50 yards! Some groups are smaller than the 1.695" X-ring, while factory guns group in two to four times that size. The M61 is excellent for nearly all shooters. Clark's .38 Long Slide was developed in 1962.

We got one of Clark's first 5 improved .38 Long Slides, made in July, 1964, guaranteed to group 10 shots in 2.0" or less at 50 yards. It's made on a new series Colt Kit made for Jim Clark and Gil Hebard. An "H" that may be Colt's code for Hebard follows the serial number, as in No. 00005-H. The bore and groove specs may account for near X-ring groups with bullet tipping, so common in factory guns, being nearly eliminated. The 6½" Douglas barrel has a 1:10 right hand twist. Bore is .349, groove .356. Lands are .050, grooves .1375 wide. Weight is 44 ounces, just right for a heavy gun.

A Bo-Mar Lock-Up Rear Sight, the world's best, positions and centers the barrel, and limits upward barrel travel. Adjustments are fine enough to zero in the X-ring. This sight is available on Clark's 61. Some chaps find the 39 oz. M61 handles easier and gives them better groups. With the Extended Front Sight you have the same 8¼" sight radius as a Long Slide, that is also made in .45. All Clark guns have superb clean-breaking triggers for better scores, without the softness of an S & W Model 52. Gil Hebard Guns, Knoxville, Illinois, has Clark guns in stock,

described in his fine new \$1 catalog handbook. Clark can supply them direct, but often with some delay.

The best target load we have fired in either gun, or any .38, is Speer's 148 gr. Hollow Base Wadcutter with 2.7 gr. Bullseye and CCI 500 primers. Use 3.0 gr. and you can bag more small game and varmints within 90 yards than with hotter loads. This bullet is fine for maximum Lo-V shock. It cuts a full caliber hole and may tumble internally. It's a dandy defense load in 2" snubs. The old Full Charge Wadcutter was the best factory load for this use.

We developed an even better snub load for defense, using Speer's H.B.W. with 3.8 gr. Bullseye. Charges are critical and should be weighed. It packs over twice the energy and about 3 times the shock of Mid-Range loads, that are efficient despite the lower energy.

In a 4" Colt it starts at 1002 fps, with velocity spread only 39 fps. In a 4" S & W it starts at 990 fsp with VS 48 fps. In a 2" S & W Chief velocity is 951 fps, VS 39 fps, for 300 ft./lbs. muzzle energy. Federal's Mid-Range load actually starts at 669 fps, with VS 52 fps, for only 145 ft./lbs. Despite the increased recoil, muzzle flash and noise, 2" barrels simply do not handle Hi-V factory loads as efficiently as my potent wadcutter load.

Crimp cases in the crimp groove. Don't reverse bullets to make the hollow base act as a huge hollow point. The 5 shot S & W guns are notorious knuckle skidders with a handle too close to the trigger guard. All Colt snubs are 6 shots, with a better handle to hold better and reduce this trouble. The extra shot could save your life.

Lawmen and hunters often ask for a load for 100 per cent kills or stopping power. There isn't any. Man or beast with a mortal wound may live long enough to fight or run. For example, deer are far harder to stop than a man. They often run a long way after being shot through the heart or other vital spot with a powerful rifle. One well placed hit is worth more than 10 times the energy in a non-vital spot.

"Modern" high efficiency semi-wadcutters are not new. The first .38, Lyman's 357271, was designed by B. F. Wilder in 1904. C. E. Heath copied it for .44 Specials in 1908, Lyman's 429336. Some men copied these and claimed them for their own design after
(Continued on page 14)

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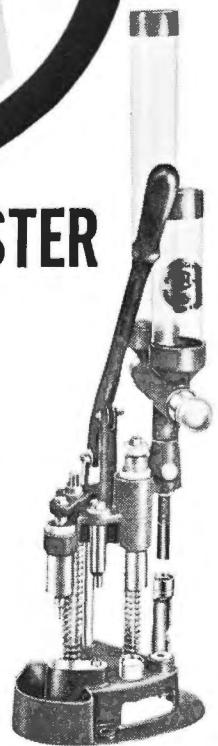
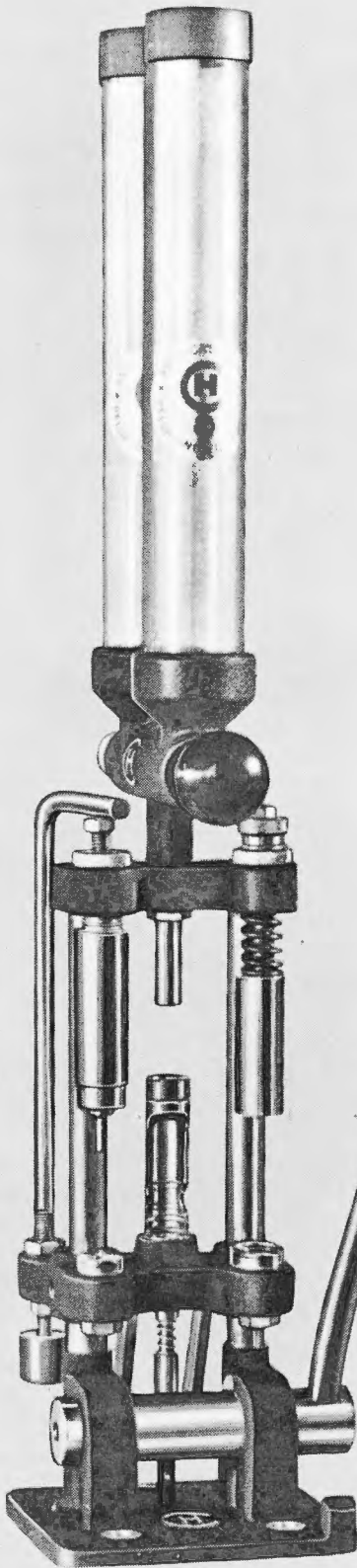
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NEWS from the SHOOTERS CLUB OF AMERICA

In the February **GUNS**, this column discussed an extremely inflammatory anti-firearms article published by Harper's Magazine. As more information pertaining to the article and its author has been unearthed, the method by which anti-firearms propaganda is invested with authority is clearly revealed.

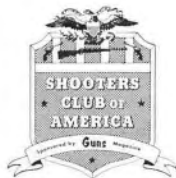
Harper's Magazine stated that the author, Mr. Carl Bakal, was partly financed through the Society of Magazine Writers. Harper's also stated that the funds the Society was drawing on to support Mr. Bakal were provided by the Beinecke Foundation.

This statement suggested to readers that the contents and conclusions of the article were supported not only by Harper's Magazine, but also by the Society of Magazine Writers and the Beinecke Foundation. For the reader who is unfamiliar with firearms, the support of such authorities would weigh heavily on the side of those who oppose firearms. In this fashion, an anti-firearms propagandist was clothed with the authority and backing of highly respected organizations.

Investigation by the National Shooting Sports Foundation has revealed that the Society of Magazine Writers and the Beinecke Foundation did not, in actual fact, support the article. The Beinecke Foundation contributes a sum of money each year to the Society, the money to be used by writers to develop articles for which they do not have assignments from editors. As Mr. Bakal, the author of the article, was on an assignment from Harper's Magazine, he violated the terms of the grant according to the N.S.S.F. The Beinecke Foundation did not know of the article until it was called to their attention, and Harper's Magazine did not have permission to use the name of the Foundation or of the Society of Magazine Writers. Both organizations are upset by the implication that they supported the article's contents.

The Beinecke Foundation is supported by a group of donors who are essentially the owners of Sperry and Hutchinson Company--S&H Green Stamps. The Beinecke family members are hunters and fishermen, and S&H buys a great deal of sporting goods products, including firearms, to exchange for stamps. Obviously, they would not willingly be associated with anti-firearms propaganda.

The S.C.A. believes that all gun sportsmen should be aware of the manipulations behind the scenes. It is not enough, however, just to know! This information should be used to educate those not familiar with the manner in which anti-gun propaganda is manufactured. And if you are not an S.C.A. member, join today! In addition to the satisfaction of working for your constitutional rights, you will obtain all membership benefits listed below!



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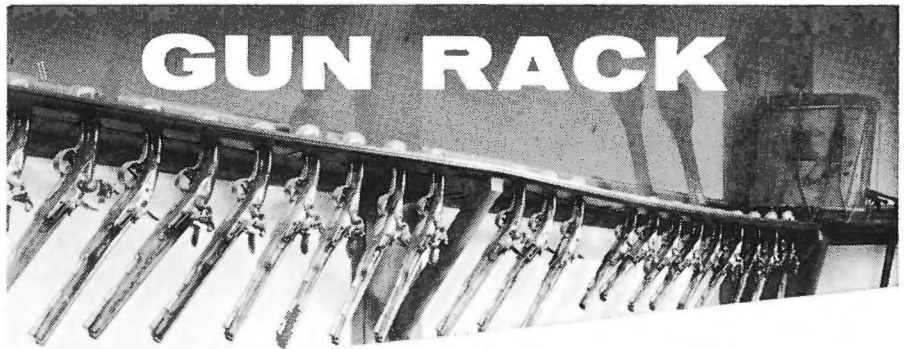
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GUN RACK



Speer Bullets

After many years of urging by .30-30 users, Speer Products has finally cracked loose with their long-expected .308 170 grain flat nosed bullet. This is a double-swaged, hot-core process bullet that, thanks to its design, should make a fine hunting bullet with good expansion characteristics.

With our loads in a Marlin 336 and a Winchester Model 94, these bullets gave good to excellent accuracy, with average groups at 100 yards measuring a hair under 1.25 inch, and one five shot group from the Model 94 going 0.75". With CCI 200 primers and 32.0 gr. of 4064, estimated velocity was around 2,100 fps. Bullet recovery tests showed excellent expansion, and in loading this Speer bullet, it must be kept in mind that it was designed for the relatively low velocity of the .30-30. The same bullet can, of course, be loaded in other .30s, such as the .308 Winchester.

Another bullet from Lewiston, though not new, has finally arrived in our test lab. For too many years, most .270 shooters-hand-loaders, have considered the 130 gr. bullet as the one and only pill that can be used in this fine caliber. Somehow or another, the 150 gr. got a black eye, and the Speer 170 gr. has been shunned by shooters. Our preliminary tests show that the 170 gr. bullet is equal to the 130 gr. bullet in accuracy and expansion. This round nose bullet, with 44 gr. of 4064, or with 54 gr. of H4831, consistently gave good 3 shot groups at 100 yards, and further tests are now in progress. This should make the .270 rifle a good gun for mountain hunting where heavier game can be an incidental target.

Score Book

Keeping score for the competitive high-power shooter is now made a lot easier with this Master Rifleman Score Book. Available from Al Freeland, 3737G 14th Ave., Rock Island, Ill. or from the publisher, Fred Schwicardi, 2 Summit Terrace, Lake Zurich, Ill., the book retails for only \$2.50. Windage diagrams for the service rifles, wind dope, and plenty of space for notes with each target for the entire course plus the 1,000 yard firing are contained in the book. When opened, the book lies flat, and printing as well as paper quality are good. This book might also come in handy for the hand-loader, for in it, you can record just where each load prints, thus have a permanent record of each gun with each load.

Herret Stocks

Some months ago, we reported on Steve's Shooting Star pistol stocks. Since then, there has been a great demand for the Shooting Star stocks, and Herrett recently released the Presentation Grade Shooting Star stocks. We got a set for our S&W Military and Police,



showed them to several members of the local police department, and now there is a stampede on for them. Made from a highly figured piece of crotch walnut without checkering, these stocks are now available for all Colt and S&W guns. You can get yours from your local dealer or directly from Steve Herrett, Box 741G, Twin Falls, Idaho. The new stocks retail for \$12.95.

Winchester Actions

For years and years, shooters, gun writers, and gunsmiths have been asking Winchester to release barreled Model 70 actions. Apparently, the screams have finally fallen on the right ears, and you can now buy barreled



M 70 actions. There are no sights or sight blocks, but the receivers are drilled and tapped for scope mounts. Standard grades in non-magnum calibers will retail for \$115.25. the magnums will go for \$126.50 as will the varmint barrels in .225 Win. and .243 Win., and the '06 target will set you back \$160.35. After June 1, barreled actions for the 7 mm Remington Magnum will be on the market, all others are now available.

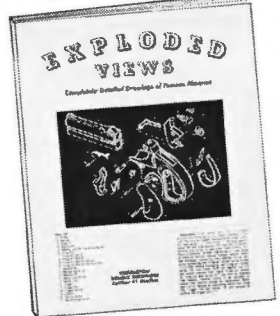
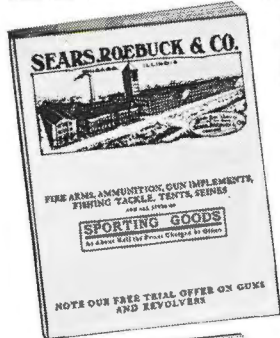
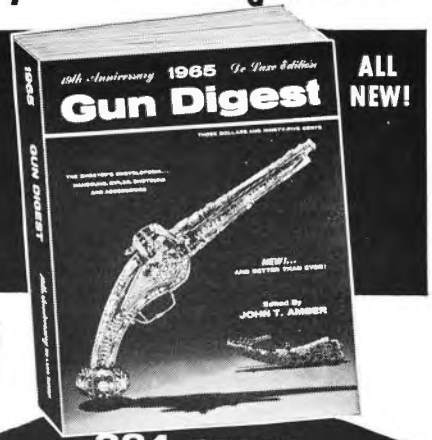
Tear Gas Devices

This new tear gas system can be installed in a home, your gun room, or in gun shops. It is easily set up, can be hooked into either a battery or the house circuits, and when

(Continued on page 66)

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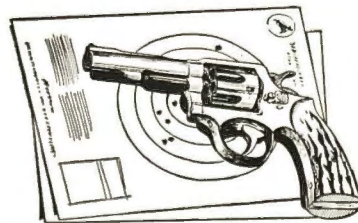
(Continued from page 8)

changing the top lube groove to a crimp groove. One was Phil Sharpe's Hensley & Gibbs No. 51 for the .357 cartridge in 1934. Smith & Wesson credited Sharpe for the "Sharpe type" bullet still used in Winchester-Western .357 ammo. The H & G No. 51 is still the best plain base .357 cast bullet, and is equally good in .38 Specials.

Ray Thompson's similar design, Lyman's fine 358156, has a gas check to reduce bore leading, and two crimp grooves, the lower one for .38 loads. I copied the fine Heath design for .41 Magnums, changing the top groove to a crimp groove. Hensley & Gibbs have it in their line of 4, 6, and 10 cavity moulds, that are superb. Heath is due credit for the excellent design.

• • •

We tested several versions of Jim Harvey's semi-jacketed Jugulars before they were introduced in 1952. Most current home swaging dies make "Jugular type" bullets. They deliver extremely high shock at Hi-V, but some guns give bore leading or poor accuracy. Speer's design eliminates both faults. A long jacket covers the entire bearing surface to eliminate leading. The crimp design helps start the bullet in bore alignment for fine accuracy, without slugging in the bore. Jackets don't shed in the bore or in flight. Jacket bases and cores can't shoot through the jacket walls, a serious problem when some bullets leave the jacket walls in the bore to ruin a gun the next shot.



Ed McGivern, the greatest handgunner of all time, designed the .38 Hollow Base Wad-cutter in 1916 that is used in all factory match ammo today. Speer improved it in 1964. Their version shoots equally well in tight or sloppy bores. A bevel base aids straight line seating and eliminates rifling fins. It's far more accurate than Speer's old flat base type.

Credit for modern handgun bullet designs and improvements from 1904 to 1964 is due Wilder, Heath, McGivern, Thompson, Harvey, and Speer, in that order.

• • •

Many good .44-40 Winchester M92 rifles are in use. Factory ammo gives poor accuracy with .424 to .427 bullets, because Marlin and Remington bores run about .424. The M92 bore is near .429, same as Speer's .44 bullets. For M92 rifles (not revolvers) load Speer's 225 gr. Hollow Point with 22.5 gr. 2400 and CCI 350 Magnum primers. Accuracy is excellent, even in guns with rough bores or dull lands. For revolvers use the same primer and bullet, but with 7.5 gr. Unique. We haven't checked our M92 load for pressure

or velocity. It's potent but not flat out in a good tight rifle.

Winchester could sell a million new rifles if they would revise and revise the handy old M92, and chamber it for .357 and .44 Magnum handgun cartridges. For my money they could omit the .256 Winchester Magnum caliber, and also the .22 Jet. Plinkers would appreciate a .357 caliber for shooting .38 Special loads. Custom conversions handle these well, and shooting cost with reloads is very low. For close range work on deer the .357 and .44 will do a good job.


• • •

CBH Bullets, Rt. 5G, Box 5400, Albuquerque, New Mexico, make fine loads for popular guns, and many foreign and obsolete guns. Loads such as 8x72R and 9.3x72R can be reloaded with our Boxer primers. Most owners of such guns can save money by buying CBH ammo and reloading the shells than to form complicated cases. Bruce Hertzler, owner, does beautiful case conversions. Cases are cleaned like factory new in his \$2,000 machine, and altered with any humps and bumps. Bruce uses tons of GI .30-06 brass for quality loads in volume.

All cases are lubed on a pad with RCBS lube, and sized in an RCBS A-2 press and RCBS sizer. Bruce says the press is unexcelled for easy and accurate in-line sizing, and the die does beautiful work with extremely long life for critical headspace and dimensions. He uses a 3 ft. square tray, 4" deep, with a ¼" hardware cloth bottom. It holds about 2,000 cases. Shake it and cases stand mouth up for speedy handling. Bruce can size 1,000 cases per hour. He holds about 12 in his left hand for feeding in the shell holder, and flips out the sized case in a box after working the handle with his right hand. Sized or formed cases are, of course, checked in a Case Length & Headspace Gauge.

Bruce used one RCBS .30-06 sizer for near 200,000 rounds before it showed neck wear. That's enough rounds to wear out about 50 rifle barrels! He returned the die to RCBS with a comment on the long life, and got a new one free that he didn't request. He has used his current .30-06 sizer about a year without wear, and believes it will be good for 300,000 or more cases. I have never worn out a really good rifle die in any caliber.

CBH has a Magnamatic .38 Special loader. It runs 3,500 rounds per hour. We tested 150 loads. They fully equal our own cast bullet ammo. The T-C die is good as new after some 1½ million loads. Dale Patrick, of Magnamatic, thinks it will run over 5 million. Bruce uses a Star tool for short runs, as a Magnamatic isn't practical for less than 2,000 loads. Three other Stars are used for .30 Carbine, .45 ACP and .45 Colt, all with T-C dies. Bruce has purchased \$2,000 worth of equipment to make cardboard cartridge boxes. The boxes are good ones, and necessary for his volume of business.

Many chaps find full or part time commercial loading profitable, even in small volume. CBH technique may give you some tips. Bruce Hertzler is working on an automatic .38 bullet swager. He believes it can be sold at less than \$2,000 to police agencies and custom loaders. If he is successful, and I trust he is, we'll report on it in GUNS. 

PRICE VALUES OF THE YEAR!



SPECIAL!
.30-06 MAUSER RIFLES

Out of Peru come these beautiful F. N. Mauser Rifles of world renowned Mauser 1924 design, (Improved '98). Originally fabricated in .30-06 cal. for the Gov't. Marked with Great Seal of that Republic. NRA Good to V.G. Cond. \$29.95, \$10 extra for Select. Barrel length 23"; Overall length 43"; Weight approx. 8 1/2 lbs. Original bayonet only \$2.95.

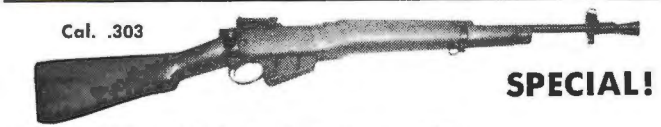
\$29⁹⁵



SPECIAL!
7.65 Cal. PERUVIAN MAUSER Model 1909

Large ring action with special short bolt throw. Guns were made by Mauser Werke, Oberndorf. Features include special medium length action, high clip guide to simplify telescope mounting. Easily converted to other calibers. Grade I, Fair to Good, \$19.75. Grade II, Good to V.G. \$24.75. Grade III, V.G. or Better, \$29.75. Original bayonet only \$2.95.

\$19⁷⁵



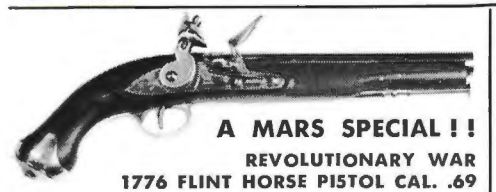
Cal. .303
BRITISH JUNGLE CARBINE
SPECIAL!
\$29⁹⁵

10-shot bolt action, flash hider, 18-inch barrel. Weight 7 1/4 lbs. Guns Excellent to New. These are the last of the surplus Jungle Carbines. No additional supplies available.



SPECIAL!
Original, Genuine G. I. CARBINES .30 Cal.
\$49⁹⁵

These were originally designed by "Carbine" Williams for Winchester, were one of first short, light weapons for new assault cartridges. These original carbines mfg. to U. S. Gov't Ordnance specifications.



A MARS SPECIAL !!
REVOLUTIONARY WAR
1776 FLINT HORSE PISTOL CAL. .69
GR III Tower
\$29⁹⁵

The astonishing popularity of this replica of the famous British Tower flintlock pistol as issued during the reign of George II and George III. Brilliant burnished steel barrel and lock, genuine walnut finished stock, solid brass butt cap and mountings, these are visually a "knock out". We sell these smoothbore Cal. .69 pistols for decorators.



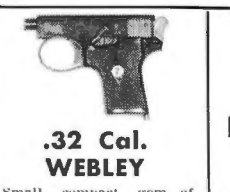
BERETTA MODEL 1934 .32 Cal.
\$24.95

Powerful hand pistol for police or personal use. Double safety catch, outside hammer. Heat tempered ordnance steel.
Beretta Model 1934, .380 Cal., \$26.95
Beretta Model 948, .22 Cal. L.R., \$26.95
Beretta Model 418, .25 Cal., \$19.95



.32 Cal. BROWNING
\$23.75

Model 1922. Large auto pistol used as Martial and Police weapon because of high degree of reliability, accuracy. Quality, dependability guaranteed by stds. of maker - F. N.



.32 Cal. WEBLEY
\$24.95

Small, compact, gem of production & finish. Has popular external hammer. First convenient .32, constructed with maximum attention. .25 Cal. Webley, just like the large .32 only \$21.75.



French MAB Model D
\$22.95

.32 Cal. auto. Represents best principles of design combined with improved post war quality. Uses standard .32 auto shells. Model C .32 Cal. Auto same as Model D but smaller. \$23.95.

Condition of Pistols Very Good. All Pistols Shipped REA Express. No COD's

AMMO SPECIALS

- .30-06 Case lot on above in sealed tins...384 rds. \$19.95
- American A. P.\$3.95 per 100; \$29.95 per 1000
- American Tracer\$3.95 per 100; \$29.95 per 1000
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- Loose F. N. Ball.....\$3.95 per 100; \$29.95 per 1000
- Argentine Tracer.....\$4.95 per 100; \$39.95 per 1000

- American Tracer nc \$4.95 per 100; \$39.95 per 1000
- Perfect for checking rifles without danger-Dummy practice shells-pkg. of 20, \$1.50; 100 rds., \$3.95. Mailable, add pstg.
- Italian.....\$2.95 per 100; Sealed cases, 2000 rds. per case.....\$39.95
- Canadian boxer primed non-corr.....\$3.95 per 100;

- Cases of 3840 rds. per case.....\$99.95
- .303 British Military \$5.50 per 100; case lot 800 rds. in reusable metal box.....\$28.95
- 7.65 n.e. FN 57 ball.....\$6.95 per 100; \$50 per 1000
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- Point hunting loads.....\$9.95 per 100; \$44 per 500

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HARPERS FERRY FLINTLOCK PISTOL
Model 1805 - Dated 1807. Made for the Army at Harpers Ferry Armory. First U.S. Pistol to be mfg. at a National Armory. U.S. Army Police adopted it as their insignia. Flintlock is 16" long, has round steel barrel 10" long. Has rifled bore in .54 Cal., varnished wood, brass mountings. Case hardened lockplate. Marked with spread eagle, U.S. & "Harpers Ferry 1807".



Engraved Scene NEW MODEL ARMY
1860 Colt New Model Army .44 Cap and Ball Revolver. Completely proofed for better & safer shooting. 8" barrel, walnut grips, blue finish, round cylinder. No special finely engraved cylinder at no extra charge.



VIRGINIA FLINTLOCK PISTOL
Virginia pistol is patterned after the Harpers Ferry with slight changes as a swivel ramrod which proved stronger, grips & brass buttcap are slightly shorter. Pistol has rifled bore in .54 cal., varnished wood, brass mountings. Lockplate is case hardened, marked with "Virginia" & "Richmond 1812".

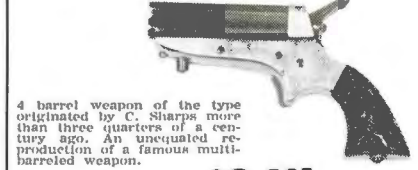
CENTENNIAL ARMS SPECIALS

Large Pistol Powder Flask for .36 and larger cal. revolvers. Made in copper just like the original. \$9.95

Small Pistol "Eagle" for .31 smaller. \$6.95

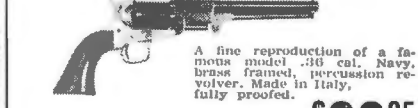
.44 cal. Iron Bullet Mold, specially made for Centennial Arms Revolvers of .44 cal. \$9.95

.22 cal. SHARPS DERRINGER



\$24⁹⁵

.36 cal. BRASS NAVY



\$39⁹⁵



Special Find
Brand New never used Civil War lock plates. One from Starr Carbine, one from Mass Arms Co. with a Maynard Tape Primer. Very limited supply. \$28.50 a pair. Unused with all original case hardening intact, exported to England.
\$28⁵⁰ a pair

SPECIAL !! \$69⁹⁵

"Centennial"—U.S. Rifle Model 1863 .58 Cal. Percussion
A vastly improved version of the Zouave replica rifle previously offered. Rifled, 33 inch barrel. The M1863 was, in its original form, a composite of the best features of the rifles of the time. The barrel and lock are like those of the U.S. Rifle, M1851. The ramrod and bands are from the M1863 Musket, 2nd Type and the patch box, butt plate, guard, stock and stock tip are from the M1855 rifle. Lock plate is marked with an eagle. Lock, lock plate and hammer are case-hardened in mottled colors. Blue-black barrel. Trigger, band springs, and all screws are blued. Butt plate and other fittings in brass. Sights: front blade, rear-3-notch type graduated in 100, 200 and 300 yards increments. (REPLICA - NOT ORIGINAL)

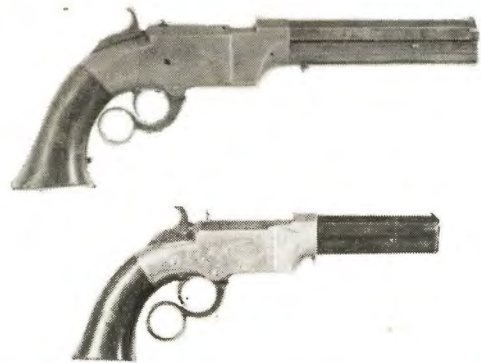
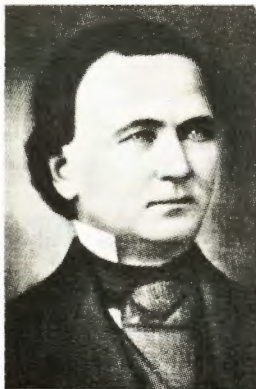
Regular \$125

CENTENNIAL ARMS CORP. 3318 West Devon Ave., Chicago 45, Illinois

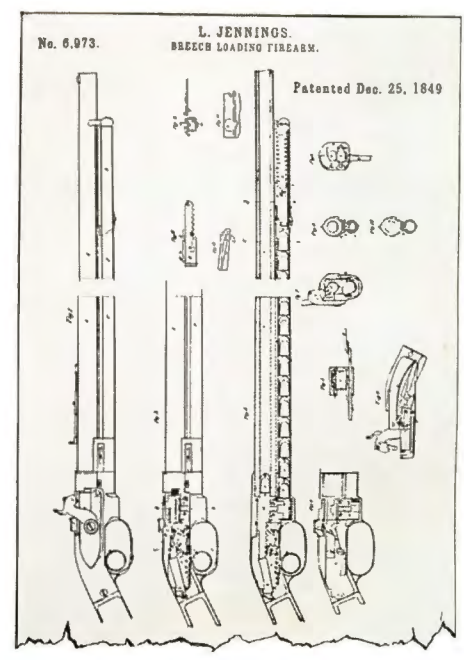
**DEVELOPMENT OF THE LEVER ACTION
WAS BASED ON A SYSTEM THAT AT FIRST FAILED**



The Hunt-Jennings-Smith rifles, made by Robbins & Lawrence of Windsor, Vermont, were the first to employ the Volcanic "rocket-ball" cartridge.



