

The

AMERICAN RIFLEMAN



Published By
The National Rifle Association of America
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 FIFTY YEARS OF SERVICE TO THE SPORTSMAN

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MAJOR CHARLES ASKINS

Back in 1880, Major Askins fired his first shot from an old muzzle-loading squirrel rifle at the age of 8. At 10, he winged his first duck; at 12, his first quail. Now, with more than half a century of shooting behind him and more than 30 years of writing on the subject, it is safe to say that Major Askins has probably done as much to promote shooting as any other living person. Besides his many contributions to sportsmen's and other magazines, Major Askins is the author of "THE AMERICAN SHOTGUN," "RIFLES AND RIFLE SHOOTING," "BALLISTICS OF THE SHOTGUN," "MODERN SHOTGUNS AND LOADS," "AMERICAN GAME BIRD SHOOTING," and a number of shooters' handbooks. Since 1920 he has been on the Arms and Ammunition staff of *OUTDOOR LIFE*, where his authoritative information and advice have been of inestimable help to thousands of outdoor men.

•
The Big 3
of Modern
Shooting
 •



CAPT. EDWARD C. CROSSMAN



WILLIAM H. (BILL) FOSTER

Skeet? Bill Foster invented it! And as President of the National Skeet Shooting Association, Inc., from its organization until November of last year, he has been the greatest moving force in bringing skeet to its present-day widespread popularity. Bill's addition to *OUTDOOR LIFE'S* staff early this year was another step on the part of the editors to give the readers of this magazine the best in every department . . . be it skeet, fly-casting or any other outdoor activity of interest to the sportsmen.

first, ASKINS; then, FOSTER
Now, CROSSMAN

ALL ON THE STAFF OF

Outdoor Life

WHEN California legal authorities want expert ballistic opinion, they call in Edward Crossman. In the past thirteen years, he has testified in hundreds of shooting cases and today owns one of the finest laboratories of its sort on the West Coast. Such is Crossman's standing with the forces of law and order, and it has come of a long and enviable record in civilian and military shooting which began in 1911 when he won the California Military Rifle Championship for the first time.

Among his many activities in State, National and International shooting, he coached the California State Civilian Rifle team which won the National matches in 1916; captained the U. S. Dewar Rifle team in 1919, 1920, 1921; had charge of the Olympic rifle matches in 1932; was adjutant and assistant coach, U. S. Pan American Rifle Team at Lima, Peru, in 1924, and served as a member of the Army Small Arms Ballistics Station staff in 1919, 1920. He is a director of the National Rifle Association and President of the Los Angeles Skeet Club.

Besides his numerous magazine articles on shooting, he is the author of "Gun & Rifle Facts", "Small Bore Rifle", "The Book of the Springfield", "Military & Sporting Rifle Shooting". Now, as a member of the *OUTDOOR LIFE* staff, he adds the wealth of his experience to that of Askins and Foster, giving rifle and shotgun enthusiasts the most important shooting news of any magazine. His first article appears in the June issue, on sale May 15. Don't miss it.

OUTDOOR LIFE • 353 FOURTH AVENUE • NEW YORK, N. Y.



RELOADER NEWS



Prepared by **HERCULES POWDER COMPANY**, Wilmington, Delaware
INCORPORATED



PRESSURE IS AFFECTED BY SEATING DEPTH OF BULLET

The seating depth as listed in the various powder leaflets is the distance the bullet is inserted in the cartridge case.

When reloading ammunition, be sure to see that the mouth of the cartridge case is crimped tightly on the bullet. This will prevent its receding into the case during subsequent handling which will reduce the air space between the powder charge and the bullet, resulting in higher pressures. In re-using fired cases, the mouth of the case should be resized so that it will grip the bullet tightly and keep it in its proper place.

The pressures developed by a given charge of powder with a certain weight of bullet depends largely upon the air space between the powder charge and the base of the bullet. For this reason, the seating depth is specified in loading ballistics published by Hercules. Any different depth will vary the results.

It is, of course, safe to use less seating depth as this increases the air space over the powder and lowers the pressures. Frequently, increased accuracy will result from the use of less seating depth as this places the bullet nearer the origin of the rifling, permitting it to enter the bore in a truer manner.

NEW BALLISTIC TESTS FOR THE RELOADER

The ballistic testing service recently inaugurated by Hercules has met with much favor with the reloader. This service offers the opportunity to all reloaders of checking their products by submitting them to the same accurate tests that are applied to ammunition in ballistic laboratories.

Tests which are available to the reloader's product include velocity and pressure and are made at the Hercules ballistic house by experienced ballistic engineers using Hercules modern testing equipment. A moderate fee is charged for each test.

A free leaflet is available describing the tests and the conditions under which such work is conducted. You should first correspond with the company and obtain this leaflet, "A New Service for Reloaders," before sending any samples for tests.

POWDER LEAFLETS AVAILABLE

Hercules has for free distribution to the reloader many leaflets describing the Hercules line of sporting powders and giving tabulations for loads for the most popular cartridges. Write to Sporting Powder Division, Hercules Powder Company, Wilmington, Delaware, for any of the following leaflets.

POWDER	CARTRIDGES
HiVel No. 2	.250/3000
HiVel No. 3	.25 Remington
Lightning	.25/35
Sharpshooter	.270 Winchester
Unique	.30/30—30 W.C.F.—
No. 2400	.30 Remington
Red Dot	.300 Savage
Herco	.30-'06
Bulls-eye and Unique for Revolvers	.30/40 Krag

NEW LABELS FOR HERCULES POWDERS

The newly designed labels for Hercules sporting powder canisters are meeting with favor from the hand-loader. While these new canister labels will not improve your shooting, they will make your reloading easier and quicker, because the recommended loads for various guns and cartridges are printed in large, easily read type on the back of the canister. The label is lacquered so that any dirt or stain can be removed easily with a damp cloth without in any way destroying the ballistic information printed on the label.

ALL ABOARD FOR BISLEY!

To the average person, the mention of England and the summer of 1937 means the Coronation and all the pomp and ceremony so dear to the English heart. To the shooter it means the Bisley matches, the chance of competing with our English cousins on the rifle range, and, above all, the opportunity of bringing the Pershing Trophy home to America.

A squad of the best small bore shooters in America, under the leadership of Ned Moor, will be in England to participate in the Bisley Matches, scheduled during the week of July 5 and to shoot for the Pershing Trophy, which Great Britain now holds. The actual match team competing for the Pershing Trophy will consist of ten shooting members, two alternates, Team Captain Ned Moor, Coach Thurman Randle, and Adjutant R. H. McGarity. The course will be 20 shots at 50 yards and 20 shots at 100 yards, using any kind of iron sights.

The American sharpshooters are keenly anticipating this competition as it marks the first opportunity in six years of winning the trophy donated by General John Pershing. In 1931, the first year of the competition, the American team went down to defeat by the score of 3927 to 3925, just three points short of bringing the trophy to America.

The National Rifle Association is arranging accommodations for shooters wishing to visit Bisley with the team. Write to National Rifle Association, Barr Bldg., Washington, D. C., for details of this Shooters' Tour.

HERCULES POWDER COMPANY
INCORPORATED

980 Market Street Wilmington, Delaware

The AMERICAN RIFLEMAN

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JUNE, 1937

N. R. A. SERVICE

LEGISLATIVE DIVISION: Looks after the interests of the shooters in Congress and State Legislatures, carries on the organized fight against unsound anti-gun laws, encourages legislation for the aid of civilian rifle practice and assists members to obtain permits to carry firearms to and from a range in states requiring such permits.

THE AMERICAN RIFLEMAN: This magazine is the official monthly publication of the N. R. A., and as such is "The Voice of the N. R. A." Non-political and non-sectarian in policy and free from commercial domination, it can and does speak freely, frankly and with authority on all shooting matters.

TECHNICAL DIVISION: Helps members with their personal shooting problems, reports in *THE AMERICAN RIFLEMAN* each month practical tests and critical examinations of new guns and equipment, and gives by personal letter advice on the selection of the right gun for a specific purpose, reloading, restocking, etc.

CLUB SERVICE DIVISION: Assists shooters in organizing local rifle and pistol clubs, furnishes detailed diagrams for the construction of regulation indoor and outdoor ranges, suggests a varied program and competition to keep up the interest of members, and generally assists affiliated units by passing along the successful experiences and ideas of other clubs.

MEMBERSHIP EXTENSION: Operates as a service division by furnishing members with sales literature and printed information so that they may explain to fellow sportsmen the value and benefits of N. R. A. membership and, moreover, because increased membership means an extension of N. R. A. service, it serves to benefit members in this way.

COMPETITIONS DIVISION: Conducts a year-round program of home-range matches in which members may win distinctive medals while practicing at home with rifle and pistol, aids state associations and civilian clubs in planning and conducting regional, state and local shooting matches, and gives members helpful personal advice on their individual target-shooting problems.

JUNIOR DIVISION: Provides individual and club memberships for junior shooters, boys and girls alike; conducts a year-round program of competitive and qualification shooting, and teaches Young America how to handle firearms safely and properly. No father should hesitate to support its good work.

POLICE DIVISION: Assists police departments in marksmanship training of their officers. Through the Association's far-flung contact and with the aid of experienced hands to carry on the work, this division is performing a public service which warrants the support of every good citizen.

PUBLICITY DIVISION: Endeavors to educate the American public through the public press to the fact that the man who likes to shoot is not a criminal and, although its services are intangible in character, it represents an important chain in the campaign "to make America, once again, a Nation of Riflemen."

Officers of

THE NATIONAL RIFLE ASSOCIATION OF AMERICA

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CONTENTS

Cover Photo

Courtesy of Sherwin Murphy. Shows portion of firing line on Fort Sheridan (Ill.) rifle range.

Powder Smoke	4
Vacation Echoes of 1936—Part 1	5
<i>By N. H. ROBERTS</i>	
An Old-Timer Speaks	9
<i>By R. C. WARD</i>	
Hunting Marmots in the Rain	10
<i>By ALLYN H. TEDMON</i>	
George Titherington, Barrel-Maker	12
<i>By HENRY J. ADAMS, JR.</i>	
A Chronograph for Hand-Loaders	15
<i>By JOHN M. MALONE</i>	
The Value of Shotgun Patterns	19
<i>By A. P. CURTIS</i>	
Woodchucking With a .22-3000 Lovell	23
<i>By BYRON E. COTTRELL</i>	
The Colt Dragoon on the Plains	24
<i>By T. B. TRYON</i>	
Shooting Takes to the Air	26
<i>By C. R. ROGERS</i>	
A Decoy Hunt for Lynx	28
<i>By HENRY F. ZINNER</i>	
Short Articles	30
N. R. A. News Items	31
Dope Bag	46
Arms Chest	58

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POWDER SMOKE

The Pershing Trophy Team

RIFLE and pistol shooting as it is viewed by most members of the National Rifle Association is a hobby and a sport. Men engage in hobbies and in sports for only three reasons—to find recreation, entertainment and competition. To every sportsman the peak of entertainment is represented by the establishment of a new record, by the winning of a National Championship, or by victory in an International Championship.

The selection of an American Team to make the trip to England in an effort to bring back to the United States the Pershing Trophy typical of the World's Championship over the Small Bore Dewar Course has naturally, therefore, been the focal point for the interest of American small bore riflemen ever since it was announced last year that such a team would be sent abroad.

The team is now announced to be constituted as follows:

Mr. E. N. Moor, Jr., Team Captain
Mr. Thurman Randle, Team Coach
Mr. R. H. McGarity, Team Adjutant

Team Members:

Mr. V. Z. Canfield
Mr. Dave Carlson
Mr. E. A. Craven
Dr. Russell Gardner
Mr. V. F. Hamer
Mr. Merle Israelson
Mr. R. D. Lambert
Mr. L. A. Pope
Mr. Wm. P. Schweitzer
Mr. Wm. G. Summerall
Dr. E. O. Swanson
Mr. Wm. B. Woodring

This team was selected by the team officers principally on the basis of the reliability of high average performance under a variety of shooting conditions as indicated by the records of the Registered Small Bore Tournaments during

1937. In one or two cases the tryouts held during May indicated that a man's physical condition was not up to the high standard required for the long ocean trip and adaptation to new foods and new living conditions in England, so that in those cases men whose scores averaged high during 1936 naturally were not included on the team roster. These are the kind of "breaks" that come in every sport, and it is the sincere wish of those who had charge of the selection of the team this year that these particular men will rapidly recover good physical condition and will be able to indicate by their performance during coming Registered Shoots that they are suitable material for whatever team or teams will be sent abroad in 1938.

The team as nominated by the team officers was approved after thorough discussion but without alteration by the Executive Committee of the National Rifle Association at its meeting in Washington on May 15th.

A number of shooters who were not fortunate enough to make the team have already indicated their intention of going to England to root for the Americans during the Matches at Bisley.

The history of sport is studded with examples of individuals and teams who have staged almost superhuman performances to win, largely because of the whole-hearted interest and enthusiastic moral support of the "folks back home." Every American shooter, whether his interest lies in the direction of the small bore or some other form of the sport, should do whatever may be in his power to indicate to these fifteen men that they have the unselfish and undivided support and that they carry the high hopes of every American shooter on the firing line at Bisley.

The **AMERICAN RIFLEMAN**

JUNE, 1937

Vacation Echoes of 1936

Part I

By N. H. ROBERTS

FEARING that they might become a bore, I omitted writing my Vacation Echoes last Fall. However, during the past few months many persons have written to ask that I continue them.

A Super-accurate .257 Roberts Rifle

During the winter, year before last, while my range was covered with snow so deep that I could not shoot there, I spent much time and thought planning a new .257 Roberts rifle that I hoped would prove superior to any other arm of this caliber that I had had. For this rifle I selected the Mauser action with double set, trigger, to which I had fitted a special Winchester Proof Steel barrel 26 inches long, $1\frac{1}{4}$ inches in diameter at the breech, and 1 inch at the muzzle. It was cut with a 9-inch twist, the bore diameter being .250-inch. The groove diameter at the breech was .2570-inch, with a straight taper to .2568-inch at the muzzle. The barrel was designed especially to keep the 117-grain bullet from tipping at all ranges, and to give the very finest accuracy possible. It was through the interest and kindness of Mr. Pugsley, Vice-President of Winchester, that I was able to get this barrel cut just as I wished it, and one year's use has proven conclusively that it is by far the most accurate barrel of this caliber that I have ever owned.

After I had received the barrel from Winchester it was sent, with the action and a fine French walnut stock blank, to Griffin & Howe, where the barrel was fitted to the action, and very closely chambered, according to my specifications, for the .257 Winchester-Roberts cartridge. The barrel was polished and blued after the stock blank had been very carefully inletted. All of this work was most skilfully done by the master-workmen of this well-known firm of rifle-makers.

Upon receipt of the rifle from Griffin & Howe, I carefully shaped the outside of the stock to suit my ideas, and fitted an ebony forearm tip, a butt-plate with trap, and a pistol-grip cap. I then smoothed the stock, applied the linseed-oil finish, and finally completed the rifle, which without telescope or sling weighs 12 pounds 2 ounces. I enjoy shaping and finishing the stocks for my rifles, but have not the time or the necessary skill and tools for the inletting and bedding, which as all riflemen know is one of the most important matters in the production of a really super-accurate rifle. It makes no difference how

accurately the barrel is bored and rifled, chambered, finished, and fitted to the action, the rifle WILL NOT show fine accuracy if the inletting of the stock is not done CORRECTLY by a skilled and competent workman.

As I have never learned to do good checking on stocks, I had this work done by my friend Floyd Butler, of Raceville, New York—an amateur gunsmith who does most excellent work. The checking is of medium-size diamonds without the usual border, and greatly improves the appearance of a fine stock.

When all this had been completed the rifle was equipped with a Unertl $1\frac{1}{4}$ -inch-objective 12-power telescope—and I was ready to kill woodchucks at long range, or to make small groups on the target at any reasonable range.

Here I might say that I, personally, consider the Unertl $\frac{1}{4}$ -inch-objective 12-power scope to be the very finest rifle telescope that I have ever used—and during the past forty-odd years I have owned and used all makes, kinds, and descriptions of scopes. I now own, and constantly use, Unertl, Souther, Fecker, Lyman, Winchester 5-A, and Malcolm telescopes, and speak from long experience. I have no financial interest in the Unertl scope, and John Unertl did not give me anything; but last year more than one hundred gun-bugs wrote me asking: "What target telescope do you use and recommend?" My answer is that I use all those mentioned above, and recommend them all; but my own particular "pet" happens to be the Unertl $1\frac{1}{4}$ -inch-objective 12-power, for target shooting and testing rifles at all ranges.

Along the Connecticut River in northern New Hampshire and Vermont are fine broad meadows where the woodchucks feed on the clover, and afford fine long-range shots for the rifleman. Accordingly, one Saturday when the weather was fine, my wife and I—and the new .257 Roberts rifle—motored to this "promised land of the woodchuck." As we drove along the New Hampshire highway my wife spied a fat chuck across the Connecticut River in a Vermont meadow, offering a really long-range shot. I pondered "what is the distance to that chuck?" The meadow on the New Hampshire side, from the highway to the river, was probably 200 yards wide, the river was about 85 yards wide at that point, and the chuck was at least 150 yards beyond the Vermont shore of the river. The scope was adjusted for 300 measured yards (the longest range

at which I had then tested this rifle), and a small cushion was placed on the hood of the automobile upon which to rest the rifle. The extra wheel carried on the side of the front mud-guard afforded a steady rest for the butt of the rifle. Through the 12-power telescope the chuck appeared to be comparatively near. I waited until the animal sat up on the mound, and then placed the cross-hairs approximately a foot above his head. Then I carefully touched the set trigger, and with the report of the rifle my wife, who was watching through the binoculars, exclaimed: "You got him!" Looking through the scope I could plainly see the chuck lying on its back apparently two feet behind its mound, where it had been thrown by the impact of the bullet. It was quite still. Soon we saw the tail waving farewell, and thus were certain that the animal was dead.

An accidental shot? Perhaps; but with the .257 rifle equipped with a first-class target scope, shooting from a good rest a skilled marksman who can judge distance and wind will in this way very frequently kill woodchucks at such long ranges. My cartridges were carefully hand-loaded with 41 grains weight of duPont No. 4064 and the 100-grain Remington-

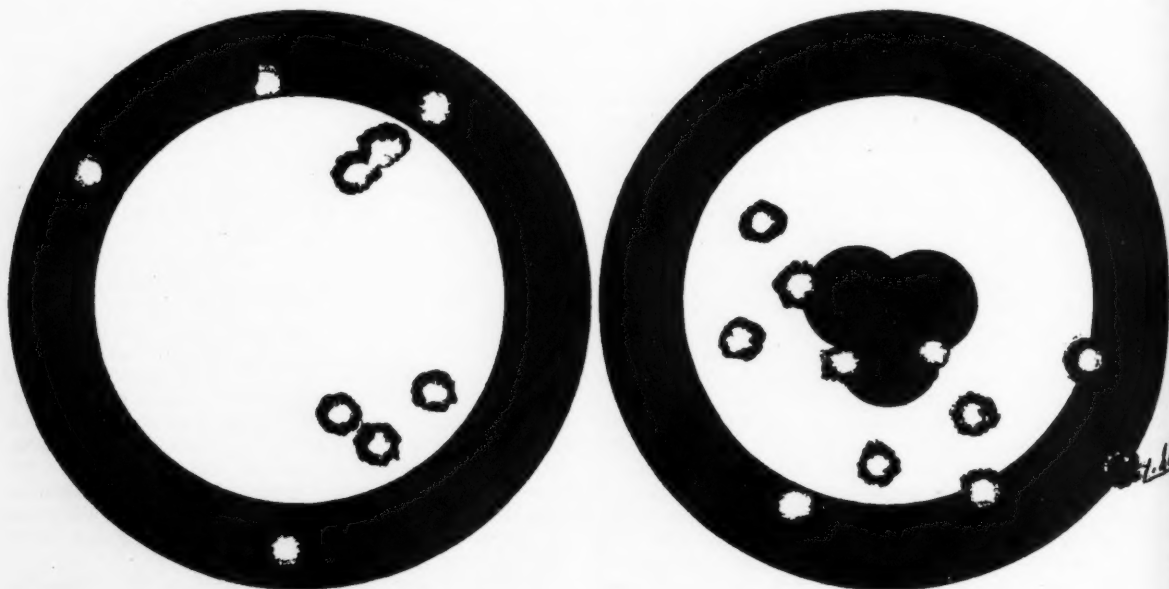
record showed that I had fired eighteen shots and killed ten chucks, the shortest range being 232 paces, and the longest kill 435 estimated yards. One chuck at 400 yards (estimated) was shot at and missed three times before it decided that it was in unhealthy territory and refused to be a target any longer. I was convinced that the new rifle was indeed extremely accurate.

The Griffin & Howe .276 Dubiel Magnum Rifle

Early in the spring a fine Mauser rifle for the .276 Dubiel Magnum cartridge came from Griffin & Howe, and was thoroughly tested at all ranges, including 500 yards. This rifle had a medium-weight 26-inch barrel, Lyman 48 rear sight, and ramp front sight. Scope blocks were attached. This .276 Dubiel Magnum cartridge case is made by reshaping the Western .275 H. & H. Magnum belted case. It uses the 139 and 160-grain boat-tail hollow-copper-point bullets made by the U. S. Cartridge Co., as well as the 175-grain soft-point and open-point bullets now on the market. The rifle without scope or sling weighs nearly nine pounds, but it can be furnished in lighter weight

ular actions such as the Springfield, Mauser, Winchester Model 70, etc., handle it, the long Magnum actions not being necessary.

Shooting from the sitting and prone positions, using the Lyman 48 rear sight and cartridges loaded with the above weights of bullets, I found this rifle to be very accurate indeed, and it shot closer than I could hold with iron sights. When shot from bench rest with my 8-power Fecker scope it gave better accuracy than I get with my National Match Springfield using the same scope. For 200-yard shooting the N. R. A. 100-yard target with 3-inch bull was used in all tests with scope. For 300 yards the N. R. A. 100-yard target with 6-inch bull was used, while for 500 yards I used the Standard American with 8-inch black. At these ranges, shooting from bench rest, I had no trouble in keeping ten consecutive shots in the black of these targets, using the 160-grain B.-T. H.-C.-P. bullet, the Western 175-grain boat-tail soft-point and open-point bullets, and the same weight flat-base bullet made by the Remington Arms Company. With the 139-grain open-point bullet of Western and Remington makes, the groups averaged 4½ inches at 200 yards, and 8 inches at



Roberts open-point bullet, giving a muzzle velocity of approximately 3100 f.-s., and grouping in one inch at 100 yards.

This was but one of the long shots that I had at chucks that day, but it happened to be the longest range at which a kill was made. On this occasion I passed up all chucks that were less than 200 yards away, as I wished to give the animals a fair chance against this new rifle. At the end of the day the

Left: 11 shots at 300 yards bench rest, .257 Roberts-Winchester C. & H. Mauser rifle, 12X Unertl scope. No. 115 Winchester primer, 39 grs. No. 4064, 117-gr. Remington-Roberts open-point bullet. Shot by author Sept. 13, 1936

Right: Average 10-shot group at 200 yards bench rest from same outfit, with 38 grs. No. 3031, 117-gr. boat-tail open-point bullet, F. A. No. 70 primer. Shot by author July 2, 1936

when desired.

One of the chief advantages of this .276 Dubiel Magnum cartridge is that the reg-

300 yards, while at 500 yards these lighter bullets fell off considerably in accuracy even when there was little or no wind, averaging 12 inches at this distance.

The following hand-loads were tested at the ranges mentioned: 50, 51, and 52 grains weight of duPont No. 15½ with Western and Remington 139-grain open-point bullets; 47, 48, 49, and 50 grains weight of No. 15½ with the 160-grain boat-tail hollow-copper-

point bullets; 45, 46, 47, and 47.5 grains weight of No. 15½ and the 175-grain Western boat-tail open-point and soft-point bullets. Winchester No. 115 and No. 115½ primers were used in all hand-loaded ammunition. The finest accuracy at all ranges was had with: 51 grains of No. 15½ and the 139-grain bullet; 48.5 grains and the 160-grain bullet, and 47 grains with the 175-grain bullet.

The rifle with these different loads was tested for killing power by shooting into blocks of paraffine at 150 yards, and comparing the performance with that of a .30-'06 using 180-grain open-point bullets. Apparently the .276 Magnum has killing power equal to that of the .30-'06-180 cartridge, while with the 160-grain bullet and 50 grains of powder it is quite superior to the .30-'06. When tested at 50 yards on a 1500-pound draft horse that had died the day before, the .276 with 50 grains of powder and 160-grain bullet caused greater destruction of tissue and appeared to have greater killing power than the .30-'06 with 51 grains of No. 15½ and 180-grain open-point bullet. Elmer Keith in his "Big Game Rifles" says: "The .276 Magnum made from the .275 H. & H. Magnum case, is really the finest long-range cartridge for all species of game that it is possible to build on these actions"—meaning the standard Springfield, Remington, Winchester, and Mauser actions.

It is quite probable that I killed the first big game on this continent that fell to the 7-mm. rifle, as my late friend Sir Charles Seaton-Kenton brought the first sporting model 7-mm. rifle to Canada in the autumn of the year in which this fine cartridge was first placed upon the English market. I used that rifle with the 150-grain "dum-dum" bullet and the 175-grain soft-point while on a month's trip with Sir Charles in the Lake Mistassini region of Canada, killing moose, caribou, and bear with it with a single shot. The 7-mm. cartridges of those days were quite inferior in velocity and killing power to the present-day 7-mm., yet Sir Charles was so impressed with the killing power of that rifle that the next year in Ceylon he used it with solid-point bullets on elephants, and had no trouble in bagging several with it. Since those days the 7-mm. rifle has been a favorite of mine for moose and caribou, and the .276 Magnum is equally as accurate, much more powerful, and a far better killer than the 7-mm. ever was; and I believe is a better killer than the .30-'06.

On the Range

During July many pleasant days were spent with my friend F. J. Sage on the range of the Goffstown (N. H.) Rifle Club,

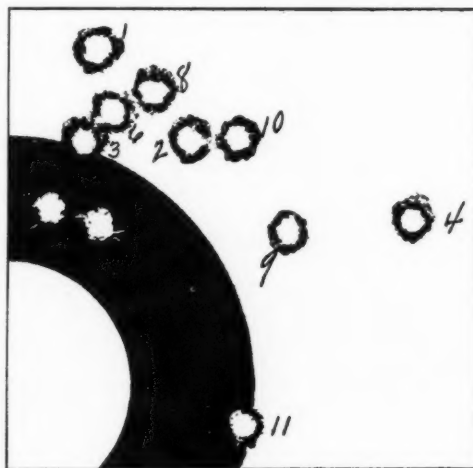
where we tested my new .257 Roberts rifle and Sage's .25 Krag Springfield at 300 and 500 yards, shooting from bench rest, with telescope sights. During the winter Friend Sage had had the Niedner Rifle Corporation fit to his Springfield action a heavy barrel the same size as mine, with a 9-inch twist. This rifle has a double set trigger, and is equipped with a fine 12-power Souther telescope. Thus we had two fine heavy-barrel .25-caliber rifles with which we hoped to obtain much finer accuracy at all ranges than our former rifles of this caliber had shown; and in this we were successful.

As the new duPont No. 4064 powder had not been tested by us to any extent, we were anxious to determine whether or not it was really more accurate in these .25-caliber rifles at 200, 300, and 500 yards



10 shots at 100 yards rest, .25-caliber Roberts rifle, 8X Fecker scope. F. A. No. 70 primer, 18.5 grs. No. 4227, 117-gr. Western boat-tail open-point bullet. Shot by Manley A. Butts, Sept. 26, 1936

than was the No. 3031 powder that we had previously used. A detailed report of the many tests that we made with all the different charges of the various powders and



Showing effect of bullet out of round, and of bullet 1 grain heavier than others. Bullet No. 4 was .0005-inch out of round; bullet No. 11 weighed 118 grs.

the 100 and 117-grain bullets during our three weeks on the range would only bore my readers. Suffice it to say that we finally decided that the most accurate-shooting loads at 500 yards in my rifle were 38.5 or 39 grains weight of No. 4064 with the 117-grain boat-tail open-point bullet,

or the 117-grain Remington-Roberts open-point bullet, while in Sage's .25 Krag case the most accurate load was 37 or 38 grains weight of this same powder, and the same bullets. Using the 100-grain open-point Remington-Roberts bullet, we decided that the most accurate load was 42 grains of No. 4064 in my rifle, and 41.2 grains of the same powder in Sage's rifle. On days when there was little or no wind we obtained as fine accuracy at 500 yards with the 100-grain bullet as with the 117-grain one, but of course the heavier bullet had the advantage when it was windy.

For our 500-yard shooting we use the Standard American target with 8-inch bull, in the center of which we paste a 4-inch square of white paper, which we can readily quarter with our 12-power telescopes and thus obtain very uniform holding. We draw a 10-inch circle outside the 8-inch black, and count all hits in the 10-inch ring as a V in scoring. Our constant endeavor was to keep all ten shots in the V-ring every day, but this we failed to do on many days, as July was a very windy month in that section. Mr. Sage's two smallest groups during this time were 10 shots in an 8¾-inch circle, using 37.4 grains of No. 3031 with the 117-grain boat-tail open-point bullet; and 10 shots in a 9¾-inch circle with a load of 41.2 grains of No. 4064 and the 100-grain Remington-Roberts bullet. On this first target 9 bullet holes made a 6½-inch group, while on the second, 9 bullets grouped in 6 1/16 inches. My own smallest groups at this range were 10 shots in 9¼ inches, with 9 of these in a 7-inch circle; and 10 shots in 9 inches, with 9 bullets in a 6½-inch group; both of which were made with 39 grains of No. 4064 and the 117-grain Remington-Roberts bullet. In spite of our most careful wind doping we had the misfortune to get one or two bullets out of the rest of the group, thus enlarging what would otherwise have been extremely small groups for 500 yards. It is our candid opinion that these two rifles, with the best loads and carefully selected bullets, will, when it is not windy, keep ten consecutive shots in the 8-inch bull at this range when using 10 or 12-power telescopes, and shooting from bench rest.

In order to make the smallest groups at from 100 to 600 yards with these rifles we find it necessary to carefully weigh each bullet on scales sensitive to one-tenth grain, and also measure every bullet with a micrometer, so as to be sure that all bullets in a given lot of cartridges shall weigh exactly the same, and be of exactly the same diameter. We find that the best commercial .25-caliber bullets have in every box of fifty about

four different weights and two or three different diameters. In the case of 117-grain bullets, our Fairbanks scales show that the weights run about 116, 116.5, 117, and 117.5 grains in each box. Then we caliper each bullet of the four different weights. We put into one box all the 116-grain bullets that measure .2570-inch in diameter, while those that are .2575-inch in diameter are placed in a separate box, and all plainly marked. Then we do the same with the bullets weighing 116.5, 117, and 117.5 grains, respectively. Thus when we load a box of cartridges we are able to know positively that every cartridge has a bullet of exactly the same weight as the rest in that box, and that all bullets are of the same diameter; all of which makes for increased accuracy at any range. All this takes time, of course, but we find it very necessary in order to eliminate the off shots that ruin small groups with these .25-caliber rifles.

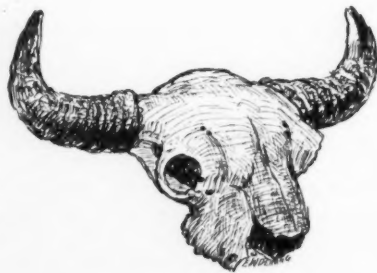
Speaking of bullets, very few, indeed, of the .25-caliber bullets on the market are really *round*, and when we caliper our bullets we discard any that are out of round to any great extent. The roundness of the bullets varies with different makes, and different lots of the same make, and it is not at all unusual to find in any box of the best factory-made bullets some that are as much as .0005 out of round. We have repeatedly proved that these out-of-round bullets do not shoot as accurately as those that are more nearly round. The fact is that improvements in the manufacture of bullets have not kept pace with the recent improvements in smokeless powders, and if we could get .25-caliber bullets—or any others—that were uniform in weight and diameter, and were all perfectly round, we could make much smaller groups at all ranges than is now possible.

The new duPont, I. M. R. smokeless powders give much finer accuracy and higher velocities with lower pressures in the .25-caliber rifles than any powder we have had before, and we find that No. 4064 is more accurate in these rifles than No. 3031, with the 100 and 117-grain bullets. With the 87-grain bullet we believe that we get better accuracy and higher velocity with No. 3031.

For the benefit of users of .25-caliber Roberts rifles who like somewhat reduced loads that are really super-accurate, especially for 100-yard shooting, I will say that Mr. Manley A. Butts, of Bradford, Pennsylvania, reports to me that the two following loads give him, on the average, 10-shot groups of $\frac{3}{4}$ -inch or less at 100 yards, rest, using telescope sight: 18.5 grains weight of No. 4227, with the 117-grain Western B. T. O. P. bullet, and 28.5 grains weight of No. 4320, with the same bullet. Mr. Butts has sent me a number of 10-shot groups that he fired with these loads at 100 yards rest, which show all

bullets in a $\frac{5}{8}$ -inch circle. At an iron-sight turkey shoot at 100 yards rest last autumn Mr. Butts scored 30 consecutive shots in the 1-inch X-ring of the N. R. A. 100-yard target, using the first load mentioned above; and on another occasion he made a 10-shot group with the second load at 200 yards rest in which all bullets grouped in a $1\frac{3}{4}$ -inch circle. These loads tested in my own .25 Roberts and .257 Roberts rifles, using a 12-power Unertl scope, average $\frac{3}{4}$ -inch at 100 yards, with frequent $\frac{5}{8}$ - and $\frac{1}{2}$ -inch groups; while at 200 yards rest, with load No. 2, I get 10-shot groups measuring 2 inches or less when there is little or no wind. These loads are very easy on cases and barrel, and will prove most excellent for riflemen who do not care for the highest velocity, but wish to retain the gilt-edge accuracy of their barrels as long as possible. Load No. 1 gives an estimated muzzle velocity of 1800 f.-s., while the muzzle velocity of the second load is about 1950 f.-s. With these loads we get the best accuracy by using F. A. No. 70 primers, although Winchester No. 115 primers give almost as fine groups in my rifles.