Left: Walter Hunt. Above: A .41 Navy pistol (top) and a .31 pocket model made by the New Haven Arms Co. Right: Jennings' patent of Dec. 25, 1849.



THE HISTORY OF THE Volcanics

By JAMES E. SERVEN



A side view, cross section, and base view of a loaded Volcanic lead cartridge. Grease grooves show this to be a later version.

WEBSTER TELLS US that the word *volcanic* describes something that is violently and powerfully explosive — something thrown from, or caused by action characteristic of, a volcano.

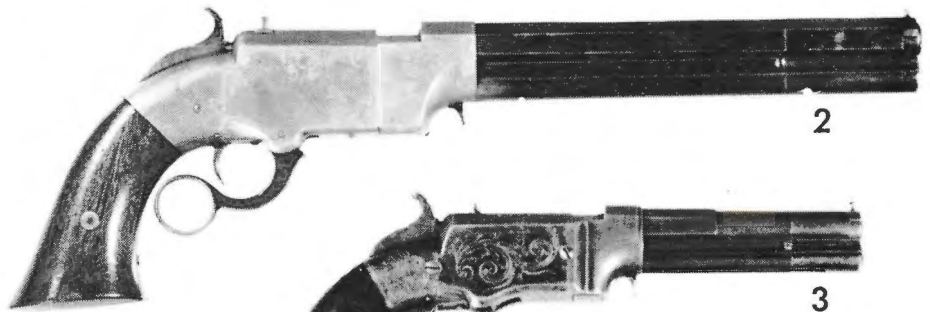
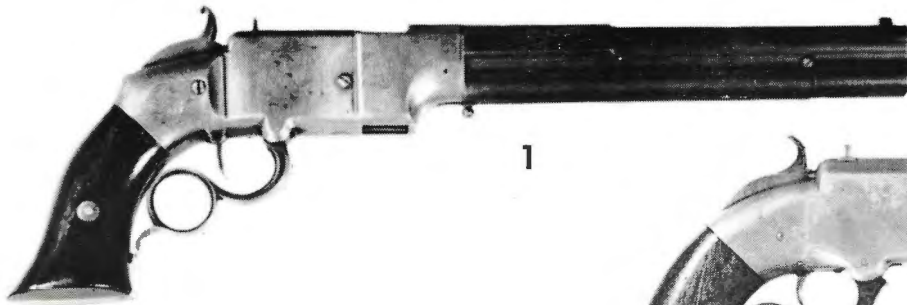
Actually, the Volcanic guns and ammunition had such poor range and weak hitting power that a hit on large game induced little more than a reproachful grunt! But, as Oliver Winchester later commented, “those early lever action repeaters were a nice piece of machinery to throw balls.” All they needed was an efficient cartridge.

How the Volcanic-type mechanism was developed and why it was a system especially suited to lever action repeating rifles goes back to Walter Hunt. Hunt was born near Martinsburg, N. Y., on July 29, 1796. He took naturally to the machinist's trade and in 1826, a bright young man of 30 years, he moved down to New York City. From that time until his death in 1859 Hunt's imaginative mind and skilled hands turned out a great variety of inventions. Many of his ingenious devices, from the safety pin to cartridges, are shown and described in a volume published in 1935 by Clinton N. Hunt, the inventor's great-grandson.

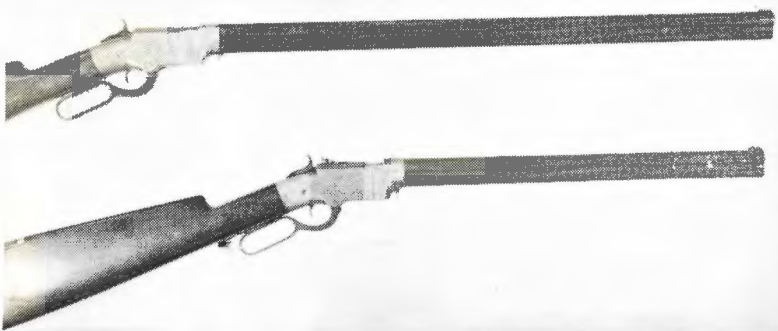
The Hunt cartridge, patent No. 5701 of August 10, 1848, was described by Hunt as a “rocket-ball.” Claimed in the patent papers was this novelty: “The construction of a ball for fire-arms, with a cavity to contain the charge of powder for propelling said ball, in which cavity the powder is secured by means of a cap inclosing the back end of same.”

This hollowed out conical lead bullet, with its stuffing of powder and detonating compound, progressed through several minor changes. The introduction of grooves cut in the outside surface of the bullet and filled with tallow to reduce leading in the barrel was one significant step forward. But basically an odd concave lead bullet packed with powder, employing no metallic case, was the standard ammunition for all Volcanic-type arms made under the four managements of the company making these guns.

Hunt's invention of the “rocket-ball” cartridge in 1848 was something like putting the cart before the horse, but he corrected this the next year by inventing a gun to shoot the cartridge. He called his gun “The Volition Repeater.” It should be mentioned that Hunt also patented an odd wooden cartridge in 1848, but apparently nothing ever came of this.



Volcanics



1. Navy size Volcanic in .41 caliber, made by Smith & Wesson, at Norwich, Conn. 2. The Navy pistol made by The Volcanic Repeating Arms Co. at New Haven. 3. A pocket size .31 caliber repeating pistol by Smith & Wesson. 4. Volcanic "target model." 5. Pocket model.

Though top gun has 24 inch barrel, both were listed as carbines. Both have No. 2 size bore (.41 caliber). Both made by New Haven Arms Co.



Horace Smith (left), partner of Daniel Baird Wesson (center). Right: Oliver F. Winchester.

Not having the capital to manufacture his "Volition Repeater" and "Rocket-ball" cartridges Hunt entered into an agreement with George A. Arrowsmith, a promoter of sorts and proprietor of a machine shop in New York City. In Arrowsmith's employ was a gunsmith named Lewis Jennings. Guided by Hunt's rifle patent issued in August of 1849, Jennings improved on the design and an additional patent was granted in December of that same year. Thus, we have the combined Hunt-Jennings efforts to produce an efficient lever-worked repeating rifle with a self-contained cartridge.

Now George Arrowsmith set out to find a backer and was successful in interesting Courtlandt C. Palmer, a well-to-do hardware merchant. So it was that in 1850 Palmer purchased the Hunt-Jennings patents and immediately

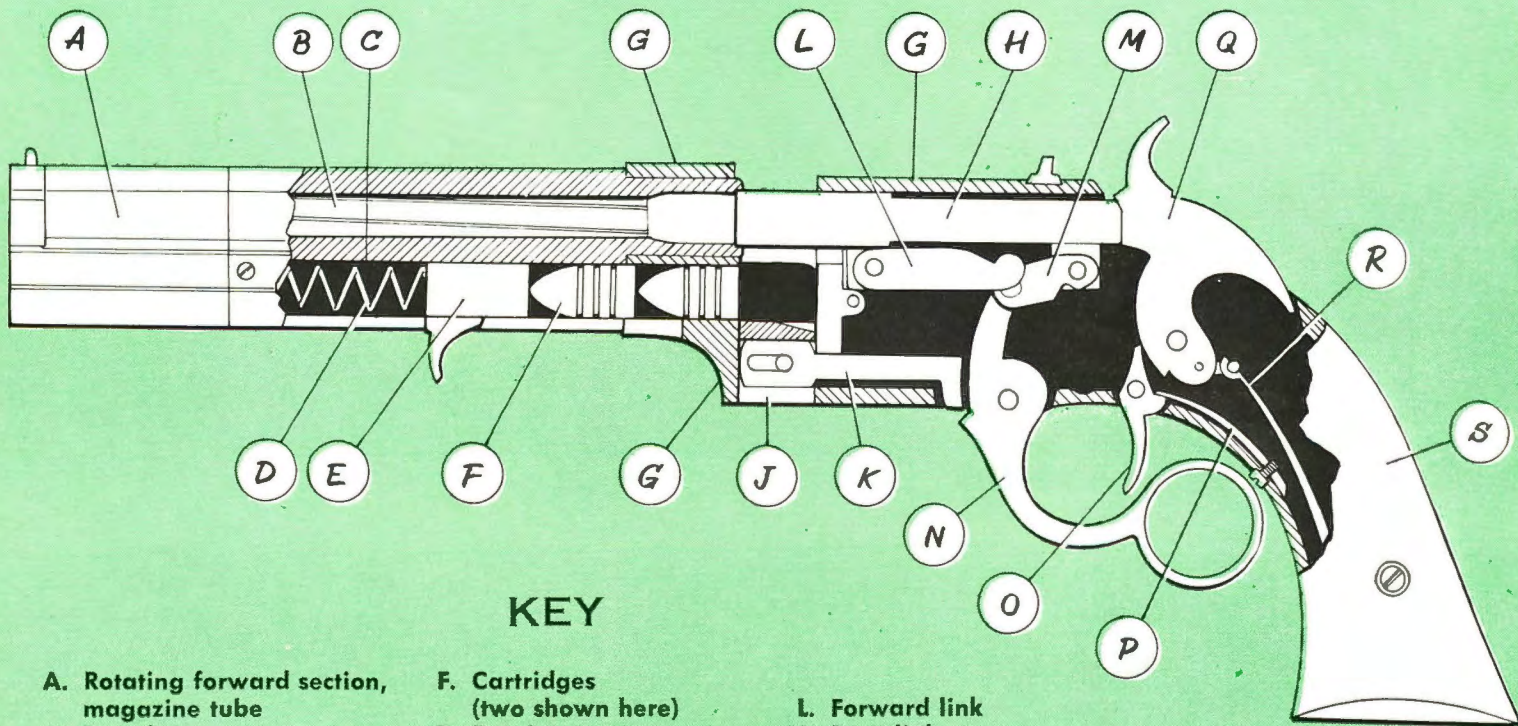
made arrangements with the Robbins & Lawrence gun-making firm at Windsor, Vermont, to produce the rifles which collectors generally refer to today as the "Jennings." Shop foreman at the Robbins & Lawrence plant was a talented young fellow named Benjamin Tyler Henry.

Mr. Palmer engaged C. P. Dixon as sales agent, and usually this marking is found on "Jennings" rifles: "Patent 1849, C. P. Dixon, Agent, New York." Either Mr. Dixon was not a very good agent or the public did not think much of the guns he tried to sell, for it soon became evident that the gun ballistically, even with its big .54 caliber bore, had too little power and was mechanically too complicated. Manufacture was discontinued in 1852.

"Jennings" rifles are to be found in limited variety. In operation, the Hunt-Jennings repeating action was not altogether dependable. Hence we find perhaps more Hunt-Jennings single shot rifles produced at Windsor than repeaters. Even after Courtlandt Palmer obtained Horace Smith's patent of 1851 to improve the Hunt-Jennings rifle, the gun was not a great success. The total number of guns made was small and today these guns are an actively sought collector's prize.

Despite the failure of the Windsor-made guns Horace Smith was not convinced that the general principles of the Hunt-Jennings-Smith system should be thrown into discard. With a fellow gunsmith, Daniel B. Wesson, Smith set out to improve on the old mechanism.

Two years later, in 1854, the results of the Horace Smith and Daniel Wesson efforts became manifest. On February 14th of that year they were issued patent number 10,535 (Reissue No. 279, Oct. 10, 1854) covering a lever operated repeating firearm and on the following August 8th, patent No. 14,147 was granted for an improved type of the "rocket-ball." This date was to appear on the labels of the tin boxes in which 200 Volcanic cartridges were packed for sale. The Feb. 14, 1854 patent



KEY

- | | | |
|--|--------------------------------|-------------------|
| A. Rotating forward section, magazine tube | F. Cartridges (two shown here) | L. Forward link |
| B. Barrel | G. Receiver | M. Rear link |
| C. Magazine | H. Bolt assembly | N. Lever |
| D. Magazine spring | J. Cartridge carrier block | O. Trigger |
| E. Magazine follower | K. Carrier lever | P. Trigger spring |
| | | Q. Hammer |
| | | R. Mainspring |
| | | S. Grips |

date would appear on Smith & Wesson lever action pistols and on the Volcanic arms of succeeding companies. It was one of the most important patents in the history of Volcanic arms.

Despite serious losses, Courtlandt Palmer was not completely discouraged and hopes for recouping were kindled by the improved designs. On June 20, 1854, Palmer entered into an agreement with Horace Smith and Daniel B. Wesson to form a company devoted to the manufacture of breech-loading firearms and the accompanying ammunition. The new firm took the name Smith & Wesson and it was located at Norwich, Connecticut, not very far from

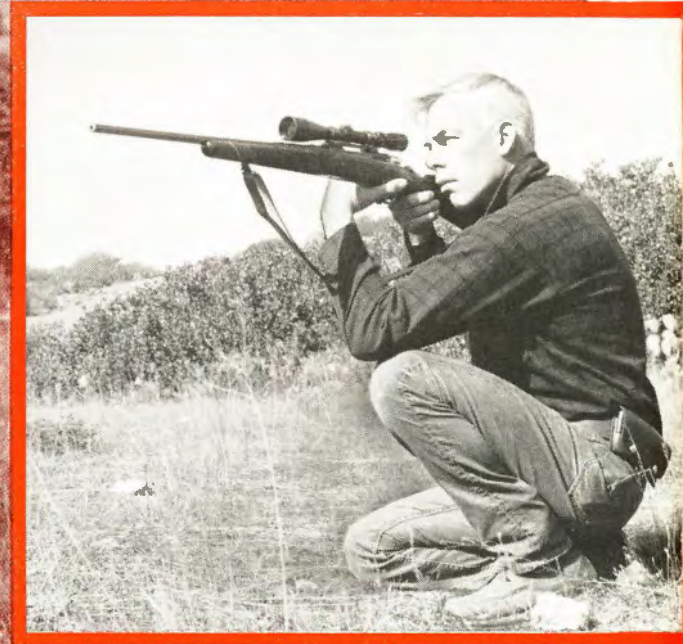
Palmer's home at Stonington. B. Tyler Henry became an employee of the new firm.

Although the new models possessed mechanical improvements, they still employed the same powder-packed lead cartridges which, although slightly improved, were relatively impotent as compared to the cap and ball guns of the time. As a comparison of muzzle energies, the Volcanic cartridge had a muzzle energy of 56 ft./lbs. as against 378 ft./lbs. for the modern Colt .45 automatic cartridge.

The principal products manufactured by Smith & Wesson at Norwich were pistols. A very (Continued on page 40)

CATALINA ISLAND

PROVES THAT EVEN IN PRESERVE HUNTING A BIG PINCH



Lee Marvin's rifle hold is somewhat unusual. Although it looks awkward, it proved to be highly effective in all positions.

By DICK FRISKE

IT TAKES JUST 15 minutes to fly from the Long Beach, California, airport to Catalina Island. Add another fifteen minutes and you can be stalking big game in a hunter's paradise. To the skeptic that sounds pretty unlikely but none the less that is exactly the position Lee Marvin and I were in early January.

I had first met Lee on the set during the filming of an episode for "Lee Marvin Presents." His warm, friendly reception made me like him instantly and somehow the

conversation turned to hunting. Lee had hunted since he was a kid except for the time he spent in the Marine Corps and a period afterwards when he was getting his start in the acting business. In the last year or two he has been able to get back to it and found it a great release from the frantic pressure of Hollywood.

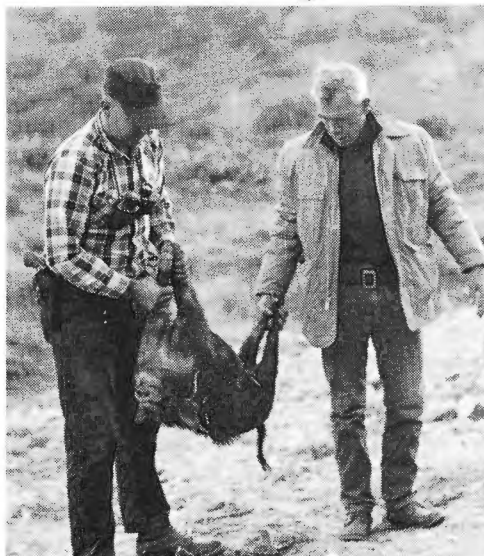
I asked him if he was interested in trying a Catalina Island hunt, his only answer was "Let's go." We planned the trip to fit Lee's busy studio schedule—and found that

HUNT...

OF LUCK IS NEEDED TO LIMIT OUT



Above: Hunters reach Catalina by amphibian, where they are greeted by Fred Kindel. Right: Fred helps Lee Marvin carry his boar, which was downed with .30-06 Browning.



Herd of goats, being stalked here, yielded Lee's trophy.

we had only two days. We were interested in Catalina goat and Russian boar, preferably trophy size—a pretty big order for the time we had. Arrangements were made with Fred Kindel who is “Catalina Game Manager.” He was to be our guide and warned us to be ready to hunt when we got off the plane.

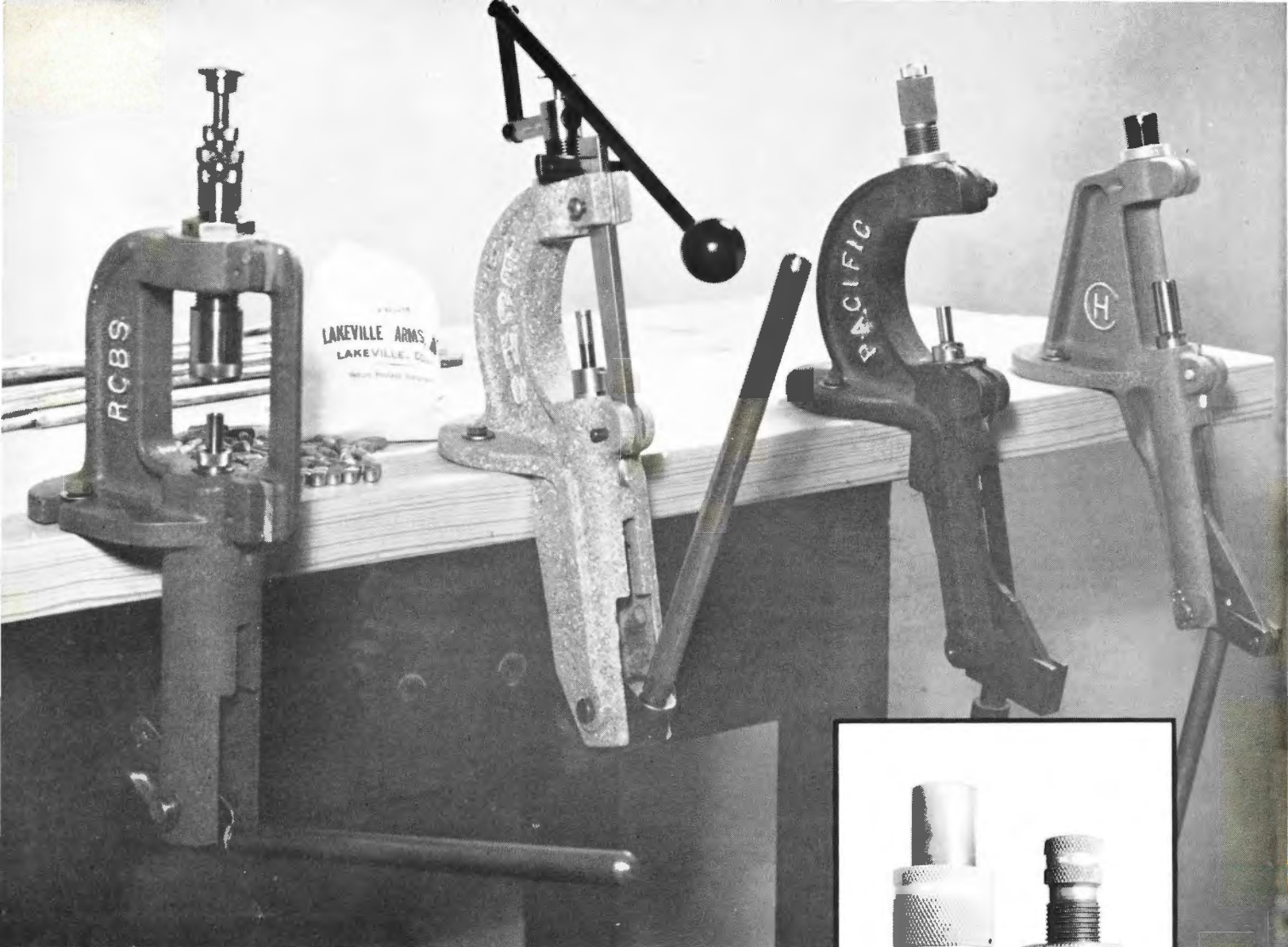
Fred was waiting for us when we landed and in a matter of minutes we had dropped our gear at the hunting lodge, scanned a map of the hunting area, and the next thing we knew we were looking at Catalina goats. Climbing the top of a high ridge, we spotted a female and two kids on the far slope. We were glassing the surrounding area looking for a billy when I looked up to find Lee motioning to me. He was pointing behind me and I eased around. A 50 pound Russian boar was moving slowly down the ridge toward us. The pig was rooting for something to eat and was so intent that he had not spotted us. He was too small—Catalina boar reach 250 pounds or more—so we just sat and watched. He just kept coming until I decided to try for a picture. As I maneuvered to get the camera into position the boar caught sight of the movement. As I clicked the shutter, the boar fled, leaving me with a slightly out of focus view of his rump.

The rest of the afternoon we walked and looked. We found game, but as luck

(Continued on page 58)



The author (left) and Lee Marvin look over Lee's goat, which he shot at about 150 yards. The horns, measuring 27 inches, were well in the trophy class.



Bellah's swaging bench. Inset shows original Hollywood dies.

Handgun Bullet Swaging.....

By KENT BELLAH

BEFORE 1950, SWAGING handgun bullets at home had been tried, but without marked success. The late Jim Harvey put swaging on the handloading map with his "Most Deadly Bullets," the Jacketed Jugulars. His swaging dies and bullets were an instant success and since then, handgun bullet swaging has become a respectable pastime among handloaders.

All swaging dies for use in reloading presses, or swaging tools with dies for bullet making only, cold form bullets in the identical manner, "squeezing" or compressing components to their final form at high pressure. Swaged bullets

have higher density with better uniformity. To illustrate, wad up a sheet of paper lightly and throw it across the room. Then wad up another sheet and compress it all you can—you can throw it harder, with longer range.

This is one advantage of the swaged bullets used in factory hunting and match ammo. "Swaging up" squeezes out internal air pockets and external defects. The jackets form a perfect base, are resistant to hot powder gas at high pressure. Common soft swaged half-jacketed bullets have huge soft points. A semi-wadcutter hollow point delivers maximum terminal shock at Hi-V, and tissue

SECTION



Carefully cut core, half jacket, and bullets with nose bleed-offs. Adjustments of the dies are critical.

destruction is terrible to behold.

Actual delivered shock is over twice as much as with hard cast bullets with identical energy figures. Energy is expended fast and violently, with fast expansion and good penetration. Hard alloy bullets are more accurate for matches, as soft lead tends to slug in the bore. On firing, the bullet base starts moving before the nose, as when you hit a golf ball. A ball, however, snaps back, but a bullet doesn't. Jackets of the proper thickness and alloy reduce slugging. Proper jacket temper is important for adequate "spring back" in swaging, to hold cores tightly. Lead cores are "dead" and don't spring back at all. Soft, dead jackets may shed in the bore or in flight, with resultant poor accuracy and efficiency. Slugging and bore leading will be excessive. Hard brittle jackets may let the base and core shoot through the barrel, leaving jacket walls in the bore. The next shot then ruins your gun.

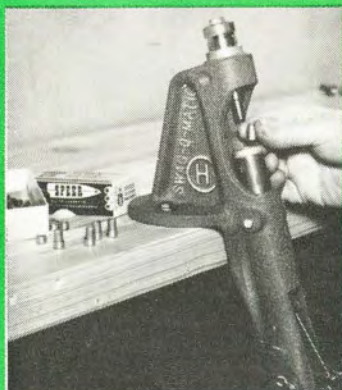
Speer jackets are made of the proper gilding metal alloy, thickness and temper, run uniform, are trimmed square to uniform length. They grip cores tightly, even when bullets are swaged in the small tools for home use. The late Adrian Bahler made equally good ones of 90:10 gilding metal. Bahler's dies were some of the best ever made. If you own a set, hold on to them.

Slugging isn't as bad as some writers imply. Hot loads increase it, but it's uniform with a given charge. Like Hi-V factory ammo, loads lack match accuracy. But you get about twice the shock of hard cast bullets. Slugged semi-wadcutter are a more deadly bullet shape for faster, more violent expansion. Hollow points are still better. They are more efficient if cavities are drilled, and they

open up faster than those cast or swaged. Use the Forster Hollow Point Accessory that I designed, in the Forster Precision Case Trimmer. Set it for a 1/4" deep cavity with their 1/8" drill, using loaded S.P. or H.P. bullets.

Half jackets expose some lead bearing surface that leads some barrels. Leading is reduced with light bullets, is nearly eliminated and better accuracy is obtained by using Swagemagic Bullet Lube, a liquid that "dries dry." Follow the simple directions, and apply by dipping, or use a strainer. Apply 2 coats, letting each dry 15 minutes or more. With Hi-V .357 and .44 Magnum loads we got 50 yard groups of 3 1/4" to 4 1/2", better than with many cast bullet loads.

Some dies or swaging tools permit the use of Speer's 3/4 jackets. These cover the entire bearing surface to eliminate bore leading, and Speer's jacket crimp on their bullets helps start them in better (Continued on page 49)



Soft bullet shows maximum slugging with hot load. At right, two .44 Mag., bullets, gas check factory bullet left, swaged right.

Terrific expansion of soft, swaged bullets as recovered from a moist sand box. For comparison, a .357 jacket is included.



Top, the C-H Swag-O-Matic is a speedy and highly efficient bullet swaging unit. Below, C press with brace, ejector.

Smokeless Loads FOR Black Powder Cartridges

By FRANK C. BARNES



THE RELOADING OF metallic cartridges began during the black powder era as a matter of economy and necessity. The first successful smokeless rifle propellant was developed in 1884 by the Frenchman Vieille and the German Duttendorfer, working separately but along parallel lines, and the French 8 mm Lebel military cartridge, adopted in 1886, was the first centerfire smokeless cartridge. The U. S. adopted the .30-40 Krag smokeless military round in 1892, while the first smokeless sporting cartridge in the U. S. was the .30-30 Winchester.

When smokeless powder came into general use during the 1890's, it brought with it more problems and confusion than anything since the development of the metallic cartridge. When loading black powder it is difficult to do anything very wrong. The proper charge fills the case to the

base of the bullet regardless of weight. A heavy bullet means less powder, a lighter bullet more powder in the same case. The only variable is the grain size, and even this allows much latitude. The coarser the granulation, the slower the burning speed, but maximum pressure developed by black powder is around 25,000 psi under normal burning and chamber conditions.

Smokeless powder is much more complicated and it develops over twice the breech pressure of black powder in some combinations. The correct charge of smokeless depends on the powder composition, grain size and type, case capacity and shape, bullet weight, primer, and other variables. A safe load with one bullet can be positively dangerous with a heavier bullet in the same case. A fast burning powder is needed for the short pistol barrel and some small rifle cartridges share this requirement. Conversely, large cases must have a medium or very slow burning powder. No one quite understood the nature of the new beast and the result was a number of wrecked guns and more or less unsatisfactory performance.

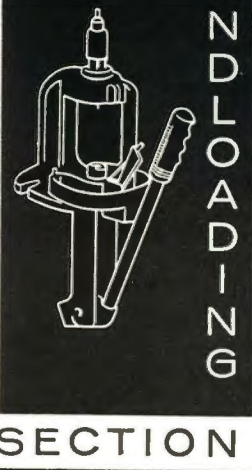
To improve matters, powder manufacturers brought out the "bulk" smokeless powders. These could be loaded bulk for bulk with black powder, and DuPont's Bulk Shotgun is the only one of these still available—it is no longer a true bulk powder. The modern smokeless powders are of the dense type, that is they occupy much less space or volume than an equivalent load of black powder. This also means that, if you load any of them bulk for bulk with black powder, you will probably end up with a wrecked gun.

In the past decade there has been a considerable resurgence of interest in shooting and loading for old black powder guns. Black powder is fun to use, but sooner or later the fouling and attendant cleaning chore becomes a nuisance. After firing with black powder, (Continued on page 56)



BALLISTICS OF POPULAR BLACK POWDER CARTRIDGES

CARTRIDGE	BULLET WT. GR.	M. V.	M. E.	MRT 200 YDS.	REMARKS
.22 WCF	45	1540	240	13.5"	Black and smokeless loading
.22-15 Stevens	60	1150	176	—	15 gr. black powder
.25-20 WCF	86	1375	360	14.0"	Black and smokeless loading
.25-20 H.V.	60	2200	645	8.2"	Strong smokeless actions only
.25-21 Stevens	86	1470	415	13.0"	21 gr. black powder
.32-20 WCF	115	1225	380	17.0"	Black and smokeless loading
.32-20 M92 Special	115	1635	685	10.5"	Strong smokeless actions only
.32-20 H.V.	80	2000	710	7.6"	Strong smokeless actions only
.32-40 Ballard	165	1430	745	12.0"	Black and smokeless loading
.38-40 WCF	180	1325	700	15.5"	Black and smokeless loading
.38-40 M92 Special	180	1770	1255	9.5"	Strong smokeless actions only
.38-55 Ballard	255	1320	990	13.5"	Black and smokeless loading
.38-55 H.V.	255	1590	1430	9.5"	Strong smokeless actions only
.38-56 WCF	255	1395	1105	12.5"	Black and smokeless loading
.38-70 WCF	255	1490	1257	11.8"	Black and smokeless loading
.40-60 WCF	210	1533	1095	11.5"	Black and smokeless loading
.40-65 WCF	260	1370	1080	13.0"	Black and smokeless loading
.40-70 WCF	330	1383	1050	12.2"	Black and smokeless loading
.40-82 WCF	260	1490	1285	11.0"	Black and smokeless loading
.44-40 WCF	200	1300	750	16.0"	Black and smokeless loading
.44-40 M92 Special	200	1565	1085	11.5"	Strong smokeless actions only
.45-60 WCF	300	1315	1150	14.5"	60 gr. black powder
.45-70 Govt.	405	1320	1560	13.0"	Black and smokeless loading
.45-70 Govt.	500	1201	1610	—	70 gr. black powder
.45-75 WCF	350	1385	1495	13.0"	75 gr. black powder
.45-90 WCF	300	1530	1565	11.0"	Black and smokeless loading
.45-90 H.V.	300	1970	2586	6.6"	Strong smokeless actions only
.50-70 Govt.	425	1275	1535	14.0"	70 gr. black powder
.50-95 WCF	300	1557	1615	12.0"	95 gr. black powder
.50-110 WCF	300	1605	1720	11.0"	Black and smokeless loading
.50-110 H.V.	300	2225	3298	5.7"	Win. M86 and single shot only
.43 Spanish	375	1440	1725	11.3"	77 gr. black powder
11 mm (43) Mauser	386	1425	1752	11.5"	77 gr. black powder
.43 Egyptian	400	1330	1570	12.3"	70 gr. black powder
.577 / 450 Martini-H.	480	1350	1939	11.7"	85 gr. Black powder
.577 Snider	480	1250	1666	13.0"	73 gr. black powder



EDITOR'S NOTE:

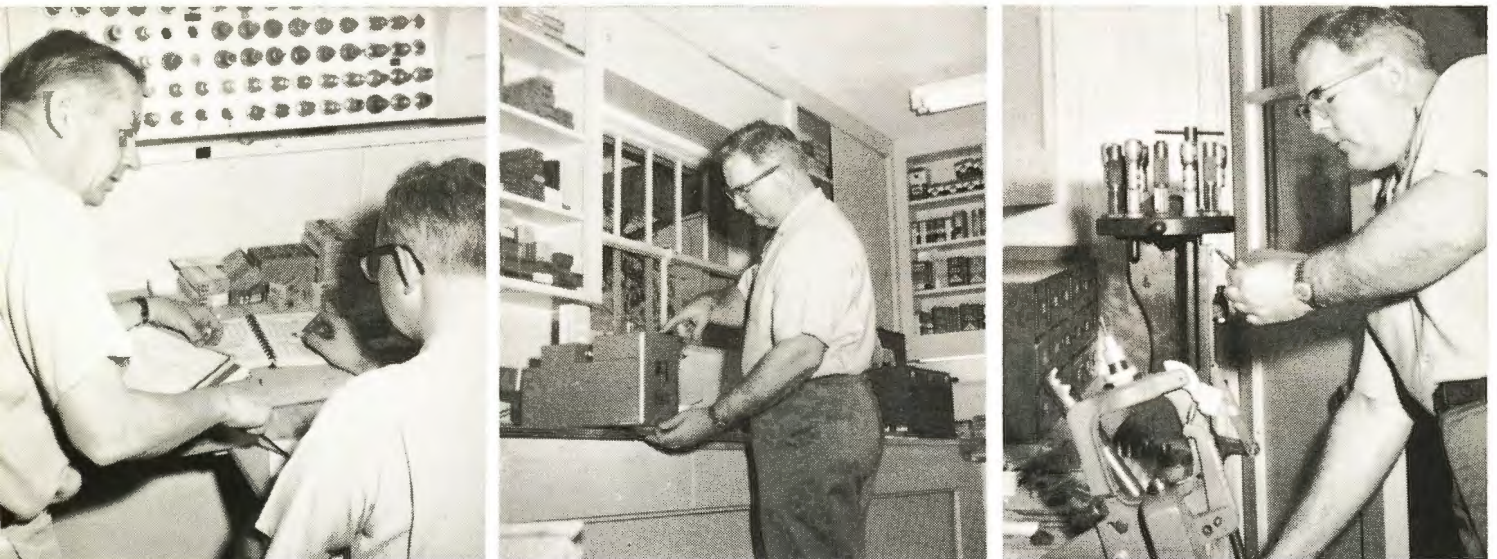
How are data for loading tables compiled? What are some of the guide lines used in arriving at safe loads? What are some of the special tricks used by professional ballisticians? These questions are so frequent that GUNS Magazine asked the Speer Ballistics Staff to answer some of them. Here is a blow-by-blow description how loads for the new Winchester .225 were developed. This is the first time that this information has been revealed, and we felt that handloaders would be interested in the methods used.

ANY RUMOR THAT a new cartridge is being developed creates a stir in our ballistics laboratory. Dave Andrews, our ballistician, immediately orders a gun and enough test ammo since we have to be ready with loading data as soon as the new caliber is announced. This means that loads have to be developed for each bullet that Speer produces in the caliber, and each and every load is checked not only for velocity, but also for accuracy, brass life, loading peculiarities, and a host of other data have to be gathered for our files.

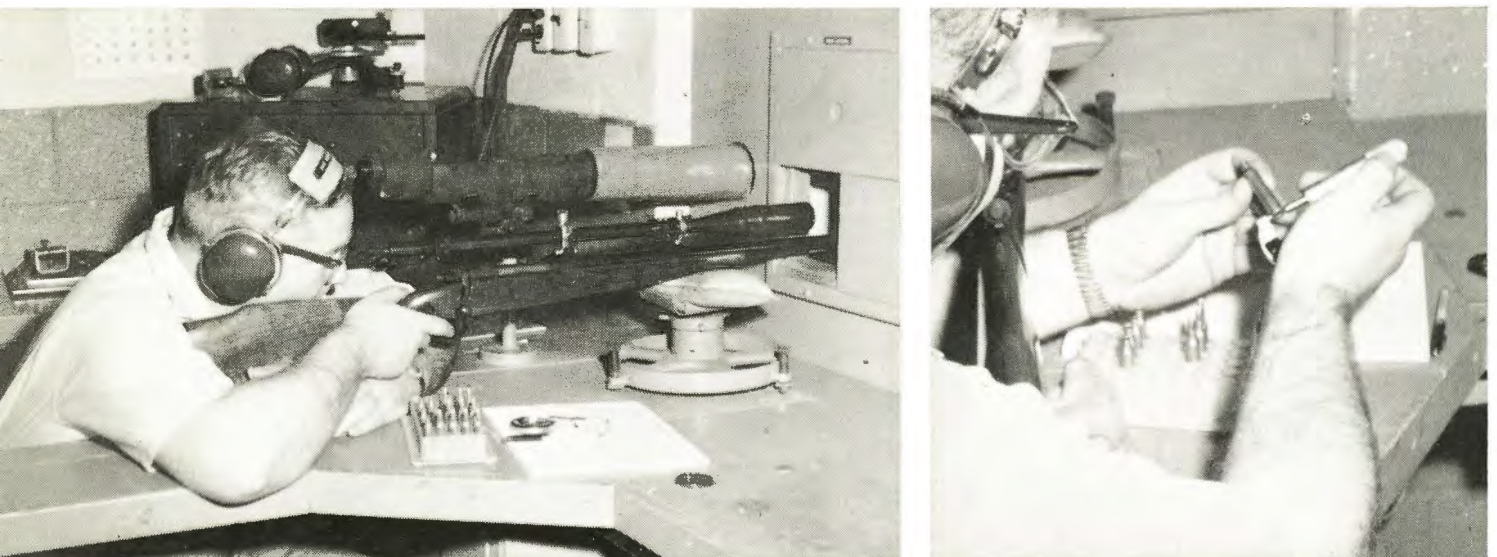
One of the most popular of the new cartridges is the

Loads for the Book

By SPEER BALLISTICS STAFF



Left: Wally Titus (left) and Dave Andrews plan load development. Center: Dave uses the electronic powder measure in the Speer Ballistic Laboratory. Right: Precision is the byword when loading test ammunition.



Left: The test ammunition is fired in the tunnel, and checked for accuracy and velocity. Right: After firing, cartridge heads are measured with micrometer for expansion, which could indicate excessive pressure.

BALLISTICS LABORATORY REPORT

SPEER PRODUCTS COMPANY
Lewiston, Idaho

NO. _____
Date 1-7-65
Caliber .225 Win.

Barometer 29.97
Temperature LAB 70° TUNNEL 37°
Rifle, Make, Model M/70 Varmint
Twist 1-14
Barrel Length 24
Bore Diameter _____
Groove Diameter _____

Name _____
Address _____
Owner _____
Remarks Load Development

NO.	POWDER	LOT	AMT.	PRIMER	LOT. NO.	CASE	BULLET MAKE - TYPE - WEIGHT	SEAT DEPTH	TIME	VELOCITY	M. V.	
									M S	AT 60 FT.		
1	4895	H	34.0	CC1 200		S-X	Speer 224-55-6-SP .135	.135	2829			
2									2777			
3									2799	2792	3673	3675
4			34.5						2756			
5									2797			
6									2770	2759	3610	3715
7			35.0						2680			
8									2670			
9									2677	2683	3736	3841
10			36.0						2615	3823	3832	

Remarks: Sp. to 33.5 gr. for #1 load

Tested by: *J. Andrews*



Speer's ballistic report shows development of a single load for the .225 Winchester.

.225 Winchester. The case is not a necked down, blown out, or otherwise altered version of another cartridge, but is completely new. Its case dimensions are different in almost every way from any other case. This means that all loading data must be worked up from scratch.

A careful comparison of the .225 Win. with the many different cartridge cases in the Speer collection showed the .219 Zipper Improved to be the closest in size. The principal differences between the Improved Zipper case and the .225 are the shoulder angle; 25° for the .225 and 28° for the Imp. Zipper; also the shoulder of the .225 is .007" larger and the rim thickness and diameter are different.

To compare the volumes of the cases we used Hodgdon's Ball C-1 powder because it flows so well. Because of differences in neck length, a bullet seating depth of .125" was assumed and the capacity measured to this level. The .225 case held 39.5 gr. The .219 Improved Zipper case held 39.7 gr. to the same level. The .224 Weatherby Magnum case was also checked and was found to hold 37.6 gr.

Since these cases are of the same caliber, have similar shapes, and are of nearly identical capacity, the known loading data for the .219 Improved Zipper can be used as a guide in developing data for the new .224 Weatherby and the .225 Winchester.

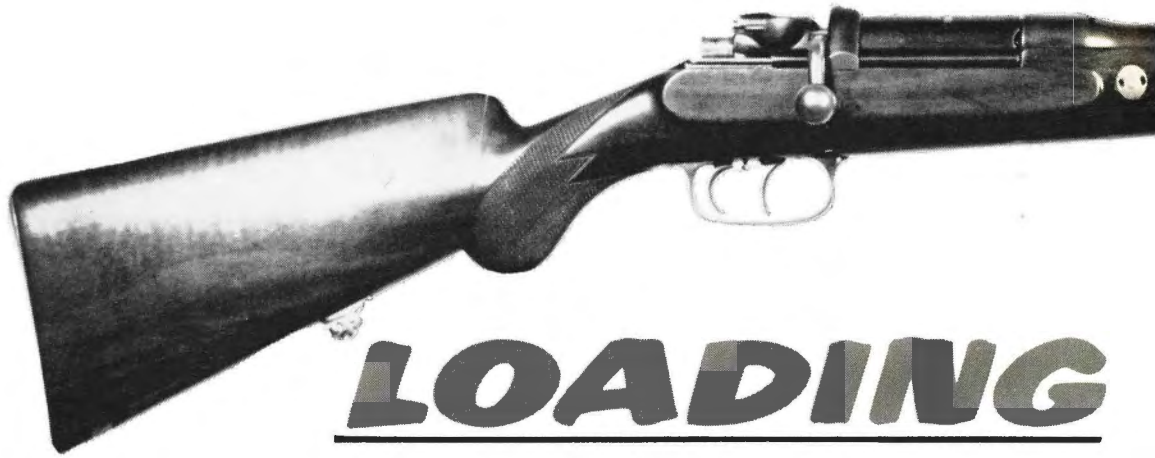
As a further check the Powley Computer was used. This computer will indicate the approximate charge and type of powder that will be most efficient with a given case and bullet. The slide-rule type computer indicated

that charges of 33 to 34 grains of the IMR powders 4064, 4895, and 4320 would be the best for use in the .225 Winchester. This prediction was later confirmed in tests.

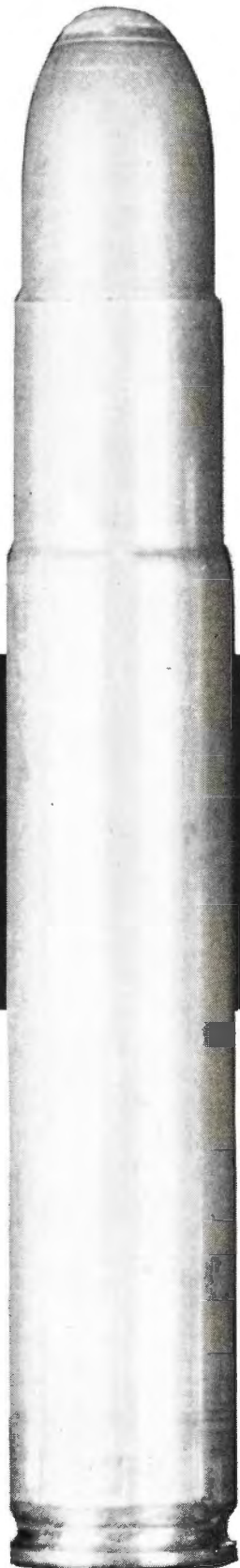
The next step was to check the factory ammunition. Several rounds were broken down and the powder examined. Ten bullets were pulled and the charges weighed. Average charge was 32.9 gr. of what looked like 4895 powder. (Powders used in factory ammunition are very seldom the same as similar appearing powders used by reloaders. Never try to identify powder by its appearance. It can't be done.)

Firing 30 rounds of the factory 55 gr. ammunition for velocity resulted in an average muzzle velocity of 3579 fps. Our test rifle was a Winchester Model 70 Varmint rifle with heavy 24" barrel. Winchester advertises a muzzle velocity of 3650 fps for the 55 gr. bullet, and this was the only bullet weight available in factory loaded ammunition at this time. Accuracy with the new rifle and factory ammunition averaged 1.496" for six 5 shot groups, using a bench rest and a 14X Unertl target scope. At this point the trigger pull and bedding of the rifle were adjusted and an immediate improvement in accuracy was noted. The last 10 rounds of factory ammunition were then fired into one group measuring 1.105", and accuracy of the rifle further improved with more shooting.

Preparing the cases for the first handloads was done quickly, using the dies furnished by Fred Huntington of RCBS. Normal procedure in the Speer Laboratory is to neck-size partially only, with a (Continued on page 54)



LOADING



The 10.75 x 68 mm

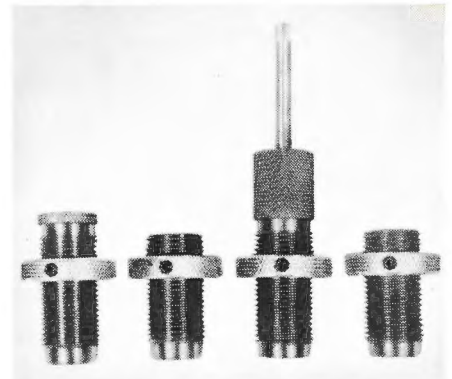
WHEN THE GI's reached Germany, they were treated to some of the finest examples of gunsmithing. The large selections of beautiful engraved jobs, stocks, sights, and engraving were quite impressive, and many souvenirs were collected. Once home, many ex-GI's found that their souvenir rifles were little more than just that. Their local gunsmiths had never seen some of the calibers before, the guns were strangers to him. Most of the guns were heirlooms, the ammunition was obsolete. There were so many of these guns that importing houses began bringing in cartridges for them. Prices were from \$8.00 to \$20.00 per box of 20 rounds. High ammo cost discouraged shooting and the guns were put on the wall and became conversation pieces. You can reload these cartridges and make your souvenir gun useful once again.

You can obtain the reloading equipment for these cartridges from Fred Huntington of RCBS in Oroville, California. And if no empty brass is available, you can make obsolete cases from American counterparts. Fred can supply all the necessary dies and tools. In some cases, it may take two or more forming dies, a trimmer die, a reamer, and a reaming die. To load the metric cartridges, you only need a hack saw, a file, a bench, and the loading tool. If empty cases are available, fine. If you buy loaded ammunition, you get brass and some shooting. Bullets, in most instances, are plentiful. Where they are not, you can obtain bullet moulds, lubricators and sizers from Lyman, Modern Bond, Saeco, and Hensley & Gibbs, in one or more cavity moulds.

In loading for the metrics, don't try for or expect maximum velocities out of some of these cartridges. Don't start

with the max load, but start at the bottom and work up carefully for best accuracy. This is usually about $\frac{2}{3}$ the top velocity, and pressures will differ with chamber and barrel dimensions with each gun. Do not be guided by the published pressures and velocities given by the various foreign arms companies.

Some barrels, especially those made for lead bullets, were made of a softer steel than the models made for the jacketed bullets. In all cases, you should slug the barrel to find the exact



Typical set of RCBS dies used for forming cases for metric calibers.

groove size. A lubricated lead bullet is best, but if one is not available, a piece of lead slightly oversized and pushed through a well oiled barrel will give you the true size of your barrel. If you are shooting lead bullets, use one slightly oversized, that is .001" or .002" larger; in the case of jacketed bullets, groove size or plus .001" will be proper. It would be best to make a chamber cast to determine the correct size of the cases to be used. If you have the foreign made cartridge to fit your gun, you are ahead of the game. If not, there are many cartridge dealers who will sell you a single specimen. You can also obtain



Reloading can bring to life many superb sporters chambered for metric cartridges.



GNZ—LOADING

THE METRICS

SECTION

loaded ammunition from cartridge dealers. Some of these German guns were recut for a different caliber, generally a larger size, modern caliber to get more velocity. These actions definitely will not take high pressures. All of these guns have proof marks, and if studied, they will tell you a tremendous amount about your pet gun. It will usually give you the bullet diameter and the cartridge case length, such as 8 x 57. The 8 is the bullet diameter in mm and the 57 is the cartridge case length, also given in millimeters. However, this is true only to a certain degree. In some instances this can be as confusing as the American designations. Take for comparison the 8.15 x 46R. The 8 x 57 service rifle takes a .323 bullet, while the 8.15 x 46R is listed as a larger designation, it takes only a .318 bullet. You see how important it is to slug your barrel and make a chamber cast.

Berdan primers are available in most local stores. To decap Berdan primers you need an ice pick, and for repriming, a piece of dowel slightly smaller than neck size and a light hammer is needed. Place the case over the dowel, and slightly to one side of the firing pin indentation, insert the ice pick and lift the primer out. To reprime, simply start the primer with the fingers and place the case with the started primer on a flat surface. A piece of flat plate will do. Insert the dowel in the case, tap it with the hammer until the primer is seated. In most cases, the manufacturer of your loading equipment can furnish you with the proper size primer arm. In ordering a mould, be sure to send the supplier a slug from your gun.

These listed loads are minimum and maximum, so start with the lightest load and work up. Most of these guns,

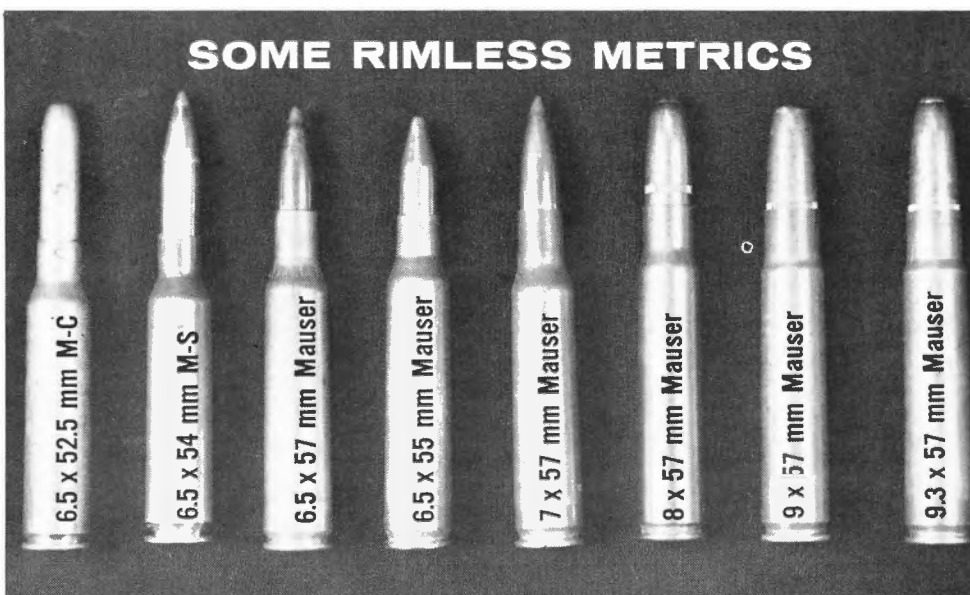
especially the Schutzens, were made for fine target work, and are best with $\frac{2}{3}$ or $\frac{3}{4}$ loads.

The 5.6 x 35R: This is the smallest cartridge you will encounter and compares to the .22 Hornet. The Hornet measures 1.390" and the 5.6 x 35R measures approximately the same. The Hornet brass has a thin neck and is given to stretching, so it would be best here to order a file type trimmer and trim these cases to the exact size. Use .223 or .222 bullets. The guns I have seen and shot all were on the tight side, so it would be better to use the smaller diameter bullet. This caliber, with reduced loads and lead bullets, will not only give you economical shooting, but will also give superb accuracy. Do not use a bullet heavier than 46 gr., and a 40 gr. bullet is even better. A charge of 8.0 gr. of 2400 or 9.0 gr. of 4227 will give an estimated velocity of 2,000-2,200 fps. A maximum of 9.5 gr. of 2400 or 10.2 gr. of 4227 will give approximately 2,650 fps.

The 5.6 x 61 Vom Hofe Super: This has been a controversial number, and much pro and con has been written about this cartridge. Cases can be made from .30-06 brass, but they should never be used for maximum loads. The head of the Vom Hofe measures .476 and the .30-06 measures .466, a difference of .010. There will be no problem here if the reformed case is fire-formed first. You will need necking dies, a trimmer, and reamer die. Use .227 or .228 bullets weighing 70 gr. Any powder, from 3031 to 4350, will do, including 4064 and 4320. These loads in my files have given me MOA groups; 36.2 gr. 4320, 40.0 gr. 4320. Maximum load is 49.0 gr. 4350, and these loads are in the 3,000 to 3,500 fps class.

The 5.6 x 52R: This is the same as the .22 Hi Power, and will be found in a great num- (Continued on page 43)

SOME RIMLESS METRICS



How To Load The Small, Hot Numbers

By ED YARD

Experimental Ballistics Associates



Author, with chronograph he built.

THE SMALL CAPACITY cases are a different breed of cat than their broad shouldered brothers—but just as many of them are wildcats. Hulls holding less than 25 grains of any powder require a different treatment. But don't let size fool you—they pack plenty of punch.