During our last week on the range we were joined by our friends Joseph E. Morrell and the late Robert C. Hussey, of Whitinsville, Massachusetts, for our "Annual 500-yard Match." Both had with them their .25-caliber Roberts rifles built on Springfield actions by Niedner several years ago, and equipped with telescope sights; and both of these men are most excellent shots. They spent two days with us, shooting at 500 yards from bench rest, and like Sage and myself their chief ambition was to keep ten consecutive shots in the 8-inch bull. However, as we had strong winds during those days, they were unable to accomplish that feat. We each made many perfect scores on a 12-inch bull during those two days, as well as numerous others with 9 shots in the 10-inch V-ring, and with 9 shots in the 8-inch black. However, Doctor Mann's "X Error" always managed to creep in and prevent our making the perfect score of 10 shots in the 8-inch bull. But we all had a good time discussing the various points that riflemen are always discussing, and planned to make that perfect score next year.



Little did we realize that it was the last time our friend Robert C. Hussey would ever shoot with us, but early in September we were greatly saddened to learn of his death. He was really a great rifleman—a very scientific shooter of the old school as well as of the modern. Mr. Hussey was a very intimate friend of the late Dr. F. W. Mann, and it was he who made Doctor Mann's first V-rest, with which the Doctor conducted his earlier experiments. This first V-rest was made of rock-maple planks, and proved so successful that later a similar one was made of iron by Mr. Niedner. Mr. Hussey shot with Doctor Mann for years, and as he was a highly educated man he was much interested in the scientific side of rifle shooting. He was for years a member of the Massachusetts Rifle Association, and shot there a great deal in the old days. He was also among the first riflemen who succeeded in making a perfect score of 10 consecutive shots in the 12-ring of the Standard American 200-yard rest target, his score being made with a .38-55 rifle using the 330-grain Chase patched bullet. The rifle was a Winchester S. S., and used a black-powder load with a small priming charge of low-power smokeless powder.

Mr. Hussey was also intimately acquainted with nearly all the expert off-hand riflemen during the 1880's and 1890's: Rabbeth, Jewell, Pope, C. H. Brown, Major Hinman, J. Francis, Patridge, N. S. Brockway, Richardson, G. H. Wentworth, William Hayes, G. H. Bixby, Horace Warner, D. F. L. Chase, and a host of others. Six or eight years ago when I had about decided that it was impossible to produce any .25-caliber rifle that could be depended upon to keep ten consecutive shots in a 1-inch circle at 100 yards, Mr. Hussey, with his friends Mr. Morrell and Mr. Newbegin, decided to lend a helping hand, and ordered special rifles from Niedner, with barrels designed by Mr. Hussey; the rifles to handle the .25 Roberts cartridge. When these rifles arrived Mr. Hussey stocked them in a way that very few stockers ever equalled, as he was a very skillful worker in wood. With these rifles this group of riflemen finally solved the problem of making 1-inch 10-shot groups at 100 yards—any day, every day. I personally owe a debt of gratitude to Mr. Hussey for his encouragement and assistance in the final development and perfection of the .25 Roberts cartridge. He was a man of sterling character, loved and greatly respected by all who knew him, and one of the Straight Shooters of the rifle world.

In Part II of this article I shall tell of my experiments with the Griffin & Howe .22-caliber Improved Magnum rifle, as well as something of my trip in August to that part of Canada where "fur was king" from early in 1600 to about forty years ago.

An Old-Timer Speaks

By R. C. WARD

I ARRIVED in Western Montana when fifteen years old. The bag limit on deer then was six, with no game warden and lots of game of all kinds. Grouse were plentiful everywhere along the rivers and high up in the mountains. To be sure of a good dinner at any time or any place, all one needed was a .22 pistol and a frying pan. In those days, when we went hunting we went out after our winter's meat. We expected to come back with our wagons or sleighs loaded down with meat, and we did.

One of the first hunting trips I took in Montana was on Howard Creek. I went with a neighbor—an old hunter by the name of Dave Van Blaricom, who was a wonderful game shot in his day. Dave used a .45-caliber Sharps rifle, and black powder and cast bullets in handloads. The first day out I saw Dave jump a bunch of mule deer, and with seven shots pull down six of them, not one of the six going more than 60 feet after being hit. I was using a big .45-75 Winchester repeater, with the old short bottle-necked cartridge having a 350-grain bullet and a velocity of about 1400 feet, the way I loaded it. With this rifle I got my six deer in the next two days, and each deer dropped in its tracks when hit. I shot my deer standing in those days, as I weighed only 115 pounds while the rifle weighed 15 pounds. After this hunting trip I named this rifle "Sudden Death," for it surely was that. Since those days I have used almost every type of rifle and bullet on big game.

After shooting a number of elk, deer, and bear with the old .45-75, like all other hunters I thought I must have a high-power rifle, and so bought the latest thing out—the .30-30 Winchester. It was a beautiful little gun, and with it I thought I had the world by the tail on a down-hill pull. The first deer I shot with it went over the hill, as if I had missed. I took the track and followed it, and found my deer dead—shot through just back of the heart. I shot many deer in the same place with the old .45-75, and most of them either dropped in their tracks or did not take more than a few jumps before going down. The exit hole of the .30-30 bullet was twice as large as that of the .45-75. Why then the slow death? I went from the low-velocity loads up to the extreme high velocities of my time, and still found the slow, heavy, cast bullets to be the best killers.

In 1915 A. O. Niedner made for me a .25 Niedner close-chambered rifle using the .30-'06 case necked down to .25 cali-

ber. This was a remarkably accurate rifle, and with it I won hundreds of turkeys. I shot deer, elk, bear, and mountain goats with it, using the 100-grain open-point Western bullet at velocities from 2800 to 3300 foot-seconds. It was a good killer on deer, but still the old .45 cast bullets rated higher. While hunting with an old friend by the name of Bill Ryan—a mail clerk on the Northern Pacific Railway—I shot a black bear through with the .25 Niedner at long range, and it ran about 300 yards over to where Bill was standing, and he finished it off with a .270 Winchester.

In the fall of 1920 my two brothers and I hooked up four horses to a covered wagon, and set out for the elk country at the head of Dunham Creek in the Monture country, about 85 miles by road and 20 miles by pack horse from Missoula, Montana. My brother Verne had a .30-'06 National Match Springfield, Ollie had a .22 Hi-Power Savage, while I carried a .45-90 Winchester which had been made to order with a light nickel-steel barrel. For loads I used the 300-grain metal-patched soft-point bullet at a velocity of 1960 foot-seconds. I found this to be a wonderful big-game rifle, although it was laughed at by many .30-'06 men.

The first elk shot on this trip was killed by Ollie with the .22 Hi-Power. Now, Ollie was a real game shot, and could place his shots on running game—and I don't mean maybe. A spike bull elk tried to run past Ollie, and he gave him one of those 70-grain soft-point bullets in the left lung. The bull swapped ends and started back on his tracks, so Ollie gave him another 70-grain slug in the right lung, but the bull went on down hill past our camp, and up the other side of the mountain. We followed until dark, and then returned to camp. Knowing how Ollie shot, the next morning I took the trail with the determination to track that bull down, even if it kept me out over night. I wanted to see where the bull had been hit, as I had used the .22 Hi-Power myself, and could not understand why the animal did not drop after those two lung shots.

I found the spike bull lying dead on the divide at the head of the Cottonwood, 13 miles from where he had been shot. The bullet holes were where Ollie had said they were—one on each side. The little soft-point bullets had blown up in each lung, leaving only the little entrance holes. As the bull had begun to swell I could not save the meat, so started back to camp, and was lucky in securing my own elk on the way back, just before dark and not

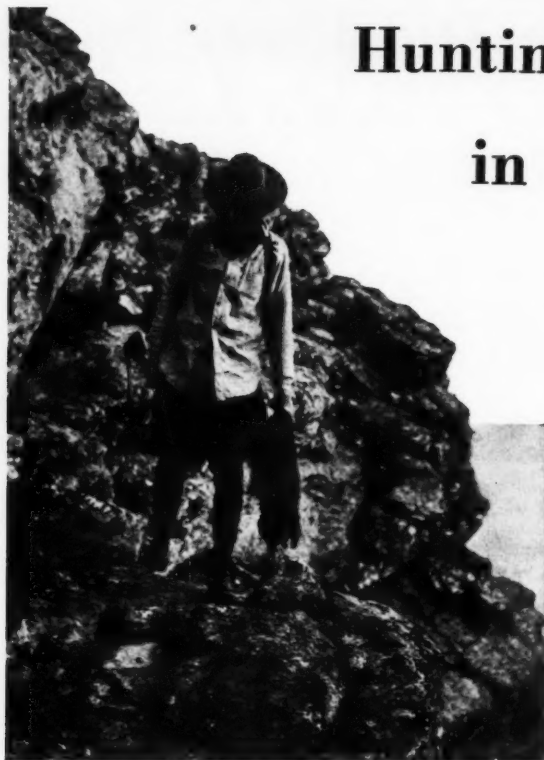
more than half a mile from camp. He was standing broadside, feeding on a bush about 75 yards down hill. I was tired, as I had covered almost 30 miles that day in rough country, so I took the sitting position I had learned from Major Dooley at Caldwell in 1919. Holding high and back of the shoulder—my favorite spot, I squeezed the trigger. When the .45-90 bullet struck, that old six-point bull went down like a ton of bricks. Having learned a long time before not to walk up to a wounded elk, I listened and waited; but all I could hear was the boys chopping wood near camp. When I walked down to the elk he was stone dead; in fact I don't think he even wiggled a hoof after being hit. When I pulled into camp Verne showed me a flour sack with an elk heart in it that nearly half filled the sack.

In later years I have been using a .30-'06 Springfield with a Niedner barrel made to order for extra-high-velocity loads. It is a fine rifle. For the last deer I shot with this rifle I used the 150-grain 300 Magnum open-point bullet made by the Western Tool and Copper Works—a wonderful bullet for high-velocity game loads. Hand-loaded to 3100 foot-seconds, the pressure is quite high. When I killed this last deer I was hunting with my son Irvine, and decided to use some of my old hunting experience; so I slipped around ahead of the boy, and sat down on a log to wait. (It seems as time goes on I am getting better at sitting on a log than anything else.) Anyway, I had not sat more than ten minutes when I heard a rock roll down the side of the hill, and here came my buck—a dandy white-tail. He was coming straight to me, and as I waited he came along as unconcerned as if he were the king of the woods. I waited until he was opposite me, and broadside, at about 50 feet, but as I raised the rifle he saw me and jumped what seemed to me about twenty feet in the air. However, before he came down I had planted the 150-grain bullet back of his shoulder, but much to my surprise he hit the ground running. I worked the bolt, and as he appeared through the brush again I planted one more bullet back of his shoulder—but still on he went. Knowing that he was hit I made no effort to shoot again, and after a few jumps he fell dead. The two bullets had gone in the same hole but they came out about six inches apart. Both bullets had struck the heart, yet this buck stayed on his feet until dead. That old .45-75 did not perform this way. Why?

Hunting Marmots in the Rain

By ALLYN

H. TEDMON



"This marmot was a large male"

IT HAS been our experience in Colorado that hunting marmots during a rain-storm in the Rockies is just about as fruitful as seeking a minister at a bank-robbers' convention. In the past, whenever we were gunning for marmots in the Red God's sky-pastures, and a rain-squall blew up, we blew up too, and quit. But there are exceptions to all rules. For example—

Last summer our eldest son Allyn and I made a trip over into one of our favorite marmot haunts. The camp site lies in the "V" of a deep, narrow valley where the spruce-clad mountainsides rise several thousand feet skyward, finally to fade into the wind-swept desolation above timber line. The hunting grounds proper are those tantalizing, ever-beckoning grim-granite summits that have gazed coldly down upon the changing face of the earth for countless ages. They saw the Flood, the forest of towering ferns, the giant reptiles, and the original mammal; and watched the first man come sneaking down the valley, fearful for his life. Our tent, with the faithful Chevy nearby, nestled in the aspens and spruces at the foot of the west wall.

As is our custom, we selected two light-weight rifles for the hunt. Allyn packed a single-shot which weighed scarcely 6½ pounds and handled like a dream. It was

fitted with an ivory-bead front and Lyman tang rear on this trip. My rifle, also a single-shot, was fitted with a Winchester 5-A scope, and weighed 7½ pounds complete with sling. Both rifles were .25-20 Single Shot caliber, but we were not using the same loads. I had brought my favorite speed-load of 16 grains of duPont No. 1204 powder behind a Remington 60-grain open-point bullet, while Allyn was shooting ammunition made up of 7 grains of duPont Shotgun powder behind an Ideal 67-grain cast bullet. This latter makes a very splendid small-game load that is heap bad medicine, with plenty of punch, up to 100 yards or so. The first load is strictly a varmint proposition, and far too destructive for rabbits or grouse, while this medium-power load kills small game quickly and neatly, and is a far more sensible load for every-day use. I killed hundreds of prairie dogs with a similar load years ago, long before the days of noncorrosive primers and modern rifle powders.

As neither of us was in first-class climbing condition, we made our packs just as light as possible, taking only extra shirts, a camera, canteen of water, pocket axe, etc. It was yet early when we left camp, and we took the going slowly, climbing and sitting as we mounted the hill. Finally, after what seemed an age of the

stiffest climbing, the unexpected whistle of a watchful marmot brought us to a halt a hundred yards or so below a series of cliffs that seemed to lean right out over us. We both willingly flopped down on the nearest rock to rest.

For twenty minutes we sat gazing straight up through our binoculars, searching the cliffs for game. Seeing nothing, we finally resumed our toil on up the heart-breaking slope—meanwhile keeping an eye on the bank of black clouds that rolled higher and higher into the sky over the head of the valley.

"Just our luck," I growled, knowing full well that in the next few minutes we would be shivering in a timber-line storm—and with all hope of a shot gone.

"You ain't telling me," panted Allyn, as we stopped for a mouthful of air. "All this he-man labor for nothing!"

Gradually the tumbling mass of clouds shut out the furnace rays of the sun. Like a plummet the mercury dropped in the tube. We had hardly labored our way two hundred yards higher, when big cold drops of rain began flying past like bullets. Several landed square on my face and shoulders, and we knew that there was no time to lose, so skinned out of our cotton shirts and as quickly jerked on our woolen ones. As we raced for a clump of wind-twisted Engleman spruce that clung pre-

cariously to that perpendicular mountain-side, we pulled the cotton shirts on over the flannel ones. Once under the shelter, we were kept busy ducking here and there under the thickest boughs in an effort to escape the downpour. Between times we rested, ate our lunch, and drank that beastly heavy water.

Ordinarily under the circumstances we would have turned back down the hill for camp: no use in seeking farther for marmots in such weather. But this time we were both determined to show this particular mountain that it couldn't make us quit, even though we were about all in. Therefore, after the first gale of wind and rain had blown itself out, we climbed on up the final pull, to the top. What a beautiful spot! What a reward for all our labor! And then, to our utter astonishment, we saw a huge marmot on a point south of us. We immediately unlimbered in a clumsy attempt to bag the audacious brute, but it was wise, and vanished before we could get in a shot. A marmot out in the rain! We stared at each other to be sure that we were awake.

For a long time we sat huddled on the skull-cap of that aged pile of granite, surveying the vast panorama. Far below, Middle Park reached out into the blue of the West—a vast mountain plain. To the East, Clear Creek threaded its way among the rugged hills, down to the crisp brown prairies. Then, to our great astonishment, Allyn sighted a second marmot taking the rain on the point of a cliff that seemed to hang out over the valley below. Here was something new to us. Two marmots out in the rain! What kind of a spook mountain was this?

Three or four hundred yards was far too long a shot for our artillery, so for the time being we turned from that hardy marmot to inspect some holes on a slope northwest of us, where, half a century or more ago, some hardy prospector had lugged his pick and shovel up twelve or thirteen thousand feet above sea level. Here he had dug and blasted along a showing of quartz in his search for yellow gold. Probably he was entirely oblivious of the grandeur about him—the scenic beauty that was the real gold.

Later, when we had finally wandered back to our first resting place, we were dumbfounded to discover

that the marmot of the cliffs below was still out, and apparently enjoying the weather. Who ever heard of a marmot deliberately taking the rain? Not we. Since the first squall, we had been alternately soaked and frozen, and this was a challenge that we could not pass up.

"Here's where we give Old Rain-in-the-Face the surprise of his life," Allyn chuckled, as we divided forces for the hard stalk.

Finally, far down the face of the mountain, we came together again for a council of war. Then Allyn scuttled down farther below, slipping from one granite block to another. From my perch, still high above the marmot cliff, I sighted the game for a moment. Suddenly the crack of Allyn's rifle echoed back and forth across the valley. I glimpsed a puff of rock-dust where his bullet had hit—a trifle low. Then I skipped and slid down to where he sat watching tensely, and cursing his low shot. During all this time the chill rain blew fitfully against our faces, but in spite of the soaking, that particular marmot continued to show itself. Never out long enough to give us a good shot, but just enough to tantalize us and prove that he was of sterner stuff than average.

After considerable discussion it was finally agreed that I should take the next shot, if one were offered. The light was fading rapidly but the rain never ceased.

and now and again I wiped my eyeglasses and the rear lens of the scope. How long I sat squatted down and shivering I do not know, but as we were about to abandon the stalk and start for camp because of darkness, the animal suddenly appeared, and with utter unconcern settled himself for one last siesta, his head just visible in a notch in the rim of the ledge.

I was tempted to risk a shot, but decided to wait for a better chance. The rain by now was a regular drizzle, and we became wetter and wetter. Then unexpectedly the marmot rose in his dignity, and vanished. What luck after all that waiting! But as suddenly he reappeared on the edge of the cliff, and stopped broadside to me. Instantly I placed the cross hairs behind his shoulder.

"Did you hit him!" exclaimed Allyn, jumping up. "That bullet lifted him clear off the rocks." It was now after five o'clock, and cold and gloomy, as we stumbled across the intervening sixty or seventy yards of slippery ups and downs, to gather in the game. Allyn climbed the cliff, and called down that the marmot had been "thrown eight feet across the rocks." Possibly it was not quite eight feet, but we found that the little 60-grain bullet had opened up on the three-quarter-inch layer of winter fat just under the hide, and had torn a 2-inch hole in the ribs. Some part of it had ripped on through a small hole on the far side of the animal.

This marmot was a large male, and had a beautiful silver-tip coat—one of the finest we have ever taken here. Later, when Allyn was skinning it, I reminded him of what Kermit Roosevelt had said of marmots in his book "East of the Sun and West of the Moon": that in Kulja "a good hide would bring three dollars." "It's worth three dollars to skin the blamed things," Allyn replied.

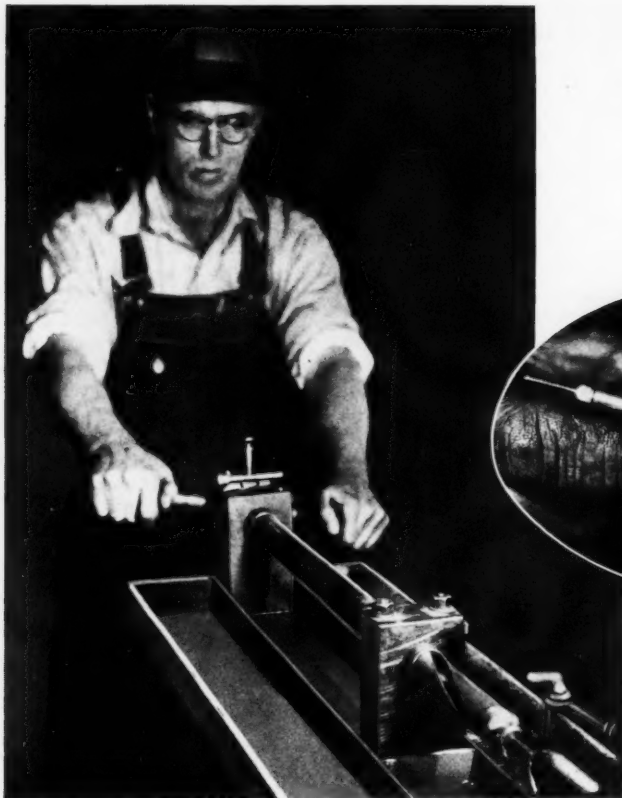
About 5:30 we set out for camp down the track of an ancient ice sheet, which was about like walking down the slate roof of some fine old

"I was tempted to risk a shot"

cathedral; and be it known that if anything it is harder work going down hill than climbing up! On this trip I had worn a pair of old shoes graced with the school-teacher's delight—rubber heels. Now take my advice and don't wear

(Continued on page 43)

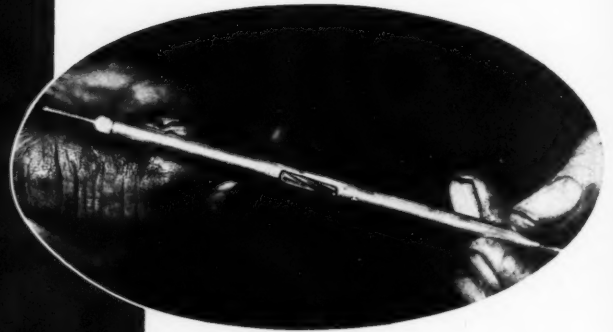




George Titherington

Barrel-Maker

By HENRY J. ADAMS, JR.



Left: Titherington at the rifling machine. Above: Rifling head, showing scrape-cutter and feed nut

SOME forty-nine years ago, in Calaveras County, California, George Titherington was born, to honest English parents. His father, an industrious man, divided his time between working in the rich gold mines of that region, and hauling freight from the nearest railroad to the gold-camp warehouses. As George grew, he, too, handled the team, and later helped his father buck freight.

Skilled labor was at a premium in that section of America's last frontier, and since he had a natural aptitude for machinery and tools, at the age of seventeen George became an apprentice machinist. He followed this trade closely in machine shops and tool rooms, making dies, cutting gears, and eventually building gas engines. In 1911 he helped build a 150-horsepower engine to be installed in a dredge in Alaska. George went to Alaska with it, but ill-health obliged him to return to the States in less than a year. Doctors advised him to stay out of the large shops, and to get plenty of fresh air, so he opened his own small machine shop in a twelve-foot-square tank house in the rear of his home. Here Stockton residents brought broken locks, lawn mowers, bicycles, damaged firearms, as well as many intricate mechanical problems. Years went by, and Titherington's name became synonymous

with that of the famous Doctor Fixit.

In 1922 old Charlie King of Oakland, who had quite a reputation in early California as a barrel-maker and gunsmith, sent for Titherington, as King was in ill-health and needed someone to relieve him from the unceasing demands of gun-cranks, who dogged his footsteps in search of more accurate rifles and cleaner trigger-pulls. Here Titherington saw his first rifling machine and deep-hole drill. Several months later he knew that he, too, could make barrels.

When King passed on, Titherington returned to Stockton, where he installed a motor-driven lathe in his old tank-house shop. Here he did general gunsmithing and barrel relining, and slowly built for himself a rifling machine, which he patterned partially after the one in Charlie King's shop. This same machine, incidentally, is still used in rifling all of Titherington's barrels. It is illustrated herewith.

Some of George's friends now urged him to turn out a complete rifling job, so he sent East to a well-known firm, and obtained two barrel blanks which had already been bored and reamed. He made for himself a single scrape-cutter, fed outward in the rifling head by means of a wedge moved by a feed nut. And in passing it might be remarked that it re-

quires an extremely skillful craftsman to shape, and hone the edge of, a scraper-type rifling cutter, as well as to fit it to the rifling head, at the proper angle, and give to the actuating wedge that smooth sliding fit which is so very essential. George makes his cutters from steel which can be hardened so that an ordinary file will not begin to touch it, and each cutter is used on from six to twelve barrels.

Henry Ronkendorff received one of these first Titherington barrels, and had very good success with it. He finally took it to Camp Perry, where it caused no little comment from some of the country's leading small bore shots. Titherington rifled several more barrels that year, and distributed them among members of the Roberts Island Rifle Club—which club proceeded to win the National Gallery Team Championship at 75 feet.

Not long after, Titherington purchased a deep-hole drilling machine which had been used during the War in the manufacture of anti-aircraft guns, remodeled it, and then began work on the first "all-Titherington" barrel.

These first barrels were uncommonly successful, all things considered, and Titherington's workmanship was well advertised by their owners—so much so, in fact, that George had to enlarge his shop to 14 by 36 feet. Orders began to come in, but, placing quality above quantity, George continued to turn out his barrels at a slow rate, with small improvements in each succeeding job.

By 1930, however—his technique and

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skill as nearly perfect as any ever achieved, Titherington was ready to fill barrel orders in limited numbers, and this is still the case. But the local boys with broken firing-pins, etc., still have precedence over a forty-dollar barrel order. Other interruptions may consist of an order for six handcuff keys from Sheriff Harvey Odell, or for a new made-to-order spiral gear for the local Stockton printing press; whereat your barrel will be held up for another day. This break in routine causes no poorer finish in the bore of that particular barrel, for if any blemish, tool mark, or scratch appears at any time during boring or rifling, that barrel is sawed in half and sent to the junk pile.

At the present time Titherington's shop contains the following machinery: two South Bend lathes; one Pratt & Whitney deep-hole drill; one Rhodes tool-room shaper; one Rockford milling machine; one Greenfield Universal tool-room grinder; one power hack-saw; one 6-inch wood jointer; one wood shaper; one 26-inch Silver band saw; two drill presses; an acetylene welder; one 14-inch disc sander for stock work; fourteen electric motors, and one Titherington rifling machine. All of the above equipment except the wood-working tools will be used directly or indirectly in making your barrel; for George makes the majority of his tools, such as barrel reamers which sell on the market for approximately twenty-five dollars. They cost him several hours of labor only.

Titherington buys barrel blanks from Wheelock and Lovejoy, Cambridge, Massachusetts, in lots of one-half ton at a time. They come in the form of cylindrical bars $1\frac{1}{4}$ -inches in diameter and from 18 to 20 feet in length. Occasionally, when some pestiferous .30-caliber bull-gun enthusiast begs long enough, George will hunt up a $1\frac{1}{4}$ -inch blank, and turn out a barrel that will group within 3 inches at 300 meters. "These barrels are easier to make," he says, "and there is always the satisfaction of knowing that any Titherington .30-'06 barrel will shoot, for unlike .22 gaspipes, they are not selective concerning

Another view of the rifling machine, showing further details

ammunition, but shoot all accurately loaded commercial brands, and most handloads." For

small bore barrels Titherington uses blanks of chrome-manganese steel, which are heat treated. This steel contains .4% of carbon. The .30-'06 barrels run about .5% carbon. This alloy steel has a tensile strength of 110,000 pounds per square inch.

The first step in making a barrel calls for the use of the power hack-saw. The blanks are cut into either 29 or 31-inch lengths—in either case being 1 inch longer than the finished barrel is to be. One end of the piece is then turned to 1 inch in diameter so as to fit the steady rest in the Pratt & Whitney double-spindle drilling machine. The drilling is done at a speed of 2200 revolutions per minute, a Pratt & Whitney drill being used. Stewart's thread-cutting oil is used to cool as well as lubricate the cutting lip of the drill, and to wash away the chips. The oil is fed under high pressure.

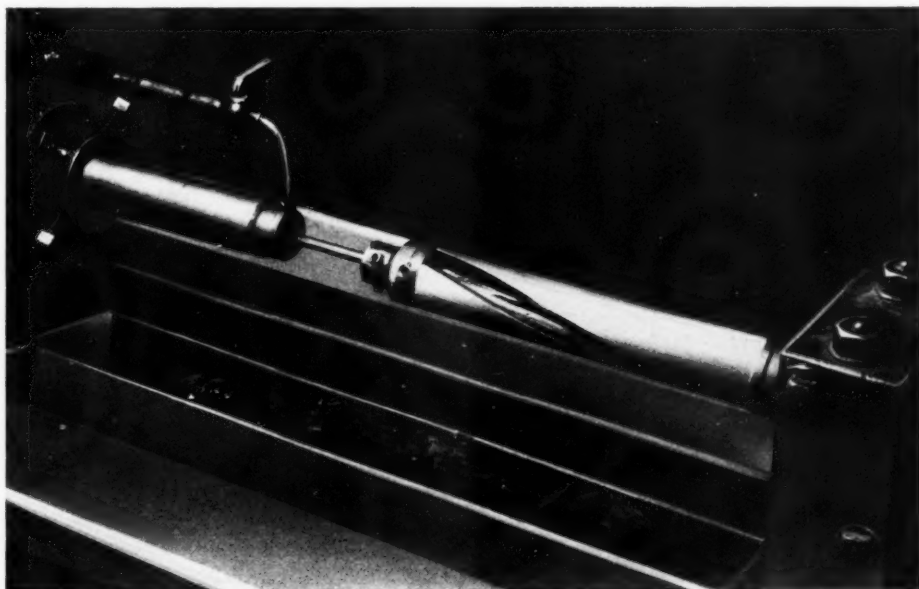
Since he did not own a barrel-reaming machine, and times were bad, George remodeled the deep-hole drill to do the reaming also, which is performed at 95 r. p. m. The drilling is followed by three reamings each one of which enlarges the bore by .002 inch. The fourth and final reaming is done with a burnishing reamer, which takes out one additional thousandth and leaves the bore .2175 in diameter.

A look through a Titherington barrel after running a flannel patch through the bore is something of an education in itself. One sees a highly polished mirror-like cylindrical well, with literally hundreds of multi-colored concentric rings that grow larger as they flow back from the muzzle to the eye. This, then, is the perfect barrel, and the high polish is one of the factors that enable Titherington to guarantee

$1\frac{1}{4}$ -inch groups at 100 yards. This polish called forth the following comment from Mr. Kelland of Imperial Chemical Industries, Ltd., concerning the Titherington barrel that I took to Bisley in 1931: "I look through ten thousand barrels a year, and that is the finest workmanship I have ever seen. Have him send me one."

If the barrel shows the slightest error in its trueness, it is then placed in a straightening jack and straightened; but only on rare occasions is this necessary. The barrel is next placed in a tool-room lathe, and turned to the specified dimensions, after which it is rechecked for straightness. Sometimes a barrel will give too readily in the straightening jack. It is then immediately discarded, as this indicates that the steel in this particular blank probably has the wrong grain structure.

After the above steps have been completed, the difficult hand-rifling process is commenced, using a single home-made scrape-cutter. This rifling operation usually takes a day, though it can be successfully accomplished in three hours if George has no interruptions of any kind. As previously mentioned, the cutter is raised by means of a wedge which is operated by a feed nut. One stroke of the cutter consumes about five seconds, and such a microscopic quantity of steel is removed at each stroke that the scrapings closely resemble wool lint. After from four to six strokes of the cutter have been completed, the rifling head is removed, and the feed nut given a quarter turn, which raises the cutter about .0003 inch. This process is repeated until the groove diameter of the barrel (in the case of .22 caliber) measures .2227 inch. Of course some barrels are turned out from one to



two ten-thousandths larger or smaller, but the tolerances are relatively always the same. After one groove is partly completed, each successive groove is cut, with the aid of an index head.

Titherington's standards for .22 caliber called for six grooves and six lands, the former measuring .084 inch and the latter .035 inch, in width. The width of the cutter naturally controls the width of the groove. It is a well-known fact that wide lands are the most durable, while narrow ones are supposedly the most accurate; and after a great deal of experimenting Titherington arrived at the above dimensions, which in his opinion give maximum accuracy and medium-long barrel life. The pitch of rifling is standard, one turn in 16 inches for .22 caliber, and one turn to 10 inches for the .30-'06.

The final process is the lapping, which is done with a lead lap and a fine Aloxite abrasive. This lapping is done on the same machine as the rifling, and the less lapping that is required, the better.

Sometimes the edge of a cutter chips, and makes a scratch so small that it can be seen only with the aid of a barrel telescope; however, if such a mark is discernible that barrel is scrapped, as Titherington affixes his name to none but perfect jobs.

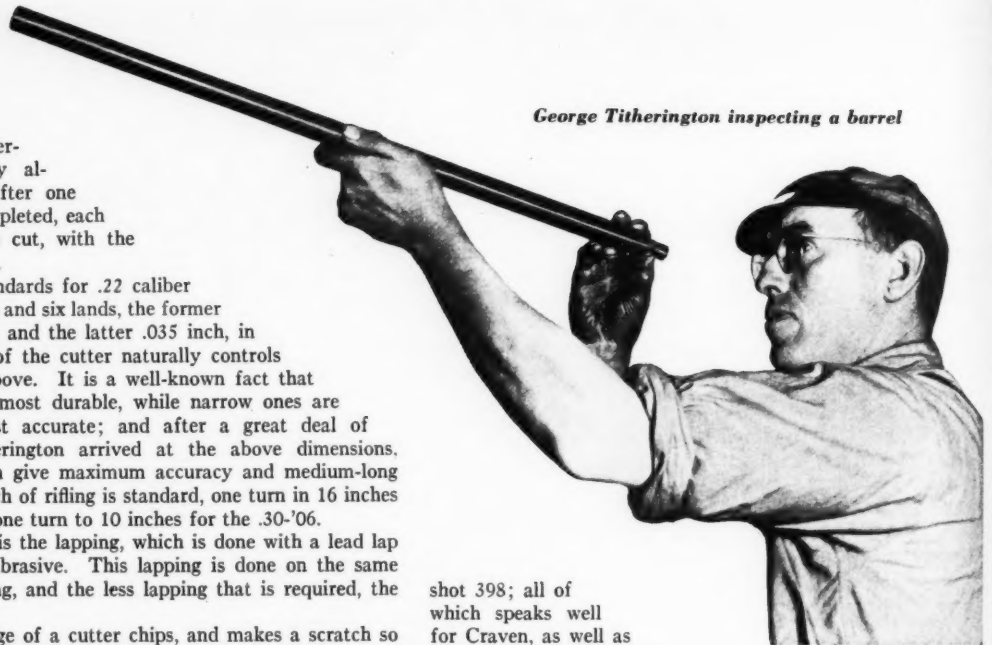
All such discards are sawed in half and sold for junk.