Pistol cases, necked down or not, and related cartridges for rifles like the .30 Carbine are stubby, their powder capacity limited. Even the .44 S&W Magnum case will scarcely hold 30 grains of powder. While the boiler room

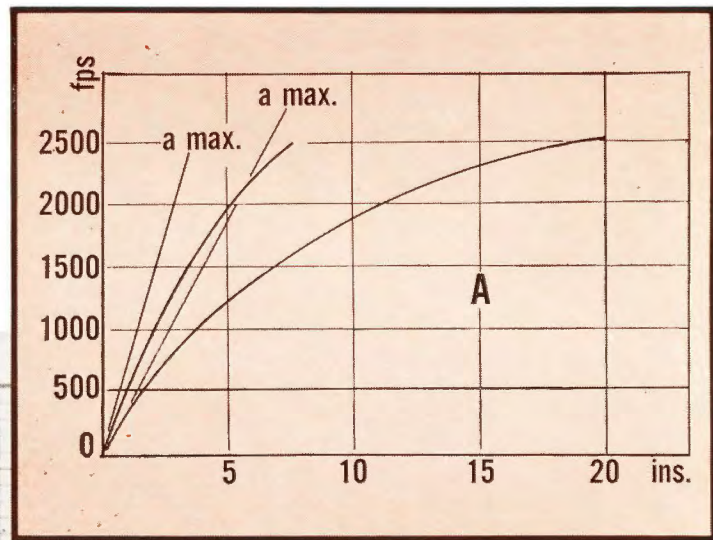
of these pint size thunder mugs is scant, their efficiency is tops. Loading these cartridges is for the experienced hand-loader who knows pressure signs and the power of explosives.

The .22 Hornet and its K cousin could be called the prototypes of small hot-shots. Shooters in 1920 wanted a varmint cartridge with more range than the .25-20 and the rimfires. The .218 Bee, the Lovell .22-3000 and its R variants, and a host of wildcats followed the lead, as did the rimfires with the .22 High Speeds in brass cases.

Woodchuck hunters wanted speed for instant kills, minimum ricochet, and flat-shooting accuracy. This they got in the various Hornet variations. Some big cartridges like the Zipper, Swift, and Varminter answered the call too. For the bulk of varminting they are too big and loud. For shooting little critters, cartridges like the .22 Sabre and twin (.22 Improved Jet) will hurl 45 grain slugs around at 3,200 fps and they are more than adequate.

The .357 S&W Magnum not only blew the top off the pistol velocity range, but it provided a perfect little case to work with. The Sabre, Jet, Ackley Jet, Super Jet, .219 Thor are a few of the .22s stemming from its straight-walled brass. Winchester's .256 Magnum, the .25 wildcats, the .30-.357, and others have adopted its case.

Almost every small case has been necked up or down to adapt it to powering some guy's pet sting-ray. Hornets



Graph A—Greater acceleration is required to boost a given bullet to 2,500 fps in $7\frac{1}{2}$ inches than in 20 inches. The steeper the tangent to a velocity curve, the higher will be the acceleration. Pressure is in proportion to the acceleration for any one bullet weight and shape.

Left to right: The .22-3000 Lovell, early hi-vel varminter; .218 Bee and Mashburn Bee; the .22 Midget Magnum; and a .256 Winchester.



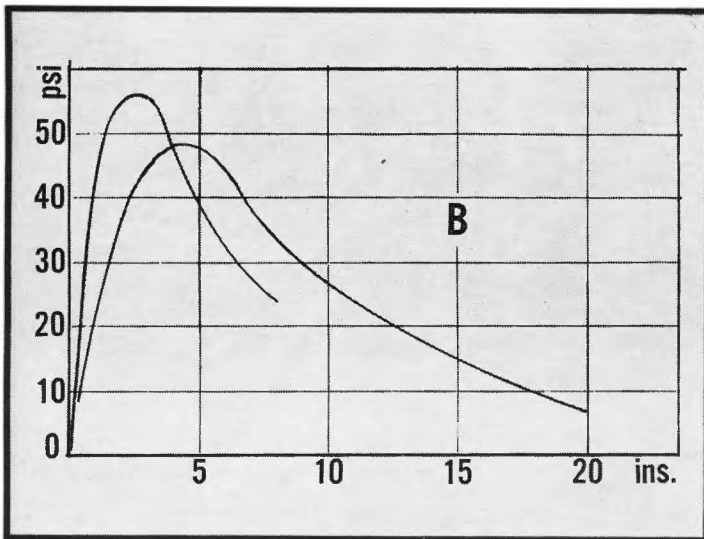
became K-Chucks, Snappers, JGRs, .17, .20, and even .25 calibers! The list is endless.

In loading the mighty midgets, you'll need to get used to 4227 as *slow powder*! The secret lies in sticking to the lighter bullets and load with fast powders. These are varmint cartridges, so don't promote them for heavier work. Remember to mind your P's and Q's—P is for pressure, Q for quantity of explosive.

The best bullets for the .22s are those weighing between 35 and 45 grains. For the .256 and the other .25s it's the 60 grain Speer bullet. The .357 S&W Magnum will handle up to 160 gr. jacketed balls, and the Speer is excellent in rifles at up to 2,100 fps. The .357 Thor is even better with the same bullet. The general rule is—the smaller the case, the better the lightest available slug will do.

Most of today's guns and cases will take 40,000 to 50,000 psi easily. The small cartridges must operate at peak efficiency. While a .30-06 may operate with a 30 per cent efficiency and often less, we must try for 35 or more per cent in a .357 Magnum load. Fast powders raise pressure quickly, and high energy ones prolong the max, while both add to output efficiency. The formula is: $V=g(P/S.D.)t$.

For a bullet of given sectional density (S.D.), velocity (V) depends on pressure (P) and how long you have it turned on (t). Ballistic graph A shows that bullet velocity



Graph B—Curves indicate type of pressure rise needed for the velocity shown in graph A. Higher pressure and fast rise is essential for 7½ inch barrel. Lower peak pressure and a slower rise will do for the 20" length, and the gas pressure at barrel's muzzle will be less.

must increase more rapidly to reach a given level in a short barrel than in a long one. The tangent to the curve of velocity plotted against the distance is the rate of change of velocity with respect to travel, and shows what acceleration is required.

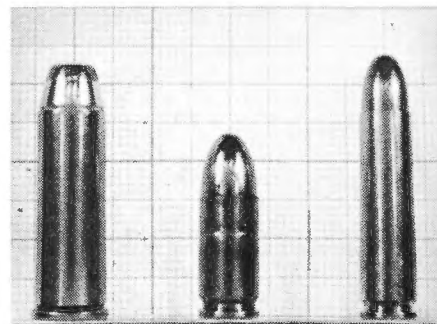
Graph B shows pressure requirements. A short barrel, which has a minimum travel time, requires a higher pressure to give the same muzzle velocity as longer barrels need with lower pressure. Long tubes yield a greater speed with the same pressure until finally the point is reached where friction slows the bullet.

The tangents to the curves (Continued on page 53)

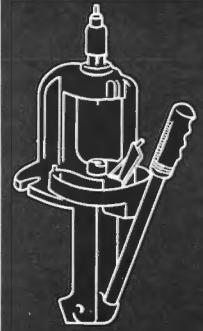
RIFLE DATA

.22 JGR		M.V.
35 gr. Sisk S.P.		fps.
.127 S.D.	4.0 gr. Unique	2200
	6.0 gr. H240	2360
40 gr. Sierra		
.145 S.D.	4.2 gr. Unique	2120
	6.0 gr. H240	2260
.22 Hornet		
46 gr. Win. H.P.		
.167 S.D.	10.0 gr. H240	2800
	10.7 gr. 2400	2670
	11.5 gr. 4227	2590
.22 K-Hornet		
46 gr. Win. H.P.		
.167 S.D.	10.8 gr. H240	2880
	12.2 gr. 2400	2870
	12.8 gr. 4227	2810
.22 Sabre		
45 gr. Rem. H.P.		
.163 S.D.	16.5 gr. 4227	3160
	17.5 gr. 4198	3050
	19.5 gr. Ball C	2835
.256 Win. Mag.		
60 gr. Speer		
.165 S.D.	13.5 gr. H240	2640
	15.0 gr. 2400	2755
	17.0 gr. 4227	2855
	17.5 gr. 4198	2675
.30 M1 Carbine		
85 gr. F.J.		
.163 S.D.	11.0 gr. Unique	2400
	16.0 gr. H240	2500
.30-357		
110 gr. Gas Ch.		
.211 S.D.	14.0 gr. AL8	2105
	18.0 gr. 2400	2410
.357 S&W Mag.		
160 gr. Speer		
.228 S.D.	17.0 gr. H240	2100
	20.0 gr. 4227	1975
.25 Stevens		
(Factory Load with 60 gr. Bullet)		1160
60 gr. Win. S.P.	5.5 gr. H240	1450
.165 S.D.	7.0 gr. 2400	1575

See page 53 for handgun data



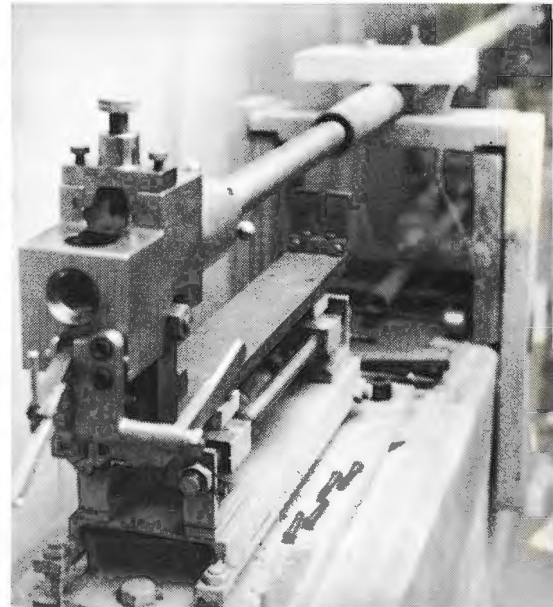
Left to right: .41 Magnum; 9 mm Luger; .30 Carbine—typical small cases that yield high performance, need fast powder for light bullets.



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SECTION

Shotshell Load Variables



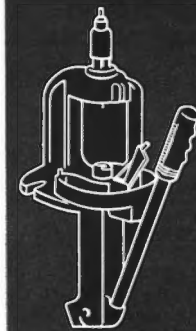
By ROBERT HODGDON

WEIGHTS OF SOME 12 GA. WAD COLUMNS

Sacdome and 1/2" Gacork.....	22.2 gr
Green Power Piston.....	26.5 gr
White Power Piston.....	29.0 gr
.200 and 1/2" Alcan.....	33.8 gr
3/8" Combo-wad.....	40.5 gr
5/8" Mono-wad.....	41.8 gr
Win-Wad w/2 cards.....	44.6 gr
Polywad (red).....	46.1 gr
Yelo-wad w/2 cards.....	53.8 gr



Top left: Robert and Bruce Hodgdon at their chronograph. Top right: Loads are checked on this pressure gun. Bottom: All of the available powders for shotshells. Bottom row for light loads; center row, medium; top row, magnums.



SECTION

ALTHOUGH there is no particular trick to loading shotshells, it should be considered as a science—and unfortunately a science which is far from exact. There are so many variables involved in loading a single shell, and a great many of these variables are beyond control of the handloader, that exact results cannot be predicted. Even honest-to-gosh experts are startled every once in a while when the laboratory tests produce results which are not at all in accordance with their careful calculations. It behooves the handloader to be aware of some of the shotshell loading variables and he should know what he can expect from these unpredictable factors.

Breech pressure and velocity usually go hand in hand, and if the shot weight remains constant, an increase in pressure will produce an increase in velocity, but this increase may not be proportional. Basically, the handloader is concerned with eight variables of which a few are controllable, while others are beyond his control in practically all cases.

Primers are non-corrosive and non-mercuric. In general ignition or brisance is very consistent and highly reliable. Alcan and CCI primers are made exclusively for handloading, and are considered by some men to be “hotter” primers. Laboratory tests failed to show a significant increase in pressure due to use of these “hotter” primers. The primer can, however, be responsible for a different “barrel time,” that is the time elapsed between firing pin fall on primer and the time elapsed when the shot charge leaves the barrel. The barrel time factor is not as great as muzzle velocity, and some highly skilled shooters can detect variations in barrel time.

There is bound to be a small difference between primers of different manufacture, and hence, the handloader is well advised to stick to the brand of primer that he is using. By the way, Remington primers should not be used with either Winchester or Hodgdon shotshell powders since the ball or spherical powders may filter into the uncovered primer. If powder filters into the primer, the cap can be blown out and foul the action of the gun. All other primers have a membrane covering to prevent such powder filtering.

Shotshell cases are the biggest variable factor. Each time a paper case is fired, the base wad becomes looser and spongier, and it will absorb pressure to a certain degree. Wads scraping down the case wall and hot gases tend to thin case walls with each firing, thus giving less resistance to the next charge. Moreover, the crimp becomes looser. Thus, if all conditions could be kept constant, consecutive loads in the same paper case would give lower and lower breech pressures and velocity would be reduced. It is for this reason that shotshell hulls should be separated into “once-fired,” “twice-fired,” and so on, and that only hulls with the same number of firings should be used during one shooting session.

The old Remington and Peters hulls had very soft base wads and tended to give lower pressures. Federal shells have a hard base wad and for this and other reasons, they tend to increase pressure. All Alcan metal-base wad shells tend to increase pressure, but metal shells, as loaded by

the handloader, usually give slightly lower breech pressures since wads fit loosely and the side walls of the cases offer little resistance to the wads; these cases safely withstand higher pressures.

A new paper shell which is first crimped by the handloader or an old roll crimped shell which is first star crimped by the handloader will give higher pressures than a factory shell. Loaded shells which were stored under conditions of extreme heat may kick somewhat harder since the melted wax from the case can harden the crimp and even cement wads to the inside walls of the case, and again the result is increased pressure. To add to the variables, hulls differ in paper thickness, and this varies not only with the manufacturers but also varies from lot to lot. Thicker walls again mean higher pressures.

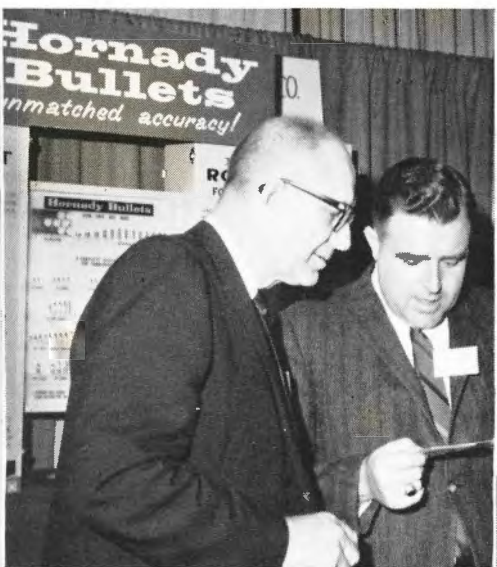
Variations in consecutive loads of plastic shells are in general less since the wall thickness and base wad variations are considerably less. The crimp of the plastic shell gradually becomes softer through use, but this does not appear to affect pressures to any marked degree. When plastic hulls were introduced widely, ballisticians assumed that the plastic hulls would produce hotter loads due to a harder base wad and a harder crimp. Extensive laboratory tests have failed to show any significant difference or increase in either pressure or velocity.

Just because the brass head of one case is longer than that of another case is no measure of case strength. Low base hulls can and have been safely loaded to magnum specifications, providing of course the load fits into the case.

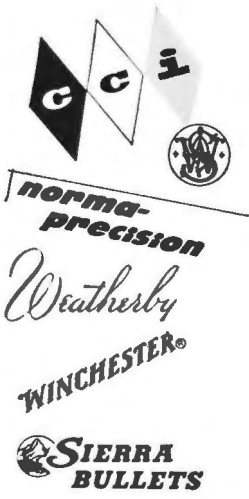
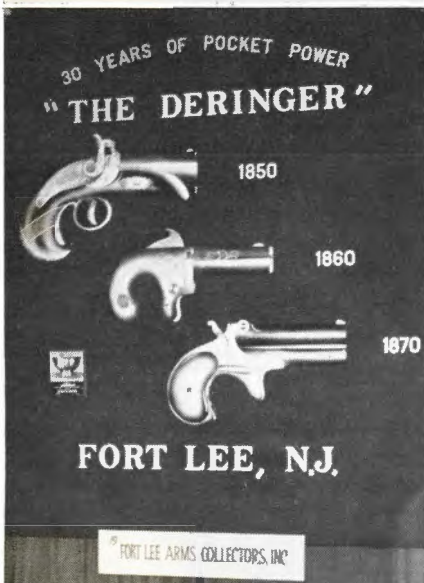
Powder choice is important, but the handloader stands helpless when it comes to powder variations. As in loading metallics, lots of powder vary, and the handloader who shoots great amounts of shotgun ammo is best advised to purchase a keg of the powder that he likes to use. Burning rate and density may vary slightly, usually not over three per cent, from lot to lot, and even the keg buyer, if interested in maximum performance, will test each new lot of powder, not only on the trap or skeet field, but also on the patterning board.

If performance is critical, powder measuring should be considered. An accurate powder measure will throw more consistent charges than the sliding bar will, especially with a fluffy powder which is prone to pack with weight or jarring of the tool. The moisture content, contrary to popular belief, varies very little with humidity changes and can, for all practical purposes, be ignored.

Unfortunately, purely deductive reasoning does not work when you are faced with the problem of developing a powder charge for a new load. Breech pressures do not change proportionately to powder weight, nor does pressure work proportionately with any other factor. The pressure increases with powder charge along a mathematical curve, with the largest changes in pressure occurring at higher absolute pressures. For (Continued on page 51)



Far left, some of the company logos seen at show. Hornady, left, discusses his bullets.



* * * * *

THE 94th ANNUAL NRA SHOW

* * * * *



By JOHN BROZ

THE 94TH ANNUAL Meetings and Exhibit of the National Rifle Association, which will be held at the Sheraton-Park Hotel in Washington, D.C., from March 27 through March 31, take on special significance this year, for several reasons.

The first is the NRA's campaign to bring their membership roles to one million. During the past five years, over 1/3 million new members have been recruited, bringing the total membership to 670,000. The current campaign, "Shooting for a Million," should, because of the position of the NRA in the legislative picture, and because of the increase in shooting activities, bring about an increased

awareness to sportsmen of the need for unity, and should make the NRA's goal of a million members a reality.

The second factor which will make this NRA meeting a significant one is the current trend in magazines, newspapers, radio, and television, of maligning the NRA and its members. In a recent editorial, the "American Rifleman" said: "By means of cleverly written articles, these authors are presenting vehement diatribes against firearms of all description, against NRA, and against gun owners in general. Some reek of bigotry and parochial thinking, while others appear to be a deliberate attempt to divide and conquer."



The major attraction of the NRA show are the commercial exhibits with the displays of the collectors' groups running a close second in popularity.

will be held. It is at this meeting that the collector's displays are judged, and the winners are announced. Collectors' shows are commonplace today, but the displays at the NRA convention are of a quality that pleases even the most discriminating collector.

The Hunting and Game Conservation session, will also be held on the 28th, and with the conservation legislation in the news, this should be a most interesting meeting. The role of the shooter in the conservation of game and other natural resources is being recognized by more people, and this role is certain to become more important each year.

Three panel discussions will be held on Monday, March 29; these will cover competitive shooting, firearms education, and firearms legislation. The latter session will take on special significance, being held in the legislative capitol of our country, and you can be sure that Senator Dodd's federal proposals will be thoroughly discussed, along with proposed or pending local and regional legislation.

The NRA members banquet, on Wednesday, March 31, will feature Admiral David Lamar MacDonald, Chief of Naval Operations, as guest speaker, and as such, he will be presented with the traditional flintlock rifle and powder horn.

Since 1948, a major attraction at each of the annual NRA meetings has been the outstanding exhibits of modern firearms and accessories, and the striking displays of the gun collectors groups.

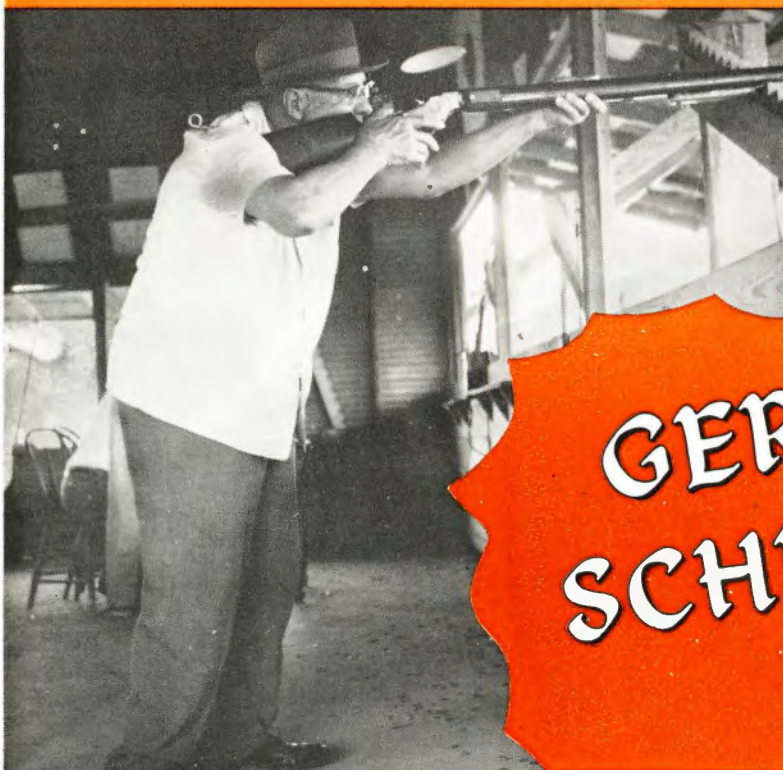
Last year, more than 113 booths showed the products of 74 commercial firms, the displays of a dozen collectors organizations, and the small arms of the Air Force, Coast Guard, and Navy.

The NRA convention is the occasion for the first public showing of many of the new products that will be on the gun dealers' shelves in the coming year. Pre-production announcements and rumors of new and exciting arms and ammunition become a reality as the manufacturers open their exhibits. Beside seeing the latest products, this is the one place that shooters can meet, face to face, with the representatives of the leading manufacturers and suppliers of guns, ammunitions, and shooting accessories. The qualified personnel of these suppliers are on hand to answer technical queries, discuss any problems associated with their products, and offer literature pertaining to their line. What will you be able to see at this year's exhibits?

Remington will be showing several new items. The Model 600 carbine has been given new punch with the introduction of the .350 Remington Magnum cartridge, and for this magnum version, the carbine will sport a new laminated stock, made of beech and walnut. You'll see the new custom version of the Model 700, which will feature a select French walnut stock with hand checkering in a special skip pattern; choice of fixed magazine or quick detachable floor plate; fine, custom-type polishing and bluing, etc. The Model 700, (*Continued on page 60*)

It is a certainty that neither the NRA nor its members will take these attacks sitting down, and the meetings of the members and the governing body of the NRA should be of interest to all who are disturbed by these vicious anti-gun attacks.

But this NRA convention is much more than official business sessions. A series of forums and discussions will take place that will be of interest to every hunter, shooter, and collector. The first of these will be the Shooting Clubs Session, on March 28. This will cover the many shooting programs of the NRA, from the Hunter Safety Training, to International shooting. On the same day, the Collectors Session



Top: Jack Reinke's Winchester high wall has full length stock, muzzle stop rest, and upper prong butt plate. Left: Bruno Schwab, age 75, leans into muzzle rest.

By BILL TONEY

GERMAN SCHUTZENFEST IN TEXAS

GERMAN IMMIGRANTS OF THE 1800'S BROUGHT THEIR TEUTONIC SHOOTING MATCHES TO THE LONE STAR STATE

EARLY in the 1800'S, many German immigrants settled in the South Central part of what was then The Republic of Texas. Towns with names like Fredericksburg, Elmendorf, Boerne, Waelder, and New Braunfels sprung up among those with Spanish and English names.

These people carried their enthusiasm for shooting clubs with them, for on July 4, 1849, four years after New Braunfels was founded, the New Braunfels *Schutzen Verein* (shooting society) was organized and began holding an annual club championship and "king shoot." By this time Texas had been annexed to the United States, and the German settlers were highly conscious of American citizenship; this had considerable bearing on the choice of a founding date.

The 114th of these annual shoots was held July 7, 1963, at New Braunfels. The club had never missed holding the annual match since 1849, although the situation was difficult during the Civil War. Only a few people appeared for the match in those years, and only a very few shots were fired because of the shortage of powder and bullets.

This championship match and "king shoot" combined consisted of ten shots standing with a muzzle rest, at 100 yards on the 25 ring German target. The bullseye on this target, a hundred yards away, looked about the size of the 12 inch "A" target used in high power rifle shooting for 200 and 300 yards—and it was. But a look through a spotting scope showed that the 25 ring was only about the size of a silver dollar (1½ inches), and the black went all the way out to the 18 ring. Scoring rings were ¼" apart.

The firing procedure is unique. A competitor fired only two shots for record each time he went to the firing line. Thus it took five relays to fire ten shots. Sighting shots were permitted, but not on the same frame as the record target and not even from the firing point assigned for record firing. There were no wind flags on the range, and the importance of accurate wind doping on this difficult target added to the "sudden death" aspect of the two-shot strings.

The club championship medal, presented for the highest total score for the ten shots, is a very historic award. In the beginning it was a small gold medal, won by Louis Simon in 1888. In 1949, the club's centennial anniversary, the medal was returned to the club by the Simon heirs to be offered for annual competition. The medal passes to each year's winner, and a small gold bar is added bearing his name, the year, and his score.

The "King of the Shoot" (Continued on page 47)



Some shooters, like Hugo Kellerman, lean heavily into the rifle when shooting with the muzzle rest.

The center black of the German target, shown with a silver dollar compared with the elusive 25 ring.





Pull!

BY DICK MILLER

WHO IS A national shooting champion? I must ask who is "a" national shooting champion, because, as matters now stand, there can exist no such individual as "the" national shooting champion.

We bestow the title of national champion in other sports. Surely, from a nation in which 25 million people find enjoyment from the shooting sports, we ought to devise some method for returning a national shooting champion. I am well aware of the problems inherent in determining who shall be called the national shooting champion.

PULL! is primarily concerned with trap and skeet. Those two shooting sports return from their annual tournaments and shooting records at least 100 persons who might be called "a" national champion, but certainly not "the" national champion. Considerable controversy would be raised by simply trying to designate "the" national champion of trapshooting.

• • •

Most trapshooting publicity is usually given the winner of the 100 target Grand American Handicap, decided on Friday of a week-long tournament held for over 50 years at Vandalia, Ohio. If we declare this man the champion, either deliberately, or by inference, which now seems to be the case, at least publicity-wise, what standing do we give the winner of the North American Clay Target, or 16 yard, championship, which is a 200 target event? Or, similarly, what status do we attach to winning the difficult doubles championship, which because it is thought to be more difficult, attracts fewer entries than either the 16 yard or handicap tournaments.

Among the trapshooting fraternity, there are those who feel that none of these championships carry the weight or prestige of the High-Over-All or High-All-Around titles that are also decided during the national tournament. The reader here can make his own choice. He can favor as "the" champion the shooter who scores highest on the 400 combined championship 16 yard, handicap, and doubles targets (200 16 yard, 100 handicap, and 50 pairs of doubles) or he can lean toward the High-Over-All winner, whose score is the highest from the full week's program of 1,000 targets (600 16 yard, 300 handicap, and 100 doubles). In trapshooting, as in skeet, there will surely exist the school of thought which holds that after all, these tournaments prove only who is the champion on a given day, or during a given week (and this cannot be denied).

This school of thinking would weight most heavily the annual record, over many fields, and during all sorts of weather conditions. And, the high national average over the year would seem to be a real test of shooting ability. In both trap and skeet, we have national junior, sub-junior, senior, and ladies champions. What do we do with them, when we try to determine just one champion?

Skeet has many of the same problems as trap, when the moment of truth for selecting just one champion arrives. As in the case of the one-day Grand American Handicap winner, most skeet publicity and honor is given the winner of the 250 target 12 gauge championship, which is again just one event of a week-long program. In addition to the 12 gauge winner, skeet returns champions from .410, 28 gauge, and 20 gauge divisions. It is not easy to refute the argument that the .410 winner should be given more honor, or at least as much honor as the 12 gauge winner. Again, as in trap, many skeet students feel that the real test of the champion is in the High-Over-All, or season-long averages in combined guns. Yet, none of these receive the publicity and acclaim of just one event, the All-Gauge (usually 12 gauge) championship. And, now that both trap and skeet declare championships in the more difficult International-style clay target events, we must give some weight to those championships.

Rifle and pistol shooting are not normally the province of **PULL!**, but because **GUNS** is the bible for all facets of shooting interest, we must certainly give strong consideration for national championship honors to the winners returned from the famous Camp Perry matches. Now that I have invaded the fields of rifle and pistol shooting, there is opened another Pandora's box as to selecting just one champion from competitions that involve big bore and small bore, long range and short range, prone or position shooting, timed and rapid fire, domestic and international style equipment, military and civilian, and others.

• • •

If we limit the rifle champions to the winners from Camp Perry, what status do we afford the national bench rest winners, who will surely feel that their special brand of shooting involves more pin-point accuracy and shooting ability than any other?

On the pistol side of the shooting ledger, we must give weight to the winner of the annual Police combat-course tournament held at Indiana University in Bloomington, Indiana. This is a detailed and difficult

course that puts a premium on all facets of handgun marksmanship.

If we close the door here, we would surely offend winners of the national muzzle-loading championships from Friendship, Indiana, who will be vocal, and perhaps rightfully so, in claiming that winning a championship in their tournament is more difficult than in any of the others.

Then, outside the pale of all these organized shooting sports who do hold national meets and declare champions, is that group of over 20 million hunters from which there is no champion or champions. I will not estimate the number of hunters who never shoot in any sort of organized competition, but who proclaim to all within hearing that the only real test of shooting ability with any kind of firearms is the consistent hitting of game under field conditions.

Now that I have related most of the problems that are relevant to selecting or determining just one national shooting champion for this nation of riflemen, this great nation of shotgunners, and of hunters and pistolers, I bravely propose to solve those problems.

• • •

It is of no small significance that facilities for holding a combined national super-tournament already exist, within a few miles in radius from the heart of these United States. The national trapshooting tournament is held at Vandalia, Ohio, just a few miles from Dayton, and facing the Dayton Municipal Airport. Naturally, the trap portion of the tournament can be held there. Camp Perry is only a few miles distant, and abounds with facilities that will accommodate all or most of the rifle and pistol games. Within a 50 mile perimeter, there exists or can be built an adequate skeet facility. There are some simulated game fields, on which concealed traps give typical hunting conditions, in the same general area, and in any case, all that is required for such a facility is a relatively small amount of open land, a small number of inexpensive clay target traps, and ground cover. There are adequate hotel, motel, and transportation facilities in the greater Dayton area to permit assembling all the tournament participants at a given time.

The super-tournament would be held in September, after all other national shooting tournaments are completed, and any winner of a championship shooting event as now constituted would be eligible to enter the competition to determine *the* national shooting champion. Every entrant in the tournament would shoot every event of the tournament, and the ultimate winner should surely be entitled to be called *the* shooting champion of this great nation of shooters.

Any hunter could enter, without having first been declared a champion. Because he would also participate in all the organized sports, in my opinion this entry list would be reasonably confined to the hunter with some experience and competence in the organized sports.

All that is needed now is a sponsor, or group of sponsors, and a governing body. There are all sorts of potential sponsors, and the governing body would naturally be made up of the executive officer from each of the shooting sports who now hold annual tournaments.





Author gave the Franchi autoloaders a workout on game as well as on the trap and skeet range.

THE FRANCHI SHOTGUNS, imported by Stoeger Arms Corporation, are claimed to be the lightest semi-automatics around. When John Olson, veep of Stoeger's, insisted that he and a number of eastern trap shooters use the Franchi autoloader for trap, I must have shown some disbelief. First of all, trap and skeet guns are always a bit heavier than field guns for recoil and swing reasons, and secondly, I know very few trap or skeet shooter who don't save their empties and autos have the distressing habit of tossing the empties into the next county. Club rules being what they are—the hull that hits the ground belongs to the club—would not sit too well with hull savers and loaders.

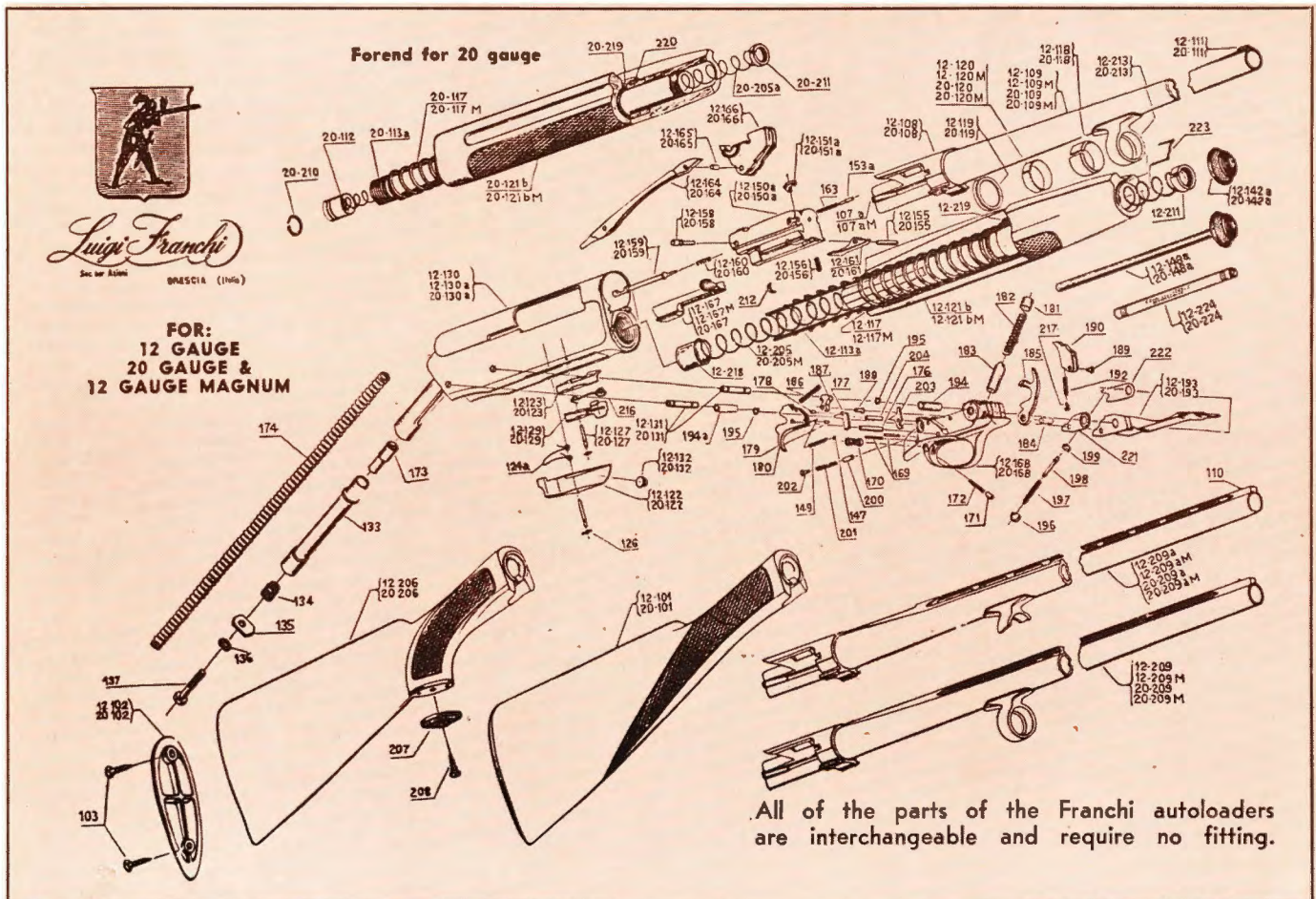
The upshot of the discussion with Olson was (a) I lost a bet for a steak dinner and (b) yes, with some ingenuity you can use an autoloader and save your hulls. And (c) those Franchi guns are light and despite a 100 round trap session, recoil was no more noticeable with the light Franchi than with a standard weight auto which also was fired 100 rounds at the traps.

Olson shipped three Franchi shotguns to us for tests, and with them came the request: "Give them a good wringing out and use them as much as you want to." This we did. I used the guns not only on trap and skeet layouts, but also on pheasants, a couple of unlucky crows and on the Crazy Quail game that can drive a

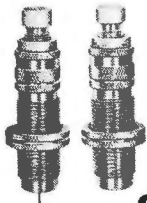
(Continued on page 59)

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THE STORY OF THE VOLCANICS

(Continued from page 19)

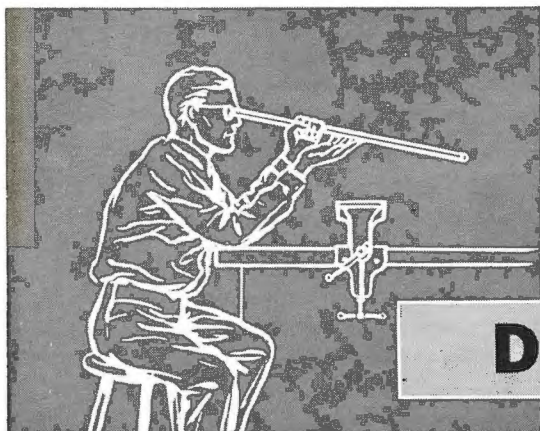
few rifles were made, and one of these may be seen at the Winchester Museum in New Haven. This museum contains the most interesting collection of Volcanic-type arms to be found anywhere.

Smith & Wesson's Norwich pistols were made with a flat-sided engraved iron frame and in two calibers. The smaller pistol, about .31 caliber and employing what was called their "No. 1" cartridge, had a rounded bag-type grip; the larger pistol, about .41 caliber and employing the "No. 2" cartridge, was made in two barrel lengths and with a flat butt. The barrels on the small pistols were 4" long; the larger pistols were made with 6" and 8" barrels, the 6" barrel length being the rarer. All barrels were blued and bore the Smith & Wesson name, Norwich address, and words "Cast Steel"; some also bore the 1854 patent date. On both sizes some of the ring levers will be found to have a finger spur while others do not have this feature. The stocks were usually of dark rosewood. Any of these lever action Smith & Wesson pistols are quite scarce and desirable; their period of manufacture was extremely short, for in June of 1855 a new company was formed under the laws of Connecticut. It adopted the name Volcanic Repeating Arms Company, the first time the word "Volcanic" formally appears to describe this category of arms.

The reasons for this quick transfer of the assets and the patents are somewhat obscure, but it is reasonable to assume that perhaps by 1855 Courtlandt Palmer concluded that he had lost enough money, and Horace Smith and his partner Daniel Wesson saw greater prospects of success with revolving cylinder arms designed for metallic cartridges. In any case, while Smith, Wesson, and Palmer were incorporators of the Volcanic Repeating Arms Company, there were many new subscribers to the \$150,000 (6,000 shares) of stock. Among these subscribers were Connecticut and New York businessmen from clock-makers to the New Haven shirtmaker Oliver F. Winchester. Thus, the Winchester name first became associated with gunmaking in 1855.

The production of Volcanic arms proceeded under the new company at Norwich through the remainder of 1855 but early in 1856 the factory was moved down to New Haven. Palmer withdrew from active participation in the affairs of the new company and after the operations in New Haven were established, Horace Smith and Daniel Wesson withdrew. With the proceeds from the sale of their interests they formed a new company in Springfield to manufacture revolvers employing metallic cartridges.

In New Haven in 1856 an optimistic new management began to manufacture and pro-



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mote Volcanic firearms. Nelson B. Gaston was the first president, but upon his death in December of 1856, Oliver F. Winchester succeeded him as president. William C. Hicks became the plant manager and under his direction were about 50 employees.

Some rather misleading reports of the Company's progress were published in New Haven newspapers of the period. There were claims for astounding range and accuracy; it was said that orders were crowding in upon the Company from many quarters. The truth was that the public was little more enthusiastic about the products of the Volcanic Repeating Arms Company than they had been for the Hunt-Jennings or Smith & Wesson Volcanic-type arms.

A few changes were made in design and construction after the new company took over. The weapons of the Volcanic Repeating Arms Company were made with bronze frames rather than iron. Some were finished plain; some were plated and engraved. The small and large pistols alike had a grip with a flat butt.

Despite a wider selection of models, the Volcanic arms of the new company were plagued with the same deficiencies which had kept success beyond the grasp of their predecessors. There was a leakage of gas around the breech, a common fault with all breech-loading arms before the use of metallic cartridges. The hollowed-out lead bullet was wholly incapable of holding enough powder to propel it with effective velocity and striking power, and there was the lurking danger of multiple discharges, set off by

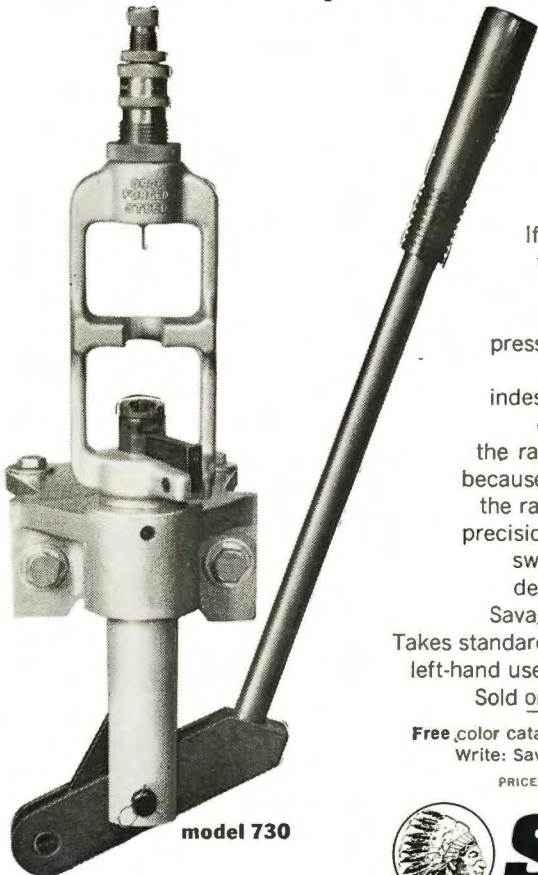
the thinly protected charges of fulminate at the base of the lead cartridges which abutted in the magazine.

Offsetting somewhat the inadequacies of the gun were its ability to get off a number of fast shots; the self-contained ammunition was waterproof and easier to carry than the separate components of powder, balls and caps; the action was now relatively simple and sturdy. But these points in its favor were not enough to prevent a pile-up of unsold arms and a pile-up of debts.

Oliver Winchester dug deep into his personal resources and loaned money to the company to keep the wheels going, but on February 18, 1857, the Volcanic Repeating Arms Company was declared insolvent. By this time Oliver Winchester was the Company's largest creditor, and in the following month negotiations were completed whereby the court assigned to him the entire assets of the company.

Oliver Winchester was apparently a hard man to discourage. On April 25, 1857, he organized the New Haven Arms Company to carry on the manufacture of lever action arms. In the new company Winchester held 800 of the authorized 2,000 shares of capital stock. By this time, Oliver Winchester did not believe that he could radically change the unfavorable public reaction to arms powered by the weak Volcanic cartridge—but he did have faith that the lever action magazine repeater could be improved to a point where it would warrant and receive popular favor. The New Haven Arms Company and the basic patents and contracts

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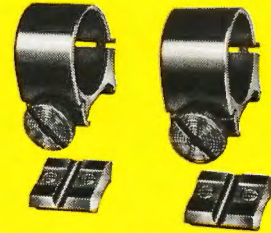


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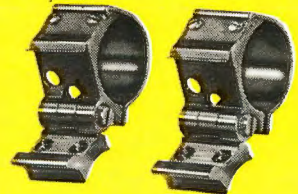
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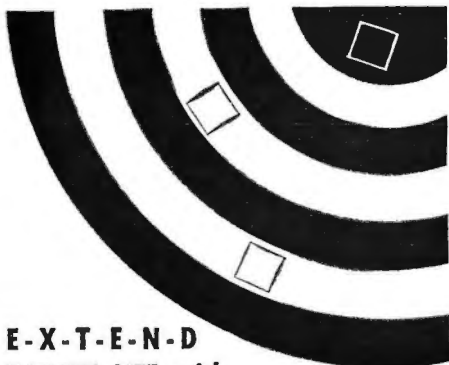
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among its assets were the stepping stones Winchester intended to use. He had several very valuable assets which were not obvious on the books, too. One was the agreement made with Smith and Wesson which specified that their patents would be available for use by the Volcanic Repeating Arms Company or its successors. Involved was a patent for metallic cartridges issued to Wesson in 1854. Winchester knew now that the key to success would rest in a better cartridge.

Another valuable asset was a master craftsman and mechanical genius named B. Tyler Henry who had been associated with the manufacture of the Volcanic-type repeating arms since their earliest manufacture at Windsor, Vermont. Henry succeeded Hicks as plant superintendent in May of 1857, and Oliver Winchester set him to work to develop a stronger lever action receiver capable of handling more powerful cartridges.

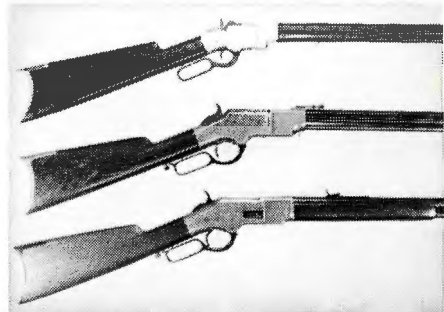
During the 1857-1860 period efforts continued to sell Volcanic-type arms. Added to the line were No. 2 (.41) caliber carbines. The actual groove diameter was .4035. There were six grooves, the rifling having a right hand twist of about one turn in 44 inches. Here are typical advertised sizes and prices of the models then offered:

Pocket pistol (.31)	4" barrel	6 shots	\$12.00
Target pistol (.31)	6" barrel	10 shots	13.50
Navy pistol (.41)	6" barrel	8 shots	18.00
Navy pistol (.41)	8" barrel	10 shots	18.00
Carbine (.41)	16" barrel	20 shots	30.00
Carbine (.41)	20" barrel	25 shots	35.00
Carbine (.41)	24" barrel	30 shots	40.00

Additional charges of \$1.50 for .31 caliber pistols, \$2.00 for Navy pistols, or \$3.00 for carbines were made if the arms were to be plated and engraved. The No. 1 (.31 cal.) cartridges sold for \$10.00 per M and were 130 to the pound. No. 2 (.41 cal.) cartridges were priced at \$12.00 per M and ran 66 to the pound. Special order pistols might be had in No. 2 caliber with attachable shoulder stocks, some with a long 16" barrel.

It is interesting to note that the same Volcanic arms which were offered as ultra-modern in the late 1850s, and were priced from \$12 to \$40, are selling as antiques today from \$200 to \$600 and more, depending on model, finish, and condition.

By 1860 with great natural skill, and with the advantage of his experience in building the Hunt-Jennings and Smith & Wesson Volcanic-type firearms, B. Tyler Henry had developed the design of the famous Henry rifle so highly prized by collectors today.



Volcanic carbine (top); Henry rifle (center); Winchester's model 1866.

This heavier improved design was patented on October 16, 1860. It employed a .44 rim-fire, copper cartridge case loaded with a 216 grain conical bullet powered by 26 grains of black powder. As important as was the redesign of the Volcanic rifle to make it stronger and more efficient, Henry's development of the cartridge contributed fully as much. The cartridge bore an H headstamp, the first letter of Henry's family name. Here at last was a respectable cartridge for the lever action repeater. Oliver Winchester now had a winning combination. The rifle's mechanism was strong and fast, the ammunition relatively safe and now powerful enough for most game; and as some soon declared: You can load this gun on Monday and shoot 'til Sunday."

By midsummer of 1862 a supply of the 16-shot Henry rifles was ready for sale. They bore Henry's patent date (Oct. 16, 1860) on their barrels along with information that the guns were manufactured by the New Haven Arms Co., New Haven Ct.

In 1866 the Henry rifle design was improved by Nelson King's patent whereby the magazine could be loaded through a port in the receiver rather than from the front as in the original Henry. The following year (on February 20, 1867) a new corporate name was given the company—Winchester Repeating Arms Company. Oliver Winchester held a majority of the stock. Hereafter he would never be regarded as a shirtmaker. The improved model was called the "Model 1866 Winchester." Lever action repeaters had come of age and were to advance rapidly in stature. Prominent in their direct ancestry were the Volcanic arms with those unique "rocket-ball" cartridges.

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(High Speed photo taken in our test lab of a HY-SCORE MAGNUM MODEL 807 smashing 3/4" plastic sheet.)

EASY ONE BREAK LOADING

LOADING THE METRICS

(Continued from page 29)

ber of drillings. Use .227 bullets. I have in my files five shot groups fired from my drilling, and chronographed by me on Phil Sharpe's range; 30.0 gr. of 3031 gave an average velocity of 3,031 fps. This is a maximum load, and 25.0 gr. of 3031 would be a good start, or the same charge can be used with 4895. You will need two or more forming dies. Cases will have to be made from .25-35, .30-30 or .32 Spec., which can be easily obtained. If .227 bullets are not available, this caliber, in an extreme, will handle .224 bullets very well. These guns have a deeper rifling than the American guns.

The 6.5 x 51 Jap or 6.5 Jap: Empty brass can now be obtained from dealers handling Norma products. If they do not have 6.5 Jap, cases can be made from 6.5 Mannlicher-Schoenauer. Loading dies are available, and bullet weights range from 125 gr. to 156 gr. Bullet diameter is .263. Regardless of what has been said about these guns, they are among the strongest made. With the 120 gr. bullet, use a minimum 27.5 gr. of 3031, a maximum of 35 gr. of 3031, but work up slowly. With a 156 gr. bullet, the minimum is 26.0 gr. of 3031, maximum is 32.5 gr. of 3031. With a 140 gr. bullet, use loads given for the 156 gr. bullet.

The 6.5 x 52 Italian Carcano: This is the Italian service cartridge. Again, M.-S. cases may be used with the necessary trimmer and loading dies. With the 139 gr. bullet, the

minimum is 30.0 gr. of 4895, maximum is 35.0 gr. of 4895. Estimated maximum velocity is about 2,300 fps. For the 129 gr. bullet, use the same data, estimated maximum velocity is 2,500 fps. This action should be treated kindly, so go slowly with maximum loads.

The 6.5 x 53R: Prior to WWII, this was the service cartridge of Holland, Romania, Greece, and several other countries. It is the rimmed version of the 6.5 x 53 Rimless MS, and loading data are identical. This case can be made from .30-40 Krag cases, but it will be necessary to have the rims turned on the outside edge to a diameter of .525. The only dies needed for this is a set of loading dies and a file type trimmer.

The 6.5 x 53 Rimless: This is the original Mannlicher-Schoenauer cartridge, and was the service cartridge of Austria, and several other countries. Cases may be purchased from your local dealer.

129 gr. bullet 36.0 gr. of 3031 maximum
120 gr. bullet 37.5 gr. of 3031 maximum
129 gr. bullet 35.0 gr. of 4895
156 gr. bullet 32.5 gr. of 4895
140 gr. bullet 42.5 gr. of 4831

The 6.5 x 55 Danish Krag: This was the service cartridge of Denmark and Norway, and was widely used in the Olympics until about two years ago. At that time, most of



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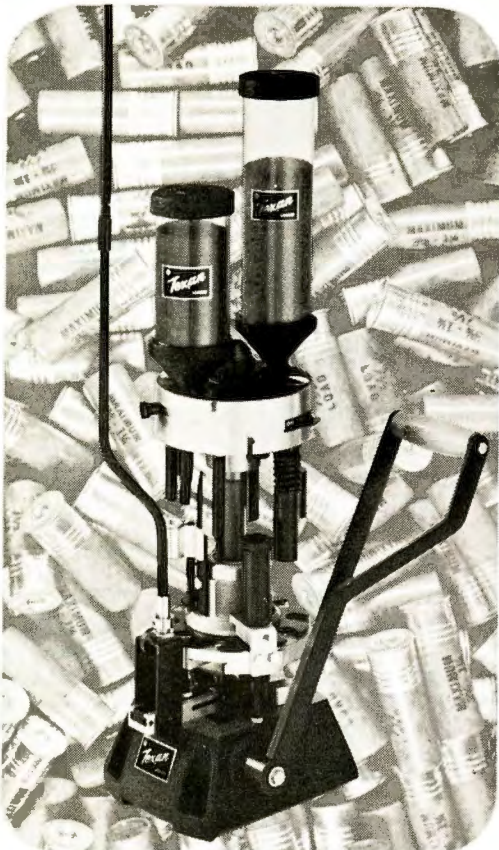
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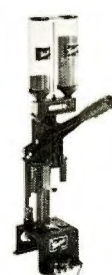
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the shooters switched to the .308 Winchester. This is a very easily formed case, and can be made from .30-06. All that is necessary is a set of loading dies, a trimmer, and a reaming die. The service load was a 156 gr. bullet at about 2,500 fps. The lighter bullets seem to do better in this caliber.

140 gr. bullet 44.0 gr. of 4831; 42.5 gr. of 4895
156 gr. bullet 41.0 gr. of 4831; 39.5 gr. of 4895

The 6.5 x 57 Mauser: This was the service rifle of some of the South American countries. Portugal and Spain also used this cartridge at one time, and sporting rifles in this caliber were manufactured in Germany. It is an excellent hunting caliber, and all the bullets from 100 gr. to 160 gr. can be used. Cases are simply formed from .30-06 with the usual set of trimming and reaming dies.

120 gr. bullet 37.5 gr. of 4895
140 gr. bullet 35.0 gr. of 4895
156 gr. bullet 39.0 gr. of 4350
160 gr. bullet 41.0 gr. of 4831

These are max loads, and you should start with loads that have been reduced.

6.5 x 57R: This is the rimmed version of the 6.5 x 57 Rimless, and uses the same loading data as the 6.5 x 57. Cases can be easily made from 8 x 57R Mauser brass with only a minimum of work. They can also be made from .30-40 Krag with RCBS dies.

The 6.5 x 61R: If you are fortunate enough to have one of these ultra-fine and very rare pieces, you will now be able to shoot this gun as often as you like. This is in the .256 Newton class, and uses identical loadings. The dies are available to make the cases from 9.3 x 74R brass which is plentiful.

The 7 x 57 and 7 x 57R: This cartridge is well known, is still available in factory loads. The rimless case can be made from .30-06 brass with a minimum of dies. The rimmed version can be made from .30-40 Krag for the drillings. Some of the service rifles may vary in bore diameter, but the present supply of bullets will work well in all arms. Bullets from 100 gr. to 173 gr. are available.