Perhaps George's most famous cull was the one used by Ed. Craven in winning the U. S. Trophy match at Camp Perry in 1935. This match calls for twenty shots at 50 yards and twenty at 100 yards, with iron sights, and Craven accomplished this difficult course to the tune of 400 X 400, with thirty-four of his forty shots in the X-ring.

Three days later, in the Dewar Team Match, Craven



Drilling a barrel



George Titherington inspecting a barrel

shot 398; all of which speaks well for Craven, as well as for the cast-off Titherington barrel.

George makes his own chambering reamers, which are of conventional pattern. He throats the lands at the end of the chamber, for two reasons: first, so that the bullet will not be jammed into the cartridge case, which might change the pressure; and second, to eliminate the possibility of putting fins on the bullet, which have a tendency to tip it as it leaves the barrel.

George Titherington takes great pride in his work, and as he has made every Titherington barrel from beginning to end, he can rightfully be proud of their performances. He knows the records of all the men who shoot his barrels, and is always interested in hearing from them. His secret ambition is some day to go into partnership with his son Bill. This lad at twenty-two is even a better craftsman than his father was at the same age, and he is now foreman of a machine shop. One of George's most prized possessions is a beautiful walnut stock made by Bill when he was seventeen years old. If George's dream materializes, the shooters of America should have Titherington barrels for many years to come.

To mention a few of the famous shots in this country who are shooting Titherington barrels, we have A. E. Hart and V. Z. Canfield, who both made ironsight 400's at Camp Perry in 1931 in the same match and with the same gun; J. B. Adams, winner of the English Small Bore Championship in 1932; the first four members of the victorious 1931 Western team in the once-famous East-West Match at Perry; the late Bill Harding who was high American in the 1932 Olympics, and third in the matches; L. A. Pope, Captain of the 1937 Dewar Team; Roy Meister

Ed Craven, and Summerall—all shooting members of the last two Dewar Teams.

In addition, Titherington barrels have won four of the last five California State Championships.

There are also about two hundred barrels in the hands of other good shooters.

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The writer in position to fire a test shot

A Chronograph for Hand-Loaders

By JOHN M. MALONE

I WANTED an accurate chronograph, but did not wish to spend too much money for it. Although familiar with the disc type, I realized that such a machine would not be accurate enough for the very high velocities which I hoped to attain with light bullets in a special-barrel .30-'06. For a long time I wrestled with the problem, and finally hit upon a solution.

The basic idea was that of an endless belt of some light material running at a known speed over four pulleys so placed that the belt formed a long rectangle, the two short sides being vertical and a known distance apart. I would then shoot through the belt, piercing both vertical sections, and after stopping its motion, measure the distance between the bullet holes along the belt to see how far the

belt had traveled while the bullet was traveling the known distance between the vertical sections of the belt; for of course the holes would be displaced a distance corresponding to the travel of the belt during that brief interval.

A little thought convinced me that it would be very difficult to obtain accurate results with such a device in its simplest, elementary form, because to accomplish this the gun would have to be held absolutely level at the moment of discharge, and would also have to be at a known height, to enable me to calculate how far the bullet holes had been displaced by the travel of the belt. An alternative was to fasten the gun in a vise, and fire two shots—one with the belt stationary and the other with it moving at a known speed; when a comparison of the dis-

tances between bullet holes would give the required information. However, further consideration suggested a very simple but effective method of evading the difficulty: to put a piece of the same belt material very close to and immediately in front of the vertical portion of the belt nearest the gun, and another piece close to and immediately behind the vertical portion farthest from the gun, these two short strips to be stationary and to be pierced by the same bullet that pierced the moving belt. In effect this would be the same as firing two shots, one with the belt stationary and one with it moving, the fraction of an inch between the moving endless belt and the stationary vertical strips not increasing the error by an appreciable amount. Then, with the two bullet holes lined up at one end of the

apparatus, the distance between the holes at the other end would represent the travel of the belt while the bullet was traveling the known distance between the front vertical portion and the back vertical portion of the endless belt (Figure 1), and the following equation would give the average bullet velocity over the distance:

$$V = \frac{B \times D}{d}; \text{ for—}$$

Let:

B = Belt speed in feet per second;
 D = distance between vertical portions of belt, in feet;
 d = displacement of bullet holes, in feet;
 v = average velocity of bullet in feet per second (over D);

Then, $\frac{d}{B} = \text{time required for bullet to cover distance D;}$

Also, $\frac{D}{v} = \text{time required for bullet to cover distance D;}$

Therefore, $\frac{d}{B} = \frac{D}{v}$ (things equal to same thing are equal to each other);

And, $v \times d = B \times D$ (product of means equals product of extremes);

Wherefore, $v = \frac{B \times D}{d}$ (dividing through by d).

Now that I have explained the theory of the machine, it should be possible for anyone at all handy with tools to make one for himself; and in fact I have no doubt that many of my readers could improve upon the mechanical details as indicated in Figure 2. However, it might be helpful if I told of my experience in erecting and putting my first chronograph into operation, together with other pertinent matters.

For a material for the belt I decided to use paper, and upon inquiry found that I could get a tough, smooth, kraft

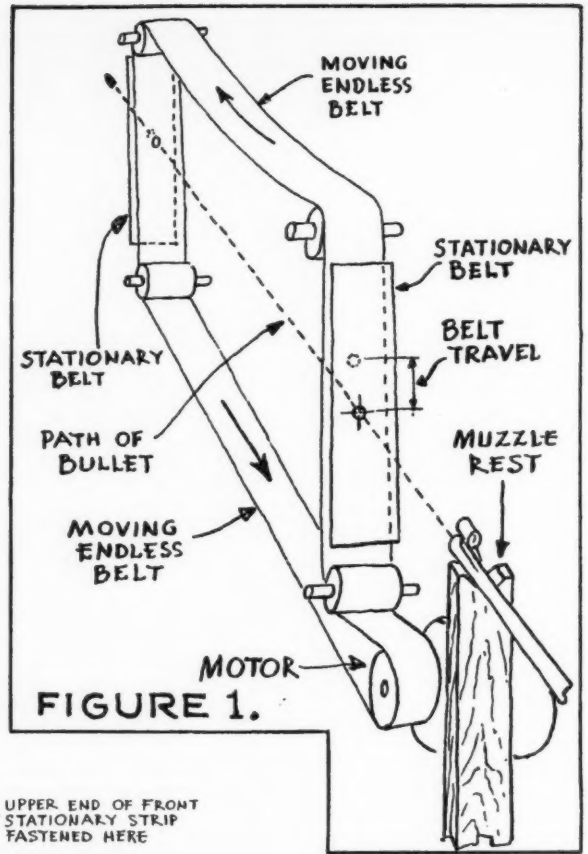


FIGURE 1.

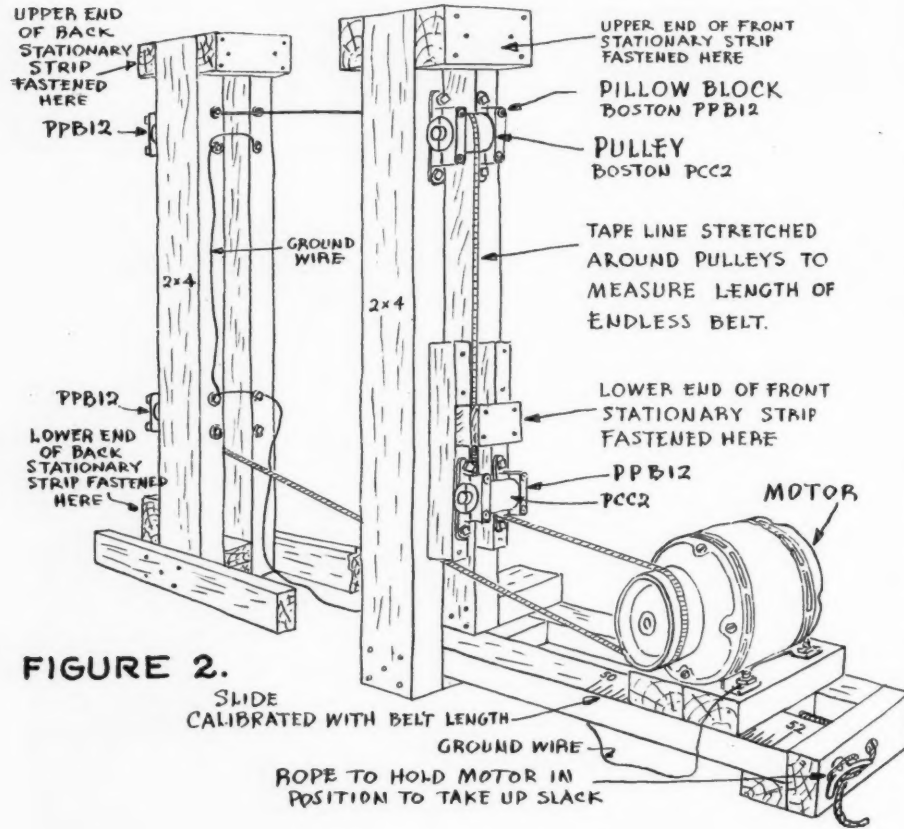


FIGURE 2.

paper which comes in rolls three inches wide and is used by certain tire manufacturers for wrapping tires. This can be procured through any paper wholesaler, and you usually have to buy a whole package consisting of about a dozen rolls—enough to operate a chronograph for months. (In ordering, be sure that your paper dealer understands that you wish *smooth* kraft paper, for there is also a stretchy, crinkled variety for wrapping tires, which is not at all suitable.) The paper proved to be exactly what was required, and is unbelievably strong even after it has been shot through. Upon experiment I found that with a lap of six inches—a glued joint hurried in its drying with the heat from an electric light—this paper made a very satisfactory endless belt.

To drive the belt I needed an electric motor of some kind. A small synchronous motor would run into money; and moreover I knew that there would be some slippage of the belt, so that the belt speed would be lower than the speed of the motor would indicate, wherefore there would be no advantage in the constant speed that is inherent in the synchronous motor. In every city there are second-hand dealers from whom a suitable motor may be procured; and indeed any form of motive power would do in a pinch: even a farm engine could be pressed into service. A good place to obtain a motor is from a washing-machine dealer who takes in old machines in trade, usually scrapping them and saving the motor and a few of the parts. (Just around the corner from my office one of these dealers has some of these motors on sale at \$2.75 each.) Bargains can also be found in the classified advertising sections of Sunday newspapers.

I finally bought an ordinary $\frac{1}{4}$ -horsepower single-phase motor, 3600 R. P. M., 110 volts. I had intended to paint a stripe on the endless belt, and time the speed of the latter by counting the number of times the stripe came around in ten, fifteen, or twenty seconds, using a stop watch, or even the second hand of my pocket watch. When I got the machine running, however, I found that the sound made by the glued joint of the belt passing over the pulleys was all I needed to do the counting, which enabled me to keep both eyes on the watch, for greater accuracy. I often counted the revolutions in several whole minutes, and found that there was no perceptible variation from one minute to the next.

(Incidentally, in counting revolutions remember not to count the one upon which you start timing, or you will always be counting one more than the actual number.)

A belt speed of around 3600 feet per minute was perfectly practicable with my $\frac{1}{4}$ -horsepower motor, and with a larger motor or shorter distance between verticals a much greater speed would probably be possible, permitting, in the former case, an increase in accuracy. I found that a belt could be riddled with bullet holes, and, so long as old holes were plainly marked, be used over and over again. However, a belt left on the machine over night becomes useless, as it absorbs moisture and the edges curl up.

A simple wooden framework would have been adequate for this machine, as well as cheap cast-iron pulleys; however, because of the high velocities in prospect, and the fact that my interest was increasing rapidly, I decided to spend more money than I had at first intended, and had a local shop make three stands out of angle iron, equipped with ball-bearing pulleys. I then set these up in line at 20-foot intervals, against a hillside near my home; which arrangement gave me the choice of a 20-foot or 40-foot interval. I later built a tarpaper tunnel over it all,

that the belt will run true. This can be done by careful measurement in laying out the location of the bearings on the frames, and then shimming under the bearing bases as may be necessary. I found that when it seemed impossible to get a particularly stubborn belt to run true, a piece of heavy, smooth wire stuck into the ground so as to just touch the edge of the belt near where it showed a tendency to climb off one of the pulleys, had a remarkably steadying effect, and made the belt run absolutely true.

By running a piece of chalk line over pulley centers, and extending it, I lined up a plain vee muzzle rest with the machine. Then, by shooting at a pencil line drawn in the center of the first stationary belt, I can keep all bullet holes on the belts.

The method of operation is briefly as follows:

1. Measure the overall length of the endless belt. (A refinement is a pointer attached to a floating idler pulley, which indicates automatically the belt length (Figure 3). The scale over which the pointer moves is laid off by stretching a tape over the pulleys, and then marking off points corresponding to different belt lengths. Figure 2 shows a simplified arrangement, with the motor mounted on a wooden base which can be moved along between two wooden rails to take up the belt slack. The scale is laid off in the same manner as described above. It will pay to calibrate this scale in tenths of a foot, and reducing inches to tenths will save much time later when a new belt is installed. In using the tape, try to strike a happy medium as regards tension. Your paper belt will not stand being too tight, nor will it run well if it is too loose, so a medium ten-

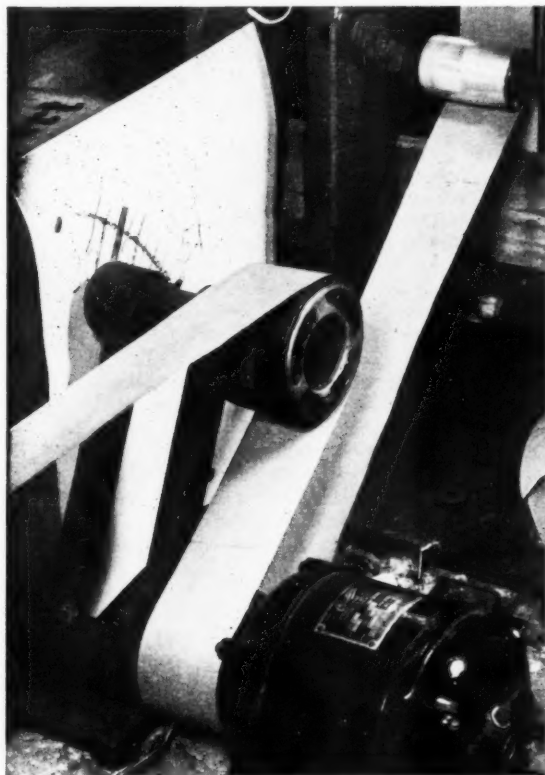


Figure 3

tion on the tape will most closely approximate the actual belt lengths you will have when you get into operation.)

2. After starting the machine, count the belt revolutions per minute. This, multiplied by the belt length in feet and fractions of a foot, and then divided by 60, will give you the belt velocity in feet per second. If you have a stop watch you can save time by multiplying the belt length in feet by ten, and dividing by the number of seconds and decimal fractions of a second that it takes for ten revolutions. The result will be belt velocity in feet per second. It is best in all calculations to reduce inches to feet and decimal fractions of a foot.

In preparing to operate the machine it is necessary to get the pulleys lined up so

3. From the muzzle rest, aiming at a pencil-line cross in the center of the front vertical stationary belt, fire a shot. The muzzle rest should be at least five feet from the paper belt to keep the muzzle blast from pushing the stationary belt against the moving belt, and also to keep slight errors in aim from causing the bullet to miss the rear vertical portion of the belt. An ordinary 45° vee sawed in a two-by-four that is lined up with the pulley centers makes an adequate muzzle rest, while a box or chair for the shooter to sit upon completes the firing-line furniture.

4. Stop the machine, and line up the bullet holes in the moving belt and the first stationary belt. Here a caution must be added: the muzzle rest and the pencil cross on the paper should be above the center line of the machine, so that the distance between the bullet holes in the moving belt will always be shorter when measured over the top pulleys of the machine. To be sure that the moving belt is in the correct position for measuring, try both bullet holes against the one in the front stationary belt. The chances are that the wrong one will be out of line, but if it is not, a quick glance will tell which distance over the top is the shorter. By arranging the motor so that the top of the belt runs in the same direction as the flight of the bullet, it is easier to avoid mistakes, since when the belt travels in this direction the tendency will always be for the holes to come closer together, measuring over the top.

5. Go to the back of the machine, and through the bullet hole in the back stationary belt, with a soft pencil mark on the moving belt the outline of the hole. While doing this it is well to be sure that the belt has not moved, so either have a friend hold the bullet holes together at the front end, or push a cartridge case or lead pencil through the two holes before going to the back.

6. Remove the back stationary belt, and measure the distance from the edge of the outline you have just drawn, to the corresponding edge of the bullet hole in the moving belt. Be careful that you measure from corresponding edges and not just between the outline and the hole, or your results will be out an amount proportional to the width of the bullet hole. The distance you have just measured represents how far the belt traveled while the bullet was traveling across the machine. Here again it is advisable to reduce inches to decimals of a foot. This is best done by putting the length in inches and decimals of an inch, and then dividing through by 12. For example: the length 7-7/16" is read 7.4375". $7.4375 \div 12 = .6197$, which should be recorded as .620 feet. Two decimal places should be enough, but three make for greater ac-

curacy. It is then a problem in simple arithmetic to calculate the average velocity of the bullet over the interval. Here are the figures on a factory-load .22 Hornet, which I give because the measurements came out in even numbers, making it a good example:

Length of belt 91' - 0"
 Belt R. P. M. 40
 Belt Speed, feet per
 minute $91 \times 40 = 3640$
 Belt Speed, feet per
 second $3640 \div 60 = 60.66$
 Distance between
 verticals 40' - 0"
 Distance between
 outline and hole . . . 12" (1 foot)

$$v = \frac{60.66 \times 40}{1} \left(\frac{B \times D}{d} \right)$$

$$v = 2426.4 = \text{velocity of bullet in feet per second.}$$

As can be seen, the greater the distance between standards, the greater the accuracy of measurement and the less the percentage of error. Measurements are simple, and can be made by anyone with a tape or ruler. There is a slight error introduced by not shooting through the machine on a perfect level, but the difference in a radius of 20 or 40 feet is almost nothing, and may be ignored.

If you will use sufficient care, and will make accurate measurements and calculations, I believe that with this chronograph you can measure velocities within a probable error of not more than 1%. You will need a clear space of from 25 to 50 feet, either indoors or outdoors, and you should have a bullet-proof backstop. For all ordinary work an interval of 20 feet should be sufficient, for with that interval and a belt speed of 3600 feet per minute (60 feet per second) a 2000-foot velocity will give a bullet-hole displacement of 7.2 inches. If you are careful in your buying and clever in designing your machine, you should be able to make it for less than \$25.00 dollars.

Below is a list of items required, together with prices quoted by two reliable houses on brand-new material. I have selected Boston Gear Works pulleys and pillow blocks because they are the cheapest I know of. By using their solid-steel pulley No. PCC2, and spacing the up-rights about 3/4 inches apart, you can avoid having to buy eight shaft collars at a cost of \$2.88.

- 4 pieces—3/4-inch C. R. shafting
7 inches long \$.80 lot;
- 4 only—No. PCC2 Boston Gear
Works pulleys 3.60 lot;
(solid steel 2" x 3" x 3/4"
crown face)
- 8 only—No. PPB12 Boston
Gear Works pillow blocks . . . 4.00 lot;
(cast iron, 3/4-inch bore)
- Total \$8.40

1 only—second-hand electric motor, \$3.00 to \$10.00;
 (1/4 to 1/2 H. P., 1750 to 3600 R. P. M.)

- 1 only—motor pulley
(Boston Gear Works)
 - 3" face, 4" dia.,
PCE4 \$1.80 each;
 - 3" face, 6" dia.,
PCE6 \$2.50 each;
 - 3" face, 8" dia.,
PCE8 \$3.10 each.

(Size of motor pulley depends upon motor speed. On a slow-speed motor you should use a large pulley.)

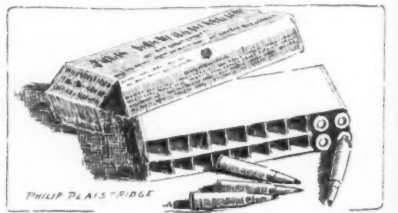
In addition to the above you will need a handful of 20-penny nails, twelve 1/4 x 5 and four 1/4 x 7 machine bolts with 2 washers, and a couple of pieces of 2 x 4 lumber; also four bolts to fasten down the motor. Allowing the very generous amount of \$2.00 for this miscellaneous material, the least the whole thing should cost you is \$15.20, and the most is \$23.50. To avoid trouble from static electricity, it is advisable to connect all pillow blocks electrically by a wire looped under one bolt head of each, and a foundation bolt of the motor should also be looped into the circuit with a piece of flexible wire. This wire need not be insulated (hay wire will do), and can run along the ground between the standards, or may even be buried. Any size or kind of wire will serve the purpose, which is to prevent the gradual accumulation of a high-potential of static electricity which is caused by air friction on the paper belt. This electrical charge would make the stationary belts try to stick to the moving belt, cause the moving belt to attract and repel particles, alarm the operator by shocks and sparks, and might possibly break down the insulation in the motor.

Don't forget lubrication. A little Gun Slick serves well on cast-iron pillow blocks, etc.

It is assumed that electric current is available at the location, and the above figures make no allowance for wiring; however, let me recommend as cheapest and best, lead-covered duplex wire laid on the ground and buried a few inches where it crosses a road or path.

I wish anyone who decides to build one of my chronographs good luck, and will be very glad to answer correspondence concerning it.

NOTE.—Mr. Malone's address is: 117 Third Avenue, Pittsburgh, Pennsylvania.—Ed.



The Value of Shotgun Patterns

By A. P. CURTIS

I DO not intend in this article to show a great variety of different patterns, which often mean nothing to the average reader, while some persons, even among our experts, place more store by them than is warranted. The patterning of barrels to show their shot distribution originated many, many years ago as part of a gunmaker's inspection schedule, to provide a concrete example of the area eventually covered by the shot pellets—after they had *all* arrived at the pattern paper. The pattern paper was placed at a standard distance of 40 yards from the muzzle of the gun, the standard area to be covered being that enclosed within a 30-inch circle. The test was also intended to show whether or not the shot charge was placed correctly as aimed.

This test idea originated in the days of the popularity of the larger bores—4, 8, and 10 gauge, and the standard percentage of the shot charge to be placed in the 30-inch circle at that time was 70% from a full-choked barrel. Of late years, with improvements in ammunition, and in spite of the vogue for smaller bores, this percentage has been increased to 75. The only exception is in the case of the 32 gauge and .410 bore, whose effective range is in each case only 32 yards. These smaller-bored guns, however, are expected to cover the same area at the 8-yards-less range.

Soon writers on gun construction and performance began using cuts of patterns to illustrate their texts, until today it is hardly possible to pick up a sporting magazine without finding illustrations of many patterns.

Now, all that any paper pattern can show is the number and distribution of the pellets in a shot charge—from *that one shell only*—that *eventually* register on the pattern paper; which represents a fairly true picture of the killing possibilities of that load on a *stationary* target only, or one going *straight away from*, or coming *directly at*, the shooter. Because of the "stringing" or lagging shot that never reach a target flying at a sharp angle across the line of fire, a pattern does not truly illustrate the killing possibilities of a gun. Because

of the lesser number of potential killing pellets that can possibly be expected to register on these angle targets, patterns fail to arouse in me any real enthusiasm.

These facts are recognized by one of our largest ammunition companies—Western, who stress the "short shot string" of their Super-X shells; they claiming a length of shot string of only 11 feet, as compared with ordinary loads which string out their shot columns to from 20 to 40 feet. By the use of a patented "flight-ometer"—a precision instrument for recording the length of shot columns in

shooting qualities of his product, irrespective of killing possibilities.

The standard practice in double-gun barrel-boring (except in the case of guns intended solely for wild-fowl and trap-shooting) is to provide a lesser degree of choke in the right barrel than in the left, because the first shot—normally from the right barrel—is usually at the closer range. The concentrated charge from a full-choked barrel would spoil small game at close range—if a hit were made, which is a rarity as the pattern is so close that a miss is usually the result, the shooter being "out-patterned," so to speak. On the other hand, with an open-bored barrel the shooter is out-patterned at the longer ranges, because the pattern is then too thin. This is well illustrated by a series of seven patterns made at the same time with the same shell at 10, 15, 20, 25, 30,

TABLE 1

Gauge or Bore	1928	1935
12	61.0%	48.1%
16	16.7%	14.1%
20	11.9%	16.5%
28	00.3%	00.6%
.410	10.1%	20.7%

flight, they show that a duck flying at the rate of a mile a minute across the line of fire, at a distance of 60 yards from the shooter, moves only about 15 inches before all the effective pellets from a Super-X shell reach its line of flight, because of this short shot string. They also show that a duck at the same speed and distance would move approximately 25 inches, and out of the pattern, if any ordinary load were used, because of its longer shot string.

On the other hand, the Peters Cartridge Company speaks of a long shot string as an advantage, "as it will often make his kill and thus provide him with an additional chance of getting his bird." If the bird is lead too far, these lagging pellets might connect.

Regardless of which contention is correct, a pattern shows only what pellets could be expected to be placed on a stationary target after all the pellets had arrived, and by no means does it show how much thinner the pattern would be on a target flying at an angle across the line of fire. Therefore patterns are of no great value except to the gunmaker who invented them for the one purpose of checking the

35, and 40 yards with an improved-cylinder barrel (Figure 1), and two similar series of patterns from modified and full-choke barrels (Figures 2 and 3). The average hunter does not consider the diameter of the shot column when it reaches the object shot at, and I know of no better way to give a vivid illustration of the coverage at different ranges than by means of these photographic facsimiles of patterns taken at various distances from the shooter, and all made with the same shell.

Some gunmakers use the terms "quarter-choke," "half-choke," "three-quarter-choke," etc., but as the terms "full choke," "modified choke," and "improved cylinder" are the ones in general use, and are more familiar to the majority of sportsmen, only the pattern possibilities of guns so bored are illustrated here.

The performance of the full-choked barrel (Figure 3) shows how senseless it would be to use this barrel on game closer than 20 yards (Pattern No. 3), as practically the entire shot charge is crowded into a 21-inch circle, the full effective 30-inch circle not being covered until the charge is

30 yards from the muzzle of the gun (Pattern No. 5).

A glance at the patterns made with an improved-cylinder barrel (Figure 1) shows the charge spread over a

TABLE 2
Average Velocities of .410-Bore and 28 and 20-Gauge Shells

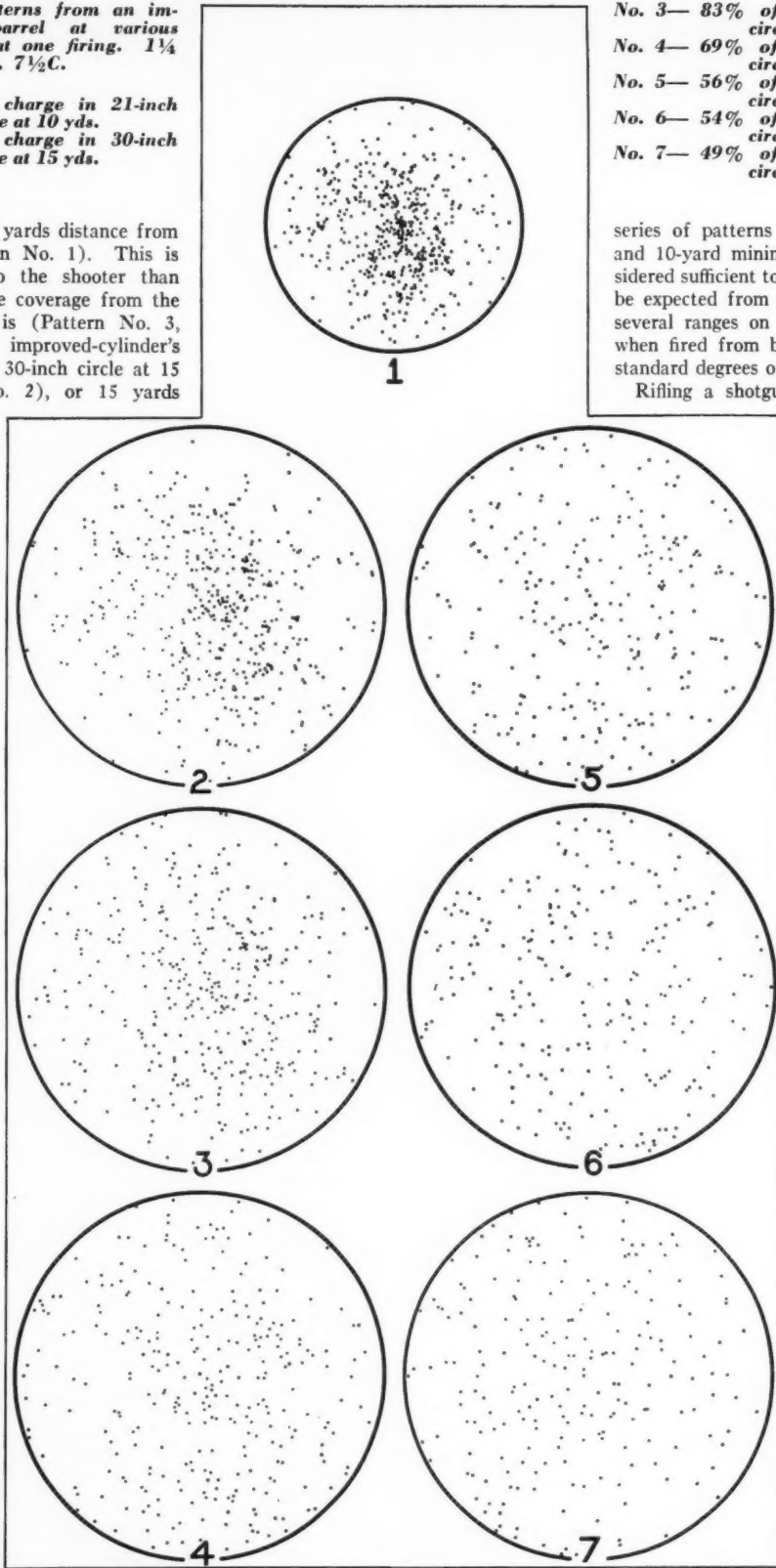
	Instrumental Velocity in Foot-Seconds	
	Over 25-Yard No. 6-C	Over 40-Yard Range No. 9-C
.410 Bore	—	—
" "	2 1/2-inch	10 Grains
" "	3 "	1 3/4 oz.
" "	3 "	17 "
" "	3 "	18 "
28 Gauge	2 1/2 "	20 "
" "	2 3/4 "	21 "
20 "	2 1/2 "	20 "
" "	2 3/4 "	29 "

Fig. 1—Seven patterns from an improved-cylinder barrel at various ranges, all made at one firing. 1¼ oz. No. 7½C.

**No. 1—100% of charge in 21-inch circle at 10 yds.
No. 2—99% of charge in 30-inch circle at 15 yds.**

21-inch circle at 10 yards distance from the muzzle (Pattern No. 1). This is 10 yards closer to the shooter than practically the same coverage from the full-choked barrel is (Pattern No. 3, Figure 3). The improved-cylinder's charge covered the 30-inch circle at 15 yards (Pattern No. 2), or 15 yards closer to the muzzle than the same distribution from the full-choked barrel (Pattern No. 5, Figure 3).

These two extremes vividly illustrate what coverage could be expected on any stationary target at various distances. The patterns from the modified-choke barrel (Figure 2) illustrate practically the same area of coverage at the same distance as from the full-choke barrel (Figure 3). In both cases the 30-inch circle is filled at the 30, 35, and 40-yard ranges, but by many less pellets in the case of the modified-choke barrel at the 40-yard range. This boring is not adapted for a stationary target at less than 20 yards distance, any more than is full-choke boring, but it gives an ideal coverage from 25 to 40 or 45 yards. In turn the patterns from a full-choked barrel are at their best from, say, 30 yards up to 70 yards. The results beyond 40 yards will have to be imagined, as in these



**No. 3—83% of charge in 30-inch circle at 20 yds.
No. 4—69% of charge in 30-inch circle at 25 yds.
No. 5—56% of charge in 30-inch circle at 30 yds.
No. 6—54% of charge in 30-inch circle at 35 yds.
No. 7—49% of charge in 30-inch circle at 40 yds.**

series of patterns a 40-yard maximum and 10-yard minimum range were considered sufficient to show just what could be expected from the same load at the several ranges on *standing* small game, when fired from barrels with the three standard degrees of choke.

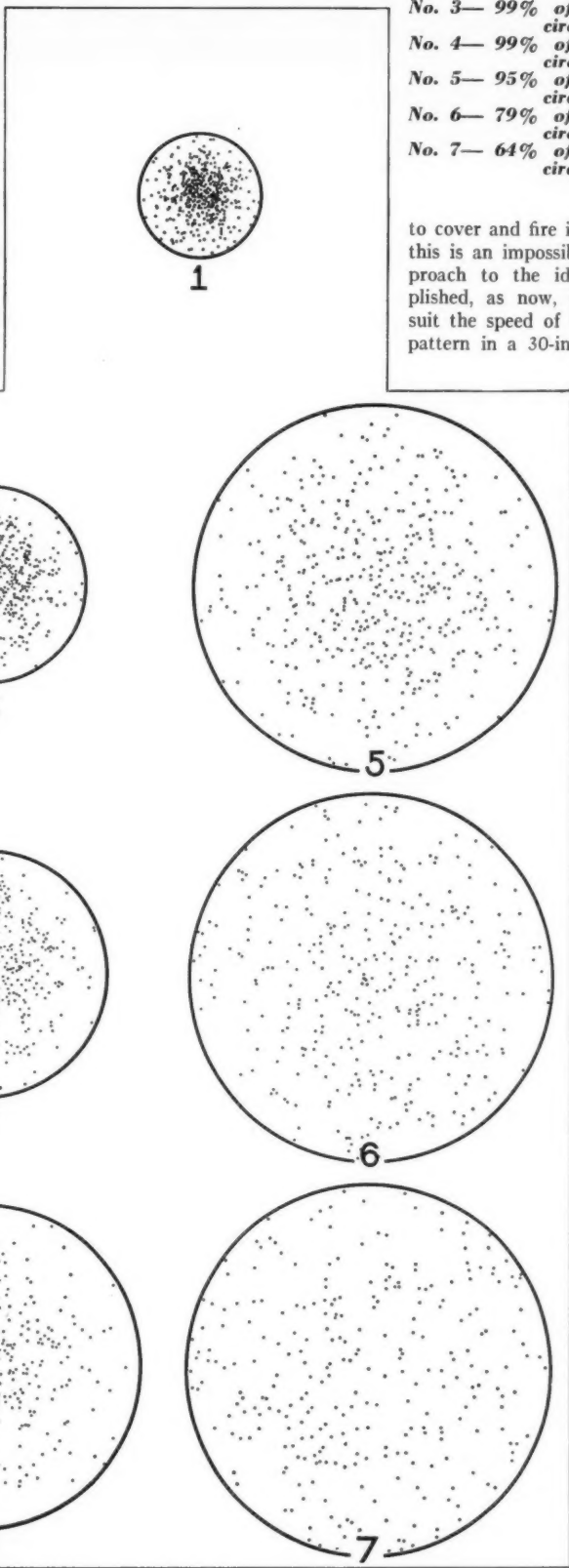
Rifling a shotgun's barrel with very shallow grooves and slow twist, to give wider or more open patterns at the shorter ranges, has been done of late by some European makers, with a certain measure of success. It is claimed that this rifling will open up a pattern to fill an 18-inch circle at 8 yards, but beyond 20 yards the pattern is too thin to be effective; therefore this is not any improvement for game work over a smooth-bored improved-cylinder barrel, the performance of which is illustrated in Figure 1. This covers a 21-inch circle at 10 yards, but does not lose its effective shot-grouping until it has passed the 40-yard range. It takes the quickest of snap shooters to locate, cover, and fire at outgoing game inside of 15 yards. In Skeet shooting the rifled bore might offer a slight advantage to the slower shooters, on incoming known-angle targets whose flight starts only at the command of the shooter; especially

Fig. 2—Seven patterns from a modified-choked barrel at various ranges, all made at one firing. 1¼ oz. No. 7½C.

- No. 1—100% of charge in 10-inch circle at 10 yds.
- No. 2—100% of charge in 16-inch circle at 15 yds.

so at station 8. But on all others one would be out-patterned.

In shooting from a "but" at driven, incoming birds, as is done in some foreign countries, these rifled barrels might give the shooter an advantage. In our game hunting a majority of the shots are at outgoing birds, and an excessive spread of pellets at very close range, resulting in a loss of grouping and killing possibilities at 20 or 25 yards, would be of no advantage; rather it would be a serious handicap. Theoretically, a shot distribution of one pellet per square inch—at time of contact—is necessary for breaking targets or insuring a kill on game. Perhaps this ideal will some day become a reality, but it will not be brought about by roughing the bore or changing the choke without changing as well the shooting time of the man behind the gun. As things now stand, a man who can cover and take his targets very quickly is going to need more choke on incoming and less choke on outgoing targets in the shooting of Skeet, while the slow, methodical shooter will require borings that are just the reverse. In order to get the ideal shot distribution, all men would have



- No. 3—99% of charge in 20-inch circle at 20 yds.
- No. 4—99% of charge in 26-inch circle at 25 yds.
- No. 5—95% of charge in 30-inch circle at 30 yds.
- No. 6—79% of charge in 30-inch circle at 35 yds.
- No. 7—64% of charge in 30-inch circle at 40 yds.

to cover and fire in the same time. As this is an impossibility, the nearest approach to the ideal must be accomplished, as now, by special boring to suit the speed of the shooter. A 75% pattern in a 30-inch circle for 30-yard targets, and the same percentage in the same area for 20-yard targets, seems to fit the time of the majority of Skeet shooters, and is therefore not far amiss for upland shooting.

The speed of the shot charge has always been of interest, and an increase in velocity desired; but many factors have to be considered in its accomplishment. The makers of powder are limited by the breech pressure developed, while the shell loader is limited by the patterns obtained; and any great increase in a smokeless-powder charge, or decrease in the amount of shot, for the purpose of acquiring speed, results in a sacrifice of patterns. This nullifies any advantages gained from the increased velocity.

The gunmaker had early done his part by increasing the lock speed of his product, so for many years a stalemate had been reached. Then our powder-makers brought out progressive-burning nitro powders. These made pos-

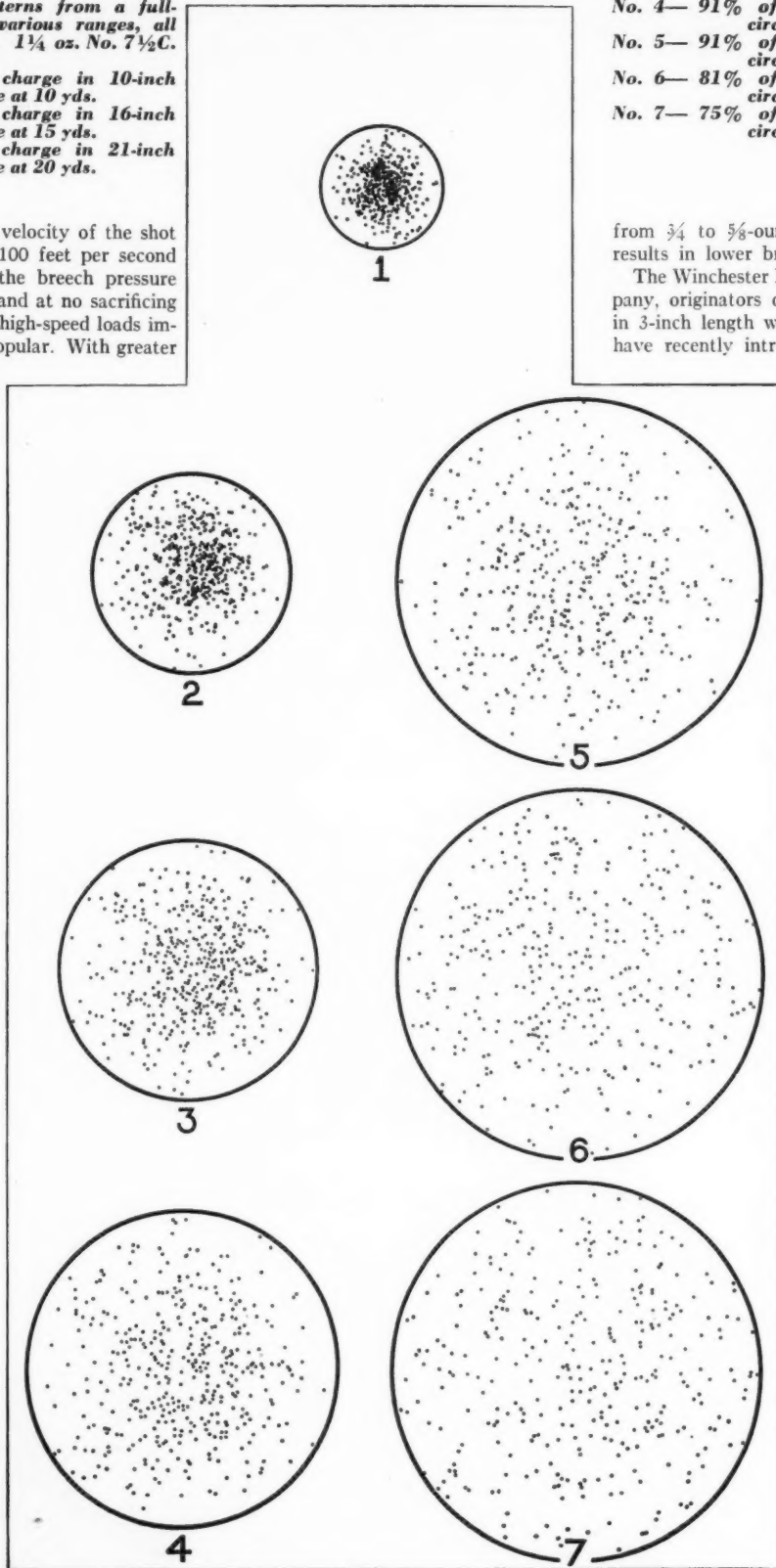
Fig. 3—Seven patterns from a full-choked barrel at various ranges, all made at one firing. 1¼ oz. No. 7½C.

- No. 1—100% of charge in 10-inch circle at 10 yds.
- No. 2—100% of charge in 16-inch circle at 15 yds.
- No. 3—99% of charge in 21-inch circle at 20 yds.

sible an increase in velocity of the shot charge from 50 to 100 feet per second without increasing the breech pressure beyond safe limits, and at no sacrificing of patterns. These high-speed loads immediately became popular. With greater velocity possible, gunmakers soon introduced long-range guns, with longer barrels and longer-tapered, more constricted chokes, for wildfowling; and clean kills at 80 yards became possible.

This worth-while progress in shotgun ammunition had a serious setback when our loading companies tried to duplicate the performance of 28-gauge ammunition in .410-bore 3-inch shells. The latter were loaded with ¾-ounce of shot propelled by all the powder it was possible to get into the case, at a sacrifice of sufficient wadding. The result was such a reduction in velocity that more lead on sharp-angled targets was necessary.

The Remington Arms Company late in 1934 brought out a new .410-bore 3-inch shell containing only ⅝-ounce of shot, which has 100 foot-seconds greater velocity over both a 40 and 25-yard range than has their ¾-ounce load. As breech pressure is governed by resistance, the change



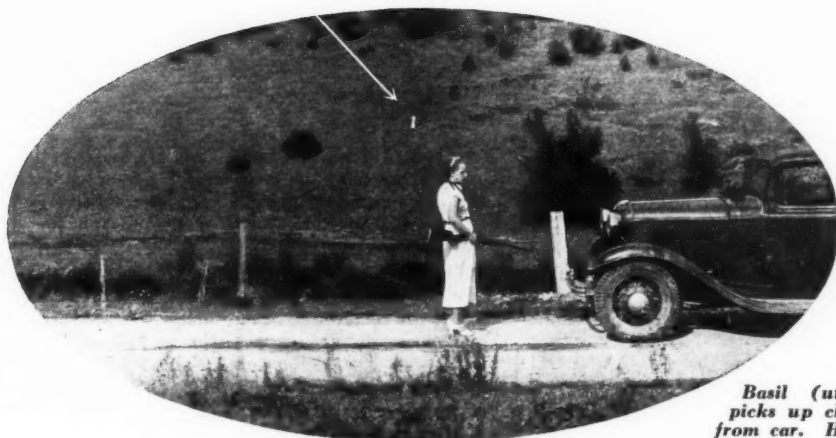
- No. 4—91% of charge in 25-inch circle at 25 yds.
- No. 5—91% of charge in 30-inch circle at 30 yds.
- No. 6—81% of charge in 30-inch circle at 35 yds.
- No. 7—75% of charge in 30-inch circle at 40 yds.

from ¾ to ⅝-ounce in this new load results in lower breech pressure.

The Winchester Repeating Arms Company, originators of the .410-bore shell in 3-inch length with ¾-ounce of shot, have recently introduced a new 3-inch shell with a ⅝-ounce shot charge, which, like the Remington shell, gives approximately 100 foot-seconds higher velocity. They have also changed the loading of their old ¾-ounce load so as to bring its velocity up to that of the new ⅝-ounce load. The Western Cartridge Company has also changed their ¾-ounce load so as to add approximately 100 foot-seconds to its velocity.

Other advancements in this, our smallest shotgun shell, have been made by several of our ammunition companies, such as loading the 2½-inch shell with ⅝-ounce more of shot than the old standard of ¾-ounce, while at the same time retaining approximately the same velocity.

Increasing the velocity of the .410-bore "long" shell adds about 10% to the penetration and 5 yards to the effective range, thus making the .410-bore shotgun comparable to the 28 and 20-gauge guns, it having practically the same (Cont. on page 43)



Basil (under arrow) picks up chuck he shot from car. His wife holds rifle

Woodchucking With a .22-3000 Lovell

By BYRON E. COTTRELL

MY GOOD friend Basil Tuller had spent more than six months' time and no small outlay of hard-earned cash in getting together his ideal woodchuck outfit. Actually he spent several years' time before he found the ideal caliber. First it was .250-3000, then a .22 rim-fire. Later it was a .30-'06, then another .22 rim-fire. But now, after one season's use, he considers the .22-3000 Lovell ideal, and I fully agree with him.

And now for a short description of the rifle. Action: Winchester Single Shot, high-walled. Barrel: 28-inch Proof Steel, same outside dimensions as standard Winchester 52; 16-inch twist. New firing pin to handle high pressures. Stock and forearm were made from a beautiful piece of Oregon myrtle by Albert T. Rowe, and this is one of the prettiest stocks I ever saw. I have never handled a finer rifle. Sedgley did the entire job, including complete bluing.

When it came to the matter of sights, we did not agree. I was strong for a high-grade target scope, but Basil wanted the neater, trimmer-looking hunting type, and decided on a Weaver No. 329 in a special hand-made low mount attached directly to the top of the barrel. This completed the outfit.

Ammunition was hand-loaded by Elliott: 45-grain S. P. Hornet bullet, Hercules No. 2400 powder, Winchester No. 116 primer.

After carefully sighting-in, we started out after chucks in the afternoon of July 2d. As the chucks were pretty well scattered we did the most of our hunting with a car. Basil got his first chuck at about 75 yards. It was a perfect head

shot, and the bullet blew most of the far side of the chuck's head off.

We found plenty of chucks, and Basil did most of the shooting, killing several at ranges from 100 to 150 yards—all clean kills. The rifle required practically no difference in hold between 50 and 150 yards.

My first try at a chuck with the new rifle was at 200 yards. I held the cross-hairs just over the chuck's back on a broadside shot—and shot over! My hold had not been 3 inches high, and I was surprised at having shot over. My next shot was held just at the top of the chuck—right at the edge of the hair, and I got my first kill with the .22-3000. This cartridge is noticeably flatter-shooting than the Hornet.

Leaving the car on a lonely back road, we climbed over a stone wall, into a pasture lot. Here I spotted a chuck at about 150 yards. He had flattened himself as close to the ground as he could to avoid being seen, but this was old hunting country to me, and I spotted him at once. Basil shot from sitting position—too many weeds in the way to shoot prone. At the report of the rifle the chuck slumped a bit, but did not even wiggle his tail; nor did he roll over, so dead was he killed. Pacing the distance, we found it to be 155 paces. The bullet caught him just under the chin, and did not go through. We found it under the skin of a hind quarter, mushroomed to nearly the size of a dime.

In our shooting at ranges over 150 yards, more chucks were missed by shooting over than were hit. This little cartridge shoots much flatter over 200 yards than we could at first bring ourselves to

believe. All our kills were practically instantaneous. The killing power of the .22-3000 is much like that of the .250-3000. The bullet does not make as large a hole in the chuck, but it is fully as deadly at ranges under 200 yards.

We killed ten woodchucks that afternoon, as well as a crow and a hawk. Basil's total kill for the season with this rifle was 148 woodchucks, 12 crows, and 2 hawks—in just two months and nine days; and he worked at his regular occupation five and a half days a week during this time.

He soon came around to my way of thinking regarding sights, and sent the rifle back to Sedgley to have a short rib installed on top of the barrel to take either a Lyman or Fecker scope. He also had Sedgley fit a Vaver peep the same height as the scope, and a Lyman 17A front, for use in match shooting where a scope is barred. He is getting a Fecker 6X with 1½-inch objective, in the best micrometer mounts.

I am convinced that the .22-3000 Lovell is one of the finest small-game cartridges we have. It will fully equal the fine Hornet accuracy at 100 yards, and will outshoot the Hornet at longer ranges. It is a better cartridge to reload, as it will use a wider range of powders and bullets. The expense is very little more than that of the Hornet. New handloaded cartridges can be had for \$4.00 per hundred, and the cartridge costs very little more to reload than the Hornet. For the man who reloads I would advise getting the .22-3000, especially if he is having a single-shot rifle made up to order.

The Colt Dragoon on the Plains

By T. B. TRYON

LATROBE said that steam, maize, and the American axe were important factors in the rapid advancement of civilization in the West—but he wrote in 1835. Had he written a decade or two later he would undoubtedly have included the Colt revolver.

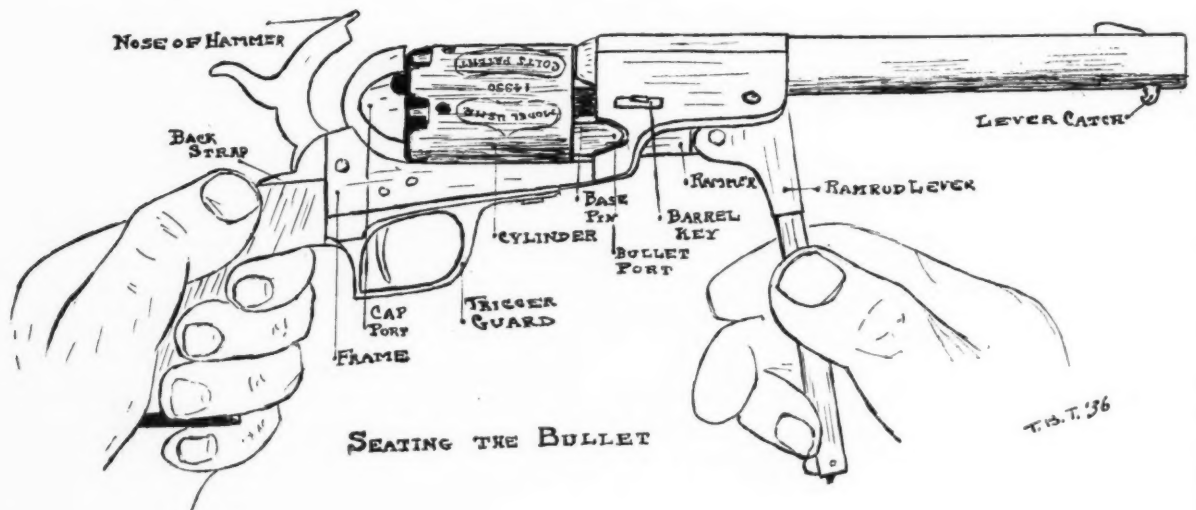
Let us pause a moment in retrospection, and consider what that practical multi-shot weapon of Colt's meant to the plains and mountain men, as well as the Texas Rangers—men who were daily in danger of being engaged by overwhelming odds of mounted Indians or Mexicans. Armed with the plains rifle and a pair of single-shot pistols, the plainsman had but a single shot with which to stop a charge from a distance, and but two shots for close conflict. But the advent of the practical holster revolver altered the situation. With a pair of these weapons, and the rifle, thirteen consecutive shots were available, which gave the plainsmen a decided advantage over the Mexicans and Indians, most of whom had no slightest conception of the theory or use of either rifle or revolver. Small, resolute bands of beaver trappers armed with accurate plains rifles and pairs of holster revolvers, wandered over the plains and through the mountains, well knowing that they could stand off almost any number of Indians. Roving war parties avoided open conflict with well-organized bands of experienced and determined mountaineers, for they had discovered that it "cost too much blood to fight trappers." And it was commonly said in Texas that one Comanche would rout six Mexicans, while one Texan could hold off five Comanches.

Of course it all started down in Texas, when a merchant, whose name unfortunately does not appear, returned from New York with a pair of Patersons which Samuel Colt had presented to him, and which he in turn presented to Captain Jack Hayes of the Texas Rangers. Hayes thought so much of the revolvers that he saw to it that his men were armed likewise. The "fine shooters," as the Rangers called them, proved their worth when fifteen of Hayes' men engaged seventy-five Comanches up above San Antonio. The skirmish ended in a charge in which thirty-five Indians "went under," while but two of the Rangers were wounded. But the Paterson was too fragile and complicated for such rough service, so Captain Walker, also of the Rangers, induced Colt to redesign the revolving pistol, which resulted in the appearance of the five-pound holster pistol which Colt called the Walker Model. It is hardly necessary to more than mention the fact that the Model 1848 Colt Dragoon revolver, manufactured in Hartford from 1848 to 1860, was but a modification of the Walker.

An examination of contemporary records discloses many interesting facts concerning the use, accuracy, and effectiveness of the .44-caliber Dragoon. Says Hans Busk: "With one of them I once fired from a rest, at the Erith rifle ground, thirty-six rounds at the enormous range of four hundred and ten yards! Six bullets struck the butt at distances varying from thirty to thirty-six inches from the center of the target, eighteen bullets struck within the circumference of a circle seven feet in

diameter, and the other six shots at heights varying from ten to twelve feet above the target,—satisfactorily proving the capacity of the weapon for still greater range." Another states that the weapon is sufficiently accurate to place six shots in an 8-inch circle at 50 paces. Captain Robert Marcy relates an interesting incident which throws light on the efficiency of the Dragoon. While in the vicinity of Medicine Bow Butte in the spring of 1858, he observed a number of mounted men empty the chambers of their .36-caliber Navy pistols into a full-grown grizzly. However, the beast was not dispatched until another man armed with a Dragoon rode up and brought the animal to the ground with two shots. Subsequent examination disclosed that all of the .36-caliber missiles had penetrated hardly more than an inch below the tough hide, while the two bullets from the Dragoon had entered the vitals, with fatal effect.

The revolver was preferred by the best hunters among the plainsmen for running buffalo, which was due to its greater convenience in handling; and a (contemporary) traveler tells us that "Of the revolvers in use the old style Dragoon pistol of the Colt pattern seems the favorite. The plainsmen who possess a pair hold them in great esteem." He further states that "A single revolver ball well placed is quite sufficient to bring down the stoutest old bull." The experienced hunter, mounted on a trained buffalo runner, approached a fleeing buffalo upon the left side, and when nearly opposite delivered the fatal shot, which was directed to a point just behind the shoulder and a little



below the center of the body. The weapon was cocked only on being presented, and fired almost immediately, frequently "burning hair," so close was it held. When running buffalo, the Dragoon was loaded with loose powder and ball rather than the fixed ammunition supplied for that model. In this way the heaviest possible charge could be used.

By fixed ammunition is meant Colt's "Combustible Envelope Cartridge," a forerunner of our present-day metallic cartridge. The measured powder charge was confined in a water-proof collodion capsule attached to a conical bullet, thus forming a water-proof cartridge, six of which were packed in a cardboard box. These were more quickly loaded than loose powder and ball, but contained only about 30 grains of powder, while 44 grains of FFFg black powder could be compressed into a chamber of the Dragoon with the round ball. Of course 44 grains is a rather stiff charge for a handgun, but inasmuch as the Dragoon weighs four pounds (against two pounds seven ounces for the 7½-inch metallic cartridge Single Action), the recoil was not disagreeable. For buffalo running, where shocking power rather than accuracy was the prime requisite, this heavy charge was

permissible, but for accuracy a lighter charge was much more satisfactory. The charger of the copper Colt flask customarily supplied with the Dragoon holds 33 grains of FFFg black powder, which gives a fairly good charge for the 243-grain conical bullet cast in the old-type brass mould made for this pistol. This mould also casts a 140-grain round ball, which gives better accuracy than the conical bullet at usual pistol ranges when propelled by 38 grains of FFFg.

When preparing to load, the hammer of the revolver was first drawn to half cock, which depressed the cylinder bolt and permitted the cylinder to revolve freely. The case of the combustible-envelope cartridge was punctured before it was introduced into the chamber, thereby allowing a small portion of powder to escape, which insured

positive ignition. The cartridge was placed in an exposed chamber at the right side of the frame, the cylinder turned so as to bring the chamber in line with the rammer, and the bullet forced below the face of the cylinder so that it would clear the barrel breech when the cylinder was revolved. When using loose powder, the charger of the copper flask was filled, and the contents transferred to the chamber. A bullet was then pressed into place, the cylinder turned to bring the bullet under the rammer, and the projectile seated. Percussion caps were placed on the tubes from the right side of the frame, either by hand or by using the cap magazine.

The base of the conical bullet was relieved for about 5/32-inch to permit it to be entered into the chamber, while the

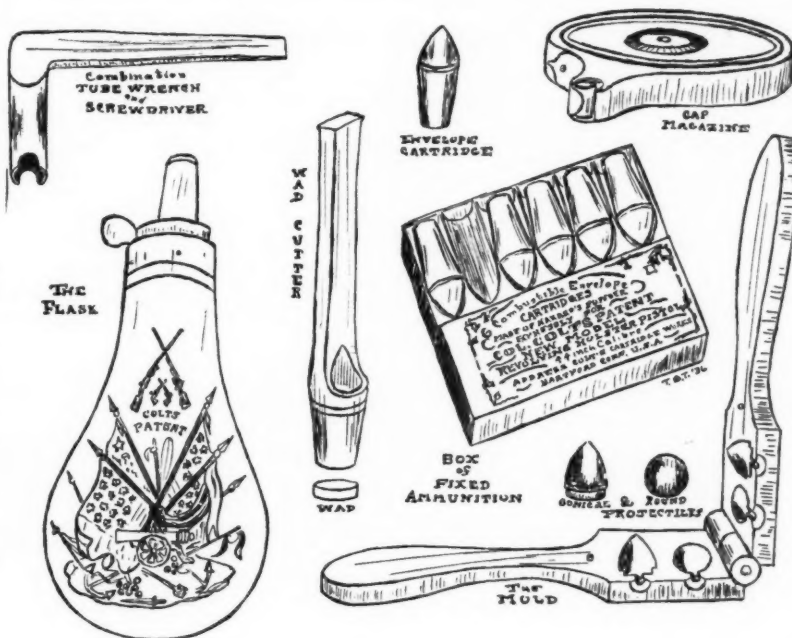
men engaged Mexicans or Indians, they charged through the enemy, mounted on fleet horses, wheeled, and swept back, emptying their revolvers with fatal effect. Inasmuch as the Dragoon was designed primarily as a holster pistol, to be carried in pairs in holsters on the saddle, and was used mostly by the plainsmen in mounted warfare and for buffalo running, it follows that the shooting matches of the latter would involve the use of the pistol when mounted. During the days of the western fur trade, the mountain men held many contests at the rendezvous at Brown's Hole on Green River. The targets were three posts ten inches in diameter and six feet in height, planted in a vertical position about twenty yards apart. The contestants rode at full speed past the posts

at a distance of not less than 15 feet, and attempted to place two bullets near the top of each post—a feat which it was claimed most of the participants were capable of. It appears that the Texas Rangers were even more adept, for it was said that most of Hayes' men could put from four to six bullets into a hat while circling it at full speed at a distance of about 15 yards. The notch in the nose of the hammer served as a rear sight, but we are told that most of the plainsmen

"... shoot as it were by intuitive feeling, glancing maybe along the barrel as they draw the trigger."

To meet the demand of modern target shooters who desired to experiment with these arms and participate in the cap-and-ball matches held by some of the revolver clubs, the Lyman Gun Sight Corporation some time ago brought out a special mould which casts a conical bullet known as the Ideal No. 450225. The Ideal No. 451118 is a suitable round ball. As before stated, a round ball with, say, 38 grains of FFFg black powder will usually be found more satisfactory than a conical bullet, for target purposes. Pure lead may be used for bullets, but a mixture of one part tin to twenty-five parts lead will produce a bullet of about the proper temper for use in the

(Continued on page 43)



bearing surface of the bullet was over-size. However, the ramrod exerted great leverage, permitting the bullet to be seated with ease. No patch or wad was needed, as the bullet was of groove diameter and was seated directly into the chamber rather than being loaded through the barrel as was usual with most weapons of that period. Beeswax was often applied to the bullet as a lubricant, and also to the tubes before capping, for the purpose of rendering the charge waterproof; and when so prepared, the weapon could be immersed for hours without damage to the loads. When loaded, the weapon was carried with the slotted hammer nose down on one of the pins which protrude from the portion between the chambers on the rear of the cylinder.

When the Texas Rangers and mountain



View of the firing line from the field operator's tent

Shooting Takes to the Air

By C. R. ROGERS

TWIRLERS of the numbered dial had a novel experience on the afternoon of May 7 when WBT, Columbia Broadcasting Station of Charlotte, N. C., again proved itself worthy of the title "The Pioneer Station of the South" by broadcasting an account of the North Carolina Small Bore Rifle Matches directly from the range at Kannapolis. This was probably the first time in the history of the sport that ether waves have vibrated to the sharp reports of shots fired in competition by sharpshooting riflemen.

WBT was well qualified to be the first to successfully conduct this unusual experiment since, in addition to being the key station of Columbia Dixie network and the only 50,000 watt high fidelity clear channel station between Philadelphia and Atlanta, it now has the distinction of being the highest rated station in America in listener preference, establishing an all-time record in a recent survey. More than just a radio station, WBT is a household institution in the vast Eastern Seaboard territory of the Carolinas, Eastern Georgia, Tennessee, Kentucky and Southern Virginia. By adding rifle shooting to the list of radio reported sporting events this station has again demonstrated its eagerness to supply its listeners with new as well as established types of programs.

The foundations of this unique broadcast were laid when J. J. Beloungy, chief engineer of WBT, contacted the officers of the Kannapolis Rifle Club, host club of the tournament. Mr. Beloungy, who derives a great deal of pleasure from his

collection of fine rifles, then took his plans to William A. Schudt, Jr., general manager of the station, with whose approval preparations were briskly begun.

For several days WBT frequently announced the coming broadcast of the tournament and at 10:15 on the preceding evening, May 6, Bill Shadel, who handles public relations for the N. R. A., filled in the time between press reports of the Hindenburg disaster with an interesting fifteen minute discussion on the development of target shooting and its present relationship to American life. And here again the attention of the radio audience was directed to the matches of the following day and the experimental broadcast to be attempted.

On Friday morning an automobile caravan drove up to the range bearing Charlie Crutchfield, whose voice is familiar to hundreds of thousands of people in Dixie because of his long experience as sports announcer for WBT, Jim Beloungy, who personally supervised the set-up of the equipment for the broadcast, and J. L. Whitman, who operated the controls. They brought with them field equipment of the most advanced type—equipment which is a duplicate of that used in the control room at their main studio.

When the range closed down at noon to give the shooters and officials an opportunity to secure some nourishment, this crew set up their equipment in readiness for the afternoon's broadcast. Three microphones were hooked up—one at the firing line to catch the crack of the rifle,

one at the 100 yard line to catch the zip of the bullet as it tore through the target and thudded into the backstop some six feet farther back, and one behind the firing line for Crutchfield to carry with him as he wandered about describing the range and looking for bits of shooting color. The Kannapolis range is some 35 miles from the transmitter and it was necessary for the club members to run a special 3,500 foot wire from the range to the nearest telephone wire.

At 2:45 the broadcast began, "theme-sung" by the last hundred yard relay of the Dewar match which obligingly fired a lengthy volley of rapid fire fouling shots for the benefit of its radio public. As the volley died away Crutchfield came on the air with a station announcement and a brief preview of the match then in progress. As he finished Chief Range Officer Captain C. N. Alston stepped to the microphone and gave his regular instructions to the competitors who had stayed in position during Crutchfield's description. His snappy "Commence Firing," set the match on its way and Crutchfield with his roving mike began to tour the space immediately behind the firing line, giving a running account of the match. As the shooters settled down to the serious business of "putting them in there" he returned to the shelter about which the spectators and those competitors who had completed the course were gathered. Here he found Bill Shadel who explained the bulletin board and answered various questions of general interest about

the shooting game. Crutchfield darted about for the next fifteen minutes interviewing some of the more interesting shooters who were on the scene. Captain John Mesick, fresh from the Philippines, told about his experiences during the two years he has been missing from the more important American tournaments; H. M. Van Sleen, the shooting jeweler from Gastonia, gave an amazing description of his new model target rifle which had never before been used in competition; Judge Oakey, who was later elected to the presidency of the North Carolina Rifle Association, stressed the safety record of the target shooting sport which goes on for year after year without a fatality and he also told about the efforts of the N. R. A. to educate boys and girls to the proper and safe method of handling dangerous weapons; Bill Bryan and Mrs. Bryan (known to most shooters as Miss Alma Hill) told about the co-educational aspects of the sport, while F. M. Hakenjos who was serving in the dual capacity of N. R. A. observer and executive officer of the matches, explained to the radio listeners the intricacies of statistical office procedure which make it possible to catch the competitor who fires a shot on his neighbor's target.

There were others on the program, each person stressing the particular phase of the game which was of most interest to him. While they were talking the shooters on the line continued to provide a background of staccato firing which kept the listeners reminded that they were tuned in on a rifle range broadcast.

The marksmanship exhibited by this relay was not exceptionally brilliant. There were as many scores turned in lower than 190 than there were above that figure and the highest of the twenty scores fired was H. W. Beck's 196 which was enough when combined with his possible at 50 yards to give him first place in the event.

Crutchfield found more and more things to talk about and less than half of the interesting material available had been covered when he realized that the end of the allotted half hour was rapidly nearing. There was one unique stunt to be tried, however. He stretched out on the firing line alongside a competitor and announced that he would demonstrate to the listeners that the bullet would reach the target before he could say "Boo." There was one mike at the firing line and one at the target, the third one Crutchfield held in his hand while he watched the muscles in the trigger finger slowly contract. His reaction was fast, but not fast enough, for even the echoes of the sound of the bullet's flight had died away before the "Boo" was heard.

The technical success of the broadcast was apparent to any listener. Especially noticeable was the complete lack of the

extraneous sounds which the public has learned to expect in remote control broadcasts. The twenty firing point Kannapolis range is located in a secluded valley which is far removed from any city traffic and made almost as good a broadcast studio as a sound-insulated room such as is ordinarily used for commercial programs. Except for the occasional chirping of a bird in the vicinity of one of the three microphones every sound which went on the air was distinctively shooting in character.

Manager Schudt of WBT was pleased with the success of the experiment and has advised that "The amount of interest shown by the public in this event at Kannapolis has been surprising and gratifying." The broadcast was a splendid demonstration of the results which may be obtained from close cooperation between the managers of a rifle tournament and the officials of a radio station.