100 gr. bullet 42.0 gr. of Hi Vel #2
139 gr. bullet 41.0 gr. of 3031
139 gr. bullet 49.5 gr. of 4831
160 gr. bullet 40.0 gr. of Hi Vel #2
160 gr. bullet 39.0 gr. of 4895
175 gr. bullet 47.5 gr. of 4831

The 7 x 64 Brenneke: This is comparable to the .270 Win., is formed by running a .30-06 case into a 7 x 64 resizing die. Your cases may be 0.5 mm short, but this will not affect accuracy. This case can be used with all 7 mm bullets, but the heavier bullets are best for hunting. The light 129 gr. bullets make excellent varmint loads. The .280 Rem. is almost a dead ringer for this cartridge and all .280 Remington data may be used.

139 gr. bullet 42.5 gr. of 3031—2920 fps
175 gr. bullet 40.0 gr. of 3031—2720 fps

The above loads can be used for the 7 x 65R. Cases can be made from .405 Winchester or 9.3 x 74R cases, which are available.

The 7.7 or 31 Jap: This is an excellent hunting caliber, and there must be many thousands of these guns in the country. This is comparable to our own 30-06. Cases are made by running a case in a trimming die and filing it flush. The bores of these arms

are .311. The standard .3085 bullets will work just as well as the .311, as most of these rifles had tight bores and deep grooves. These cases should be fire-formed with a lighter load since heads will expand .005 just above the rim. This is in no way dangerous. Once the cases are fire-formed, they can be loaded to maximum loads. Here again, this is a very strong action, can be used for a lot of modern calibers.

150 gr. bullet 42.5 gr. 3031;
170 gr. bullet 49.0 gr. 4320
180 gr. bullet 45.0 gr. 4895

These are maximum loads, start 5 per cent below these data.

The 8 x 48R Sauer: This caliber is most frequently found in drillings, and some single-shot rifles. Cases can be made from .30-40 Krag brass with very little work. The rims will have to be turned on the outside edge to .500 diameter. This can be done by chucking the case in a drill press and holding a file on the edge until the correct diameter, $\pm .005$, is reached. Cases can also be made from .30-30 brass by trimming the rims. These will have to be fire-formed with a light load as the rims will bulge slightly forward of the head. The best powder is 4759 or 4198. I have reloadings listed for this, but a good start would be 15.0 gr. of 4759, or 17.0 gr. of 4198. Work up slowly. Do not use jacketed bullets in any arm marked BL. G. To be on the safe side, use .318 bullets diameter. Moulds can be obtained from your local dealer or from Lyman.

The 8 x 50 Steyr Mannlicher: This cartridge was the Austrian military, and used .318 and .323 bullets. Slug your bore. Cases can be easily made from 7.62 Russian brass.

150 gr. bullet 47.5 gr. of 4895
170 gr. bullet 45.0 gr. of 4895
236 gr. bullet 42.5 gr. of 3031

The 8mm French Lebel: Cases can be made simply from .348 Win. brass. Cases will have to be fire-formed. The only load I have is for the 170 gr. bullet with 42.5 gr. Hi Vel #2.

The 8.15 x 46R: There is probably no other caliber made in Germany that is as popular. It is comparable to our .32-40. Since barrel diameters vary, you must slug the barrel. This is a low pressure cartridge with low velocity. If it is loaded carefully, it will be as accurate as any gun now on the market. Use 4759 powder for best results. Start with 14.0 gr. and work up in stages of 0.5 gr. With the 170 gr. bullet, 22.5 gr. of 4198 is also good, but this bullet should not be driven over 2,000 fps.

The 8 x 57 Mauser: Watch this cartridge. The Model 88 rifle used a .318 diameter bullet and lighter loadings than the Model 98 which used .323 bullets and heavier loadings. Check your gun to ascertain the correct bullet diameter. Cases are simply made by running a .30-06 case in a file trimmer, and then sizing.

125 gr. bullet 50.0 gr. of 4895
150 gr. bullet 49.0 gr. of 4895
170 gr. bullet 46.5 gr. of 4895
236 gr. bullet 45.5 gr. of 4320

The 8 x 57R: This is the rimmed version of the 8 x 57, and is found in drillings,

although many fine single-shot rifles were made for this case. Almost all of these used a .318 bullet, but slug your barrel. The .30-40 Krag cases can be used. You need a file type trimmer and rims will have to be turned to fit the extractors of different guns. Use 8 x 57 loads reduced at least 5%.

The 8 x 60 Magnum: This is almost identical to the 8 x 57 Mauser, with the exception that the case is 3 mm longer. Cases are made in the same manner as for the 8 x 57. Again, slug your bore, as both .318 and .323 diameters were used.

- 154 gr. bullet 51.0 gr. of 3031
- 170 gr. bullet 47.5 gr. of 3031
- 200 gr. bullet 46.0 gr. of Ili Vel #2

These are not max loadings, but work up slowly.

The 8 x 60R: This is the rimmed version of the 8 x 60, is found mostly in drillings. These guns all used a .318 bullet. The loadings are the same as the 8 x 60 Rimless. These cases can be made from 9.3 x 74R brass in the same manner as the 8 x 60, and with the same dies.

The 8 x 64 Brenneke: This is Brenneke's 8 mm Magnum. Many 8 x 57 Mausers were chambered for the 8 mm-06, and will take identical loadings. The cases can be made from .30-06 brass in the same manner as the 8 x 57.

The 8 x 65R: This is the rimmed version of the 8 x 64. These cases can be made simply by using the 9.3 x 74R case, and use the same loading data as for the 8 x 64.

- 170 gr. bullet 50.0 gr. of 4350
- 170 gr. bullet 48.0 gr. of 4895

These are not top loads, and may be increased. Do so cautiously.

The 9.3 x 62: This is an excellent hunting caliber. Cases can be made from .30-06 brass, following the same procedure as with the 8 x 57. This caliber uses a bullet of .366, which can be obtained from most importers. The price of bullets is quite high, so you might order a gas-check mould from Lyman. The reformed cases will need fire-forming. Bullets can be sized down from .375 Magnum very simply by having RCBS make a ring die and punch in .366 diameter.

- 280 gr. bullet 57.0 gr. of 4895
- 300 gr. bullet 52.5 gr. of 4895

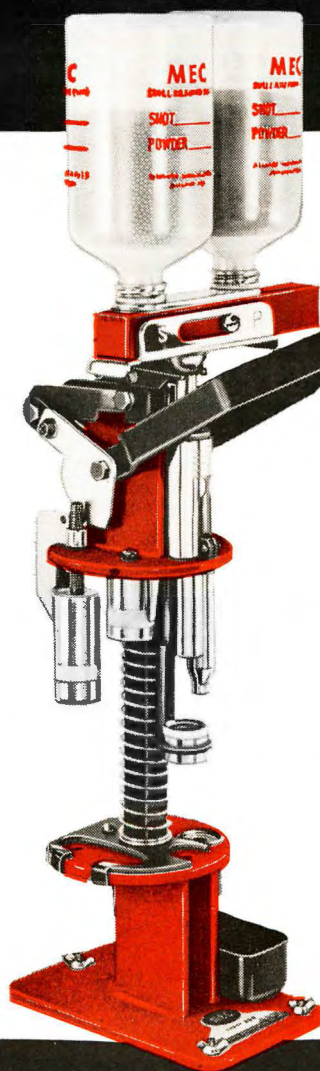
The 9.3 x 62R: This is the rimmed version of 9.3 x 62 Rimless. Cases can be made in the usual manner from 9.3 x 74R brass. Use the same data as for the 9.3 x 62 Rimless.

The 9 mm Mannlicher-Schoenauer or 9x57 Mauser: Before World War II, Western offered this cartridge as the 9 mm Mann. Sch, and the 9 mm Mauser. The 9 mm—M-S measures 56 mm, and the 9 mm Mauser measures 57 mm. The factory made ammunition to fit both guns—56 mm length. This cartridge compares to our own .35 Rem. in ballistics, and data for the .35 Rem. can be used for both cartridges. Cases can be made from .30-06 brass, and again all that is needed are the usual loading dies and a file type trimmer.

- 200 gr. bullet 45.0 gr. of 3031
- 250 gr. bullet 45.0 gr. of Hi Vel #2
- 250 gr. bullet 45.0 gr. of 4895

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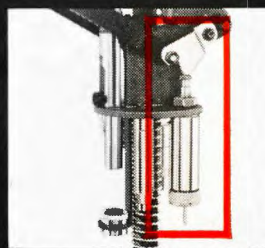
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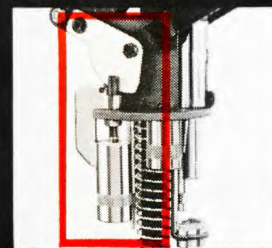
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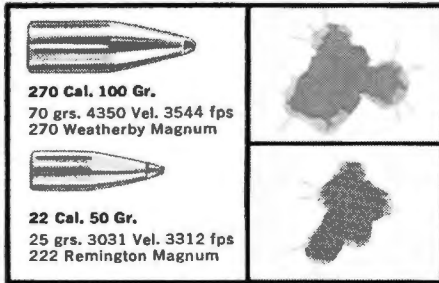
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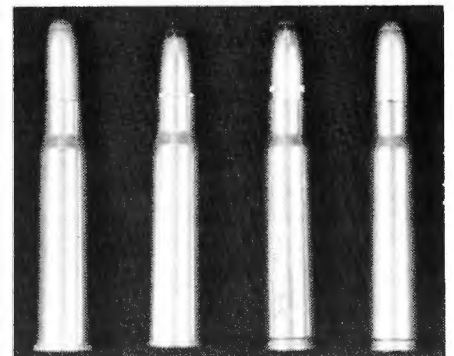


The 9 x 57R: This is the rimmed version of the 9 x 57, and uses identical loading data. Cases can be made from .30-40 Krag, and from 9.3 x 74R.

The 9.5 x 56 or 9.5 x 57: This is simply the 8 x 57 case expanded to take a .375 bullet. This is a low velocity cartridge, but it is a terrific brush cutter. It is good at ranges under 100 yards. After that, velocity loss is rapid. Use the 8 x 57 Mauser data.

180 gr. bullet 42.5 gr. of 4895
270 gr. bullet 50.0 gr. of 4350

The 9.3 x 74R: This cartridge is the best of the rimmed metrics. In ballistics, it equals the 375 H.&H. It was made primarily in double rifles, but there are some made on bolt-action Mauser actions. This was the German favorite for hunting heavy stag and wild boar. It has plenty of stopping power, and the Germans used it on roan antelope, and all other heavier, thin skinned animals, in-



L to R: Variations of 8x57 Mauser cartridge; the JRS, JR, JS, and J.

cluding zebra, and wildebeest. Cases are plentiful, and DWM makes some exceptional bullets for this caliber. Pressures are in the 55,000 psi class. Hi Vel #2 is the best powder, although 4064 and 4320 may be used. The following are starting loads only, so be careful and work up slowly.

235 gr. bullet 60.0 gr. of Hi Vel #2
270 gr. bullet 57.0 gr. of 4064

The 10.75 x 68: This is the German big game caliber for Africa. It fires a 350 gr. bullet at 2,200 fps, and has considerable recoil. It compares with the .400 Nitro Express in stopping power. Cases and bullets are available from the importers. Loading dies are available from RCBS. Cases are Berdan primed, and as far as I know, there is only bullet weight available. Cast bullets can be used for practice. A bullet cast of linotype metal with a gas-check would stand all the velocities possible with this case. Lyman can furnish moulds. I load the 300 gr. bullet with 55.0 to 60.0 gr. Hi Vel #2.

Have a rifle chambered for one of the metric cartridges standing around, collecting dust? Take her down to the gunshop and let the smith check headspace and make a chamber cast. Then get the suitable dies and start loading—you can then enjoy the gun on the wall as well as on the range and in the field.

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GERMAN SCHUTZENFEST IN TEXAS

(Continued from page 37)

medal is awarded to the male competitor with the one shot nearest the exact center of the target—regardless of his score. In preparation for this part of the match the targets are mounted in the pits with detachable 25 rings. Anytime a competitor scores a 25 it is signaled from the pits with a red paddle. The detachable 25 ring is then removed from the target, marked for identification, and placed in a sealed jar. A new 25 ring replaces it on the target and firing continues. At the end of the match, a committee selects the one most perfect shot—and the King of the Shoot. Many hits can be easily eliminated, but in case of near ties, the club has an elaborate calibrator, hand-made long ago by some farsighted German craftsman, that will separate the most nearly perfect shot from the second best. There is a parallel "Queen of the Shoot" award, a dainty gold medal, for ladies in the match, scored exactly the same way.

When breech-loading rifles came into being, the .32-40, .38-55, and .45-90 were favorite calibers in this club. Ballard and Winchester high wall actions were widely used, and heavy custom barrels, special stocks, and various refinements were common. Harold Adams, 1963 King of the Shoot, has a .38-55 on a Winchester high wall action, with a heavy custom barrel made by Harry Pope.

About 1920, the match rules were modified to permit .22 Long Rifle caliber, and the range was reduced from 200 to 100 yards. In the 1963 *koenigschissen* (king shoot) everyone shot .22 Long Rifle. Even this year the old actions outnumbered the new ones. There were many Ballards, low walls, high walls, and Martinis, with only an occasional Winchester 52 or Remington 37. Some of the older action fans simply rebarrelled the same rifle in .22 Long Rifle caliber that they used to shoot in .32-40 or .38-55. To accommodate the change from centerfire to rimfire they turned and drilled their barrels with the bore slightly off-center so the firing pin that used to strike center would now strike on the rim of the cartridge.

Along the years, *koenigschissen* rifles have been barreled by Harry Pope, Schoyen, Peterson, Gregoire, and in more recent years by Sukalle, Douglas, and other top barrel makers. For this event the barrels are usually heavier than those seen in matches fired without a rest but not quite so heavy as benchrest rifles. Competitors using Winchester 52's and Remington 37's most often shoot the bull barrel weight common in prone smallbore matches.

Some of these competitors like their barrels full floating. They believe this has the advantage of freeing the barrel from any effect of changes in bedding due to reaction of the stock wood to changes in temperature and humidity. Bolt action owners are most often advocates of full floating because one piece stocks on bolt actions are most easily affected. Other competitors bed their barrels part of the way from the action toward the muzzle but the rest of the way the stock is floated, and does not touch the metal. Still

others bed their big, heavy barrels all the way in stocks running to the muzzle.

The stocks that do not extend all the way to the muzzle, such as those on Winchester 52's and Remington 37's, have a custom rib extension underneath the stock, running parallel to the barrel to about even with the muzzle. This is to avoid the effect of erratic barrel vibrations when the rifle is fired with the metal barrel resting solidly against other solid material such as wood. On all rifles, a stop is installed about four inches back from the muzzle on either the rib or stock. This enables the competitor to lay his muzzle over the rest, push forward until the stop is held solidly against the rest, and maintain a very solid contact by leaning slightly into the rifle. Some of these stops have one or two sharp points about a quarter of an inch long at the bottom to avoid slipping.

Set triggers are the order of the day, and many variations were noted on the two-piece stock actions. The modern bolt action shooters usually use single stage triggers with light pulls.

Only iron sights were permitted, and I noted at least one tube sight. The bolt action rifles were usually equipped with Redfield International, Redfield Olympic, Vaver, or Lyman front and rear sights. Some of the older actions had elaborate front sights with lateral adjustment and a tiny built-in spirit

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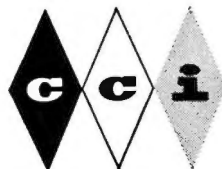
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level, to avoid canting. Matching rear sights were peep tang type with fine adjustment for elevation. Aperture front sights are most often used, and these rifle buffs not only buy up all the sight apertures they can find, but make others that they think up themselves.

Pronged butt plates were used on all the rifles I saw, but they looked like free rifle butt plates reversed. Instead of the main prong being positioned *under* the arm, these rifles are supported at the muzzle rest and at the butt by a prong over the shoulder.

The best score that I saw listed on the club championship medal was a 248, fired by Erno Borchers in 1958. This year's championship was won by Henry Dietz with a 245. He also won it in 1957 with a 246.

The 1963 "King of the Shoot" was Harold Adams, a New Braunfels banker. He has been competing in this match for 40 years and never won the "King" title before. Adams has several rifles, old and new, ornate and plain, bull barreled and sporter weight. For this match he used a Winchester 52-C. Knowing his love for old guns, I asked why he did not use one with a heavy custom barrel. He replied, "Well, some custom barrels shoot real well, but some factory barrels do too. This is a good factory barrel."

Dietz fired his winning score with a heavy Gregoire barrel, stocked to the muzzle, in a Ballard action, with double set triggers, and Redfield sights.

From watching the shooters, and firing five shots myself, it appears that the basic job of holding on the right spot as steadily as possible and letting the shot off without any disturbance is similar to that in other types of rifle and pistol shooting, but the manner of carrying out the job is different. The shooter faces almost squarely toward the target with feet spread; lays the muzzle of his rifle across the rest; pushes it forward until it comes to a solid stop; adjusts his distance from the rest so that he leans slightly into the rifle to hold it solid against the stop; lets the pronged butt plate support the weight at the butt; and proceeds to fire. No manner of shooting at a 1½-inch circle 100 yards away is going to be easy, but I tried five shots from this position, and it is surprisingly steady. The position taken by the muzzle rest shooters, with feet spread, facing almost directly into the target, and leaning slightly into the rifle, creates a tripod effect that is hard to beat. My five shots were 20, 25, 24, 25, 24, with a strange gun, and without sighters.

After I became slightly accustomed to the many fine old guns at this match I noticed there were also many shooters of long experience. Bruno Schwab, 75 years of age, told me he had been shooting since he was 18 years old. Walter Schulze, born October 13, 1892, joined the New Braunfels Schutzen Verein in 1912 and this year fired his 51st consecutive annual club championship.

There are new shooters in the club too. Of these, Peggy De Lay, the 1963 Queen of the Shoot, is probably the most successful. This slender, charming housewife started shooting a little over a year ago under the tutelage of her husband, Dan. He had lived in New Braunfels before their marriage, had many German friends, and it was a natural for them to try this type of shooting.

Accustomed to the hard boiled aspect of national pistol and rifle competition, I saw, in this event, some pleasant features of a Sunday afternoon picnic; yet the standards of excellence noted here would do honor to any shooting affair I've ever attended.



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HANDGUN BULLET SWAGING

(Continued from page 23)

bore alignment for better accuracy. No crimp die of this type is currently available.

Lyman's adjustable Core Moulds, with my suggested cavity diameters, permit casting any weight cores. Cast various weight cores until one weighs, with a jacket, 2 or 3 grains more than the desired bullet. Save sample castings in each weight used. To re-adjust to a desired weight, place the master core in the cavity and set the adjusting screw to contact it.

For speed, use lead bullet wire. Most core cutters work well. C-II's \$7.50 core cutter deserves consideration. It takes all wire sizes and cuts over 4,000 cores per hour. Mount on the end of a bench, on the bench on a 4" length of 3" x 3" angle iron, or board. Buy extra adjustment screws with 2 nuts, or car battery cable bolts, for each core weight desired. Adjust for desired core weight and lock the adjustment screw with the extra nut. You can remove the screw for different cores, and replace it to return to the exact weight. This saves lots of time and wire.

Hollywood's standard core cutter at \$15 has a screw adjustment. Their \$25 micrometer core cutter is identical except for a micrometer screw, so you can return to the exact weight cores. These take all wire sizes in all alloys, and are fine cutters, fast to operate. They are used in Hollywood Senior or Senior Turret presses. Hollywood's Senior Turret is the finest and fastest turret reloading press ever made, true professional quality, for around 200 complete reloads per hour. They are very strong, heavy, massive, and well made, at a moderate price. They speed loading of quality ammo, and work well with Hollywood rifle and pistol swaging dies, cutters, and other accessories.

Pacific's core cutter and swaging dies work well in their presses. Good separate cutters include C-H, Hemp's, Wichita, L.L.F., and SAS. Good swaging dies for loading presses include C-H, Hemp's, Hollywood, L.L.F., ECHO, Laemiller, Pacific, and SAS. You can't go wrong with these, but check to be sure they fill your needs. Good swaging tools that don't convert to reloaders include the C-H Swag-O-Matic and the SAS Mity-Mite.

C-H's Swag-O-Matic is a highly efficient, quality tool that comes to you for \$33 complete. A single die swages and forms a bullet, with cores bled-off to uniform weight in the same operation. It automatically ejects beautiful "clean" bullets without a nose bleed-off tit, a design originated by C-H. It's very practical, and easy to operate for about 400 bullets per hour. Ours, one of the first, has made tens of thousands of perfect bullets, and is as good as new. Extra caliber dies are only \$9. or \$11.50 for H.P. You can leave it set-up, without your reloader being tied-up. This is often a big advantage.

The C-H Swaging Unit is for half jackets only. We have used it with Speer's 3/4 jackets, by using pre-swaged cores that are bled-off to uniform weight. We use C-H's .30 caliber die to swage .38-.357 cores, and a .38 die for .44-.45 cores. To swage bullets,



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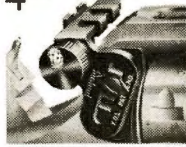
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adjust the die to form bullets perfectly with moderate handle pressure.

Ted Smith's \$56.50 and up Mity-Mite is a well designed "C" type swager that works in a horizontal position. It forms bullets rapidly, permits the use of half or 3/4 jackets. It uses two dies. In the first die you seat the core in the jacket, and swage to just a shade under the final diameter. In the second die you form the bullet and swage to final diameter. Extra caliber dies are \$24.50. Core Swage Dies \$18.50, his core cutter costs \$8.50. The Mity-Mite is a fine, reliable tool that is not widely enough known.

C-H's \$19.95 Swaging Unit, similar to Harvey's original Lever Ejection Die, works in a loading press. You eject bullets, completely formed in one die, by pressing the lever. It's excellent and practical. Bullets are "clean" for good looks and uniform weight, are made just as perfect and about as fast as in a Swag-O-Matic.

A unique C-H Swaging Unit makes 3-Stage bullets. You load 3 bullets in a shell. The 3-slug shotgun pattern greatly increases the probability of a hit on man-size targets. They appeal to police, watchmen, and those who may have to fight in dark alleys or poor light. You are more apt to hit a target at up to 50 yards with one to 3 slugs, and often with all 3 slugs at half that range. Bullets lose velocity rapidly for safety in city areas. They are dandy for home defense where targets are often in dim light. A .38 revolver is a formidable defense weapon with 18 slugs you can shuck out in a couple of seconds. A chap won a steak dinner betting he could shoot 7 or more holes in a target with 6 shots. The 18 slugs simply riddled the paper.

All swaging dies or tools work on the same principle. You insert a core in a jacket and put this in the die. Operating the tool handle forms a bullet, and ejects it automatically, or you eject it manually. Some dies, of the early Bahler type, have a knock-out top punch you hit with a mallet. Some good bullets have been made in them, but I prefer an automatic or lever ejector type.

Light "C" presses spring under heavy swaging pressure. Some firms sell tie-down bars that work well to reduce spring. ECHO has a fine Wedge Block Tie Bar for their fine "C" presses. ECHO's Standard "C" is a good medium duty, and the new Champ is a fine heavy-duty press for reloading and swaging at a bit higher price. Both take the

same ECHO primer arms and threaded Shell Holder Heads for reloading. ECHO's Accromatic swaging dies and core swaging dies are excellent auto ejector type, for their presses and most others.

The RCBS A-2 is an extra-heavy-duty "O" press that develops its own power to do heavy work with ease, without springing. It's really professional equipment for reloading, case forming, and swaging with production dies such as Hemp's dies. It takes standard and 1 1/4 x 18 TPI dies. Hemp's fine dies are \$77.50 in Standard, or \$85 for 1 1/4", which I recommend for production work.

The RCBS Jr. is a lower priced but excellent strong "O" press for standard dies, fine for all loading, case forming, or swaging. It's popular with chaps who want a quality, heavy-duty, all-around tool. RCBS sold some 11,000 in 1964 alone.

C-H's new 205 is a strong "Off-Set O" frame press in standard thread. It's fine for all-around work, with spring eliminated. I like it better than their slightly lower priced improved Universal "C," that also works well. We haven't tried the extra-heavy-duty C-H 207 "Off-Set O" press that should be stronger.

LLF Dies makes excellent rifle and handgun bullet swaging dies. LLF knows how to use tools, and how to finish dies extremely well.

Swaging is so simple a child can master it in a few minutes. Just follow directions that come with your equipment and you can't go wrong. Soft lead cores work easier, and most die makers specify them. There is no trick to loading the bullets, but they should be seated in one operation, and crimped in another. RCBS supplies 4-Die Sets for this purpose, or you can purchase an extra crimp die for the fourth operation with your regular 3-die set. This eliminates deforming bullets in loads, which gives less accuracy than severe slugged bullets on firing, and causes excessive bore leading.



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SHOTSHELL LOAD VARIABLES

(Continued from page 33)

example, an increase of one grain of powder at 8,000 psi may mean an additional 1,000 psi, but with the same powder loaded to 10,000 psi, one additional grain of powder may raise pressures 3,000 psi! Loading tool manufacturers, in conjunction with those making wads and powders, have developed some highly accurate loading tables. Similar tables have also been developed by others in the field, and you should use only thoroughly reliable data—never exceed them!

Wads and wad columns are major variables. The more efficiently a wad seals the expanding gases from combustion, the higher the breech pressures and velocities will be. Thus, loads which are safe for nitro card-filler combinations may be too hot for the more efficient plastic over-powder wad. The one piece plastic wads usually have deep cups and provide especially good gas seals.

Wads are actually a projectile, and their weight adds to that of the shot. Increase wad weight, and you increase breech pressure. The one-piece wads are generally heavy as well as efficient, and the powder charge must be reduced drastically, usually somewhere around 20 per cent, from the recommended card wad loads. Popular wad column weights shown in the chart vary by 31.6 gr., or nearly 6.5 per cent of a 1 ounce shot charge. Powder manufacturers are now becoming aware of this fact and publish their data with wad column weights considered and the make of wads specified.

The plastic "Mark V" shot strips and the plastic shot guards on the one-piece plastic wad columns do reduce the number of distorted shot pellets and also the degree of distortion. However, the change in pattern percentage and extended killing range cannot be predicted wholly for all guns. It has


been our experience that the shooter must try a number of powder-wad combinations in his own gun to determine the best results, and when he begins to use the plastic shot collars, he once again must check his loads.

Wad pressure is probably one of the most frustrating factors encountered by the shot-shell handloader. Before highly efficient wads became the rule rather than the exception, the consensus of opinion was to use as much wad pressure as possible without actually either crushing the wads or bulging the sides of the case. A good rule of thumb that applies to the currently available wads is this: the more efficient the wad, the less pressure is needed. Thus, if recommended a pressure with card wads is, say, 70 lb., a good plastic over-powder wad would reduce optimum wad pressure to perhaps 50 lb., and a one-piece plastic wad to 10 to 20 pounds. The mono-wad would be classified with the plastic over-powder wads.

Excessive wad pressure can result in blown patterns and greater recoil. Applied wad pressure below that required for consistent powder ignition can result in bloopers or muzzle flashes.