Almost every rifle or pistol tournament can supply a sufficient number of interesting sidelights to maintain listener interest at a high level throughout a broadcast period of from thirty to sixty minutes. Such a program is distinctly different from any of the various types of sports or remote control broadcasts which are usually heard. Many of the listeners expressed the wish that a similar program could be broadcast over one of the major networks from the Pershing trophy match at Bisley, July 9, or from the National Matches at Camp Perry in September.

With the broadcast out of the way the match progressed very smoothly along normal lines to its climax when H. W. Beck of the Kannapolis club was awarded the new Van Sleen trophy as the champion small bore marksman of North Carolina with an aggregate score of 2358 x

2400. N. J. Boger of the same club turned in the same total but was outranked on the 100 yard scores. Captain Mesick and Van Sleen also won trophies, Van Sleen for outshooting all competitors in the matches of the first day (1179 x 1200) and Mesick for the splendid exhibition of cross firing he gave in the last match of the tournament.

Until that event Mesick was very much in the running for the top prize in the aggregate. He had already won two of the Saturday matches, taking the 50 yard individual event with a fine 398 x 400 and following this with a 394 which was sufficient to give him first place in the 50 meter any sights match. G. T. Strailman, who shoots with the Langley Field marksmen from Hampton, Va., was the only out-of-state shooter to break into the win column. He combined a 100 yard possible with a 199 at 50 yards to run off with top money in the short range any sights match.

As usual the annual banquet and meeting of the North Carolina State Rifle Association was held in conjunction with the tournament. Judge Oakey of Hertford was unanimously elected to the presidency in recognition of his successful efforts of recent years to definitely give North Carolina a spot on the map of the shooting world. E. M. Ketchie of Kannapolis, who has served as executive vice-president of the association ever since its organization, was reelected to that post, while H. H. Smathers of Canton was elected second vice-president. The offices of secretary and treasurer were wished on S. K. Barringer of Kannapolis. The association adopted a resolution protesting against the proposal of Attorney General Cummings to require the registration of all classes of firearms with Federal authorities.

Crutchfield turned from the firing line to call attention to bits of color provided by the spectators





It was in November

A Decoy Hunt for Lynx

By HENRY F. ZINNER

WHILE the fox and wolf, in spite of their well-known cunning nature and keen sense of smell, respond readily to the enticing, food-promising notes of the hare-call or deer-call, why should not the lynx? For does he also not love to feast up on a fat bunny or a nice juicy piece of fresh, warm venison?

The food of the lynx is, in general, much the same as that of the fox and wolf, but there are also other things to be considered when hunting him by the unique method of calling. Not only is the sense of smell of the lynx not nearly as well developed as in the two other species of marauders mentioned, but his method of hunting his daily food is considerably different from that of the fox, because of the large territory he covers and his habit of continually changing his hunting-ground. The lynx is a wanderer of the first order, and in this respect unlike the fox, which is more or less of a local inhabitant; therefore in hunting the lynx all this has to be taken into consideration—not overlooking the state of the weather. In the first place, there *must* be *fresh* signs proving the presence of lynx on the grounds we are to hunt; for to start a concert with imitation game-calls in any old place where

these big cats *might* be, is merely a waste of time and energy.

This calling method on fur-bearing animals was first introduced in Europe many years ago in still-hunting the fox, and was later used on the wolf, with equal success. As I received reports that it worked well on the lynx, I welcomed an opportunity to give it a trial; but my chance came rather unexpectedly.

It was in November, some years ago, that I first tried the "Lockjagd" on lynx in the foothills of a rather wild section of the Carpathian Mountains. A telephone call from a local forestry office informed us that lynx had recently made known their presence in their territory by leaving behind a couple of freshly killed carcasses of roe-deer, and that we were welcome to make an attempt to avenge the killing. A guide from the Forestry Department, my host, and myself made up the party. With our rucksacks loaded for light housekeeping we set out on the trail of the varmint. A fresh three-inch snow made tracking easy. The guide took us first to the deer carcasses mentioned, where tracks of three of the raiders were visible. Swiftly and without talking we followed the tracks for about an hour, until they reached the bottom of a deep and heavily-wooded gully.

Here we separated a little, and then sounded the first notes on the hare-call, but without results. So we promptly quit the spot, and continued along the tracks, which followed up the gully to higher ground.

Another hour brought us to a plateau surrounded by ledges and crags. Carefully we separated, and our guide skillfully gave a perfect imitation of a fawn calling its mother. But apparently the tawny cats were not in the immediate neighborhood; and as night was rapidly advancing we decided to postpone the hunt until morning, and make camp under one of the overhanging ledges. With all hands at work we soon had a nice thick bed of evergreen boughs for a mattress, and a roaring fire in front of us. The cave-like recess in our rock shelter soon warmed up nicely. Supper of baked potatoes, knackwurst, and tea made us all feel better; and with our pipes at full steam the conversation of the evening drifted from exciting hunting experiences with red stag and boar to daring encounters between foresters and law-defying poachers. Finally the conversation stopped, and silently we stared into the red embers—listening to the long-drawn-out howl of a wolf which could be heard in the distance, inter-

rupted at intervals by the deep-throated call of the "Uhu," as the great horned owl is called there. But as an early start the next morning was necessary we soon rolled into our blankets.

The beginning of a clear and still winter day greeted us the next morning. Breakfast was over at dawn, and when the first yellow rays of the morning sun gilded the surrounding mountain peaks, we were already hard on the trail of the tassel-eared cats. After half an hour of steady walking we came upon another kill of a doe, which had been ripped open within the past few hours. The fresh, bloody tracks of the killer were plain in the heavy spruce forest where the carcass lay, and as lynx have a habit of lingering for several hours—sometimes days—near a kill, we thought it advisable to try our skill here. Not a word had been spoken for some time, and the guard motioned us to separate. Slowly and noiselessly we moved over the soft snow to our different stations. My host went to the right, to slightly higher ground, while I turned left toward the bank of a tiny brook. The forester took the central position. About 100 yards separated us.

For fully five minutes I stood there admiring the giant spruces around me, when the deathlike stillness was broken by the cry of a wailing bunny. Natural and full of pain, the call for help came, with regular intermissions, as from a trapped hare. I gripped my Mauser tighter, and clicked the set trigger, for I sensed a peculiar nearness of our quarry. But nothing appeared upon the scene.

Another intermission, and then the appealing bleat of a doe in distress reached my ears. A pause and then Bang! came a rifle shot through the stillness of the forest. As the report echoed from hill to hill I glanced swiftly about, but saw nothing. Then suddenly a greyish form dropped silently from a knoll in the distance on my right. It would disappear behind the trunks of the giant spruces, and in the depressions in the ground. It passed completely out of sight, but a movement on my part might be disastrous to my chances of getting a shot, so I continued to stand dead still.

Now the form appeared again, coming steadily nearer. It was a lynx, all right. With stealthy, catlike movements it tried to pass some 50 yards in front of me. The closeness of the tree trunks and the swift movements of the animal prevented my getting a shot. With its belly close to the ground it skipped between the

spruces. It did not appear to be more than six inches tall when crouched, but would suddenly rise for an instant to its full height of about three feet, to look about; only to disappear again into the snow behind a raise of ground. How I wished for my three-barrel gun with a couple of loads of buckshot!

With my cheek against the stock of the Mauser I watched for the lynx to reappear. It would soon reach the little brook; and no sooner had this entered my mind than there it stood on the creek bank! Through my Zeiss scope I could plainly see the rust-colored fur-tipped ears and the slanting eyes as the lynx looked about, apparently undecided whether to jump the creek or follow the bank down. There was no time to be lost, and just as the animal turned its head away from me the picket of the telescope came to rest at the lower edge of its shoulder, and I touched the hair-trigger.

At the report the big cat jumped four feet straight up into the air, and landed in the creek bed, out of sight. Sounds of snarling and the scraping of claws into gravel, and of splashing water, told me that the lynx was cashing in. In a minute all was still; and no sound or sight of my companions, either. Was this lynx

My host and the forest guard now appeared upon the scene, and to my surprise the former was carrying a very large lynx. It seemed that while the hare-call brought no immediate results, at the first few notes from the deer-bleat instrument a large female lynx with two cubs came sneaking down the mountain-side toward my host's position, and he promptly downed the large cat with a well-placed bullet from the 8-57 rifle barrel of his three-barrel gun. The two cubs continued down the knoll at a rapid gait, passed the forester some 60 yards away, and separated there. The forester, while using his "magic flute," had set his "drilling" down against a tree, and could not get into shooting position quick enough.

While this European method of hunting cats is not as positive as traps or our American system of tracking with hounds, it is a novelty in itself to be able, with these man-made "calls of the wild," to lure these culprits of the forest to within shooting range. It is a very interesting and sporty method, and one that requires an amount of skill and patience not possessed by the average "Sunday hunter." Because a pack of noisy hounds is not regarded with favor on European hunting grounds—where every square foot of soil



A fresh three-inch snow made tracking easy

one that was missed by my companions—for the very best marksmen will miss sometimes? Shoving a fresh cartridge into the chamber, I remained on my stand a few minutes longer, and then heard the voices of my two companions. I decided that the hunt was finished, and walked over to the lynx. The 7-mm. bullet had forever stilled its appetite for venison.

is private preserve, this system was developed. The use of hounds is apt to frighten deer and other game out of one preserve and into another, while the decoy method of still-hunting will not disturb other game in the least. Lynx, as well as fox and even wolf, are often shot from the universally used elevated watch boxes by the aid of those food-promising game-calls.

A 54 Winchester Conversion

By HERBERT R. LONGO

AS A RESULT of a trade some time ago, I found myself in possession of a Model 54 Winchester rifle in .30-30 caliber. It happened that the .30-30 cartridge did not particularly interest me, and I cast about in my mind to see what, if anything, could be done to improve the situation. In the end I hit upon the idea that perhaps, at not too great expense, the rifle could be altered to handle the .30-40 Krag cartridge, which I have always liked.

I carried on considerable correspondence with Colonel Whelen regarding the matter, and he agreed that the 12-inch twist of rifling in the .30-30 barrel would be quite satisfactory for the .30-40 cartridge, the 10-inch twist in the Krag being necessary only to handle the long 220-grain bullets of war-time production, at the longest ranges. In the Colonel's opinion, the greatest difficulty would be found in altering the magazine; for he suspected that, although the magazine could be made long enough without much trouble, it might not be wide enough to accommodate the heads of the .30-40 cartridges in staggered position. As an alternative he suggested a single-column magazine similar to that of the Winchester Model 95, but not projecting below the stock; such magazine to hold two or three cartridges. Griffin & Howe had the same doubts about the magazine. But a capacity of only two or three cartridges did not appeal to me, and I found that by knocking out the extra end plates of the .30-30 magazine I could get five .30-40 cartridges in place.

The rifle was sent to Griffin & Howe, where they allowed that perhaps the thing could be done, and agreed to re-chamber the barrel, alter the bolt head, extractor, and ejector, and rebuild the magazine. My idea for altering the magazine was to use two thin steel wedges, front and back, soldered or screwed to the ends of the magazine; their position and angle being easily adjusted to give proper guidance to the rimmed cartridges. However, Griffin & Howe brazed in two plates, no doubt making many trials before finding the proper angle.

When the rifle came back I tried it for functioning with Western 180-grain Deer Special cartridges. The blunt nose of the bullets frequently caught on the rear end of the chamber, while at other times the cartridges would do a nose dive into the magazine. This I laid to the fact that the magazine was adjusted to handle cartridges loaded with pointed bullets. I returned the rifle to Griffin & Howe for

further adjustment, and since then have found it entirely satisfactory.

They told me that they had given the rifle a target chamber, and I found that fired cases showed very little expansion at the neck, requiring no resizing for cast bullets, and very little for .308 jacketed bullets. The throat of the chamber was reamed for modern bullets, which alone is worth the trouble and cost of the entire job.

Colonel Whelen said he was very glad to learn of the satisfactory outcome of this job, and felt that I had obtained a very useful rifle; he having always been a great admirer of the .30-40 cartridge, considering it to be the best-balanced American big-game cartridge in existence. He stated that it splendidly combined accuracy, sufficient killing power, flat enough trajectory, lack of disturbing recoil, and lack of tendency to metal fouling; and that with modern nitrocellulose powders and noncorrosive primers the accuracy life of .30-40 barrels would be very long. He said that prior to this the only good breech actions (in common use) for this cartridge have been the old Krag and the Winchester Single Shot. The Krag, however, could not be considered ideal, he said, because its one locking lug caused various loads to differ in both windage and elevation, while the Krag action was distinctly limited to a breech pressure of 42,000 pounds. For the very best burning of modern powders in the .30-40 case he thought the cartridge should be loaded to a breech pressure of about 43,000 or 44,000 pounds, and that cases would stand as much as 45,000 pounds.

The Colonel told me, too, that he liked the .30-40 cartridge so much that he had often contemplated rebarrelling a .303 British Enfield Model 1914 for this shell, but now much preferred the idea of the Winchester Model 54 in this caliber.



ENGRAVING

By HERBERT H. HILTON

ENGRAVING is one of the oldest of the arts. A person to be successful as an engraver should have artistic ability and a fine sense of touch. Some people are fond of having their things engraved, with both lettering and ornamental designs, according to what is needed. In other words, they like ornamental work in general.

Many persons think this work is done by machinery, this being a machine age. Machines are used to some extent in the making of plates for printing, these being finished by hand. Engraving machines have been invented, but they have not proven satisfactory.

In good work the surface is first covered with a wax or fine powder and the design drawn or marked in; then the cutting process commences. This is done with small chisel-shaped pieces of steel of very good material, the best coming from Switzerland. Some of the chisels have fine grooves in parallel formation running the whole length of the steel. Other shapes are square with the top ground off, making a point of one of the corners. On the end of the steel is a small wooden knob or handle which is held in the palm of the hand by the little finger and the one next to it. Engravers are not held as is a knife, but are used in a way similar to that in which a plow is handled; in fact, the tools work on the same principle as a plow.

The article being engraved is held in the left hand and turned more or less as the engraving progresses. Small articles are held in an engraving block, which is a vise the bottom of which is in the form of a ball, so that it may be tipped in any direction as may be required. Engraving on guns is more difficult than on many other things, owing to the shape of the parts and the toughness of the steel.

There are two principal ways of doing the cutting: one is to give a design in relief, while the other is merely cut in. Relief work requires much the more time, especially deep relief in which animals, birds, or other parts of a scene are cut in model formation.

Fine monogram and letter work, as well as the crests of not so many years ago, are rarely engraved nowadays. Large shops of twenty or thirty engravers are a thing of the past. In engraving the parts of an old gun that are casehardened, these have first to be softened by heating, or the hardened coat is removed with acid.

When I took up engraving twenty-nine years ago the art was already declining, although there are still some very fine workmen in the world.

THE AMERICAN RIFLEMAN

California Gallery Championships

By JOHN B. ADAMS

RIFLE shooting stepped into its rightful place in the California sports limelight early in March when 68 teams and 360 competitors rubbed shoulders in the State Gallery Rifle Championships.

Sponsored by a committee from the newly organized San Francisco Rifle Association, and under the auspices of the *San Francisco Examiner* newspaper, the three day shoot, March 5, 6, and 7, was held in the California National Guard Armory.

The enthusiastic response of the shooters was quite remarkable, considering that the first announcement of the competition was made less than three weeks before firing commenced.

The match was further noteworthy since it marked the first attempt of San Francisco—at least in many years—to stage any kind of a rifle competition. Although there were a few scattered clubs in the city, prior to last fall, there had been no shoulder-to-shoulder shooting. At that time, Hughes Richardson, former president of the Connecticut State Rifle Association, arrived on the scene—and powder began to burn with eighteen clubs competing weekly in the San Francisco Rifle Association matches.

In order to stimulate interest among every class of individuals, young and old, civilian and service, seven distinct classifications were made for the State shoot, with two additional divisions for Juniors and Women—which unfortunately drew rather a negligible attendance. Next year it will be a different story.

Course of fire consisted of five shots in each of the four positions, prone, sitting, kneeling, and standing, on the N. R. A. 50 foot target, one shot on each bull. The range, in the basement of the Armory, had twelve firing points. With a time allotment of 25 minutes for record and sighting shots, and a few minutes to change relays, the range had a capacity of 24 competitors an hour.

It was early in the opening evening that Golden Gate Rifle and Pistol Club appeared on the firing line and turned in a score that withstood the assaults of every other team. Paced by John W. Davy, a bricklayer by trade, with the fine score of 195 x 200, the Golden Gaters piled up a total of 949—an average of practically 190 per man over the four position course, and equivalent to 380 per man in the somewhat longer forty shot course. This won them the Examiner State Championship trophy.

Davy's score, a possible prone, 49 sitting, 48 kneeling and 48 standing, was all the more remarkable since it was made

under pressure—and won for him the Examiner Trophy for State Individual Gallery Rifle Championship. John B. Sweany, barrelmaker and ballistics expert of Winters, California, made a real try for the individual championship on the closing day of the shoot when he turned in possible prone and sitting, a 49 standing and 45 kneeling for a total 194.

Olympic Club took second in the Open Championship with 937, followed by the regimental team of the 250th Coast Artillery, California National Guard, 935. The San Francisco Schuetzen-Verein, oldest shooting organization in the West, landed third in the Civilian championship with 930.

Alameda High School staged an upset in the R. O. T. C. Division when they piled up a total of 856 on the final day to beat out the Polytechnic High School team which scored 852. Galileo High was close behind with 850. Alameda was awarded the Hughes Richardson Trophy and in the Junior Prone Division top honors went to the Galileo High second team with 933x1000.

Three teams from the University of California set the pace in the Collegiate Division with the varsity team taking the Spiro Company trophy. The university boys, incidentally, ran through their season of postal matches with 30 consecutive wins over the nation's leading college teams. In the Women's prone match top score of 938x1000 was recorded by the San Francisco Junior College Women's team.

Company "G" of the Thirtieth Infantry, commanded by Captain T. S. Timberman, led the Service Company team division with 872 to win the Army and Navy Club trophy.

In the special division for Reserves, Sgt. Irving Kelly's team of the Marine Corps Reserve landed in first place with 888 while another Marine Reserve team of Oakland, the Observation Squadron, tallied 843. They were awarded the Golden Gate Rifle and Pistol Club trophy.

Allison Schofield, president of the San Francisco Rifle Association and one of the leading figures in California's memorable fight against the Alco anti-gun law, presented the Citizen's Defense League trophy to Municipal Post of the American Legion for top score of 915 in the Veterans' Division.

Two Santa Cruz marksmen had their share of the spotlight in the specialty matches held on the drill floor of the Armory. Earl Harris, big game hunter and clothier, walked off with first place in the 50 meter individual match on the

international target with 198, one point better than the splendid score recorded the previous day by Lou Coulson of Mill Valley.

The Miss n' Out match at fifty yards was won by Paul Johnston who ran 48 consecutive shots in the four inch bullseye in the standing position. Second place was taken by Eddie Johnson, radio entertainer, who also won the 20 shot offhand championship with 180. Second place offhand went to F. Pensotti of Napa with 177, and third to Fred Schelter, of the Schuetzen-Verein, with 176. Johnson also won the Miss n' Out match on the first day of the shoot when he ran 26 shots in a 2 inch bullseye at the 50 yard range.

Scoring four possibles in the 50 meter scopesight re-entry match first place went to Dr. H. R. Baix of the Schuetzen-Verein, followed by Frank Davy of Golden Gate and George Titherington, the Stockton barrel-maker. Carl Williams took the iron sight division, followed by Earl Harris, and E. Wisner.

Largely responsible for the success of the matches was the volunteer help of various San Francisco rifle club members. Lt. T. J. Remington, Forest Wheeler, Louis Landreville, and Bob Eaton served efficiently as Range Officers, while in the scoring rooms the Brothers Davy—Frank, J. W., J. B. and Joe, assisted by L. V. Easterday and Sgt. Irving Kelly checked over nearly 2,000 targets—and without a single complaint.

The task of squadding teams and individuals fell on the shoulders of Hughes Richardson, Joe Terry and George McDowell, while the registration desk was operated by Mrs. Richardson and Mrs. Terry. Full facilities of the Armory were made possible by Lt. Col. D. P. Hardy, executive officer of the 250th Coast Artillery, and Captain Merle Kline, secretary of the Armory Board.

With the first shoot of the San Francisco association now a matter of record as an outstanding success the boys are now aiming towards a new goal—that of matching Connecticut in staging the biggest shoot in the nation.

GOLDEN GATE CLUB TAKES FRISCO TITLE

WITH two of their members capturing first and second in the individual aggregates, the Golden Gate Rifle and Pistol Club of San Francisco won the San Francisco Rifle Association's Indoor League with the high five man average of 939x1000, for ten shoots.

The club, undefeated in gallery competition this season, set and broke five team score records during the course of the season leaving a record of 953x1000 for the boys to shoot at.

9 OUT OF 10 CALIFORNIA EVENTS CAPTURED BY "PALMA MATCH" SHOOTERS

EDGAR CRAVEN TAKES FIRST HONORS AT CALIFORNIA SMALLBORE CHAMPIONSHIP



NO. 1 CALIF. SHOOTER... E. A. Craven won the Aggregate, Dewar and Titherington.



Geo. Rowell... Winner of the Palma event with Palma Match VEEZ 73.



J. O. Miller, victor in the Hamilton.



Robert A. Hill won the Ljutic.



J. B. Adams, first in the Wimbledon.



"DOWN ON THEIR BELLIES" along the firing line at Glendale, Calif., where Palma Match shooters had a "field day."



Crown City R. & R. Club, who took the team event. Left to right: F. L. Day, A. Ryerson, Earl F. Burns, R. W. Miller.

GLENDALE, Cal.—E. A. Craven doesn't have to be told how VEEZ 73 will pull up a score! Shooting in the California Smallbore Rifle Championships, he was top man in the Aggregate with 1796, and he took the Dewar and the Titherington with a pair of 399's.

Competition in the Dewar was plenty hot. J. N. McClintock, who took second place, and R. C. Kanagy, third, also turned in 399's with plenty of X's... both shoot-

ing VEEZ 73. In the Ljutic, Robert A. Hill nosed out A. F. Goldsborough (shooting a new Remington 37) by one point. Both used VEEZ 73.

The Club team event was captured by the Crown City R. & R. Club with 1577. The whole team used Championship Ammunition—VEEZ 73.

At right are more complete details of what turned out to be a victory sweep for Palma Match shooters!

CALIFORNIA SMALLBORE CHAMPIONSHIPS

- DEWAR—1. Edgar Craven, 399—VEEZ 73
2. J. N. McClintock, 399—VEEZ 73
- TITHERINGTON—1. Edgar Craven, 399—VEEZ 73
2. L. A. Pope, 396—Palma Match
- LJUTIC—1. Robert A. Hill, 397—VEEZ 73
2. A. F. Goldsborough, 396—VEEZ 73
- HAMILTON—1. J. O. Miller, 196—VEEZ 73
2. J. N. McClintock, 196—VEEZ 73
- PALMA—1. Geo. B. Rowell, 225—VEEZ 73
2. H. Comstock, 225—VEEZ 73
- WIMBLETON—1. John B. Adams, 194—VEEZ 73
2. Victor Massie, 194—VEEZ 73
- TWO-MAN TEAM—I. R. Barnes, 393
R. C. Kanagy, 397
(Kanagy shot VEEZ 73)

- CLUB TEAM
CROWN CITY R. & R. CLUB—1577
A. Ryerson, 398—VEEZ 73; Floyd E. Day, 395—VEEZ 73; R. W. Miller, 393—VEEZ 73; Earl F. Burns, 391—VEEZ 73.

TEN MEDAL WINNERS IN CHAMPIONSHIP (AGGREGATE)

E. A. Craven, L. A. Pope, John B. Adams, A. F. Goldsborough, Otto Marckmann, H. J. Adams, J. O. Miller, E. C. Hamley, Walter Joy, J. E. George. Eight shot Palma Match VEEZ 73. Two used grease lubricated Palma Match.

TEN MEDAL WINNERS IN AGGREGATE ALL SHOOT "PALMA MATCH"

BRIDGEPORT, CONN., JUNE, 1937

POSSIBLES AND IMPOSSIBLES

by FRANK KAHRS



There certainly is some sweet "hind leg" shooting going on these days! For example: T. E. Hetland, President of the Eau Clair (Wisc.) National Rifle Club, shot five 10's off-hand in the Club events. Kleanbore shooter Howard Nobbs of the Jamestown Rifle Club recently scored a hot 99 off-hand in a recent New York-Pennsylvania League Match. And I hear that Wilson Rouse, a member of the Janesville, Wisc., Rifle and Pistol Club, displays a perfect 150 at 50 feet indoors (scope) in the prone, sitting and off-hand positions. Harry Grimesey, Secretary-Treasurer of the same club, shot a 148 the previous week consisting of 50 prone, 49 sitting and 49 off-hand. Both of these gentlemen state that they shoot "good old Kleanbore." May their shadows never grow less!

I've got a very good 10X possible at 50 yards shot by W. H. Womack of Shreveport, La., with Kleanbore. And Mr. Womack says: "With the present high quality of your ammunition, I feel that I can duplicate these targets at almost any time I desire."

Bruce M. Campbell, Jr., of Roxbury, Conn., sends me a very nice 7X possible at 50 yards, made with Kleanbore.

Thurman Randle and I journeyed from Dallas to Glendale recently for the California State Championships, and while Thurman acted as Official N. R. A. Representative for the shoot and the tryouts for the Bisley Team, I acted as "coordinator." The boys are still trying to figure out what a "coordinator" is. As a result of the tryouts it looks as if Ed Craven is going to get a free boat ride to Europe.

It was a real pleasure to visit with the Glendale boys on their new range. Always feel like one of the boys when visit that range.

I received an interesting possible shot by Bill Holmes, 18, of St. Louis, Mo., using Kleanbore Kleankote at 50 feet. Not one of the shots cuts the 9 ring from the inside!

"KLEANBORE" HAS MATCH ACCURACY AT LOW COST

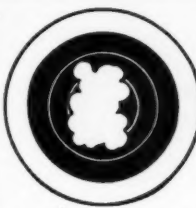
MINNESOTA STATE TITLE WON WITH "KLEANBORE"

IS THIS A RECORD?

LOCKPORT, N.Y.—"Kleanbore" shooter Frank Schilling of Lockport scored 100's in the prone and sitting positions, and 97's kneeling and standing in the 50 ft. four position event in a match between the Sill Rifle and Revolver Club of Lockport and the Frontier Rifle Club of Lancaster. The Sill Marksman won the match by 1902 to 1884.

Is this a new world's record? As far as we've been able to check it looks like the highest total score ever attained for 10 shots in each position at this distance in competition.

Schilling has been high average shooter in the Niagara Frontier League the past two seasons, and it looks as if he'll repeat this year.



Irven W. Kenny, Jr., 9, of Fort Lewis, Wash., qualified Sharpshooter, 3rd class. He's learning to use KLEANBORE early.

AMONG THE JUNIORS

Contributions keep pouring in to our "Infants' Department" . . . proving that the youngsters are doing some real shooting today. Jeanne Ripick, 9, of Cleveland, and Glen Dodge, 9, of Huntington Beach, Cal., sent us some well shot targets made with Kleanbore, Glenn Thomas, 11, of Woonsocket, S. D., and Mark A. Cooper, Jr., 10, of Rome, Ga., have evidently been doing some fine work with Kleanbore Kleankote.

Anna Lou Ballew, 13, Mannington, W. Va., asks no favors from anyone, as this 50 x 50 proves (scored with Kleanbore). Anna Lou is qualified as a Sharp-

shooter in the N. R. A., and has four bars toward her rating as Expert.



THERE'S ONE IN EVERY CLUB . . . UNOFFICIAL SCORER



THE TARGET OF THE MONTH



Which of these two targets is the better? We had to give up and call it a tie! On the left is an 8X possible at 200 yards, shot with Palma Match by B. M. Johnson of Fort Stockton, Tex.

The right hand target was shot by Burrel J. Whitworth of Denver, Col., with Kleanbore. It's the smallest group at 100 yards we've ever seen . . . almost makes a 10X possible on a 50 yard target if placed properly!

Each month Remington will produce what is in their opinion, "The Target of the Month." Only conditions: 1. It must be fired under N. R. A. rules. 2. Be witnessed by two people. 3. Be fired within one month previous to the time it was mailed to us. 4. Be fired by a Remington ammunition or rifle. Send in "hot" targets to Frank Kahrs, Remington Arms Co., Inc., Bridgeport, Conn.

Sighting Shots From Successful Shoots

NIAGARA FRONTIER PISTOL MATCHES

THE Buffalo Revolver and Rifle Club of Buffalo, N. Y., conducted the first N. R. A. Registered Pistol and Revolver Matches fired in this section, during the week-end of April 17-18. The Bison City pistol fraternity was pleased once again to act as hosts to their friends from Toronto, Rochester, Syracuse, and many other places both far and near.

The Toronto aggregation, composing the hardest shooting crowd this city has known, was represented by larger numbers than last year when they made a clean sweep, leaving the rest of the shooters with but very few crumbs.

The Grand Aggregate Trophy, denoting the Niagara Frontier Championship, was again awarded to Leonard Appleyard with a score of 1569, an increase of 16 points over last year. Lynn D. Wallace finished in second place, and the Bronze Trophy for third place was awarded to I. Flatman, of Toronto, who incidentally afforded the big surprise of the match by firing a beautiful possible on the Standard American 20-yard target, using Dominion ammunition in a borrowed H. & R. Single Action Sportsman.

In the Ladies' Match, Mrs. Lloyd Bissell (alias D. P. White to the Skeet Shooting Fraternity of Western New York), finished first with a 161, just nosing out Loretto Meier by one point. Marjorie Baker finished third with 155.

The Mixed Doubles Event was more than interesting. Wives abandoned their husbands of mediocre ability and paired with the best shots that they, using their best smiles, could inveigle into shooting with them. As a result, the winning pair, Mrs. Loretto Meier and Leonard Appleyard, of Toronto, finished first (winning a beautiful pair of trophies) with a team total of 182 on the Standard American Target, a score which is good in any company. Miss Baker and I. Flatman finished second with a score of 174.

The .22 caliber Aggregate Trophies which were awarded on the total scores fired in the .22 caliber Events, was won by George B. Young, of Buffalo, who piled up a score of 724. Leonard Appleyard, of Toronto, finished second with a total of 722. Lynn D. Wallace finished in third place.

Sunday morning, with the Small Bore Events now history, a large aggregation prepared to fire the Center Fire Events. The Slow Fire Individual Match was a clean sweep for the Toronto Club as they

proved again their ability to handle their big guns, Leonard Appleyard finished first with a score of 180, and was followed by W. C. Smith with 178, and Dr. L. W. Black with a total of 175.

In the Slow, Timed and Rapid Event, however, the American Shooters showed their ability. John Mills, of Rochester, won first place with a total score of 266. Edward Beitz of Buffalo, finished second with 257 and W. L. Kendall, of Rochester, finished third with 256.

When the scores were finally compiled, it was found that John Mills had won the Center Fire Aggregate with a score of 702, which was a total of 25 points more than last year's winner. Edward Beitz finished second and Leonard Appleyard, of Toronto, was third.—LYNN WALLACE.

SMALL-BORE "C" MATCHES PROVE POPULAR

THE diversion offered in the California Small-Bore "C" Championships which are held annually at the range of the Antioch Rifle Club, proved an attraction to some 94 competitors this year, who chose to get away from the usual prone shooting of most small-bore matches for a change and fire this novel course. It is fired exactly as the regulation army "C" course except that the bullseye and ranges are reduced to one-fifth the size used for the .30 caliber shooting. Scores made over this course are comparable to those made with the large bore and are excellent training at a cost which is also about one-fifth the cost of large bore.

With a setting of numerous oak trees growing on a carpet of wild flowers in full bloom and the kind of weather one reads about in California travel bureau advertising, this year's shoot was foreordained to be a success.

As has been the case at all previous shoots, the competition was keen and the winners were in doubt until the end of the last relay. When all scores were in it was found that Antioch Rifle Club had made 1193 points to take first place, the Perpetual Trophy and five medals for the high team. Close on their heels was the Capitol City Rifle Club (Sacramento) with a score of 1191 points, who took the five medals given for second high team.

In the individual competition, Ham Holliday of the Antioch Club got off to a slow start with a 44 offhand, but got "hot" for the balance of the shoot and only dropped one point for a score of 243.

A pistol shoot for the ladies was inaugurated in connection with this year's shoot and it proved so popular that it is planned to also make this an annual event. Twenty women competed for medals on the pistol range which is adjacent to the small-bore range. In the free for all event, first place was taken by Algie Spaite. The handicap was taken by Yvonne Stinnett, with a score of 300. Second and third medals in this event went to Effie Long, with a score of 300, and Margaret Spaite, with a score of 299.—C. H. ALLISON.

THE MIDWEST INTERSCHOLASTICS

THE Second Annual Midwest Interscholastic Rifle Matches were fired on the two indoor ranges of the Morgan Park Military Academy at 2153 West 111th St., Chicago, Ill., April 9 and 10. The ranges are equipped with the X-ring bullet traps, fifteen positions on Range "A" and ten positions on Range "B" at a distance of 50 feet.

A summary of the entries shows 179 individuals participated in the matches, sixteen boys' teams, two girls' teams and thirteen father and son teams.

Eligibility rules required competitors to be under 19 years of age, members of the National Rifle Association or affiliated club, and in attendance at schools of grade or high school category, that is, twelfth grade or below. By requiring all entries to be made three days before the opening date it was possible to have all targets marked, statistical forms prepared, range assignments and relay assignments made and mailed to the coaches of the various teams, with the date and hour they would fire.

Officials of the match included Major Paul O. Franson, executive officer; Major Francis W. Parker, Jr., chief range officer; Major Lester F. Stewart and Russell Wiles, assistant range officers; Herb Goebel, statistical officer, and Sergeant George H. Freer, registration officer.

In the team match the Culver (Ind.) Military Academy's first team won first with 1859 leading the Culver second team in second place by 56 points. The Evans-ton (Ill.) Township High School's team placed third with a 1778.

The Girls' Team Match, 40 shots prone in two stages, was won by the Viking Girls' Team of Chicago. Carol Franson of Loring School, Chicago, won the girls' Individual Match.

The Individual Aggregate Mid-West Championship was won by L. R. Kellam of Culver Military Academy, who shot a 378 for the four stage course of ten shots prone, kneeling, sitting and standing. Three of his team-mates from Culver followed in second and third and fourth places.

FOURTH ANNUAL CLEVELAND SHOOT

The Fourth Annual Small Bore Rifle Tournament of the Cuyahoga Civilian Marksmen's Association was held at the Cleveland Grays' Armory on April 10 and 11 with a record attendance of 115 shooters, representing seventeen clubs approving the new feature of N. R. A. official registration.

Twenty firing points were available for the shooters and due to a unique system of squadding all likely congestion from the scarcely anticipated influx of marksmen was eliminated.

The Oliver Hazzard Perry Memorial trophy went to Milton Klotz of the Zepelin club for his excellent score of 392 x 400 for the four position course. His additional second place in the metallic sight four-position match and a first in the individual off-hand gave him the grand aggregate for the meet.

The N. R. A. affiliated club team match was won by the Lawrence Park Rifle Club with the Lorain Rifle Club placing second and the East Cleveland Rifle and Revolver Club third.

Ruth Williams came through with a possible in the ladies' match, 20 shots prone, to lead Flossie Anson in second and Minnie McCoy in third, who both fired 199's. Only previously, however, Miss McCoy's possible in the individual prone event led the entire mixed field.

Very gratifying to publicity hungry shooters was the bounteous provision of the three local newspapers as well as radio station WTAM. The Associated Press had a reporter on duty continuously throughout the tournament. Many spectators were present and scopes were set up for them to observe shots as fired.

Match officials were Captain J. F. McCaslin, chief executive officer; Captain W. B. Higgins, statistical officer; Sergeant J. R. Harroff, chief range officer, and the N. R. A. representative and observer N. E. Shively, official scorer.

STATE SHOOT AT SALT LAKE CITY

The Salt Lake City small arms club won the state gallery match by firing a score of 1826 over the course of its home range, the scene of the shoot, and led the Payson rifle club team, the second place winners, by a margin of 23 points. Arthur Gephart and the state pistol champion Jim Wade, were the leading scorers for the Mormon city team.

The surprise of the meet was the strong showing of the West high school R. O. T. C. team. Led by Bill Boucher, the high school boys demonstrated they knew the secret of steady holding by clinching third place in the tournament. The prep

team's score of 1795 is considered remarkably good for young shooters. Boucher finished second in the high ten individual ratings, being only two points below the leader, Ray Hansen, veteran Goshen rifleman.

Miss Vera Hansen of Goshen won the women's state championship with a score of 340. She also recently captured the Utah county championship in a meet at Provo.

PORTSMOUTH WINS NEW HAMPSHIRE STATE TITLE

The Piscataqua Rifle Club of Portsmouth won its third state rifle title in the annual gallery championship matches sponsored by the New Hampshire State Rifle Association as a fitting celebration of its fourth anniversary.

The matches were conducted by the Granite State League on the range of the Winnisquam Rifle Club, which was remodeled to accommodate the large number of shooters. All team and individual championship firing was done on a range of eight points on the ground floor of the building, and eight more firing points were installed in a large upstairs hall for re-entry firing.

In the team match, the big event of the gallery season for the rifle clubs of the state, twelve clubs were represented by one or more teams of eight men, five high scores counting. All firing was done at 50 feet, iron sights, ten prone and ten off-hand per man. The Portsmouth Club's score of 915 was two points better than that of the Franklin Rifle Club which finished in second place. Manchester, the 1936 champs, finished fifth with 900 flat.

Teams were classified into four divisions, with all teams above 895 in class "A", with fifteen points to each division below that score. By some freak, all the nineteen teams firing wound up in class "A" or "C", leaving the other two classes empty. For this reason, it was decided to use the Lewis class system in 1938, as being more satisfactory. The class "C" title went to the East Concord Rifle Club, with a score of 879.

In the individual championship, fired over the same course, Ol' Man Buck Fever got in his deadly work. One potential champ after another warmed up on the offhand reentry range until he "got in the groove", and then went down on the championship range and blew up with a resounding bang! R. W. Plummer of Concord, a student at the State University, figured that under the conditions no special effort was needed and fired his average score of 185, taking the state title, the trophy and a gold medal. M. J. Geer, also of Concord, tied Plummer but was outranked, taking the silver second

place medal. A. W. Skoog of Keene tied Conant of Plymouth and Margeson of Portsmouth for third place, but won the silver medal with an 88 offhand. Eighty-seven men fired in this match, a new record for the event.

At 8 p. m. Sunday, the annual meeting of the association was held. The 1936 board of officers was reelected without change. The officers are L. W. Bucklin of Franklin, president; Stafford S. Hill of Nashua, vice-president, and A. G. Stevens of Manchester, secretary-treasurer. It was voted to hold the 1938 gallery matches at Nashua, using the Lewis class system in the championship events. The 1937 outdoor small-bore tournament, registered, will be held at Manchester, July 17 and 18, as in 1936. The meeting was adjourned at 10 p. m., bringing to a close the most popular and enjoyable gallery matches ever sponsored by the association.

CONTINENTALS WIN RHODE ISLAND MATCHES

The Varnum Continentals of East Greenwich captured the indoor State team championship at the Rhode Island State Rifle and Revolver Association's annual meet in the Cranston street armory yesterday. It was the second time the Varnum Continentals have won the bronze plaque, symbolic of the State championship, as they also were victorious in this event in 1934.

Members of the winning team were A. C. Friel, G. I. Cook, J. Cook, Colwell and Budlong. Their scores were 1340, three points better than the Newport Rifle Club. The East Warren Rod and Gun Club finished third and the Snipers' Rifle Club was fourth.

George I. Cook of the East Greenwich group won the individual state championship after very keen competition. Cook posted 188 on the record sheet. A. C. Friel, a team-mate and A. W. Manchester of Newport followed him with 187.

Marion Evans, 18-year-old Providence girl, won both the women's indoor State championship and the junior indoor title.

Miss Evans, who is a member of the Snipers' Rifle Club and has been a rifle enthusiast for a little over two years, had a close call in the women's event, in which she nosed out May Manchester of the Netop Rifle Club of Newport by a single point. Miss Evans scored 99, and Mrs. Manchester 98. Ruth Jarrett of Rhode Island State College was third with 94.

In the junior field Miss Evans continued her steady shooting to clearly dominate the field of young men and women under 19 years of age. She scored 97 points and her nearest opponents, Richard Cartier and William Marchant, both of Providence, tied with 94 for second prize.

THE OHIO TEAM MATCHES

THE Ohio Team Matches were held at Fort Hayes Drill Hall, Columbus, Ohio, on April 3 and 4 with most sections of the good old shooting state of Ohio represented. The omnipresent Akron shooters took major honors throughout the matches. Although the Zeppelin team drove to Chicago to compete in the Chicago matches on Saturday, driving most of the night through a blizzard on their way back to compete at Columbus Sunday, it seemed, if anything, to improve their scoring ability. Milton Klotz put the pressure on in earnest to score 295 and 294 in two successive trials over the three position course. Israelson, a team mate, joined his partner with a 293 in the four man team match to place Zeppelin in front with 1142. This sewed up match No. 1, a four man, three position affair.

The Zeppelin club bowed to Dayton's National Cash Register team, however, in the feature match of the meet. This was the match for the Governor's trophy fired over the same course but competed for only by the winners of the season's shooting schedules in each section of the state. These so-called leagues shoot at least eight shoulder-to-shoulder matches during the season and the winner of the greatest number of matches in each league is eligible to compete for the Governor's trophy. Scores for the most part reflected the tension which grips the teams as they go on the line for this match and many good teams failed to do their best. When the smoke had drifted away, however, National Cash Register was sitting on top of the heap with Zeppelin a scant point behind. The scores were 1413 to 1412—with Klotz turning in possibles in both prone and kneeling position and a "mere" 95 standing.

The fifth renewal of the Buck-Empire Match (telegraphic) fired vs. New York shooters, found Ohio winning 3762 to 3754. This was only the second time Ohio had won in five trials and the Ohio boys were justly proud of taking the New York sharpshooters into camp. The course of fire was 20 shots prone and 20 shots standing.

A new match with California was a very popular feature of program and won much interest. This was fired against two teams of gallery riflemen from Northern and Southern California, respectively. There were ten competitors from Southern California who fired scores at Los Angeles under the leadership of E. C. Hamley, Jr., and ten competitors from Northern California who fired their scores at San Francisco under the leadership of John B. Adams. L. A. Pope and Hughes Richardson handled most of the arrangements. The Southern California boys took the Northern California shooters into camp

by a handy margin of 3758 to 3731 for a combined total of 7489. Ohio, however, went out in front by 30 points and won with a score of 7519.

The matches were ably conducted with Roy B. Foureman serving as executive officer, Captain Henry M. Smith of Fremont, range officer and L. Q. Bradley of the National Rifle Association serving as scorer.

The tabulation of scores fired by members of the several leagues in the state shows that the Summit County League (Akron Territory) with 34 representatives fired a fifteen man team total of 4221 for an average of 281.4 per shooter over the prone, kneeling and standing course. The Southwestern Ohio League with 17 shooters present came in only three points down for a fifteen man total with 4218, an average of 281.2 per shooter. The Western Ohio Rifle League mustered 21 representatives who put up a fifteen man total of 4173 for an average of 278.22.—F. L. SPENCER.

THE BIGGEST LITTLE SHOOT IN THE EAST

IN New Jersey at the present time all types and classes of shooters apparently revel in 50 metre matches if the attendance at the 4th Annual Amateur Rod and Gun Club matches held May 2nd can be taken as any indication at all. Starting off modestly with 44 competitors in 1934 this A. R. G. C. match doubled itself in contestants every year until this year when range facilities prohibited doubling the 170 that attended in 1936, and the management catered to 220 from early morning to sunset.

In the very first relay in the individual match Ransford Triggs, who will bid for national recognition this year dropped his first shot and then ran 19 tens to command a comfortable lead over all other struggling hopefuls who had their eyes on the new Remington Rangemaster which the A. R. G. C. boys had placed up as first prize. Along about lunch time F. Kenneth Van Houten of the host club quit his labors as Re-entry Officer and obligingly tied Triggs with a well shot 199 but was outranked. The wind by this time was tantalizing such well knowns as Schweitzer, Lippincott, Samsøe, Frohm, Shanessy, Gwilliam and Tekulsky while an unusually hot May sun took the starch out of many a collar—and shooter. In the midst of this hopeless condition Dave Carlson, Number 2 national rater—firing what looked to be a 200 and what turned out to be a 199—outranked Triggs and while bystanders were still standing around with incredulous looks on their faces, was presented with the coveted prize.

John Vitrano meantime was busily engaged cleaning up the re-entry match with

E. Pade of Sellersville, Pa., Major M. R. M. Gwilliam and C. Grollmund following in that order.

The Perth Amboy Rifle Club composed of W. Larson, J. Kolbus, T. Samsøe, R. Coffy, and C. Nohns topped 14 clubs in the Team Match to win the 2,500 rounds of match amm. offered as first prize.

The A. R. G. C. management also maintains a so-called Average Shot Class with the same approximate awards as are given in the Expert Class. Of the 220 shooters in the match 104 entered the Average Shot Class which seems to vouch for the advisability of such a class in any shooting match or matches. Mr. J. F. Short totaled 196 to take the gold medal. Henry Ullman took the sterling medal outranking F. Gordan with a 195.

—R. B. CHAMPLIN.

WASHINGTON SHOOTERS MEET AT IONE

THE third annual Pend Oreille County Outdoor Small-Bore Tournament was held at Ione, Wash., at Thackston's Range, one half mile west of Ione on April 18th, with 30 shooters from Pend Oreille County in attendance. The tournament was under the direction of the Ione Rifle Club.

H. A. Locke was high in aggregate of all rifle matches and awarded possession of the Service Garage Trophy for a year—G. E. Widger was high in the Dewar aggregate and has possession of the Pend Oreille Hospital Trophy for another year, having won this trophy last year—Ione Team number one took possession of the Pend Oreille County Team Trophy for the third consecutive year. This is a perpetual challenge trophy so is still up for competition.

In the pistol matches medals were awarded for 1st, 2nd, and 3rd places. Medals went to members of the buddy teams for 1st and 2nd place and medals to members of the four man teams finishing in 1st, 2nd and 3rd places. In the grand aggregate of rifle matches Trophy went to 1st and a medal to high tyro.

ALABAMA STATE SMALL BORE MATCHES

DESPITE an abundance of rain and wind, Saturday and Sunday, the Alabama State Small Bore Rifle Matches went off as scheduled with M. F. Salter of Atlanta taking top honors. Salter placed first in the M. R. Scott 50 meter match, won the T. K. Lee trophy for greatest number of bulls and was awarded the Bausch and Lomb trophy, emblematic of the state championship.

E. E. Sellers of Anniston and M. A. Cooper of Rome, Ga., also made it a good day for themselves by placing in two events each. Cooper took first place and

THE AMERICAN RIFLEMAN

the trophy in the Birmingham Rifle Club Trophy match, and third in the Dewar match while Sellers was taking third in the American Legion event and second in the R. E. Strickland match.

The junior championship event, which opened the meet, was won by Aubrey Craig of Bessemer. Van Thigpen of Birmingham and M. Houston, also of Birmingham, placed second and third, respectively.

The tournament this year, held on the General Persons Range, was a registered shoot with L. Q. Bradley of the N. R. A. staff representing the association.

SECOND SEATTLE LEAGUE MATCH

THE Second League match of the Seattle Outdoor Pistol and Revolver League was fired at the Fort Lawton pistol range, April 25th. G. C. Vernon took the individual .38 caliber event over the national match course with a 273, one point better than the score of the runner-up, R. M. Anderson. The team of L. J. Trones and D. M. Davis totaled a 522 for first in the buddy team event over the same course. Anderson led the shooters in the .45 caliber match on the national match course with a score of 254; while the tyro winner, G. D. Stacey, was leading his class with a 220.

The mechanically operated targets which the officials of the Fort Lawton post were kind enough to have installed for the convenience of the pistol shooters, worked beautifully and were a great help to speeding up the match and eliminating confusion. The next shoot is to be N. R. A. registered.

MILAN TAKES TRIBUNE TROPHY

THE Milan Rifle Club of Milan (Ill.) for the second successive year was winner of the annual indoor rifle team match for the traditional *Tribune* trophy. Its four-man entry rolled up a total of 4,566 points. Chicago Rifle Club, which pressed the winners closely in the first stages, was second with 4,515 and Milan's team number 2 placed third with 4,492. Seventeen teams fired the course.

Lake View Rifle Club of Chicago, a newcomer in state shoots, captured first place among teams firing with iron sights. It scored 4,427. Other high teams in the iron sights division were Humboldt Park Rifle Club, 4,361 and Mt. Vernon Rifle Club, 4,357.

S. Fogle of Milan turned in an aggregate of 1,158 as pace-setter for individual honors. Ralph Izard, competing as an individual, shot a 1,153, two points ahead of his fellow club-member, Ken Smith of Chicago Rifle Club. Clark Luther, Milan marksman, won the gold medal for high iron sights.—SHERWIN MURPHY.

Gallery Postal Matches Close

THE greatest series of gallery home range rifle and pistol matches in N. R. A. history was definitely brought to a close with the publishing of official bulletins, showing complete scores and medal awards in the thirty-one individual matches and the team matches which included the collegiate, military, junior and interclub series.

The success of the program, indicated by the greatly enlarged field of competitors, is given further recognition in the eager response to the outdoor program which is now coming from the shooters throughout the country. In the first week since the program was mailed some eleven hundred entries have been received which only shows how adequately the postal matches are keeping pace with the feverish activities in shooting circles reported from every section of the country.

A summary of the matches just closed shows some 2500 individuals entered in the solo events and approximately 600 teams in the various team matches. Each of these competitors has already received a series of bulletins showing the complete results of all events. It is hardly practical, therefore, to repeat this information in the *RIFLEMAN*, but, space permitting, the custom of listing medal winners will be followed in a later issue.

The record of Alice Bull in one of the largest open matches of the series—the individual prone metallic sights 50 foot event, is outstanding. She won this event from a field of well known shooters with a perfect score of 1000 x 1000 and a run of perfect bulls which was only terminated after range facilities proved no longer available, leaving her with an unfinished perfect score. Miss Bull, recognized as one of the outstanding woman shooters in the country and a member of the President's Hundred, also won the women's open championship with a 50 shot possible.

W. O. Boian of Des Moines, Iowa, won the Eagle Rifleman Match, posting a score of 580 to Creedmoor R. E. Loudon of Butler, Pa., for top honors. The Life Members' match over the three position course was well liked with 51 entries; Dr. R. J. Timmerman of Richmond, Ind., comfortably leading these dyed-in-the-wool shooters by a three point margin over the sharpshooting Eagle Rifleman, Bill Boian.

Match number five, the individual any-sight prone match at 50 feet, proved the second most popular. Jule Leiweke of St. Louis, Mo., won by shooting 101 extra bull's-eyes to lead the seven other top shooters who had possibles and the 128 also-rans.

A tyro, Frank Jowe of Los Angeles, may claim the honor of being the out-

standing hand-gun shooter of the series with three first places: in the .22 caliber pistol or revolver championship at 20 yards, and the tyro slow fire pistol matches at 50 feet and also at 20 yards. Leo Allstot of Mason City, Iowa, has two firsts to his credit, and D. A. Thimmesch of Iowa Falls gained a first and several silver and bronze medals. U. S. Naval Academy has already been reported as winner of the intercollegiate team championship. The men's individual intercollegiate was taken by J. A. Butterworth of Iowa State College, and the women's by Sigrid M. Bergerson of the University of Washington. The University of Maryland freshmen team proved the best in their class, while the Carnegie Tech coeds set a new record in the women's intercollegiate team match by turning in a score of 2994 x 2400. This exceeded the old record of 2991 which had been set by the George Washington team in 1927.

The junior gallery championship with 196 entries was won by a Chicago lad, Raymond Talacek, and the individual scholastic championship with the huge field of 329 competitors was taken by the sharpshooting lassie, Mae Markey of Munhall, Pa., who had been a most important member of the interscholastic championship team from her high school.

JUNIOR INTERSCHOLASTIC FINALS

THE firing of the final round in the National Junior Rifle Championship Matches to determine the nation's best prep rifle team, brought to a close the six-stage indoor series sponsored by the N. R. A. and clinched the title for the team of sharpshooting coeds from Munhall, Penna.

The 1937 Champions paced the field of 150 teams for most of the series, but only by shooting the unusual team scores of "possibles"—dropping but one shot out of the ten ring in its entire championship run of 240 shots—were they able to stay ahead of another crack prep squad, a boys' team from Stadium High School in Tacoma, Wash. A team from Xenia, Ohio, with a considerably lower score, placed third.

The Division B teams, with lower comparative scores, were led by South High of Youngstown, Ohio, which slipped a bit in the closing match of the series but was able to rely on its commanding lead to carry off first place honors in its division. A Phoenix (Ariz.) team was second.

Division C teams put up a real battle for top position, with Turlock (Calif.) Union High ending the finals with a lead over teams from Evanston, Ill., and Norwood, Mass., who finished second and third.

ARIZONA

August 8: Inter-Club Competition sponsored by Yavapai Rifle and Pistol Club. For programs write Harry L. Jacks, Box 546, Prescott, Arizona.

CALIFORNIA

June 12-13: Western Small Bore Rifle Championships sponsored by the Elks Rifle and Pistol Club and the Richmond Rifle and Revolver Club. For programs write Mr. E. J. Martin, 325 12th Street, Richmond, Calif.

June 18-19-20: California .30 caliber Rifle Matches and State Civilian Team tryouts will be held on San Luis Obispo range.

June 20: Southern California Pistol League Matches sponsored by Los Angeles Police Revolver and Athletic Association. For programs write Lt. J. A. Bartley, Room 75, City Hall, Los Angeles, Calif.

July 18: Southern California Pistol League Matches will be held in Los Angeles.

July 23-24-25: Southwest International Pistol and Revolver Matches. For programs write Mr. Rodney Pease, San Diego Police Department, San Diego, California.

July 31 and Aug. 1: State Pistol Matches will be fired at Alameda. For programs and further information write L. A. Pope, 532 Oakford Drive, Los Angeles, California.

August 15: Southern California Pistol League Matches sponsored by the Los Angeles Police Revolver and Athletic Club. For programs write Lt. J. A. Bartley, Room 75 City Hall, Los Angeles, California.

September 19: Southern California Pistol League Matches to be held in Los Angeles.

October 17: Southern California Pistol League Matches to be held in Los Angeles.

November 21: Southern California Pistol League Matches in Los Angeles.

December 19: Southern California Pistol League Matches in Los Angeles.

CONNECTICUT

June 18-19-20: Connecticut State Small Bore Championships will be held on the Silver City Gun Club range in Meriden, Connecticut.

DELAWARE

June 19-20: Middle Atlantic States and Delaware State Revolver Championships Tournament sponsored by the Wilmington Rifle and Pistol Club. For programs write Wilbur J. Brown, 15 Ashley Place, Wilmington, Del.

September 31: Delaware Police Team and Individual Matches will be held in Wilmington.

October 1-2-3: Annual Delaware Tidewater Rifle and Revolver Championships. For programs write Mr. F. R. Lesney, 106 East 16th Street, Wilmington, Del.

ILLINOIS

June 6: .30 caliber matches at Fort Sheridan including 200 yards slow fire, 300 yards rapid fire and 600 yards slow fire.

June 6: Small Bore Matches at Paxton, auspice Paddy Wagon Club.

June 13: Central Illinois Small Bore Match conducted by the Springfield Y. M. C. A. Rifle Club. For programs write R. W. Seabright, 2005½ South 6th Street, Springfield, Illinois.

June 20: Wimbledon Match (1,000 yards) at Fort Sheridan.

June 20: Small Bore and Pistol events at Milan.

June 27: Individual Dewar Course Match at Fort Sheridan.

June 27: Small bore matches sponsored by Illini Gun Club to be held at Champaign.

June 27: .30 caliber club qualification at Fort Sheridan.

July 10-11: Illinois State .30 caliber matches and Civilian Team tryout at Fort Sheridan.

July 17-18: Illinois State .30 caliber matches and Civilian Team tryout at Camp Lincoln, Springfield, Illinois.

July 23-24-25: U. S. Grant Memorial Matches, conducted by the Illinois State Rifle Association at Camp Grant. For programs write Major Lester F. Stewart, 710 South Main Street, Normal, Illinois.

COMING EVENTS

INDIANA

June 12-13: Midwest Rifle and Pistol Tournament conducted by American Legion Post #11 Rifle and Pistol Club. Write Mr. C. B. Gildersleeve, 345 West Oak Street, W. Lafayette, Indiana.

IOWA

June 6: First Annual Small Bore Eastern Iowa Regional Match. For programs write Mr. J. G. Johnston, 219 W. 7th Street, Muscatine, Iowa.

June 19-20: Iowa State Small Bore Matches. For programs write Mr. G. G. Cooper, 816 Telephone Bldg., Des Moines, Iowa.

July 31 and Aug. 1: Iowa State .30 caliber Matches and State Civilian Team tryouts to be held on the Camp Dodge range. For information write Mr. G. G. Cooper, 816 Telephone Bldg., Des Moines, Iowa.

KANSAS

June 13-14: State High Power Rifle and Pistol Matches at Fort Riley. Write William M. Ruddick, Hutchinson, Kansas.

June 27: Kansas State Small Bore Rifle Tournament. For programs write Mr. Frank T. Boyd, 1210 Thorp St., Topeka, Kansas.

KENTUCKY

June 12-13: Kentucky State Pistol Matches. For programs write Dr. Scott Breckenridge, 164 Market St., Lexington, Kentucky.

July 4: Kentucky Civilian Rifle Team Final Tryouts at Fort Knox. For information write H. J. Hopkins, 1506 S. 4th St., Louisville, Kentucky.

MAINE

June 26-27: Sixth Annual Small Bore Tournament conducted by Maine State Rifle and Pistol Association to be held in Skowhegan. For programs write Kendall Cross, Solon, Maine.

MARYLAND

July 1-5: Eastern Small Bore Rifle and Pistol Championships at Camp Ritchie, Maryland.

MASSACHUSETTS

July 3-4-5: First annual 100-Yard Prone Shoot conducted by the Arlington Rifle Club. For programs write Chet Eloy, 79 Pine St., Belmont, Massachusetts.

July 17-18: Connecticut Valley Championship to be held on the Ludlow Fish and Game Club Range. For programs write Harold V. Lovett, 290 Goodwin Street, Indian Orchard, Massachusetts.

July 24-25: Bay State Rifle Matches at Walnut Hill. For programs write Robert A. Van Amburg, 41 Whitney Road, Medford, Massachusetts.

July 31-Aug. 8: United Service of New England Annual Tournament at Wakefield. Write E. F. Walker, 49 Westminster St., Providence, R. I.

MICHIGAN

June 5-6: Michigan State Small Bore Matches at Ann Arbor.

June 26-27: Michigan State Pistol Matches to be held on the Briggs Range in Detroit. For programs write Harold Headley, 71 Lakeview Avenue, Battle Creek, Michigan.

MINNESOTA

June 5-6: Minnesota State Small Bore Tournament at Fort Snelling. Write George J. Kuch, Robbinsdale, Minnesota.

July 10-11: Sixth Annual Arrowhead Lake Small Bore Tournament. For programs write Alex Ellison, Virginia, Minnesota.

June 13: First Annual Outdoor Match sponsored by the Minneapolis Pistol and Revolver Club to be held at Fort Snelling. For programs write C. B. Melrose, 107 Seymour Avenue, S. E., Minneapolis, Minnesota.

July 24-25: Minnesota State .30 caliber Matches at Fort Snelling.

MONTANA

August 8: Intermountain Small Bore Matches conducted by the Butte Gun Club. For programs write Harlow Pease, Butte, Montana.

July 10-11-12: Montana State .30 caliber Matches and Camp Perry Elimination at Missoula.

August 1: Shalkaho Small Bore Shoot to be held at Stony Lake Camp, Sapphire Mountains.

NEVADA

June 18-19-20: Nevada Pistol and Rifle Matches and State Civilian Team Tryouts will be held at Lovelock. For programs write Lyle D. Stoker, Box 571, Lovelock, Nevada.

NEW HAMPSHIRE

July 17-18: New Hampshire State Small Bore Tournament will be held in Manchester, New Hampshire.

NEW YORK

June 20: Spring Small Bore Shoot. For programs write Albert Mook, Lancaster, New York.

August 15 and 16: Poughkeepsie All Range Match sponsored by the Poughkeepsie Rifle Club. For programs write G. W. Morehouse, 5 Oak Crescent, Poughkeepsie, New York.

NORTH CAROLINA

July 17-18: North Carolina Civilian Team Tryouts at Fort Bragg, N. C. For programs and information write H. M. Rooney, Linville, North Carolina.

OHIO

June 25-26-27: Ohio State Matches to be held at Camp Perry. For programs write F. L. Spencer, 502 N. Walnut St., Wilmington, Ohio.

July 17: 2nd Annual Ohio Valley Pistol Championship Matches and Ninth Silver Cup Matches. Sponsored by The Legion Rifle and Pistol Club. For programs write Phil D. Butler, 62 S. Paint St., Chillicothe, Ohio.

July 30-31 and Aug. 1: Zeppelin Small Bore Rifle Tournament, Akron, Ohio. Pistol matches will be included for the first time. For programs write Merle Israelson, R. D. #8, Akron, Ohio.

August 17-18-19-20: The All American Pistol Matches sponsored by the Indian Hill Rangers. For programs write Rudolph Homan, Madeira, Ohio.

August 14-15: 4th Annual Small Bore Rifle Tournament conducted by the Fort Harmar Rifle Club. For programs write L. R. Miller, 735 Fourth Street, Marietta, Ohio.

August 22 to September 11: National Rifle & Pistol Matches and National Rifle Association Matches at Camp Perry, Ohio. Further information will be contained in future issues. Programs will be available July 1.

Mid-October: 9th Annual Silver Cup Rifle Matches sponsored by The Legion Pistol and Rifle Clubs. Write Frank Ferguson, P. O. Box 186, Chillicothe, Ohio.

Mid-October: The Metropolitan Pistol Matches open to residents of Greater Cincinnati. Sponsored by the Indian Hill Rangers.

OKLAHOMA

June 12-13: 12th Annual .30 caliber Championship. For programs write Captain Elmer C. Croom, Secretary Oklahoma Rifle Association, Okmulgee, Okla.

October 2-3: Oklahoma Pistol and Small Bore Rifle Matches sponsored by the Oklahoma Rifle Association.

OREGON

July 24-25: Oregon State .30 caliber Rifle and Pistol Matches to be held at Clackamas, Oregon. Write Leslie T. St. Clair, Gresham, Oregon.

August 7-8: State Civilian Team Tryouts at Clackamas, Oregon.

PENNSYLVANIA

June 12-13: 6th Annual Walnut Creek Rifle Club Tournament. For programs write F. S. Campbell, 1810 West 12th St., Erie, Pennsylvania.

July 4: Open Small Bore Shoot sponsored by the New Brighton Rifle Club. Write Walter Vetter, New Brighton, Pennsylvania.

September 4-5-6: W. S. Brown Trophy Match conducted by the Allegheny County Rifle Club, Millvale, Pennsylvania.

RHODE ISLAND

July 10-11: Rhode Island State Small Bore Matches. For programs write Frank B. Perry, 93 Calla St., Providence, R. I.

July 17-18: Providence Police Pistol Matches sponsored by Providence Police Revolver and Athletic Association. Write Alf. T. Staves, 60 Health Avenue, Providence, Rhode Island.

TENNESSEE

***June 20:** Tennessee State Pistol Championships sponsored by the Nashville Pistol and Revolver Club. For programs write Frank B. Hill, c/o Eller and Olsen, Nashville, Tennessee.

TEXAS

June 3-4-5-6: Texas State Big Bore Matches at Camp Bullis. For programs write L. L. Cline, 325 Cedar St., San Antonio, Texas.

June 27: The 2nd Annual Invitation Matches sponsored by the Temple Rifle Club. For programs write Charles H. Jones, Jr., P. O. Box 384, Temple, Texas.

***July 17-18:** Texas State Pistol Matches to be held at Laredo, Texas.

Sept. 24-25-26: Pan-American Rifle & Pistol Championships, Greater Texas & Pan-American Exposition, Dallas, Texas. For programs write H. Frank Townsend, 6151 Palo Pinto Avenue, Dallas, Tex.

UTAH

June 13: Utah State Pistol Matches at Fort Douglas. Write H. A. Weymouth, P. O. Box 1380, Salt Lake City, Utah.

July 17-18: Utah State .30 caliber Matches and Civilian Team Tryouts at Fort Douglas, Utah.

WASHINGTON

June 12-13: Washington State Small Bore Championships. For programs write H. E. Brainers, 1112 West 62nd Street, Seattle, Washington.

***June 13:** Seattle Outdoor Pistol Buddy Team Matches at Fort Lawton, Wash.

***June 27:** Seattle Outdoor Pistol Buddy Team Matches at Fort Lawton, Wash.

***July 11:** Seattle Outdoor Pistol Buddy Team Matches at Fort Lawton. Write Walter F. Day, 2343 43rd Avenue, North, Seattle, Washington.

WEST VIRGINIA

Fairmont Gun Club Rifle and Pistol Tournament has been postponed. Dates will be announced in a future issue.

WISCONSIN

June 6: Land O'Lakes .30 caliber Match. For programs write A. L. Dahlstrom, Ladysmith, Wisconsin.

June 20: 2nd Annual Tri-State .30 caliber Rifle Meet. Write E. L. Schreiber, 716 Vine St., La Crosse, Wisconsin.

June 6: Wisconsin State High Power Matches.

June 13: Wisconsin State Veterans of Foreign Wars Match.

June 27: Wisconsin State Regional Small Bore Matches.

July 11: Wisconsin State Small Bore Matches.

August 1: Wisconsin State High Power Matches.

August 7-8: Wisconsin State American Legion Matches.

September 27: Wisconsin State Small Bore Matches to be held on the County Line Range. For programs write Oliver Moody, 5527 N. 35th St., Milwaukee, Wisconsin.

* Indicates Registered Tournament.

D. C. M. NOTES

THE ammunition reported for sale by the Ordnance Department in the May RIFLEMAN is no longer available according to word from the offices of the Director of Civilian Marksmanship. The supply has been completely sold out.

IMPROVED RANGE FOR KANSAS STATE MATCHES

IN A SPECIAL announcement to the Rifleman regarding the Kansas State Small Bore Tournament to be held June 27, the Capital City Rifle Club, sponsors of the shoot, mentions the enlarged and improved range, considered the best in the state, which will be the scene of the state shoot.

The 50 and 100 yard firing lines are entirely shaded by large trees and will accommodate 22 shooters. The matches will include the state championship, open and 200-yard events, novelty matches and state championship shoots for women and junior riflemen. This will be the first time the women have had a chance to compete in a class of their own. There will also be an open five-man team match over the Dewar course and a two-man team event at 200 yards. A merchandise shoot at the crack of dawn will be offered to lure the shooters out to the range early.

NEW OUTDOOR RANGE FOR CHICAGO SHOOTERS

THE opening of a new outdoor range for shooters in Chicago during the early part of May was announced by the Hyde Park YMCA Rifle and Pistol club, one of the very active organizations of the Chicago area. The range is easily accessible by automobile in its location just to the east of Harlem Avenue at 54th street, between the Illinois-Michigan canal and the Sanitary canal, and offers to shooters in Chicago an opportunity to enjoy their sport in the outdoor season.

CHALLENGES

The National Newark and Harydston Rifle and Pistol Club would like to challenge any team in either pistol or rifle postal matches. The pistol to be .22 caliber, and the rifle either .22 or .30 caliber. Address Charles J. Schultz, Sec'y, 29 Glendale St., Nutley, N. J.

The Mason Dixon Rifle Club will appreciate postal matches with other clubs over the Dewar Course, iron sights; ten men to shoot and five high to count for record. Score sheets exchanged. Contact D. M. Thomas, Sec'y, R. D. No. 6, Box 31, Morgantown, W. Va.