Extensive experimental work conducted in our ballistics laboratory leads me to believe that wad pressure is not as critical as many people assume it to be. The exceptions are those powders which require extreme wad pressures for proper ignition. It appears that the most important consideration in applying wad pressure is not how much but how consistent the pressure is being applied, and the less variation of applied pressure there is between shells, the better the performance of the shells will be.

Shot used in reloading should be the best, roundest, and hardest shot that is available. Off-round pellets will not fly true and soft

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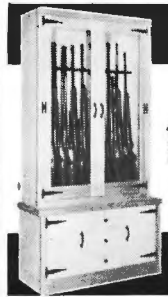


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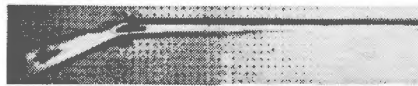


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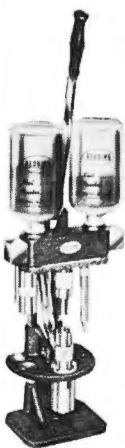
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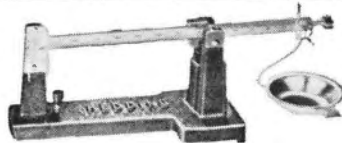
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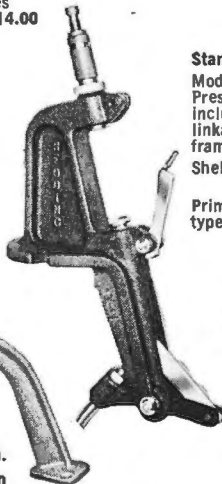
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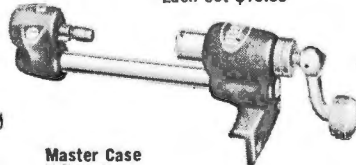
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shot deforms more easily than does hard shot. There is relatively little hardness deviation from the standard hardness of shot manufactured today, and all of the popular brands are well and uniformly made. The advent of the plastic collar and the one piece "chimney" wad has made variations in shot even less important since shot deformation is reduced considerably with these shot protectors. Copper and nickel plated shot is harder than regular lead shot, but it appears that the introduction of the plastic collars has reduced the demand for plated shot.

Charges of small shot will be more uniform through the bar-type tool than charges of large shot, and charges of small shot will weigh slightly more than charge of large shot delivered through the same loading bar. This is no reflection on the makers of shotshell loading tools, but is an inherent problem when round objects are measured volumetrically. Only a few trap and skeet shooters who are particular about their shotshells bother to check shot charges on their scales. If you want to check this out yourself, one ounce equals 437.5 grains.

Shotshell loading tools of today, especially the sliding bar oncs, are probably the single most important reason for the tremendous interest in shotshell loading since the late 1950's. Practically without exception these are fine tools, but they perform only as well as the operator permits.

The smaller and less complex, and thus the less expensive, tools require an average of five to six handle strokes for each shell. By jerking the tool handle violently while loading one shell and moving it gently for another, it is possible to produce variations of several grains in shot and powder charges. Careless operation can cause wad pressure variations and differences in crimp. By paying attention and operating the tool smoothly and evenly, these variations can be completely eliminated, or reduced to such a degree that they become negligible.

Temperature and humidity are, in most cases, beyond the control of the handloader. Pressures increase with temperature increases, but within normally encountered temperature variations, pressure increases are not drastic. A shell that is permitted to simmer in the hot chamber before being fired can be several hundred psi hotter than the shell that is being fed from the magazine into the chamber and is fired immediately after arriving in the chamber. On the whole, temperature is a minor consideration, even on the trap and skeet fields where sun and speed of firing tend to heat gun parts.

Humidity has a nuisance value only. Extreme humidity can swell paper hulls until they won't chamber, paper wads swell, and this can make wad insertion a tedious chore. As with other loading components and loaded ammunition, it is best to store these things under conditions where temperature and humidity remain relatively stable.

Most shooters are aware of these variables, and a great many handloaders will tell you that they have never encountered any of them. This is probably true, but it is equally likely that a missed bird—either of the clay or feathered variety—escaped because one of these variables played hob with that shell. Maybe you can use this as your next alibi?



THE SMALL, HOT NUMBERS

(Continued from page 31)

in graph A are the derivatives of velocity versus distance, and this can be plotted against time. Distance being relative to time, these tangents are indicative of the rates of change of velocity needed vs. acceleration.

Looking at the formula. We have chosen V, g is fixed, S.D. was determined. The pressure needed depends upon time allowed to get the bullet up to the desired speed, and

REVOLVER DATA

.22 Kay-Chuk		M.V.
37 gr. Sisk H.P.		fps.
.134 S.D.	5.4 gr. Unique	1625
	7.0 gr. AL7	1725
	9.0 gr. 2400	1575
	9.5 gr. 2400	1630
40 gr. Sierra		
.145 S.D.	7.0 gr. AL7	1800
	8.0 gr. H240	1665
.219 Thor		
35 gr. Sisk H.P.	13.0 gr. AL8	2400
.127 S.D.	13.0 gr. H240	2470
	14.5 gr. 2400	2445
	16.7 gr. 4227	2465
40 gr. Sierra		
.145 S.D.	14.0 gr. 2400	2350
.256 Win. Mag.		
60 gr. Speer		
.165 gr. S.D.	13.5 gr. H240	2420
	15.0 gr. 2400	2350
	17.0 gr. 4227	2440
.38 Special		
145 gr. Cast		
.207 S.D.	10.5 gr. AL5	1270
.357 S&W Magnum		
148 gr. Gas Check		
.211 S.D.	16.0 gr. H240	1675
.357 Thor		
135 gr. HJ		
.192 S.D.	23.0 gr. H240	1950

pressure presumes a rate of change of velocity for a particular missile. The time that pressure is maintained will determine the final velocity.

There are two kinds of smokeless powders in use today. Single base, nitrocellulose, of which the Du Pont IMR's are typical. And double base, nitrocellulose plus nitroglycerine, such as Hercules and cordite. Double base types yield more heat of explosion. Single base powders with lower heat of explosion burn at a lower temperature, cause less barrel erosion.

For small cases, hotter burning types can be tolerated, and they contribute to performance. It takes a lot longer to shoot out a Hornet barrel with 2400 than a Swift tube with HiVel No. 2. Powder charges tend to burn as a unit. Each granule is, in theory,

ignited at once by the primer flash. If each granule burns independently, twice as much powder can produce twice as much energy in a given time, if all other conditions remain identical. Powder burning rates increase sharply with pressure. Therefore, loading bigger charges has two effects: more total energy is made available, and because the amount of powder and pressure is increased, burning is more rapid.

A powder that burns faster gives us, in a smaller amount, what a slower one would in larger quantity—but for less time. Higher energy powders of the same speed can give equal pressures for a longer time, thus more bullet energy. That, of course, is just what we want in the small hot-shots.

Hercules' 2400 yields 10 per cent or more extra ft./lbs. per grain than average single base powders. H 240 gives 5 per cent less in energy and burns more quickly. These two powders exemplify the propellants that fit the need of the cartridges we are considering



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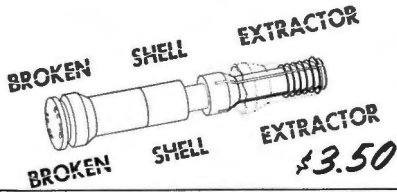
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300 Rem.	300 Win.	300 Rem. Mag.
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here. Although 2400 probably isn't the best powder in this field, it may be the most versatile one. Neither 295 HP nor H 2400 can be obtained today. In the larger cases 4227 does a good job. IMR 4198 is useful where heavier bullets or a large ratio of charge weight to bullet weight may be loaded. Herco, Unique, Alcan's AL5, AL7, and AL8, are faster burning than 2400, take over when 2400 is too slow, as in smaller cases, or when ratio of charge to bullet weight is low. Unique is the fastest of the powders suitable at moderately high pressures, and is probably the most versatile powder for pistol, shotgun, and reduced large rifle loads.

The .22 hi vel cartridges put the "a" into accuracy, put benchrest shooting on the map. Hornets have been shooting 1-inch groups at 100 yards for 35 years. All of these cartridges are capable of holding their own in grouping contests. Accuracy doesn't just happen, you've got to load and build for it.

Bullets must be mechanically perfect. Any eccentricity will cause a wobble, will certainly diffuse the group. Uniformity in weight, jacket thickness, hardness, and in concentricity and form are essential to ac-

curacy. Base defects are usually harmful. Cast bullets, often used in these guns, are either equipped with gas checks or made from a hard alloy. They will give good accuracy when they fit the gun and do not lead the bore. Weight variation in cast bullets usually means cavities and poor groups.

The loads listed below were developed for our guns and with our components. All of the loads shot well and pressures were within acceptable limits. Since your components, guns, and techniques probably vary from those used in this experimental work, we cannot recommend these loads for your guns. If you use any of these data, remember to start low and work up.

There are, of course, other small calibers that have not been mentioned here. Some of them have been wildcatted from standard cartridges, others have passed into the ballistic oblivion. Some day some experimenter will dig one or two of them out, alter the case shape somewhat, and presto—we'll have another new caliber. This new cartridge may have a new name or may only be labeled "improved," but like its cousins, it will be a hot little number.

LOADS FOR THE BOOK

(Continued from page 27)

full-length sizing about every five reloadings. Primer pockets are cleaned and checked for expansion each time the cases are fired. Any case which will accept the no-go primer pocket gage is immediately destroyed, so that no test will be made with a case having an expanded primer pocket. CCI #200 Large Rifle primers were used in these tests. The relatively small size of the case and using powders in the middle range of burning characteristics, did not indicate any advantage in using the Magnum primer. This was later borne out by comparative tests using standard and Magnum primers.

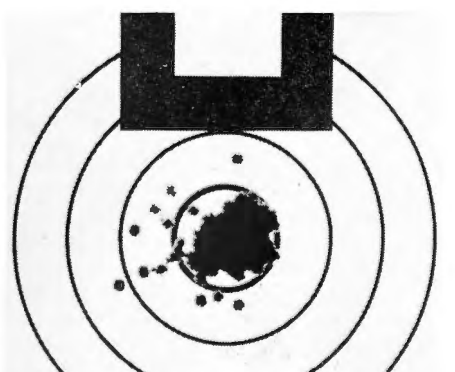
During our test program cases were continually checked for lengthening. The .225 cases had grown enough in the first 5 firings to require trimming. All cases were trimmed to 1.925", .005" below maximum case length. This lot of cases required trimming again after the 12th firing.

The preliminary paper work had given Dave a starting point of 33.0 gr. of 4895 with the 55 gr. bullet. Three rounds with this charge were loaded and fired for velocity, checking each case for head expansion. This is accomplished by measuring the head diameter of the case with a micrometer before and after each firing. Any head expansion is indicated on the Laboratory Report, the permanent record of all firing in the Speer Test Laboratory.

The 33.0 gr. loads were fired successfully and an average muzzle velocity of 3613 fps was recorded with no signs of pressure. Rounds with charges of 34.0, 34.5, and 35.0 grains were then loaded, in an attempt to find the first signs of excessive pressure. Muzzle velocities of 3675 and 3715 fps were recorded for the 34.0 and 34.5 grain loads with no signs of pressure. The first round with the 35.0 gr. load was all right but the

next two showed head expansion of .0004" to .0005", and MV was 3841 fps. As a final check, a charge of 36.0 grains was fired, blowing the primer, showing a head expansion of .14", and a muzzle velocity of 3932 fps.

Speer's maximum safe charge is figured at 6 per cent below the charge showing definite head expansion, so the top load was set at 33.5 grains for this particular combination. Rounds with charges of 33.5, 32.0, and 30.5 grains were then loaded and checked for both velocity and accuracy. Respective velocities were 3669, 3529, and 3368 fps. Accuracy of each 3 shot group was about 0.75".



Target with 170 shots from .225.

Once the loads for one powder are known, the loads for all other powders can be closely approximated by an experienced ballisticians. All powders used by handloaders have a definite relationship to one another, and experience teaches us approximately what variations in powder charge are necessary in any given combination of components.

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is tested with each bullet weight in the same way. About 250 bullets of each weight were fired, making a total of about 1,000 rounds fired in testing the .225 Winchester.

group of 3 shots measured .395" was fired with 31.5 gr. 4895 and the 50 gr. bullet.

During the tests 170 rounds were fired at one target, using the same point of aim for

LOADING DATA FOR THE .225 WINCHESTER

Rifle: Winchester Model 70
Barrel: 24"

Primer: CCI 200
Cases: Winchester

BEST LOADS WITH THE SPEER .224" 55 grain bullet.

Powder	Charge	MV	Powder	Charge	MV
4350	36.5	3626	4895	33.5	3669
4350	34.5	3454	4895	32.0	3529
4350	32.5	3224	4895	30.5	3368
4320	33.5	3636	4064	33.0	3675
4320	32.0	3488	4064	31.5	3537
4320	30.5	3376	4064	30.0	3333

BEST LOADS WITH THE SPEER .224" 52 grain Hollow Point bullet.

H380	36.5	3758	4895	33.5	3776
H380	35.0	3577	4895	31.5	3601
H380	33.5	3469	4895	29.5	3429
4320	33.5	3736	4064	33.0	3752
4320	32.0	3577	4064	31.0	3499
4320	30.5	3352	4064	29.0	3277

BEST LOADS WITH THE SPEER .224" 50 grain bullet.

4320	34.0	3743	4895	33.5	3730
4320	32.5	3606	4895	31.5	3591
4320	31.0	3456	4895	29.5	3375
N-203	34.5	3785	4064	33.5	3813
N-203	32.5	3679	4064	32.0	3563
N-203	30.5	3517	4064	30.5	3403

BEST LOADS WITH THE SPEER .224" 45 grain bullet.

4895	34.0	3787	4064	34.0	3952
4895	32.0	3581	4064	32.0	3645
4895	30.0	3453	4064	30.0	3562

Each of these rounds were assembled with extreme care, each charge weighed, and the results recorded.

Accuracy of the rifle steadily improved, and very few combinations gave 3 shot groups larger than 0.75". The best loads for accuracy with the Speer 55 gr. bullet were 31.5 gr. of 4064 with a group size of .375". Another good load with the 55 gr. bullet was 34.0 gr. 4320 and group size was .450". The 52 gr. Hollow Point bullet shot very well with many combinations. The best group, .244", was shot with 33.5 gr. of 4895. A

each shot. All of the bullets fired were within a 2.6" group, indicating good general accuracy. One interesting fact about this particular test is that all of the loads with 4320 powder shot to the left of the main group. This series of 170 shots included 4 different bullet weights and 5 different powders combined in 56 different load combinations.

These loading data were developed with one individual rifle, and loads for any other rifle should be carefully worked up, using this information as a guide.

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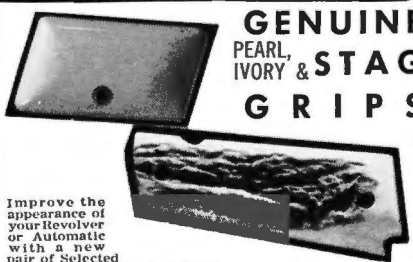
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BLACK POWDER CARTRIDGES

(Continued from page 25)

even the brass cases must be scrubbed clean with hot water and soap or detergent before being ready for use again. The fouling problem can be reduced to a satisfying degree by using a duplex load incorporating 5-10 grains of DuPont Bulk Shotgun, 4759, or Hercules Red Dot with the main black powder charge. The small smokeless charge is loaded first, the black powder on top. The main charge should be reduced by the amount of smokeless used if a weak action is involved. Duplex loads don't eliminate the hot water cleaning, but there is less fouling and it is easier to remove.

Smokeless loads for black powder cartridges must, to some extent, be tailored to the action or gun involved. Some black powder guns are extremely strong by any standard, and a few will stand modern pressures. Among the strongest of the old actions are the Farrow, Peabody, Remington Rolling-

Block, Stevens Model 14½, Winchester single shot, Sharps-Borchard, and the Remington-Hepburn. Weak actions that should be restricted to black powder pressures are the U. S. 1866 and 1873 Springfield, Kennedy, Whitney, Ballard, Maynard, Stevens "tip up" models, Winchester 1873 and 1876, plus the various Colt lightning models. Some of these are much stronger than others, but none are strong enough to take high pressures. Marlin's Model 1895 and Winchester's Model 86 lever action repeaters have strong actions.

Large numbers of obsolete black powder military rifles have been sold in recent years. If in good condition, they can be considered safe with the original cartridge and black powder. Those based on the Remington Rolling-Block or the Peabody-Martini are quite suitable for rebarreling to many modern calibers. The Mauser Model 71 or 71/84 is also strong, but not sufficiently so to handle modern cartridges. The hinged block actions are suitable only for low pressure loads.

High Velocity Loads for Selected Black Powder Cartridges to Be Fired in Strong Action Rifles Only

Cartridge	Bullet Wt. Gr.	Powder	Charge Grains	M. V.	Remarks
.25-20 WCF	60	2400	11.0	2120	Win. bullet
.32-20 WCF	115	4227	13.0	1710	Win. bullet
.32-40 Ballard	165	3031	27.0	1910	Win. bullet
.38-40 WCF	180	4227	25.0	1820	Rem. bullet
.38-55 Ballard	265	Hi Vel	29.0	1650	Rem. bullet
.44-40 WCF	200	2400	26.5	2010	Rem. bullet
.45-70 Govt.	300	4198	45.0	1700	Fred Barnes bullet
.45-70 Govt.	350	4198	41.0	1625	Hornady bullet
.45-90 WCF	300	4198	55.0	2140	Fred Barnes bullet
.45-90 WCF	350	4198	51.0	2060	Hornady bullet

NOTE. Above loads are for jacketed soft point bullets. None of these loads should be fired in weak action black powder rifles. They are for such actions as the Remington Rolling-Block, Winchester single shot, Stevens 14½, Win. M86, Marlin M95, Win. M92 and M94, Rem M14½ and 25, etc.

cases can be a problem. The Connecticut Cartridge Co. (Box 354 G, Plainville, Connecticut) produces ammunition and components for most of the obsolete cartridges. Suitable brass can often be made by reforming some similar cartridge case, and Nonte's "Cartridge Conversions" (published by Stackpole) is invaluable.

DuPont 4759 is the best all around propellant for most of the old timers. However, DuPont 3031, 4198 and Hercules HiVel No. 2 can also be useful. The most satisfactory results with cast bullets at or near original velocities are obtained with 4759. With a good strong action, modern barrel steel and jacketed bullets, 4198 will give top performance in the medium to large cases.

The use of fast burning powders such as 2400, Unique or Bullseye for light loads in black powder cartridges is often suggested. Great care in loading must be used since it is easy to get a double charge in the larger cases, and even a visual inspection can miss a double charge. With bulky powders such as 4750 double charges are unlikely.

Most black powder rifles have soft steel barrels that are quickly worn out by jacketed bullets. It is best to stick to cast bullets for

Caliber designation of black powder cartridges is often confusing. Two or three numerals were generally used, such as the .45-70 Govt. or .45-70-500 Govt. The first figure is the caliber, the second the black

powder charge in grains, the third the bullet weight in grains. Very simple, but unfortunately complicated by the gun or cartridge manufacturer's habit of tacking his name on slightly different versions of the same cartridge. Thus, the .45-70-350 WCF, the .45-70-300 Marlin, and the 45-2 1/10" Sharps are one and the same .45-70 Govt. The Marlin version of the .45-60 Winchester was designated the 40-60 Marlin. The two are identical and interchangeable. But the .40-60 Winchester is a different cartridge and is not interchangeable with the .40-60 Marlin!

maximum barrel life. Gas check bullets, if available, will allow a moderate increase in performance and are no harder on the bore than the plain base type. Soft jacketed bullets of the swaged type used in revolvers will not cause undue wear unless the barrel is of unusually soft steel. An alloy of 1 part tin to 16 parts lead works well in most arms, and 1 to 10 alloy is better if original velocity is to be exceeded. A gas check bullet is usually required if velocity exceeds about 1400 to 1500 fps.

Smokeless powder is much more difficult to ignite than black powder, and its burning characteristics are affected by the intensity

consistently hit anything, which in the field won't be much over 100 yards.

The .38-55, .38-56, .38-70, .40-60, .40-65, .44-40 and the .45-60 are good deer and black bear calibers at short to medium ranges. At one time, high velocity loadings were available for some of these that made them much more effective than the original black powder loads, and only the .38-55 and the .44-40 have survived.

The .40-70, .40-82, .45-70, .45-75, .45-90, .50-70, .50-95 and the .50-110 are considered as adequate for any North American big game at varying ranges from 125 to possibly 175 yards.

Loading Data for Black Powder Cartridges Using DuPont 4759 Powder and Lyman Bullets

Cartridge	Cast Bullet Diam.	Bullet Weight Grains	Charge 4759 Grains	M. V.	Lyman Bullet Mould No.
.22 WCF	.228"	45	5.5	1550	228151
.22-15 Stevens	.226"	60	5.5	1400	22636
.25-20 Single Sh.	.257"	85	6.5	1360	257312
.25-20 WCF	.257"	85	9.0	1450	257312
.25-21 Stevens	.257"	85	8.0	1340	257312
.32-20 WCF	.311"	110	8.0	1460	311316
.32-40 Ballard	.321"	175	13.5	1400	319295
.38-40 WCF	.401"	175	15.0	1390	40188
.38-55 Ballard	.375"	265	18.0	1425	375296
.38-56 WCF	.375"	265	20.0	1450	375296
.38-70 WCF	.375"	265	21.0	1575	375296
.40-60 WCF	.403"	210	18.0	1520	403168
.40-65 WCF	.403"	260	18.0	1410	403169
.40-70 WCF	.405"	330	20.0	1340	406150
.40-82 WCF	.403"	260	23.0	1425	403169
.44-40 WCF	.427"	205	14.0	1325	42798
.45-60 WCF	.456"	300	22.0	1370	456191
.45-70 Govt.	.457"	210	20.0	1210	457127
.45-70 Govt.	.457"	300	24.0	1400	456191
.45-70 Govt.	.457"	405	24.0	1325	457124
.45-75 WCF	.456"	350	22.0	1380	456192
.45-90 WCF	.457"	300	25.5	1480	456191
.50-70 Govt.	.515"	350	23.0	1420	518145
.50-70 Govt.	.515"	440	22.0	1350	515141
.50-95 WCF	.512"	290	22.0	1420	512139
.50-110 WCF	.512"	290	28.0	1650	512139
.43 Spanish	.439"	370	30.0	1450	439186
11 mm Mauser	.440"	370	30.0	1450	439186
.43 Egyptian	.448"	465	28.0	1440	446187
.577/450 M-H	.445"	465	32.0	1430	446187
.577 Snider	.570"	476	24.0	1250	475213

NOTE: All of the above loads are low pressure loads duplicating original black powder performance. These loads are safe in any black powder rifle in sound condition.

and uniformity of the flash. This is important because many black powder rifles have a weak firing pin blow and won't fire the smokeless primers in a satisfactory manner. The result can be erratic performances with smokeless loads. If your rifle won't digest smokeless loads with acceptable accuracy, check the firing pin fall.

The .22 WCF, .22-15 Stevens, .25-20 Single Shot, .25-20 WCF, .25-21 Stevens, .32-20 WCF, .32-40 Ballard, and the .38-40 WCF are, by modern standards, strictly varmint or medium game cartridges. In a good single shot action, they are capable of match accuracy. All are effective at any range you can

There are many obvious advantages to using smokeless loads in black powder rifles and cartridges. The average shooter probably gets more use out of a black powder gun if the messy cleaning chore can be eliminated. Where a strong action is involved, smokeless powder will provide a considerable improvement in range and killing power. It is quite possible to develop smokeless loads which equal in accuracy the original black powder cartridge.

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CATALINA ISLAND HUNT

(Continued from page 21)

would have it, no trophies crossed our paths. At sundown we called it a day.

The goats were brought to the island by the Spaniards over 400 years ago and are known as Spanish range goat. The boars were not introduced until 1932 when they were transplanted from Santa Rosa Island in an attempt to control the rattlesnake population.

The following morning at five AM we were blasted out of bed by a little 12 gauge cannon. This was Fred's means for getting hunters to the breakfast table on time.

By six o'clock we were working our way down a steep hill. Fred had spotted two boars feeding on the lower slope. Lee and I were going in for a closer look. We were down wind of them and had crept within 30 yards when the larger of the two disappeared in the brush. I sat tight and Lee went around to try and flush out the big one. I lined my sights up on the one I could see and but decided to wait for the big one. The big boar broke from cover and we got a glimpse of what a pig can do when he's really in a hurry. He was gone before either of us could shoulder our rifles.

The rest of the morning was similar to the previous afternoon; plenty of game, but no trophies. We broke for lunch and discussed the situation. Since we had only that afternoon and the following morning to get

our game, we decided to concentrate on the boar. Lee agreed to take the next fair-sized boar, if not for the trophy room then at least for the dinner table.

About mid-afternoon Lee scored. We had come to the rim of a very steep canyon. I took one look over the edge and told him "You go, I'll stay." Lee had taken to the climbing with the adeptness of the goats he was hunting, but after five hours up and down I was just plain beat.

The boar came out of the brush about 60 yards from Lee and was headed up the opposite side of the canyon. Lee sank into a sitting position, waited a few seconds for a clear shot, then fired. That was it. The 180 gr. bullet hit the running boar into the spine. Lee was using a Browning .30-06, topped by Browning 3X-9X variable scope.

By six o'clock the next morning we were climbing again. Since the plane for the mainland leaves at 2 P.M., we had half a day left and were minus two goats and a boar. We still wanted a trophy-sized pig so we decided to stay with them until the time element forced us to abandon the boars.

We had been hunting for about three hours, had seen no boar sign. We had however, sighted one good-sized herd of goats and several strays. Time was running out, and we went after the goats. The herd was out of range and scenting us, they stayed that way. They seemed in no hurry to move, but they kept watching us. Lee elected to go for one of the strays. He maneuvered into the kneeling position for a shot at about 150 yards. He aimed, fired, and the goat fell where it stood. The horns measured 27 inches which was not bad since anything over 18 inches is considered a trophy.

Now it was my turn. It took almost an hour to get down-wind and within range, although Lee's shot had not spooked them in the least. We came up over the ridge of the hill and saw the herd grazing on the far side. Fred pointed to a good billy slightly below us and I dropped to a prone position. I was uncertain about the range, but Fred and Lee put their heads together and came up with a 400-450 yard estimate. I held the crosshairs of my Browning variable a little high, squeezed off my shot—and promptly missed. The billy took off down hill and I glanced at my companions. They looked like a couple of sour limes. For some reason the goat changed his mind and came back up the slope at a slow trot. I settled down again and heard Lee say, "Hold just over the bris-ket." I kept the crosshairs on the billy and he paused for a fatal look back. I fired and the 100 gr. soft point bullet from my bull barrel .243 custom rifle broke his spine. That rated me a grin from my hunting partners, to say nothing of the silly one that must have been on my own face. The bullet was lodged just under the skin on the far side.

We had barely enough time for lunch before we caught our plane. As we took off I was already calculating when we could get back. For come back we must—Lee and I want to have another crack at those Catalina boars!



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(Continued from page 39)

self-respecting scattergunner to taking up crocheting.

Two of the Franchi's were autoloaders, one a 12 gauge standard model, the other a fancier version of the same gun, called the Hunter, and this one came in 20 gauge. Both guns have ventilated ribs, although plain barrels are available. The AL series has a light alloy receiver, the A series of the guns has a steel receiver. The Hunter version has a hand engraved receiver and selected walnut stock, and the Superdeluxe line comes with extra fine engraving and a walnut root stock. A gun chambered for the 3 inch magnum is also available in both gauges, and chambers for the non-magnum are the standard 2 3/4 inch ones.