GUNS REPORTED STOLEN

Stolen from a car in Brooklyn: 1 Hi-Standard Automatic, .22 caliber, model B #13733; 1 Mossberg Rifle model 46; 1 Argus Camera Ser. #13911; 1 Wollensak 4x Rifle Scope with pin point reticule, altered with extra lens at eye piece; and 1 carton 500 rds. .22 caliber, Staynless, marked Army Lot #185. Reward. Please notify Albert I. Wiebe, 969 East 28th St., Brooklyn, New York.

\$10.00 Reward offered for the return of Remodelled Enfield M-17 Remington No. 402428 equipped with Weaver 29-S Permanent mounted. Was stolen from Garage Bldg. along with tires and batteries on March 30th., D. R. Toomay, Braymer, Missouri.

MICHIGAN STATE GROUP OUTLINES SEASON'S PROGRAM

AT a meeting of the executive committee of the Michigan State Rifle Association in the Olds Hotel in Lansing, April 23rd, plans for the immediate season were developed which include the small-bore tournament set for June 5 and 6 at Ann Arbor as a registered tournament; the pistol tournament at Briggs range, Detroit, June 26 and 27 also to be registered; the .39 caliber matches to be held at Grand Rapids July 31 and August 1 for the western part of the state and upper peninsula, and August 7 and 8 for the eastern part of the state.

Mr. Gustavus D. Pope, president of both the Michigan state and the National Rifle Association, presided over the meeting which in addition to the officers of the association, included such distinguished guests as the Attorney General of Michigan, Mr. Starr, and the Adjutant General, Colonel John S. Bersey.

A beautiful trophy was presented to the state group by Walter O. Briggs, president of the Briggs Manufacturing Co. and owner of the Detroit Tigers baseball team. Mr. Briggs at one time took great pride in his shooting ability and the presentation of this trophy was another indication of his continued spirit of sportsmanship. The trophy is a real work of art to be awarded to a team in pistol competition and will beyond all doubt attain as vast a popularity as the Dewar Trophy amongst the small-bore riflemen of the country. This will be a valuable addition to the state collection already estimated to be worth \$5,000.

Two new trophies were also added for the small-bore tournament; one from our old friend Ned Moor, captain of the U. S. Bisley team, and one from the Bausch and Lomb Optical Company.

The annual Michigan-Ohio shoulder-to-shoulder match, fired alternately in each state will be fired this year in Michigan at the Ann Arbor Range, June 6th. Because of the lack of a suitable 200 yard range this year, that course will be eliminated and a course of ten shots at 100 yards on the 100 yard International target will be substituted. Ned Moor was named team captain and J. E. Weaver of Flint team coach for this team. The ten firing members and three alternates will be selected by competition at the annual tournament.

Great stress is being laid on the co-ordination of small-bore activities throughout the state to the end that the shooters may enjoy greater activities in the small-bore game. C. H. Vincent of Utica will head a committee to formulate plans for better coordination.

Programs may be secured by addressing the Secretary, Harold Headley, 71 Lakeview Ave., Battle Creek, Mich.

OKLAHOMA ASSOCIATION MATCHES

DROUTH and depression have only encouraging effects upon the Oklahoma Rifle Association, which finds its twelfth year of existence reflecting swift growth.

Like most small state associations, the Oklahoma group began in 1926 with combined annual matches, inclusive of rifle, small-bore and pistol. Steady growth "outlawed" the combination, however, and when champions of Texas, Missouri, Kansas, Arkansas and Colorado began making the Oklahomans sit up nights looking for new alibis, the matches were separated.

In spite of unprecedented rains, the 1936 matches were better and larger than for 10 years. There were 398 entries in the small-bore and pistol sections, combined in October for a two-day assembly at Okmulgee.

Predictions, and written indications by shooters of the Southwest, are that on Saturday and Sunday, June 12 and 13, the Barrett range at Okmulgee is going to see the largest turnout of service rifle addicts ever gathered in a Southwest tournament. Last year's big-bore matches saw trophies going home to Arkansas, Texas, Missouri, Kansas and even Georgia, so that the "home boys" are really worried this year.

Open to the world, both civilian and military, the Oklahoma matches have been made highly attractive for that elusive type of shooter, the National Guard rifleman, who is prone to content himself with strictly military events. Special medals for service rifle shooters, giving them an incentive for entering the free-rifle events ordinarily taken over by civilians, are a regular thing.

But not all effort is directed toward enticing the bashful soldier.

Ladies' matches, with pistol and with small-bore rifle, have attracted shooters from three states. Junior matches, for the youngsters who will be tomorrow's champions, have found keen competition the rule.

There have been retained in the Oklahoma programs, such grand old events as the Schuetzen firing at 200 yards on the 50-yard pistol target, and while major sections of the programs are "standardized" according to N. R. A. rules, the state association has tried not to forget any angle of the rifle-nut's pastime.

There is a running-deer range patterned on the Camp Perry range, which same proves highly popular for riflemen and pistol shooters alike.

For several years there was difficulty in finding a rifle range large enough to handle the state events. That trouble now has been overcome. Almost entirely without financing from the outside, operating on the good old army game of "salvage," the

Charles F. Barrett range at Okmulgee has grown until it excels even the regular army range at Fort Sill in the Wichita mountains.

The range's camping facilities, abetted by a seven-acre "swimming hole" are coupled with such minor details as 100 concrete benches, five toilets, brush arbors, stone kitchens, stone tent floors, gravelled roads leading to all firing points.

Such is the setting for the 1937 high-power matches. To Judge Wolfe seven times veteran of the National Matches, three times president of the Oklahoma Association, inveterate big-game hunter known in the wilds of Alaska, Mexico, and Maine is due much of the credit for this fast-growing Oklahoma sporting association.

Another matter which annually attracts considerable attention to the Oklahoma matches is that, during the high-power shoots in the spring, the state civilian rifle team is selected. Major General Charles F. Barrett, for whom the Okmulgee range was named and known as "the father of shooting in Oklahoma," turns selection of the state civilian team over to the Oklahoma Rifle Association.

CORRECTION

IN THE account of the National Mid-Winter small-bore shoot at St. Petersburg, Florida, published in the May issue of the *AMERICAN RIFLEMAN*, this statement appeared: "... an entirely new record (Charles Hamby's winning Swiss Match score of 99 bulls) as Randle's famous run of 196 at Ritchie in '35 was made on the slightly larger C-5 target while Hamby fired on the standard (200 yard N. R. A.) decimal target . . ."

Actually this run of 99 bulls was a new range record, topping Bridgland's score of last year by 12 bulls, and was made on the 8 inch (9 and 10 ring) black of the standard target. It in no way detracts from Thurman Randle's 196 which was scored on the 7.2 inch black of the older C-5 target.

OCCASIONAL complaints have been received recently from members indicating their inability to secure prompt replies to letters and orders sent to *RIFLEMAN* advertisers of unquestioned repute. Upon checking into these complaints we invariably find that the fault is due entirely to the failure of these members in showing the complete address of the advertisers, or in indicating their own correct and complete address. Please be sure that your own return address is given on every letter and order you send to advertisers, and that your name is spelled out **PLAINLY**.

NEW ENGLAND PLANS FOR UNITED SERVICES SHOOT

WITH the National Rifle Association leading the way, State rifle associations all over New England are following the example of the Washington group and co-operating to an extent unknown in the past to make the annual tournament of the United Services of New England at Camp Curtis Guild, Wakefield, Mass., the biggest and best in the history of organized shooting in that corner of the country.

Reports from Connecticut indicate an entry of six ten-man teams for the Hayden Match, which is fired over the same course as the National Team Match at Perry. There were 22 ten-man teams in this match last year and it is hoped to have 30 this year.

New Hampshire expects this year to send a record delegation and from Maine comes equally enthusiastic reports. Rhode Island will have one and perhaps two teams in the Hayden match, out of its large delegation of shooters, both rifle and hand-gun.

Massachusetts as usual will have the biggest representation of both National Guard and civilians and the State Ordnance Office is sending out programs to each National Guard unit in the State with the expectation of making attendance even larger this year.

Latest reports indicate adequate pit and scoring details, the rough spot of many matches. The Marine Corps will have fifty scorers in addition to the permanent detachment, the Army will furnish fifty enlisted men and one officer and the Coast Guard usually has 50 or more men available for this duty which will assure Colonel Humphrey, Chief Range Officer, of adequate details. Several young officers of the Rhode Island and Massachusetts National Guard have applied for duty as range officers and these added to the assignments from the regular services should make running of the line smooth and prompt.

GENE MITCHELL TO BLACKINTON

E. F. ("Gene") MITCHELL, whose resignation from Association headquarters several months ago has elicited numerous requests for information as to his present activities and whereabouts, is now connected with the V. H. Blackinton Company, who manufacture medals and medal insignia in Attleboro, Massachusetts.

"Gene" maintains his home in Washington at 5701 32nd Street, N. W., where mail will reach him. Having listened for several years to the shooters' plea for more variety in shooting medals, it is to be hoped that he will use his new connection to develop a considerably "freshened" line of shooting awards.

THE AMERICAN RIFLEMAN

THE ILLOWA VICTORY BANQUET

ON THE evening of April 12th, one hundred and twenty-two Illowa League members with their wives, sweethearts or junior shooters gathered in Hawcock's ballroom, in Monmouth, Illinois, for their fifth semi-annual Victory Banquet. The Illowa League is composed of 18 rifle teams representing towns in Illinois, Iowa and Missouri.

The speaker of the evening was Herb Goebel of the N. R. A. who outlined the work of the National Association in assisting and supervising matches throughout the country, staging the big matches at Perry, fighting harmful legislation in state and national legislatures and interesting the juniors of the country in the shooting game. One point brought out was the fact that the National Safety League had pronounced rifle shooting as the least dangerous of any competitive sport.

Major Francis Parker, Jr., of Chicago, N. R. A. director and member of the Executive committee gave a short talk on the coming Grant Memorial Tournament to be held at Camp Grant in July, which is expected to make shooting history in Illinois.

Major Stewart, President of the Illinois State Rifle Association, outlined the vicious anti-arms bills which are now pending in Springfield and which if passed will virtually wipe out rifle and pistol shooting in that State.

The Dewar honors for 1936 were awarded Emory Hawcock, with Mel Koblner second and Al Freeland of Milan third. The .30 caliber winners were Ed Maurer of Wilton, Iowa first, Ragan of Rock River, Ill., second and Leo Masterson of Wilton third.

The Gallery heroes were Ed Bent of Morrison, Ill., who finished with a four position average of 195 per cent, and R. Miller also of Morrison. Art Wilson of Burlington, Iowa, with a 194 per cent took third. Among the Pistoleers Sgt. Geo. Kingery of the Monmouth club was the king pin with Harry Potter of Milan placing second and Goodman of Rock River club third.

During the gallery season the Illowa League operates after the fashion of a baseball league. Each team fires one match with the 17 remaining teams, the one winning the most matches during the season taking the league cup. The league is governed by a President, Secretary, Treasurer and an executive board consisting of the secretaries of each member club.

The league competition for the season ended with the Morrison, Ill., team finishing in top position with a perfect season's record of 1000 per cent. Milan, Ill., with sixteen wins and one loss took second and Kewanee, Ill., was third.—EMORY HAWCOCK.

FOX RIVER VALLEY LEAGUE DINNER

APPROXIMATELY two hundred members of the Fox River Valley Rifle League attended the Fond du Lac victory dinner, Sunday, April 11, at which time the winners who proved their right to the title by consistent rifle firing over a nine-week period were awarded trophies and medals.

Major McCoskrie, of the regular army, who served as official scorer and has been active in both civilian and military shooting competition for nearly thirty years, was the principal speaker, and also made the presentation of awards.

The team trophy, a round, gold column with black trimmings presented by Dr. E. V. Smith, was awarded the Fond du Lac Rifle and Pistol Club. Members of the Fond du Lac team awarded individual medals were L. H. Buch, H. D. Lewis, E. R. Vehrs, Lucius Witucks and Clarence F. Hill. Members of the second place Ladysmith team also received medals.

Roger Lindoo, of Ladysmith, was awarded the trophy for high individual honors. The trophy, a silver reproduction of a rifleman shooting from the offhand position, was presented by the Oshkosh Rifle Club in memory of the late Captain G. C. Schwants.

The group, representing the ten teams in the league, voted to continue the matches next year and anticipate at least four additional teams.

Guy Monthan

THE shooting game in the southwest lost one of its hardest working members when Guy Monthan died at Tucson, Arizona, on April 9th. His death followed an operation for internal injuries suffered on a trip to the State Small Bore Matches at Phoenix.

Guy Monthan in his youth was a Northwest Mounted Policeman in Canada and with his brothers went into the Arizona country on horseback years ago. He was first a ranchman and then in more recent years engaged in the nursery business. He was Secretary of the Arizona State Rifle Association for at least twelve years, during which time his energy and personal contributions carried the Association through its worst period.

Theron C. Beal

THONERON C. BEAL died at his home in Pittsburgh, Pa., March 11, 1937, age 61 years. An N. R. A. Life Member and Vice-President of the Fort Pitt Rifle Club and active in the organization since 1907, he gave much of his time for the promotion of rifle and revolver shooting among civilians and rarely missed attending the meeting at Camp Perry.

Stanley A. Weller

ILLINOIS rifle shooters have lost "Sam" Weller. His death, on April 29, 1937, from injuries received in an automobile accident leaves a gap in our ranks that cannot be filled. He was known to mid-western shooters as both a keen competitor and an energetic, decisive and yet friendly official. His shooting interests were broad, embracing small bore and .30 caliber as well as competitive rifle shooting. His experience as an active club officer was equally diversified. At the time of his death he was Secretary of the Illinois State Rifle Association and held office in both the Arrowhead Rod and Gun Club and the Westric Rifle Club.

As President of the Hawthorne Gun Club he was instrumental in arousing interest in the shooting game among the employees of the Hawthorne Works of the Western Electric Company with which he was connected for 16 years. Perhaps the most conspicuous contribution was his sustained interest in the stimulation of rifle activities among high school students, boy scouts and sons of Legionnaires.

Stanley A. Weller was born in Genesee County, New York, June 28, 1895. He attended Purdue University and at the outbreak of the War enlisted in the Signal Corps, becoming an observer in the Balloon Section. He came to the middle west in 1921, making his home in Downers Grove, Illinois. He leaves a wife and 2 sons, ages 13 and 8.

Willis H. Brow

WILLIS H. BROW, a Life Member of the National Rifle Association and one of the few old time gun-smiths left in Rhode Island, passed away at his home in Providence, Wednesday, April 21 after a brief illness, in his 73rd year.

Mr. Brow was known to a host of shooters of both rifle and hand-gun all over the country. He was considered an authority on rare and unusual firearms, particularly revolvers.

He was a member of long standing in the U. S. R. A. and his name appears on the list of charter members of the Providence Revolver Club and the Roger Williams Rifle and Revolver Club, the oldest and youngest shooters organizations in Rhode Island.

For many years Mr. Brow followed the sea having held a marine engineers license but in his later years he was employed as an expert mechanic in the building of submarine engines.

His early shooting experiences were gained in the Fall River (Mass.), company of the Massachusetts Naval Militia of which he was a member. He is survived by two sons, Lt. Commander Harold Brow, U. S. Navy and Lynwood Brow, an engineer with the N. E. Tel. & Tel. Company.

NEW LAWS RELATING TO FIREARMS

Alabama

The Alabama State Firearms Act, which was approved April 6, 1936, was amended by House Bill No. 161-XX which was approved by the Governor March 2, 1937.

Under this amendment all permits to carry concealed weapons must be secured from the sheriff of the county in which the applicant resides. Under the old law, permits could also be secured through a probate judge or the police department of a municipality. The amendment also permits gun owners to deliver their guns to pawnbrokers without the necessity of notifying police officials of this act.

Maine

House Bill No. 1723 was approved by the Governor April 15. It provides regulations for the hunting of skunks and raccoons, making it legal to hunt for these animals at night from October 15 to December 15 when accompanied with a kerosene lamp or two-cell electric flash light. The new law provides that no firearms other than .22 caliber pistols may be used for such hunting.

Maryland

The following bill has been adopted by the Maryland State Legislature and has been approved by the Governor. It represents a rational attempt to solve the problem of keeping guns out of the hands of the underworld and may be considered a model law of this type.

General Assembly of Maryland, 1937 House Bill 475

A BILL ENTITLED

AN ACT to add eight new sections to Article 27 of the Annotated Code of Maryland (1924 Edition), title "Crimes and Punishments," to be under sub-titles "Pistols," said new sections to be known as Sections 452A to 452H, inclusive, and to follow immediately after Section 452 of said Article, relating to the sale, identification marks and possession of pistols.

SECTION 1. *Be it enacted by the General Assembly of Maryland,* That eight new sections be and they are hereby added to Article 27 of the Annotated Code of Maryland (1924 Edition), title "Crimes and Punishments," to be under sub-title "Pistols," said new sections to be known as Sections 452A to 452H, inclusive, to follow immediately after Section 452 of said Article, and to read as follows:

452A. As used in this sub-title—

(1) The term "person" includes an individual, partnership, association or corporation.

(2) The term "pistol or revolver" as used in this sub-title means any firearm with barrel less than twelve inches in length.

(3) The term "dealer" means any person engaged in the business of selling firearms at wholesale or retail, or any person engaged in the business of repairing such firearms.

(4) The term "crime of violence" means murder, manslaughter, rape, mayhem, kidnapping, burglary, house-breaking, assault with intent to kill, commit rape, or rob, assault with a dangerous weapon, or assault with intent to commit any offense punishable by imprisonment for more than one year.

(5) The term "fugitive from justice" means any person who has fled from a sheriff or other peace officer within this State; or who has fled from any State, Territory or the District of Columbia, or possession of the United States, to avoid prosecution for

a crime of violence or to avoid giving testimony in any criminal proceeding.

452B. A true record shall be made by each dealer in a book kept for the purpose, the form of which shall be prescribed by the Secretary of State, of all pistols or revolvers sold, transferred or otherwise disposed of at wholesale or retail, which said record shall contain the date of sale, the caliber, make, model and manufacturer's number of the weapon, to which shall be added the name and address of the purchaser. Such record shall be retained by the dealer for a period of not less than three years following the date of such sale.

Each dealer shall promptly notify the Clerk of the Court of the County where the sale is made, or the Police Commissioner of Baltimore City if the sale is made in said City, of all sales of pistols or revolvers, giving the information contained in the above record. It shall be the duty of each Clerk of the County and of the Police Commissioner of Baltimore City to transmit as promptly as possible a copy of all reports or notifications of the sales of pistols or revolvers to the Superintendent of the Maryland State Police, whose duty it shall be to maintain a file of the records of all sales of pistols or revolvers made in the State.

452C. It shall be unlawful for anyone to obliterate, remove, change or alter the manufacturer's identification mark or number on any firearm. Whenever on trial for a violation of this section the defendant is shown to have or have had possession of any such firearm, such fact shall be presumptive evidence that the defendant obliterated, removed, changed or altered the manufacturer's identification mark or number.

452D. It shall be unlawful for any dealer or person to sell or transfer a pistol or revolver to a person whom he knows he has reasonable cause to believe has been convicted of a crime of violence or who is a fugitive from justice.

It shall be unlawful for any person who has been convicted of a "crime of violence" or who is a "fugitive from justice" to possess a pistol or revolver.

452E. It shall be unlawful for any person to possess, sell, transfer or otherwise dispose of any stolen pistol or revolver, knowing or having reasonable cause to believe same to have been stolen.

452F. It shall be unlawful for any person to make any loan, secured by a mortgage deposit or pledge, of a pistol or revolver.

452G. The provisions of this sub-title shall not be construed to include any antique or unserviceable firearms sold or transferred and/or held as curios or museum pieces.

452H. Any person violating any of the provisions of this sub-title shall upon conviction thereof be fined not more than Three Hundred Dollars (\$300.00) or imprisonment for not more than one (1) year, or both.

Sec. 2. *And be it further enacted,* That this Act shall take effect June 1, 1937.

New York

Assembly Bill No. 779, giving the conservation commissioner power to revoke hunting, trapping and fishing licenses for a second violation of game laws or for injury or death to another by gun fire, was approved April 26.

Federal

Senate Bill No. 1285, giving the War Department authority to issue arms and ammunition to departments or independent agencies of the Government for the protection of property and money, was approved April 14.

CLUB NOTES

The Fifth Annual Indoor Tournament of the Central Kansas Rifle League was held April 30 over the Hutchinson Armory Range with seven N. R. A. clubs participating.

The Sterling marksmen outclassed other competitors, their high five scoring 907 points, thereby winning the Jones-Oneil Loving Cup, held by Lyons Club for the past two years; other club scores were McPherson, 889; Hutchinson, 876; Lyons, 870; Canton, 797; Lindsborg, 783; and Bushton, 774.

The league awards went to the following: H. A. Wagner, 188, gold medal; C. M. Wagner, 186, silver medal; and E. A. Walter, 185, bronze medal, all of Sterling.

The six high score marksmen were awarded merchandise prizes furnished by Fray-Mershon, Inc., of Los Angeles, and H. A. Wagner awarded a sling pad to the lowest score man making a team, which fell to Ben Westbrook, Canton.

The league was pleased to have as range officer for the tournament E. J. Allen, now of McPherson, formerly of Geneseo, Kans., who was instrumental in the organization of the league.

The Silk City Rifle Club, of Paterson, N. J., one of the oldest rifle clubs in the vicinity and active continuously since 1906, has just developed a new outdoor range at Midvale, N. J., which is considered one of the best ranges in the state. It has 50 and 25 yard pistol ranges and 50 to 300 yard rifle ranges. The club is sponsoring an annual Passaic County Small-Bore Championship, June 13, offering as the main prize a perpetual trophy donated by the Paterson Evening News.

The Rosslyn Rifle and Revolver Club, of Long Island, N. Y., held its Annual Dinner on April 13 with 63 members and their guests present. After the dinner movies furnished by the N. R. A. were shown and were enjoyed very much by those present. The chicken and merchandise shoot held April 18 on the outdoor range was very well attended.

AN ACKNOWLEDGMENT TO ALL MEMBERS AND RIFLE CLUB OFFICERS IN NEW YORK STATE

WE take this method of acknowledging and saying "thank you" for the many letters and telegrams which you sent to the State Legislature at Albany in opposition to the so-called Rogers Bill which would have required the payment of a twenty-five cent fee for the registration of every gun of every description including air guns owned within the State of New York.

We are sorry that our mail in connection with this and other legislative matters has been so heavy that it is impossible to personally acknowledge each of the letters we have received from our members and club officers in New York State relative to this proposal.

We are glad to say that Senator Rogers has informed us that the bill will be permitted to die in committee.

C. B. LISTER,
Secretary-Treasurer,
National Rifle Association.

COLT DRAGOON ON THE PLAINS

(Continued from page 25)

Dragoon. In *anti-Bellum* days, a lubricated wad between the bullet and powder charge was rarely if ever used, for of course it was not needed as a gas check inasmuch as the bullet was of groove diameter. However, a well-lubricated wad of felt placed between the bullet and powder will greatly diminish powder-fouling. The wads are cut, with a .45-caliber wadcutter, from hat felt or similar material, which has been soaked in a hot mixture of one part paraffin to two parts vaseline.

Powder of fine granulation performs most satisfactorily, as it burns quickly and is entirely consumed before leaving the barrel. I am informed that King's Semi-smokeless has been used with good results, though I have never tried it. It would of course be much cleaner, but one should *never* experiment with smokeless powder in these old charcoal-burners. When participating in a match it is a good idea to weigh out your powder charges prior to the event, and carry each separately in a clean .30-'06 or similar cartridge case, properly stoppered. Before loading, run a copper wire of the proper diameter through each tube on the revolver to make certain that each is clear.

The jar of heavy loads frequently loosens the screws that hold the trigger guard and back strap to the frame. To obviate further annoyance from this cause, remove each screw, put a drop or two of linseed oil on the thread, and set it up snugly. The oil will congeal, effectually preventing the screws from loosening, yet they may be removed at will with a heavy screw-driver of the proper size and shape.

To dismount for the purpose of cleaning, half-cock the hammer, and drive out the key which holds the barrel and frame together. The barrel is sometimes found to be frozen to the base pin of pistols which have been stored for years. In such case revolve the cylinder to a position which permits the rammer to bear upon a partition between the chambers, place a piece of sheet brass on the face of the cylinder to prevent marring it, and force the cylinder away from the frame by exerting pressure upon the ramrod lever as if seating a bullet. A few drops of penetrating oil will help. This is the proper way to dismount the piece at any time, though of course the brass is not necessary if the weapon is in working condition and properly oiled. After shooting, wash the barrel and cylinder first in cold water and then in hot, and then dry and oil thoroughly. Keep the base pin on which the cylinder revolves clean and well lubricated.

My interest in the Dragoon is not centered in its possibilities as a weapon for present-day use. Rather is it stimulated

by a desire to be acquainted with the history of a typically American weapon which played an important role in the winning of our West. And I trust I am not in error when I assume that many of the readers of *THE AMERICAN RIFLEMAN* are likewise deeply interested in the history of typically American arms.

VALUE OF SHOTGUN PATTERNS

(Continued from page 22)

shot charge and the same velocity.

These newer and better-balanced loads were bound to come, the shooting public—especially those following Skeet—having complained loud and long about the older 3-inch ballistic freaks. They rightly claimed that the latter were so slow that it was necessary to give angle targets a greater lead in order to center them.

These several improvements in .410-bore shells have lifted the .410-bore shotgun from out of the toy class, and placed it upon the same footing as some of the larger bores, as is evident by comparing the velocities of the .410-bore shells—both 2½-inch and 3-inch—with 28 and 20-gauge shells in the shorter and longer lengths, as given in Table 2.

It will be noted that these newer loadings using progressive nitro powders, in the .410-bore shells, have brought velocities up very close to those obtainable in the 28 and 20-gauge loads in which the same charge of shot is used; and in some cases they have surpassed in velocity the larger bores. For example, the .410-bore 3-inch ⅝-ounce-of-No. 9 loads, as used in Skeet, developed a greater velocity over both 25 and 40-yard range than does the 28-gauge ⅝-ounce and ¾-ounce loads; while with No. 6-C shot the velocities are practically the same.

The 28-gauge shotgun has never been popular in America; in fact only two of our armories manufacture double guns in this gauge, while some of our ammunition makers never considered it advisable to tool-up for loading 28-gauge shells. What little vogue it had in years past was on the wane, until Skeet shooting was introduced and 28-gauge events were permitted and sanctioned. Then the 28-gauge commenced to be in demand, many preferring it to the .410-bore with its slow, 3-inch freak load. Now that 3-inch .410-bore shells can be obtained loaded with either ⅝ or ¾-ounce of shot, the same as is loaded in 28-gauge shells, and that are as speedy and effective with small shot, it would seem that the 28-gauge gun is doomed for either targets or game.

The compilation of sales as given in Table 1, of one of our largest producers will give an idea of today's demand trend for all gauges and bores, as compared with that of 7 years ago. While the 28-gauge

has made a slight gain (¾ of one per cent), the .410-bore and the 20-gauge have gained considerably in popularity, especially the .410-bore. Skeet shooting can be credited with this rise in popularity of the smaller bores, aided by the fact that more of our women and youths are taking up the sport of hunting and target shooting. And there is no question that the 3-inch .410-bore shell is responsible for most of the remarkable increase in popularity of our smallest-bored gun.

HUNTING MARMOTS IN RAIN

(Continued from page 11)

rubber heels—especially on old shoes—on a wet mountainside. If I slipped and fell once I went down a dozen times. Rubber heels will not stick anywhere when wet, and are dangerous in the extreme.

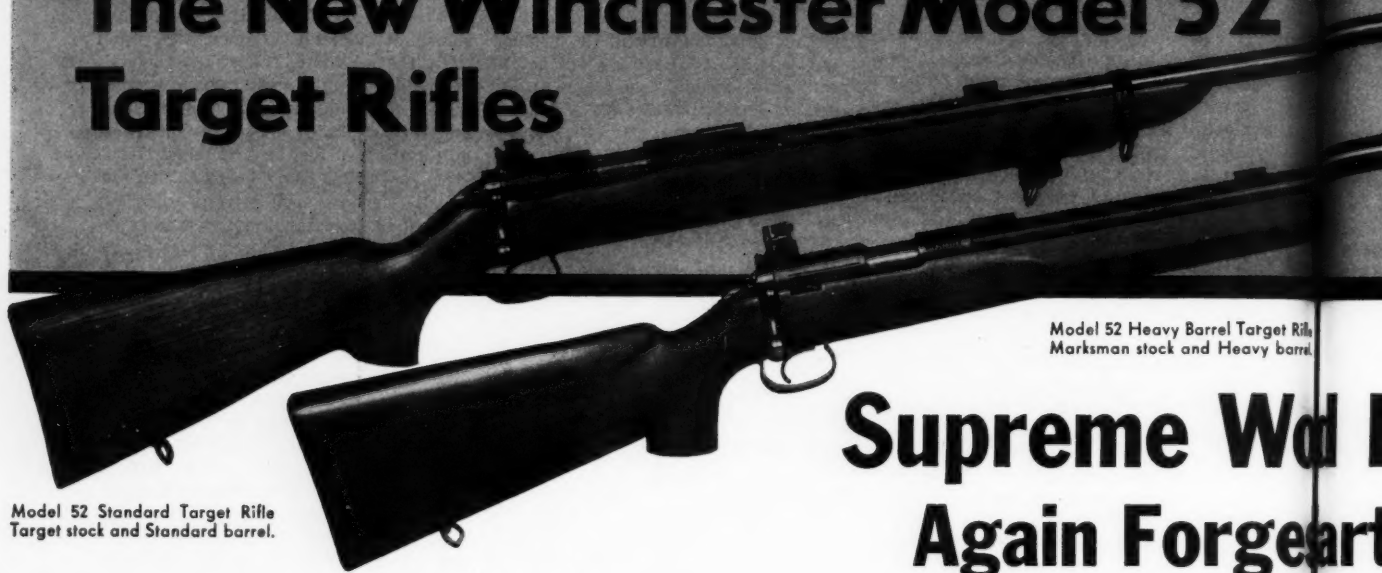
One of the most real dangers of this high country is the dislodged rock that comes plunging down the slope, stopping for nothing until it reaches the valley floor below. To be hit in the head by one of these cannon balls would mean certain death; and to avoid such an accident two or more persons should never be separated by any great distance one above another when climbing either up or down steep mountainsides. But experienced climbers become careless now and then, forgetful of the dangers so constantly with them. We were both quite tired, and at one place about half way down the mountain, where we were slipping and stumbling down through a grove of young aspens, Allyn had thoughtlessly worked over into a position a hundred feet or more directly above me. Suddenly he yelled:

"Look out! A rock is coming!"

Whirling, I looked back up. Down the mountainside, straight at me, came a piece of granite considerably larger than my head—and probably just as hard. In high, ever-lengthening bounds it came, snapping the young aspens like so much matchwood. Allyn stared in tense helplessness. When the rock was eight or ten feet from me, and left the ground in the bound that was to be mine, I jumped straight up, drawing my legs up under me in the hope that the thing would pass below without touching me. It did—almost. It clipped my left foot, and threw me flat. But I was thankful it had not struck my leg, for it surely would have broken it.

As darkness crept up the silent valley we arrived at camp, quite exhausted and soaked through. After changing to dry clothes, followed by supper, we tumbled into our snug bough bed; and the last thing I remember hearing was the incessant pattering of the rain upon the canvas.

The New Winchester Model 52 Target Rifles



Model 52 Standard Target Rifle
Target stock and Standard barrel.

Model 52 Heavy Barrel Target Rifle
Marksman stock and Heavy barrel.

Supreme World Again Forgiven

Introducing Many Important New Improvements, Among Them the Winchester

THE new Winchester Model 52 Target Rifles illustrated above are the two basic models of the eighteen different styles in which these new rifles are furnished. These new, improved rifles are designed and built with the express purpose of maintaining the well established and present world leadership in competitive .22 rim fire rifle target shooting of Winchester Model 52 Target Rifles. The full range of selection, according to metallic sights desired, is as listed herewith—twelve in the Standard model and six in the Heavy Barrel model. This selection includes one of each model furnished without metallic sights.

Ever since introduced, in 1919—for eighteen years, now—Winchester Model 52 Target Rifles have maintained supreme leadership in competitive small bore rifle target shooting. Year after year they have far exceeded all others in important winnings and in popularity. From the average small club to the largest National Matches they have actually predominated on the firing line by approximately 75%.

Just about every well-established important small bore trophy or match has been won repeatedly with the Winchester Model 52. It has been the same way with the making of record scores, most of which have been set with Model 52. In international match shooting, most of the members of the United States teams use Model 52s—and our teams generally win. This is the rifle, too, which has set the highest ranking individual score made for the United States in the International Dewar Team Matches for 1933, '34, '35 and '36—the last three each with a perfect score.

Throughout this eighteen years of leadership, these Winchester small bore special match shooting rifles have remained distinctly individual and unapproached in general design and styling. They originated and firmly established a new, clear-cut, definite standard of what a highly specialized and supremely efficient modern small-bore match rifle should be. As made today in the new Model 52s they represent, back of their Winchester originality, more than eighteen years of intensive research, study and testing by the Winchester engineering staff, with the benefit of the most advanced ideas of many of the world's most expert rifle shots. And they represent, too, Winchester's traditional great mechanical skill and countless invaluable advances in precision manufacturing—in which it was a pioneer in the firearms field.

These new rifles are of the bolt-action type, with stocks of improved styles, and chambered expressly for .22 caliber Long Rifle rim fire cartridges. The two basic types are the Standard model and the Heavy Barrel model. The same improved receiver, new firing mechanism with new patented double-adjustable trigger pull and new safety lock, are used in both rifles.

BARRELS. The new Model 52 Heavy Barrel Target Rifle has a 28-inch straight-taper round barrel of Winchester Proof Steel, of the so-called floating type, tapered from 1 inch at the breech to $\frac{7}{8}$ inch at the muzzle. It is chambered, bored, hand lapped, finished and fitted to receiver and stock with rigid attention to Winchester's extremely high standard in accuracy of gauging.