Mechanically, both guns are identical, and in a total of 400 rounds fired through the automatics, there were no malfunctions with factory ammo or with handloads. The 12 ga. gun weighed 6 lbs. 4 oz. on the nose, while the 20 ga. gun was just a shade under 5 lbs. 2 oz. Barrels are chrome lined, can be inter-



the 20 ga. delivered about 79 per cent. Operation of the auto's is almost identical to that of other autoloaders, but release of the cartridges from the magazine may prove confusing to the man who has not read the directions that come with the guns. The magazine shell latch is located inside the action housing on the right wall, and with the bolt handle held back and the shell carrier depressed, it is a simple matter to remove cartridges from the magazine.

Equally as simple is the adjustment of the recoil absorbing mechanism. On the whole, and comparing these guns with two autoloaders in my own battery, I found that the lack of weight and the easy method of stripping the guns gave them a slight edge over my own guns. In field use, when recoil is hardly noticed, the Franchi guns handled easily and the test of weight vs. recoil came on the trap range. Make no mistake, the Franchi guns do have a certain amount of recoil, yet the lack of weight apparently did not hamper swing, nor did the lack of weight appear to affect shooters adversely in the recoil department. Especially when shooting Crazy Quail, two other shooters and I found that the guns swung easier, that follow-through was perhaps a bit smoother than with our other guns. No matter what the reasons might have been, we all scored higher on Crazy Quail than we usually do, and that is a fine recommendation for a gun.

The third gun John Olson sent to GUNS Magazine was the Franchi over/under, and this one was bored skeet and skeet. The Aristocrat, also available in three grades and styles, has chrome-lined barrels, and a special safety device makes it impossible to fire the gun unless it is perfectly locked. The trap and skeet models have special stocks and non-automatic safeties, but automatic ejectors are standard on all guns. Guns are available with single selective and double triggers, and a variety of barrel lengths and chokes can be had in the three models.

The standard grade Franchi skeet gun weighed just 7 pounds, had a single selective trigger, and inletting was exceptionally good. The heft and feel of the gun was pleasant and I had only one ejection failure and this with a badly battered, fourth-time reloaded hull, which had been bulged in loading to check for feed and extraction. This failure can hardly be blamed on the gun, and my only complaint about the Franchi O/U is that it did not improve my not very impressive skeet scores.

Just a word about the finish on the Franchi guns. The bluing is a good, deep, satiny blue that is pleasing to the eye. The stock finish is apparently some sort of oil finish which gives the wood a relatively dull appearance which, at least to my mind, is a lot more pleasing than the high gloss finish of the lacquers which scratch all too easily, and where scratches cannot be repaired readily.

This is one time I did not feel too badly about losing a bet—the Franchi's did live up to their publicity.



changed easily without tools. The Franchi guns are readily field-stripped, recoil adjustment is simple, and the long recoil action does reduce recoil considerably, although I was unable to make any really valid comparisons as to how much recoil was actually reduced—but reduced it was judging from the feel of my shoulder and cheek after a prolonged session at Crazy Quail.

Carrying either of the auto's in the field was a pleasure, and the guns came to the shoulder easily and smoothly. Both guns were full choked and with number 6 shot delivered an excellent pattern, with the 12 ga. gun giving a 77 per cent pattern, while

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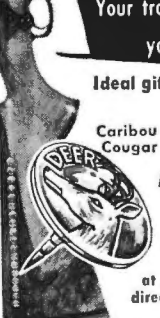
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The 6 mm Remington cartridge will be loaded with a new 80 grain bullet for varmint hunters, and the 175 grain bullet of the 7 mm Remington Magnum cartridge has been changed from the soft point Core-Lokt to a pointed soft point. Styling changes in checkering and stock design will be shown on the Remington 870 pump and 1100 auto-loading shotguns, and the Remington-Peters shotshells will reflect the shooter's acceptance of the "Power Piston" wad column as they are used in more loads.

Those who attended last year's NRA convention are not likely to forget the promotional endeavors of Winchester-Western, whose "On Safari" theme was carried out masterfully. Shooters who attend this year's convention will be able to see many new W-W items that will be introduced during 1965. Already in production is the deluxe grade of the Model 70. Those who remember with reverence the old M70 Super Grades will take to the fancy walnut, special checkering, and other deluxe features of this new version. Winchester's rimfire rifles will also be available in new models. The 200 Series will see deluxe versions appearing during the year, and we are particularly anxious to get a look at the autoloader that will feature a zebra wood stock.

The new Winchester shotguns featured this year will be both the 1200 pump gun and the 1400 autoloader in 20 gauge. Both models will be also shown in 12 gauge slug models for the deer hunter, featuring 22" slug barrels with the same rifle sights as on the Model 94. There will also be an 18" barrel Model 1200 riot gun. Visitors to the Winchester-Western exhibit will also be among the first to see the new W-W trap and skeet loads. But more important than seeing these new items, will be the opportunity to find out why they were produced, how they were produced, and what they will mean to your shooting and hunting.

Savage has ten new models for 1965, and they will all be ready for the NRA exhibit. The Model 99 lever action will be available for the first time with a detachable clip magazine for those who prefer to have a spare loaded clip handy. The new magazine follows the rounded contour of the 99 action, and is easily ejected by pushing a recessed release button. The Model 99 and the Model 110 rifles will be available in special presentation grades that are finely engraved, and feature select walnut stocks, handsome hand checkering, and other ornamentation usually found only on custom rifles. The 110 Presentation grade rifle will sell for around \$300, while the Model 99 will be available in two styles for around \$225 and \$310.

For the small bore shooters, Savage will exhibit the Model 6 autoloader in a premier grade. The Savage Model 6 has been a favorite .22 rifle for many years, and with the addition of a select French walnut stock

that is checkered and finished in the traditions of a custom gun, it should appeal to those shooters who are willing to spend a few more dollars for added eye appeal. In the Savage .22 bolt action rifle line are the new Model 65, a lightweight rifle with clip feed and Monte Carlo stock; the Stevens Model 46 with tubular magazine; the Stevens Model 34 clip, and the Stevens 73 single shot.

Rounding out the Savage line for 1965 will be the Stevens Model 95 single barrel shotgun. This is a solid frame, non-takedown type with modern sweeping lines. This 12 gauge gun will be chambered for either 2¾" or 3" shells, will be made with 28" modified or 30" full choke barrels, and will sell for under \$30.

Mossberg will have several new items of interest at the show. The first to be announced is the Model 351C, a new .22 autoloader that they call the "Jack Rabbit Special." This lightweight, "western style" carbine features a straight-line tubular feed magazine in the buttstock, carbine barrel band, sling swivels, and a genuine walnut Monte Carlo stock.

Ithaca will show their new Model 66 single barrel shotgun in 20 and .410 gauge this year, both gauges being available in youth models for young shooters. Early this year, Ithaca will again accept orders for their famous single barrel trap gun, which has not been available since 1963.

Daisy's 1965 line of BB guns will be unveiled to the public at the NRA convention, and their new, exciting propellant will debut there. With the sort of news that the new Daisy shooting system should make, undoubtedly Daisy will want to demonstrate it effectively, and the logical place for them to choose in Washington would be the excellent range facilities of the NRA. Daisy, an innovator and the largest producer of synthetic gun stocks is returning to wood stocks on several of its rifle models. Another new item of interest at the Daisy booth will be their new target backstop material that stops BB's on impact without bounce or ricochet.

Marlin will be showing off their newest, the .444 caliber lever action rifle; Harrington & Richardson will be showing new guns, new calibers, and new accessories; High Standard, Colt, Smith & Wesson, Sturm Ruger, Weatherby, and other leading manufacturers will be represented to bring you up to date on their new products and ideas for 1965.

The major importers, such as Browning, Firearms International, Norma-Precision, and Sloan's will also show their wares, as will many of the leading manufacturers of reloading tools, ammunition components, scopes and sights, and other firearms accessories.

Plan to attend as many of the meetings as possible; cover all of the exhibits; and be prepared to spend five most enjoyable days as you mingle with crowds of people whose interests are the same as yours; guns, shooting, hunting, collecting.



CARTRIDGES OF THE WORLD

By Frank C. Barnes,
edited by John T. Amber
(Gun Digest Association, Chicago, Ill.,
1965. \$5.95)

This book has been in the works for some years and its final form belies the gigantic task the book presented for author Barnes and editor Amber. The 14 chapters abound with data and information that has been virtually impossible to find unless you have a complete arms library at your command. The book covers centerfire and rimfire metallics, shotshells, factory and wildcat cartridges, new and obsolete, and cartridge data are about as complete as you are likely to find them anywhere. In addition to the technical material, you'll find historical notes, handloading and ballistics information—in short this is the most definitive cartridge book that has ever come to the attention of this reviewer. And as such "Cartridges of the World" should be owned by every shooter who has graduated beyond the .22 plinker stage—R.A.S.

THE SPORTSMAN'S HANDBOOK

Edited by Houston Branch
(Sportsman's Handbook, Inc., Box 224,
Cambridge, Mass., 02138, 1964. \$15)

This is a big book not only in size but also in scope. No matter where you want to go in the U.S. for hunting or fishing, or in Europe or Canada, or in South America—this book

will tell you how to get there, where to stay, what to look for and what to avoid. It is the most comprehensive compilation of where and what facts for the sportsman that has appeared in print in recent years, and having it handy is a necessity for every sportsman. I recommend it highly for everyone.—R.A.S.

COLT FIREARMS

By James E. Serven
(Foundation Press, 111 N. Sycamore,
Santa Ana, Calif., 1964. \$17.95)

This, the 5th edition of Jim Serven's original book, differs only slightly from the earlier editions. Most noteworthy is the chapter that deals with Colt's latest developments and the company's recent history. Serven's work on Colt guns has long occupied a most enviable position in the world of gun books and more specifically, in the field of books for the collector and student of firearms. If you have missed the earlier editions, do not fail to get this new one. And if you have the earlier edition, you will find some important new material in this book.—R.A.S.

THE BOY'S BOOK OF GUN HANDLING

By Richard Alden Knight
(G. P. Putnam's Sons, New York, N.Y.,
1964. \$3.50)

This is one of the better books devoted to the subject. Dick Knight, the son of the famed outdoor writers team of the Knights, has done a fine job in translating the complexities of shooting so that a youngster can get a basic understanding of gun handling. What helps this book is the profuse use of photographs and drawings without which any such book soon becomes a burden. Perhaps even more important is the fact that the picture selection shows action rather than static pictures. This book should prove helpful for the young reader.—R.A.S.

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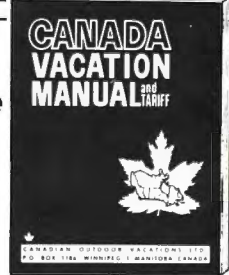
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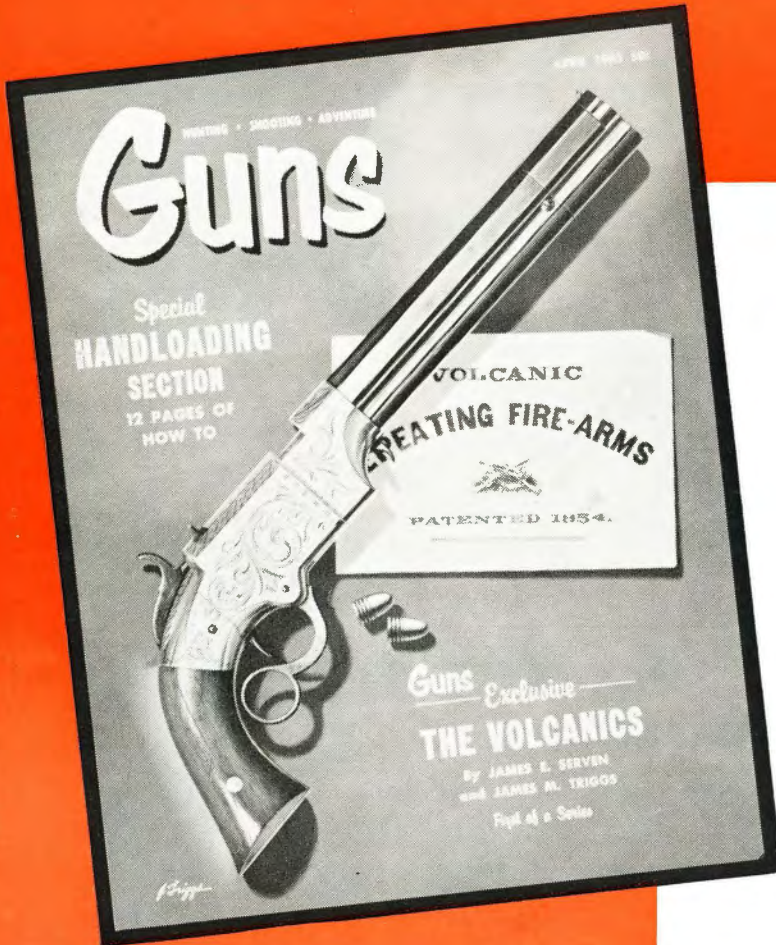
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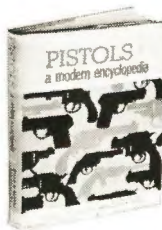
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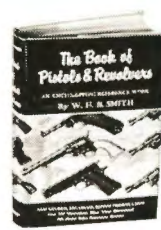


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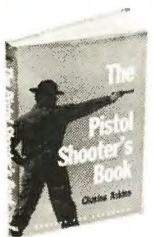


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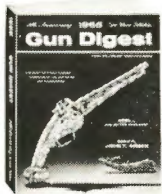
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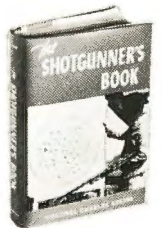
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Panel of Experts

Because of the heavy influx of questions, it has become necessary to limit the number of questions submitted in one letter to two. Your questions must be submitted on separate sheets of paper, must carry full name and address, and your Shooters Club of America membership number. If you are not a member of the Shooters Club of America, send a dollar bill with each question. Questions lacking either number or money cannot be answered. If you want a personal answer, enclose a stamped, self-addressed envelope for each question.

Left Hand Actions

What is the story on left hand bolt action rifles? Is Savage the first? How do you rate the 110MCL action? Would you advise having a Savage 110 action fitted with a 7x57 Mauser barrel?

Raymond Cheatham Jr.
Basin, Wyoming

Savage was not the first company to make left hand bolt actions. Mathieu and Winchester were on the market, the latter with a southpaw Model 70. The Savage 110 action is an excellent one, and can be done over to 7x57 easily.—P.T.H.

Czech Model 38 Pistol

A friend of mine has an automatic pistol of WWII vintage that we have been unable to identify, as to make or caliber. This auto pistol has an exposed hammer, it weighs 1 3/4 lbs., and has a 4 1/2" barrel. On the left side of the slide it is marked "274432 Ceska Zbrojovka Akc. Spol & V Praze."

The pistol is in excellent condition; bluing is perfect, as is the one-piece walnut grip. I cannot find any safety on it at all. We have no ammo for it but would like to fire the gun. Can you help?

Edward J. H. Zaleski
Stanton, Delaware

The gun you describe is the Czech Model 1938 double action, and is a very well made and reliable firearm. Most of the guns encountered in this country are chambered for the .380 ACP cartridge (9 mm Kurz) and your local gunsmith can easily check this out for you.

An "Inside Look" feature appeared in the March '65 issue of GUNS which included a detailed illustration of the mechanism that might interest you.—S.B.

Pinfire Shotgun

I have a pinfire double shotgun in 12 gauge marked "W. R. Pape—Newcastle-on-Tyne." The action, which is quite tight, is opened by a lever under the trigger guard. All external parts are engraved, and the stock and fore-end are well checkered.

I would be interested in any information on the age and value of this gun. Also, I would like to fire this gun. I can get pinfire hulls and load them myself with 2 3/4 or 3 drams of black powder and 1 or 1 1/8 ounces of shot. Do you think this is wise?

William Webster

William R. Pape was in the gun business for many years. He operated from two addresses. The earliest was at 36 Westgate St., Newcastle-on-Tyne (Northumberland) and the second at 21 Collingwood. The business was probably started in the 1830's, and in one fashion or another was active until 1890.

W. R. Pape made percussion rifles, pistols, and shotguns. In later years he made cartridge revolvers and shotguns. I cannot tell you when Mr. Pape made your pinfire shotgun, but such shotguns were popular in the 1850's and 1860's.

For your gun you would be wise not to exceed 1 ounce of shot and 2 1/2 to 2 3/4 drams of black powder.—C.B.

Pheasant Loads

I have had good success loading 12 gauge shotshells for pheasant hunting as follows: Rem. paper case; CCI primers; 33 gr. Alcan AL-5; 90 lbs. wad pressure; nitro card & Win. felt wad; 1 1/4 oz. #6 lead shot. Would it be safe, and an improved load to use the same loads and cases with a Power Piston wad? If so, what pressure?

What results would you effect with 1 1/4 oz. of shot in a Power Piston designed for the 1 1/4 oz. Power Piston? Is there any other single column sleeve that would be more flexible than the power piston?

James Tule
Easton, Pa.

I believe you'll obtain best results by following Alcan's data, using 31 gr. of AL-5 with their Flite-Max single unit wad and 1 1/4 oz. of shot. When fired, this wad compresses enough to completely enclose the shot. Use the Flite-Max No. 1 wad with R-P or W-W target shells. It isn't wise to try to "improve" listed standardized shotshell loads. A bit too much powder may be safe, but may give erratic patterns. I'd suggest you use 40 pounds pressure.—K.B.

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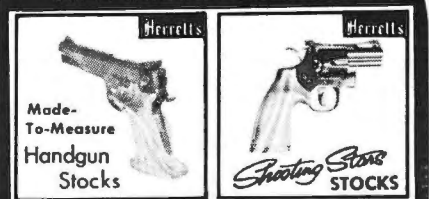


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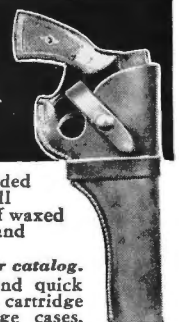
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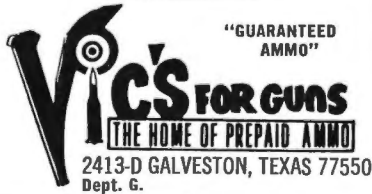
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GUN RACK

(Continued from page 12)

a break occurs, the electrical circuit is closed. This discharges enough tear gas to cover a 40,000 cubic foot area. The system was installed in the testing laboratory of GUNS Magazine and was also tested with the actual shop. One device was tested with the actual gas, while the other was tested with a bell relay. Both of them worked perfectly, and the slightest touch of the tripping thread set off the alarms. The Tear Gas Watchdog, retailing for \$18.95, can be installed by anyone, can be obtained from Tear Gas Devices, 65G Broad St., Stamford, Conn., 06901. This system appears to be foolproof and should be of interest to all who have valuable guns that might be the target for break and entry burglars.

RCBS Dies, Scales

Over a year ago, Fred Huntington of RCBS gave us a sneak preview of his new powder scale. The prototype had all the features a handloader might want or expect from a high quality scale, and the production model that we have been putting through tests in the last week carried out the promise of the prototype. One of the features I liked especially well is the scale capacity: Normal beam capacity is 300 grains, and there is an extra weight that, when screwed onto the beam, jacks up capacity to 600 grains. Using a big precision scale for comparison, I weighed two known weights 30 times, came up with no variation that is worth mentioning. A leveling screw permits setting the pointer of the beam at zero, and

the powder pan is amply large and easily handled. The scale will retail for just under \$20, and at first will probably be in short supply since orders have been coming in faster than scale shipments. One word of caution: do not fool around with the calibrating lock rings on the beam. Once they are disturbed, this scale, like any other, must be returned to the factory for re-calibration. Our RCBS scale is now being used extensively for charge checking and I found it most accurate and satisfactory.

RCBS also offers a new and improved Wide-Ring Tungsten-Carbide pistol case sizing die. Our test die is for the .38 Special, and the advantages of the Carbide sizer lie in the fact that, when a case is full length sized, the new RCBS die won't leave a ring or belt near the head of the case. The secret in the new die is the wider sizing ring and the 2-3° taper. Tungsten dies are virtually indestructible, and cases are polished as they are being sized. The new Wide-Ring RCBS dies will retail for \$19.50, and shipments are now being made. If you load a lot of pistol ammo, you'll like those new RCBS dies.

Taxidermy

Recently we got some taxidermy work done that, when we looked at it, turned out to be a very pleasant surprise. Pig heads, whether it be javelina, Russian boar, razor back, or what have you, usually are best not mounted. Our job was done by Acme Taxidermy Studio, 3845 W. Grand Ave., Chicago, Ill., and we plan to let them do a couple of other jobs that we have been holding back. Acme handles not only all domestic game animals, but also has done some very fine work on African heads, polar bears, and other critters. Write for brochure.

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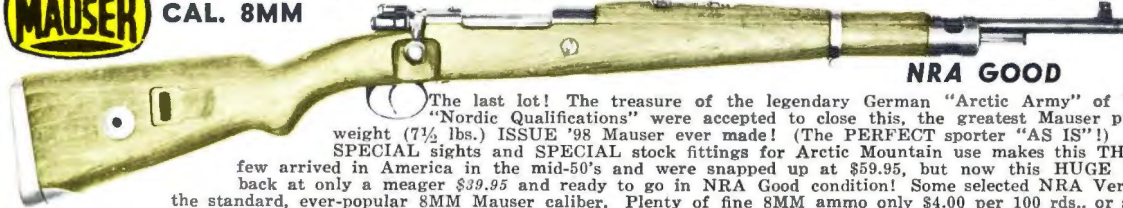


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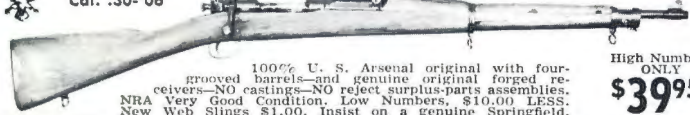
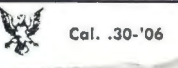
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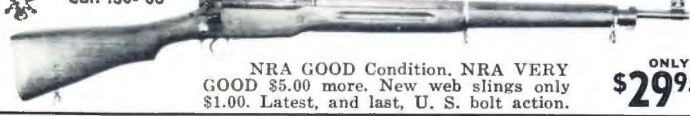
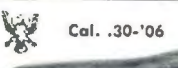
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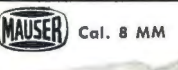
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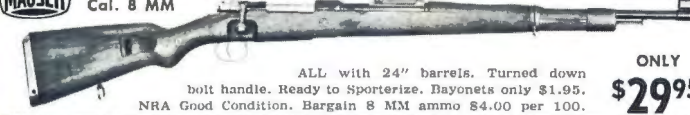
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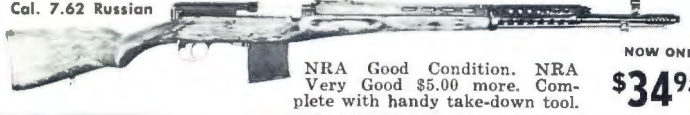
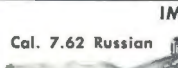
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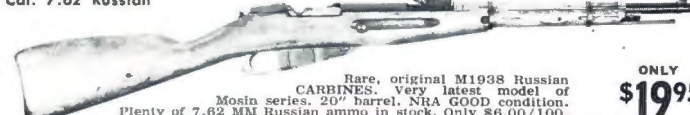
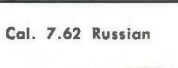
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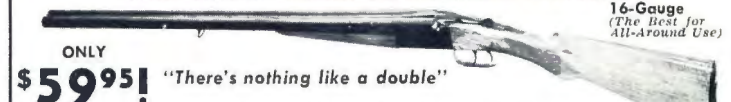


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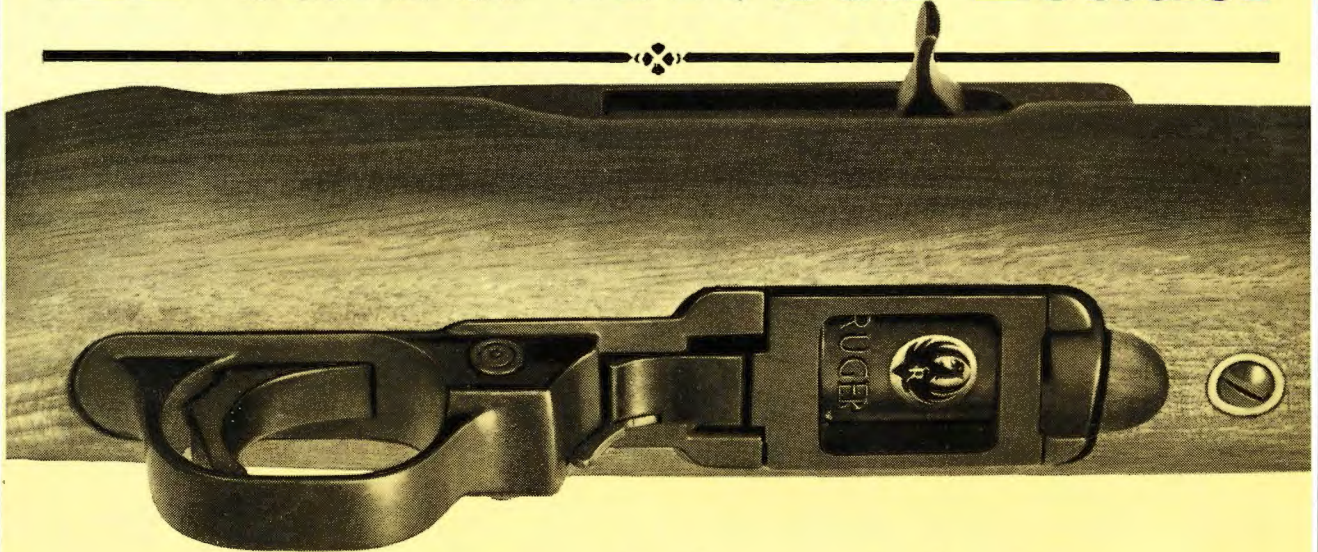
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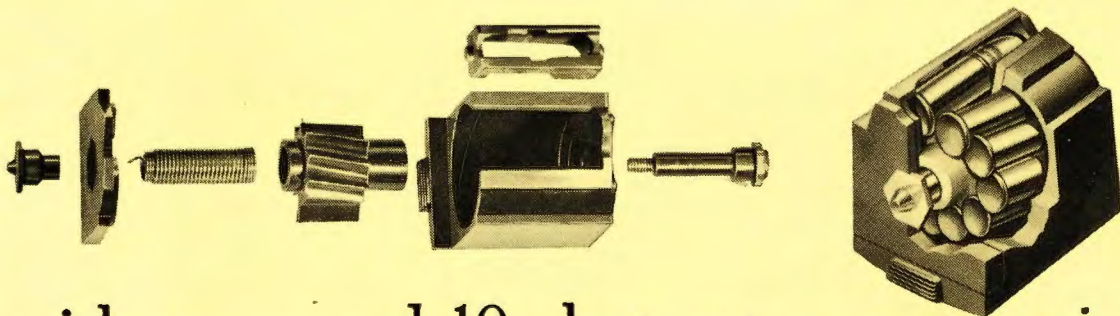
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