The Standard rifle has a 28-inch round barrel of Winchester Proof Steel, tapered from 1 inch at the breech to .715 inch at the muzzle. The same degree of scientific accuracy attained by Winchester in the production of Model 52

barrels, with gauging held to incredibly microscopic variation, is rigidly maintained, as is every other detail of barrel making. Nowhere else in the world are match rifle barrels made under conditions so favorable to consistent supreme accuracy.

MARKSMAN STOCK. The Heavy Barrel rifle is furnished in five styles with its regular Marksman stock and Winchester Heavy Barrel of Winchester Proof Steel, and in one style with Target stock. The Marksman stock is entirely new, improved design, with full pistol grip and full beavertail forearm. This stock is larger, heavier, and represents, even more than the Standard Target rifle's new improved stock, the latest accepted ideas of what is desirable in a match rifle stock. With it the barrel is mounted "full floating."

Inletted with great care, and specially waterproofed inside and outside, both stocks are fitted to the action and barrel in the precise manner. Winchester has found to give the best accuracy results. Both stocks have new adjustable hand support and adjustable forearm sling swivel, accommodating any shooter's reach and doing away with numbing of the shooter's arm from pinching under the taut sling. Both stocks are built with slightly tapered drop at comb and heel than was standard in Model 52 stocks as previously improved; Target stock is $1\frac{9}{16}$ " at comb, 2" at heel; Marksman stock is $1\frac{1}{8}$ " at comb, $1\frac{7}{8}$ " at heel. These dimensions are approximate.

TWO TYPES AND THREE GENERAL STYLES

Model 52 Heavy Barrel Target Rifles

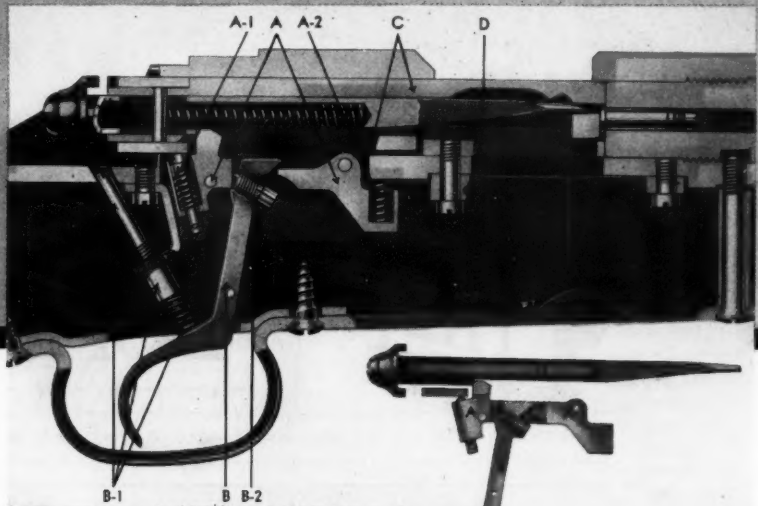
Symbol	Stock	Barrel	Rear Sight	Front Sight
*G5234R	Marksman Heavy 28"	Lyman #48FH	Lyman #77	
G5264R	Marksman Heavy 28"	Vaver #35 Miel. Ext.	Vaver Front	
G5274R	Marksman Heavy 28"	Marble Goss Ext.	Lyman #77	
G5284R	Marksman Heavy 28"	Lyman #52F Ext.	Lyman #77	
**G5204R	Target Heavy 28"	Win. #82A	Lyman #17G	
†G5224R	Marksman Heavy 28"	None	None	

*This rifle will be furnished as regular Heavy Barrel with Marksman stock unless order does not specify the particular sight combination desired.

**This rifle will be furnished as regular Heavy Barrel with Target stock unless order does not specify the particular sight combination desired.

†Heavy barrels have tapped holes on muzzle end of barrel for base plug. Prices may be obtained on application to Winchester, or from your local dealer, from whom purchases should be made.

WINCHESTER



Cross-section of Standard Grade action, showing new Speed Lock with patented double adjustable trigger pull. Firing pin in cocked position. A-Sear. A-1-Sear plunger and spring. A-2-Sear spring. B-Trigger. B-1-Trigger spring adjusting screw. B-2-Trigger-and-sear-engagement adjusting screw. C-Breach bolt. D-Firing pin.

Close-up of the three major parts in the new Winchester Speed Lock firing mechanism. A-Sear. B-Trigger. D-Firing pin.

World Leadership Gearthier Ahead

The Winchester Speed Lock with Patented Two-Adjustment Trigger Pull

STOCK. The Standard rifle, with a newly designed stock with improvements in butt-stock, pistol grip and semi-beavertail forearm; new camouflaged divided type barrel band (which cannot exert any disturbing pressure on the barrel), and regular Standard barrel of Winchester Proof metal, is so built for all twelve of its styles, as listed above. Further particulars follow.

WEIGHTS AND SLING. Both rifles have standard telescope-sight blocks and offered with the extensive choice in sight equipment listed on this page, both with or without the Standard government sling-strap. Sling, when furnished, is extra. Metallic and telescope sights are interchangeable, and the stock dimensions enable changing from the use of one style to the other with minimum change in shooting position.

RECEIVER AND ACTION. Besides the improvements in stocks and the wide choice in sight equipment—and the super-fine barrels—there are many very important developments in these new rifles. The receiver has been altered and improved, and the action is entirely new, with an advanced Winchester Speed Lock firing mechanism and patented trigger pull, both of exclusive Winchester design.

The breeching shoulders of the receiver have a greatly increased area, providing stronger, firmer contacts with the bolt, and reducing vibration. The receiver is not cut down on the left side of the loading well nearly so far as on the right. This provides a strong additional area of steel for greater stiffness, which does not interfere at all with hand loading. Also, the front of the receiver is now recessed deeper to admit the front end of the bolt. Thus when completely cammed forward the bolt is "locked in" fully 1/8th inch. The sight mortise on the receiver which was previously cut for the Winchester No. 82-A folding leaf rear sight is now omitted—except when ordered. The bolt handle, with a large round knob, is lower and well to the rear, bringing it, when closed, conveniently close to the trigger. Raised and retracted, the handle will clear any standard target telescope sight. Bolt is instantly and easily removed for cleaning.

SAFETY. A new improved safety is provided. This is triple locking, and when set in safe position locks the sear out of engagement with the trigger, locks the firing pin retracted, locks the bolt shut. The safety's thumb lever, located conveniently on the right side of the receiver, works forward and backward and is out of the way within the rifle's contour.

SPEED LOCK. The new Speed Lock is distinguished for uniform engagement of the sear with the firing pin until the trigger is pulled, and for dependable trigger engagement and weight adjustments. It maintains the same fast lock time as the previous Model 52 Speed Lock. Two other advantages also retained are the crisp let-off without trigger take-up, and reduced vibration, resulting from reduction of weight in the moving parts. In the new design the patented trigger pull has, as indicated, two separate adjustments. The pull-off adjustment controls the weight of the trigger pull, and is outside the lock action, directly to the rear. The engagement adjustment controls the amount of engagement of trigger and sear, and is located in the upper part of the trigger. Both adjustments are made to remain constant. Both are properly set and carefully tested at the factory to provide a very crisp yet amply safe pull of about 3 1/4 lbs., with no noticeable trigger take-up.

WEIGHTS. The Heavy Barrel rifle with Marksman stock weighs about 12 lbs. The Standard rifle with Target stock weighs about 10 lbs. These weights are with standard government sling-strap attached.

SINGLE-SHOT ADAPTER. The same detachable box-type five-cartridge magazine is regular equipment on both rifles. If the shooter prefers, he may obtain instead a single-shot adapter, which fits in the magazine chamber, or well, precisely like a magazine. By its use a cartridge dropped in place for loading requires no hand guidance, being pushed into a chamber by the bolt in closing the breech. This single-shot adapter is furnished in place of the magazine (only to order), or supplied as an extra.

A special folder, fully illustrated and giving a great deal more detailed information, will be sent you free, on request. Prices may be had on application, or from your local dealer, from whom your purchase should be made.

WINCHESTER REPEATING ARMS COMPANY
NEW HAVEN, CONN., U.S.A.

WIDE RANGE IN METALLIC SIGHTS

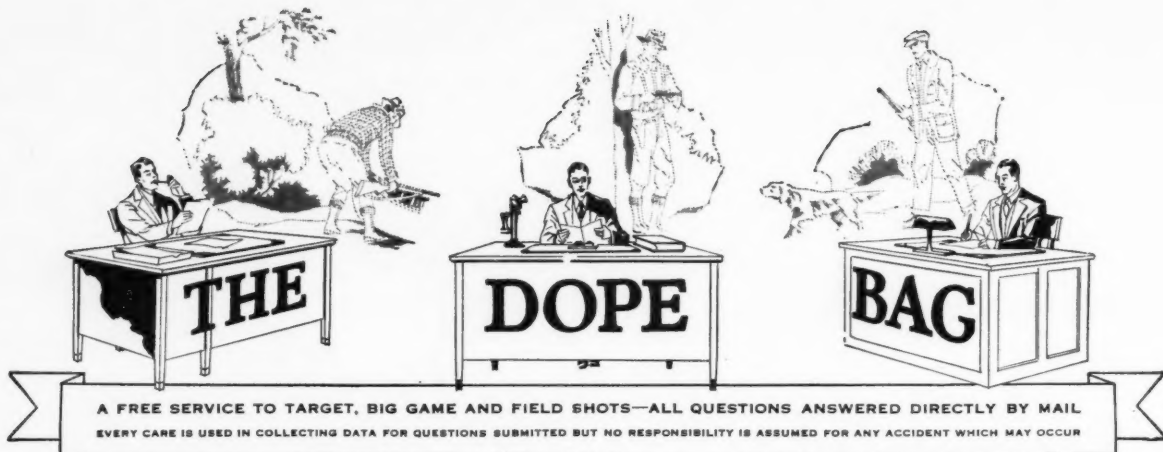
Model 52 Standard Target Rifles

Model	Stock	Barrel	Rear Sight	Front Sight
#77	TR	Target Standard 28"	None	None
	TR	Target Standard 28"	Win. #82A	Win. #93B
Front	TR	Target Standard 28"	Win. #82A	Lyman #17A
	TR	Target Standard 28"	Win. #82A	Redfield #65
#77	TR	Target Standard 28"	Lyman #57F	Lyman #17A
	TR	Target Standard 28"	Lyman #48F	Win. #93B
#17G	TR	Target Standard 28"	Lyman #48F	Lyman #17A
	TR	Target Standard 28"	Redfield #100F	Redfield #65
	TR	Target Standard 28"	Redfield #90F	Redfield #65
	TR	Target Standard 28"	Vaver #35 Mielt. Ext.	Lyman #17A
marksman	TR	Target Standard 28"	Marble Goss. Ext.	Lyman #17A
	TR	Target Standard 28"	Lyman #52F Ext.	Lyman #17A

stock if lever sight cut in stock. Front sight cut in barrel filled with blank piece. rifle will be furnished as regular Standard if order does not specify the particular sight combination desired.

Any of the above rifles will be furnished with Marksman type of stock special order, at an extra charge.

WINCHESTER



Conducted by F. C. Ness

New Scopes for Old

The Light Compact Malov

LAST summer Mr. V. Korinek, a visitor from abroad, did me the honor of looking me up. He showed me a "rifle sighting glass", the 2½X Malov, which is similar to the wellknown Zielklein rifle scopes. The small, 10-inch Malov weighs only 8 ounces with its 17-mm. objective lens. The eye end is of the same size. The field of view is 34½ feet per hundred yards, and its 7-mm. exit pupil indicated plentiful transmission of light. The eye relief is 3¼ inches.

I was (volubly) much impressed with its fine optical properties and its low price of \$23.50 plus duty. I added that I was not satisfied with the usual graticules, which were the same as those furnished by Zeiss and Hensoldt, and I showed him a special reticule in my 4X Hensoldt Diallytan which I had Dr. Hensoldt install some years previously.

Mr. Korinek's response heightened my interest, because he indicated his firm would make up and install special reticules to my own design without extra charge. The upshot of my contact with this very pleasant visitor was the purchase of two scopes and three special reticules at a total cost which amounted to less than that of a single high-grade scope of competitive make. In fact, I had been quoted by others more than the cost of the complete Malov scope for a special reticule alone.

The Wide-Field Nimrod

One I ordered was a brand new, wide-angle design with an 80-foot field at 100 yards, the 2½X Nimrod with 40-mm. eye

piece. Since I wanted this for aerial work or snap-shooting with autoloading rifles and for field use on shotguns I had it fitted with a medium flat-end aiming post inverted or suspended from the top of the field. While it gives more than twice the field of view commonly found in the biggest, if not our best, hunting scopes the eye relief is a mite short for the best interests of safety on heavy-recoil arms, especially when they are to be mounted and fired quickly as in bird shooting or used at high angles as in aerial target work. Until the makers bring out a modified version with longer eye relief I shall use this wide-angle Nimrod on the 410-gauge repeater or the .22 autoloader. The price is only \$37.50, plus duty.

The All-Purpose Lovec

My chief interest was in the 4X Lovec model which is similar to the widely-used Zielvier scope, the Lovec being the same in size, shape, weight and power. It is 10¾ inches long and it weighs 13½ ounces. The 31-mm. objective, 8-mm. exit pupil, 4-inch eye relief and field of 31½ feet at 100 yards make for fine practical optics. It is the equal of any of our high-grade hunting scopes and the price (plus duty) is \$37.50 including a special reticule of my own design, and a spare.

The Special Reticule

In this all-purpose scope I wanted an all-purpose reticule. I have found fine cross hairs appreciably more accurate than other reticules on paper targets and especially on obscure objects in the field which are small in actual size or relatively

small in appearance on account of distance. The disadvantages of cross hairs are poor definition and even invisibility against certain backgrounds or in poor light under the condition of insufficient contrast. To get around this compromise requirement I use fine cross hairs in the center of the field leading out of four, wide, short, opposing posts or bars which form a sighting aperture in the center of the field for quick aim on running game or under other conditions which render the fine cross hairs invisible.

I have such an all-purpose reticule in my Hensoldt Diallytan and in my 4X Lovec and am well satisfied with their practical features, although I have now ordered a total of four in the hope of getting one with the ideal dimensions for all-around employment. Slightly short of this ideal the side bars and vertical bars seem too short or too long or too slender. They must be wide enough and long enough to form a positive aperture for quick aim without obstructing the field of view.

These fine moderately-priced Malov, Nimrod and Lovec hunting scopes are made in Prague (Praha) Czechoslovakia. The fine interest in special sighting problems and the splendid spirit of cooperation belongs to the makers who make Luxor binoculars for the Czechoslovakian Army and others as well as microscopes, military, optical and measuring apparatus and such components as lenses, objectives, prisms, optical calculations and aeronautical and meteorological registering apparatus. Their address is: Srb a Stys, Praha XVII, Kavalirka 208, Prague,

Czechoslovakia. The import duty on all foreign scopes is 55% of the net price.

We found that we had too much parallax in the Lovec amounting to $1\frac{1}{2}$ minutes of angle. This is what ails a Gerard scope which we have acquired. In the Lovec we succeeded in eliminating the parallax by judicious employment of our Handee Grinder to extend the negative or extreme minus adjustment of its focusing sleeve. After we had done this and installed the second special reticule we considered it fine enough for our Model-70 (.30-'06) Winchester and had the Redfield people install it with one of their good bridge mounts. This combination has been very satisfactory in the field and on the target range. From bench rest we can shoot into less than $1\frac{1}{2}$ minutes of angle and we have killed chucks up to 214 paces with it shooting into the sun from prone without sling or rest. With the Gebby monopeg scope holder, which I used as a chuck rest, I have made groups as small as 1.60 inches from sitting position at 100 yards.

Uniform Resolution Test

Because it is difficult to effectively express relative resolving power in cold words we have put all our optical instruments through a uniform comparison test on a target having a series of rows of parallel lines in groups of graduated sizes and spaces. There are five groups to a row and five rows. The groups of parallel lines are approximately $\frac{3}{8}$ -inch or 10-mm. wide.

The tightest group in the third row, which is the fifteenth group, has eleven parallel black lines about $1/64$ -inch wide and white spaces of the same size. To rate 3 (three complete rows) the resolving power must enable the viewer to definitely distinguish and separate these small lines and spaces. Over our range of 25 yards indoors (toward the light) this amounts to a

row, which of course, has tighter or closer groups of parallel lines.

On account of the uniform but curtailed and purposely adverse illumination, optical instruments which lack good image brightness are placed at a disadvantage, and thus rated, by our comparison test. In other words, a rating of $3\text{-}1/5$ (or 3.2) is the mark of a good glass. With my 6X 36-mm. Unitex monocular (one tube of the Mirakel Tritonex) I get $3\text{-}1/5$ and have gone as high as the second group in the fourth row. The Ross-Watson Periscope recently advertised rated $3\text{-}3/5$ by Barr who normally gets from $1/5$ to $4/5$ less than I do in this resolution test. The B. & L. 7 X 35-mm. binoculars went to $3\text{-}2/5$ and the Hensoldt 7 X 50 binoculars went to $3\text{-}1/5$ for me in this test. The 15X Wollensak spotting scope went to $3\text{-}3/5$ for me and to $3\text{-}2/5$ for Barr. The hunting scopes, of course, cannot achieve such ratings. The big Hensoldt Diallytan which we used as a standard rated $2\text{-}1/5$ for both of us. The 4X Lovec rated 2.0, both Barr and me. The Gerard scope which is the same size as these two reached a maximum of only $1\text{-}4/5$ (1.8) for Barr.

Big Zeiss and Hensoldt Scopes

For comparison, the equally bulky Zielvier and Diallytan scopes may be described as follows. The 4X Hensoldt Zielvier has a 26-mm. objective, a length of $9\frac{1}{2}$ inches, an eye relief of $3\frac{1}{4}$ inches, a field of $40\frac{1}{2}$ feet at 100 yards, a weight of 11 ounces and a price of about \$40.00 plus duty, with standard reticule. The 4X Hensoldt Diallytan has a 36-mm. objective and it weighs 14 ounces. The length is 11 inches. The tube diameter is 26-mm. against 22-mm. for all other Hensoldt models, but the eye distance is the same for all of them. The Diallytan has a 9-mm. exit pupil against 6.6-mm. for the Zielvier. The price is about \$50.00 plus duty. The

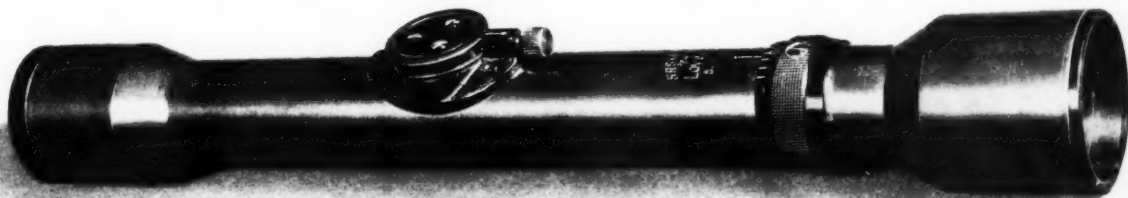
New Zielvier Featherweight

The latest model by Zeiss is bigger than their standard Zielvier but several ounces lighter for all that, thanks to the new light-weight metal used in this and some of the Zeiss binoculars. The optical features are identical but the Featherweight model has a bigger tube. The middle diameter is 27.5-mm. against 26.5-mm., the old standard. The enlarged eye end is 39.5-mm. against 38-mm. and the objective end of the tube is 36.5-mm. against the 35-mm. diameter of the standard Zeiss Zielvier. In spite of this the bigger Zeiss Featherweight weighs only 10 ounces. In addition there are integral inverted dovetail blocks on the bottom of the tube to facilitate mounting. A long block is located at the middle and a short block at the objective end. When these integral blocks are utilized by the gunsmith there is no necessity for taking the instrument apart or for disturbing the optical parts. This model lends itself to very rigid mounting which is furthered by the reduced inertia resulting from its lighter weight. The instrument is also made dust proof and moisture proof.

Central Bridge Mounts

While it is practical to use good low-model bracket mounts (Niedner and G. & H.) with these big scopes including such modified brackets as found in the Stith, Sorenson Springboard and Skardon Smith mounts, I consider the Redfield and Tilden bridge mounts best adapted of all mounts for these larger sighting instruments. Bridge mounts support the instrument at both ends on or by bases which are centrally fastened directly to the top of the rifle to eliminate any unsupported overhang common to bracket mounts. This unyielding two-point support is also embodied in the Belding & Mull Hunter, the V-type Weaver and the G. K. Turner

The Czechoslovakian Lovec, an answer to the special reticule problem

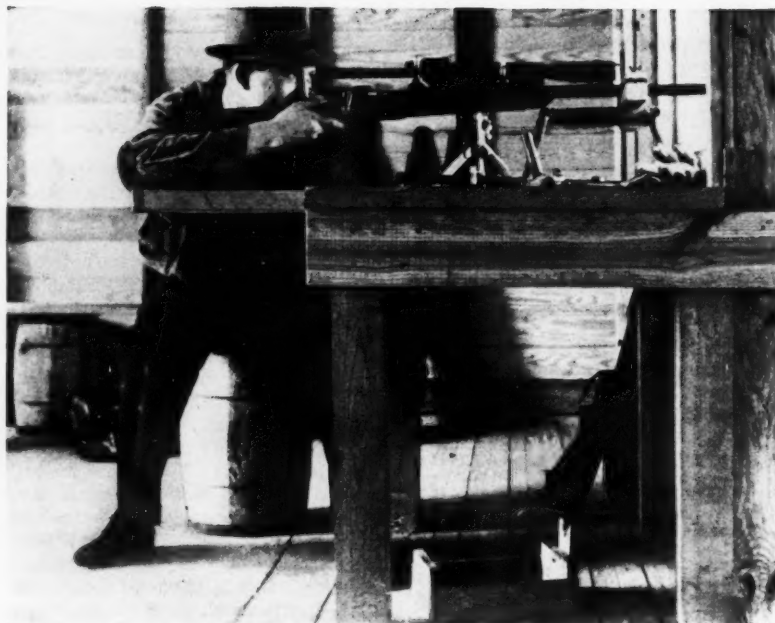


visual acuity of better than one-eighth of one minute of angle, which is equal to the ability of definitely distinguishing a contrasting object smaller than $\frac{1}{8}$ -inch (about $1/10$ th) at 100 yards in poor light and under adverse conditions. A rating of $3\text{-}1/5$ means the first three rows plus the first or biggest group in the fourth

4X Zeiss Zielvier is $10\frac{1}{2}$ inches long and it weighs $13\frac{3}{4}$ ounces with its 31-mm. objective. The eye distance is $3\text{-}3/16$ inches. The exit pupil is 7.75-mm. and the field of view is $32\frac{1}{2}$ feet at 100 yards. The price is \$70.00 including cross hairs or graticule No. 4. On our resolution chart Barr got a rating of 1.8.

top-fastened hunting mounts. None of these, however, are as suitable or available as the Tilden or Redfield bridge mounts.

In these latter two mounts the front end is pivoted for horizontal swing and the rear end is held in a cross-wise female dovetail slot, the location for azimuth being controlled by two opposing screws.



This system forms a very strong, sturdy and rigid support. It also makes the mount detachable, but both of them are at their best when left on the gun permanently zeroed for exclusive use with one load and for all sighting purposes with that rifle. By great care, good judgement and some luck it is possible to remove and replace the scope without inadvertent change in zero with these mounts. In this we have had better luck with our sample Tilden than with our sample Redfield mount, and we believe the smaller Tilden pivot, which is purposely made less tight for a more free movement, is responsible. Both mounts, Redfield and Tilden, are practically identical in other respects.

Both are very satisfactory and represent our first choice for exclusive use and constant attachment of any of the big sighting scopes. We use the Redfield with our 4X Lovoc on the M-70 Winchester and the Tilden with our 4X Dialytan on the M-54 Winchester with altered bolt handle. These big scopes have enlarged eye pieces and they must be mounted as low as possible to give maximum strength, minimum inconvenience from their great bulk and maximum aiming efficiency for the all-around use which alone justifies their selection over the smaller compact scopes. The rifles best adapted are the M-70 Winchester, 30-S Remington, M-1917 Sporter, M-40 or M-45 Savage, M-141 Remington and 99-T Savage. The M-70 safety cannot be used with these scopes properly mounted.

For saddle use, in the scabbard, a small scope is necessary or a quickly detachable mount for the big scopes. For this latter

purpose the best ones I have seen or used are the low-model, double-lever, Niedner mount, than which there is none better, or the low-model, double-lever, Griffin & Howe mount. The double-lever, B. & M. Hunter is also quickly removed and replaced without any effect on zero, but it is adapted only for the very good B. & M. Hunter 2½X scope, which is exceptionally smooth in lines but a bit long, not satisfactorily sealed against the elements and without provision for convenient individual-vision focus. The Skardon Smith mount is detachable but since I have not tried it I do not know how well it maintains its zero. The strong, simple bridge mount designed by G. K. Turner which worked well in our tests is not as yet on the market. The Sorenson Springboard is very quickly detachable and maintains its zero, but it is better adapted for small straight scopes like the common non-adjustable target scopes, the foreign Zielklein and especially the Unertl and Fecker small-game scopes without internal adjustments which are provided in the mount. The Stith mount, excellent for exclusive use of small scopes, especially in the saddle scabbard, is not detachable although it is demountable.

The two recommended bridge mounts provide only azimuth adjustment for lateral zero. Elevation adjustment is obtained by turning the turret screw in the elevation boss on the scope itself. Our Hensoldt has 96 graduations representing a complete turn of the turret screw. A quarter-turn, or about 24 marks, gave us 11 inches change on the target at 100 yards, indicating ½-minute values. Our Lovoc elevation screw has 120 gradua-

tions, each equal to an inch at 100 yards according to our experience and notes. The Zeiss Zielklein has 52 graduations and the Zeiss Zielvier, 72 graduations. The values usually are 2 minutes of angle, but sometimes mount makers change the graduations so they will conform with their own mount adjustments. A couple

The N. R. A. gets a new range. Barr trying our latest accession, a Johnson-Springfield small-bore outfit, from bench rest. The muzzle rest in use was designed and sent us by Mark Cooper and another simpler rest can be seen beneath the bench

of G. & H. jobs, involving the Zeiss Zielvier scope, were tried and its graduations gave us about 1.3 minutes of angle.

Zeroing some hunting scopes requires much time and ammunition amounting to a considerable cost, which in fairness to more readily adjustable designs must be charged to the outfit by adding the sum to the list price when comparing prices. Our method is to first adjust the focus, remove the parallax and then refine the adjustment on the range while we are bore-sighting from rest. Or the first shot is fired at short range to correct the lateral zero only. The next shot at the next range (about 50 yards) indicates the trend of the trajectory, up or down. The third shot at 100 yards is close enough for refinement or for finishing this first group on the paper before refinement of the zero. All the above preparation is merely to get on the paper at 100 yards.

If a machine rest, clamp-rest or bench-rest is used to bore sight or check for parallax, the zeroing is readily accomplished by holding the rifle where it was aimed while adjusting the sight until it points at the center of the off-center group. Only one shot is required for this if it is fired from a bore previously fouled or warmed as required by the individual rifle. Lever-action rifles can be bore-sighted by using the Winchester Barrel Reflector, or they can be initially fired at 25 yards as suggested above. The range can now be extended to 125 yards, 150 yards, 175 yards or 200 yards according to the power of the weapon, the purpose of the shooter and the trajectory of his load. With one of our big all-purpose scope sights we arrive at our permanent zero by trying it on several days or as opportunity permits and let the average center-of-impact of the several groups determine our final fixed zero.

The Super-Targetspot

The latest thing in target scopes is the new Lyman Super-Targetspot which we announced last month. The standard Targetspot has not been supplanted by the new model, and, indeed, anyone who needs

a good 8X scope would be better served at less cost with the standard Targetspot. If such shooter likes he can have his old Targetspot equipped with the new three-point Lyman target mounts and the new Lyman hardened bases which have supplanted the old mounts and bases. Or if he wants more power he can also have his

To save valuable time when testing rifles or sights, we use targets in groups of fourteen or sixteen, saving many unnecessary steps. Barr examining his bench rest groups and marking the targets before replacing them with clean ones for the next outfit to be fired

8X Targetspot raised to 10X, 12X or even 15X and have the larger Super-Targetspot objective and better-graduated focus sleeve fitted for this increased magnification.

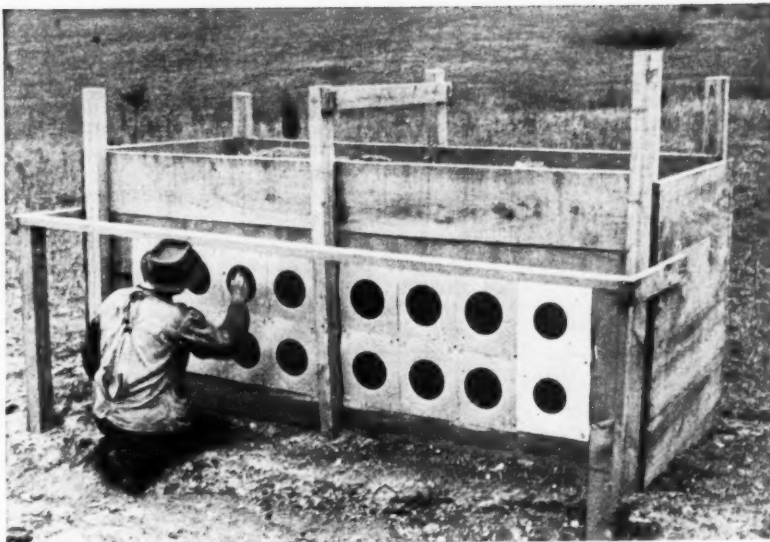
I have a report from Mark Cooper on one of these revamped Targetspots. Mark had Lyman equip his Targetspot with the new objective and found little improvement when light conditions were favorable. But when the light became poor and the improvement became desirable it was there in sufficient measure to be very appreciably evident.

Our No. 1 sample in 10X had wonderful optics which Cooper acknowledged when he saw it here and which made him wish his own would prove as good. In our comparison test it outclassed anything we had on the range and it rated 4-3/5 for me and 4-1/5 for Barr in our indoor test at 25 yards. Even without artificial lights it reached 2.8 for Barr and 3.0 for me. The exit pupil was 3.4-mm. and the relative brightness 11.5, but this scope must be used in poor light to be properly appreciated. We have sent it back to be raised to 15X for spotting purposes and further check. It will then have a 2.27-mm. exit pupil and a relative brightness of 5.1. Also the field will be reduced from 12 feet to 8 feet, 9 inches at 100 yards. Our sample had a fine cross-hair reticule of special-order .0005 size. The standard for the Targetspot and Super-Targetspot is .0007.

.22 RIM FIRE HEADSPACE

WITH any rimmed cartridge the space allowed for the rim at the head of the cartridge is measured from the bottom of the rim seat of the chamber in the end of the barrel to the face of the breech block or bolt when the action is closed.

In any odd center-fire caliber we determine the amount of excess space by adding shims of thin metal to a case having maximum thickness of rim until we can just feel the contact while gently



closing the action. The shims are then miked for total thickness or excess space. We have found this to run from 0 in some Hornets to as much as .005 inch in some Krags. The actual headspace allowance is the total distance from bolt-face to seat which would require adding the thickness of the cartridge rim.

The most accurate way of getting the total headspace is with a steel head plug or headspace gauge, which must be non-compressible, hardened against wear or change and very accurately tooled up individually to exact dimensions. Therefore head plugs are necessarily expensive. For the sake of economy a club or a group of shooters should buy headspace gauges for community use.

In the .22 rim fire the total space allowance for the rim of the cartridge is about .045 inch, but in different target models it runs from .043 to .046 inch and higher in sporting repeaters, some individual rifles going as high as .050 inch. When the headspace is scanty or less than the minimum .043 inch we experience difficult seating and sometimes get poor accuracy, punctures and blow backs or even premature discharges while closing the action on an abnormally thick rim in such close-breeched rifles. On the other hand when the headspace exceeds the normal .045 inch we sometimes get uneven ignition and poor accuracy or even hang-fires and misfires.

The theory, with much practical support, is that when the headspace is .046 inch or more best results in ignition and on the target are obtained with Lesmok target cartridges as opposed to smokeless match ammunition. Practice is not faithful to theory which latter is not always borne out by subsequent target-shooting experience. In order to check on our own

small-bore equipment we have obtained from that popular maker of match barrels, Eric Johnson, a complete set of hardened head plugs for the .22 rim fire. They are made in steps of .001 inch and range from .043 inch to .050 inch, inclusive.

Our Stevens rifles vary from .044 inch to .047 inch in the matter of headspace. Our most accurate rim fire is the 417½ Stevens S.-S., and it refused to close on the .045 gauge. The .044 inch was a tight fit. This rifle shoots all loads with remarkable accuracy, but it should do best with smokeless target loads. At 50 yards its 1936 average with Lesmok is .593 inch for 100 shots against .668 inch for 110 shots with smokeless. In 1937 we gave Lesmok and smokeless a direct check in this rifle. At 50 yards 40 shots with Precision averaged .810 inch, while the same number of Kleanbore made .730 inch, which is mighty close. At 100 yards Precision averaged 1.430 inches for 30 shots while 60 shots of Kleanbore did the same, or 1.425 inches. The total score at 50 yards is .684 inch for 240 shots of Lesmok and .711 inch for 200 shots of smokeless.

Our second-best Stevens is the M-417, which is a heavy-barrel single-shot. This one refuses the .047 gauge, but will just accept .046 inches. While our 1936 book shows the smallest average with Lesmok, the total score is a mite better with smokeless in this rifle. At 50 yards 150 shots with smokeless averaged .765 inch against .791 inch for 200 shots with Lesmok. In 1937 we fired only 20 shots with Precision which averaged 1.75 inches at 100 yards in this rifle.

Our M-418 Stevens S.-S. takes the .047 gauge and does as well with smokeless as with Lesmok loads. The .056 Buckhorn

Stevens gauges the same and performs the same. Our .053 Buckhorn breeches more snugly. It will accept the .045 gauge. It does very slightly better with smokeless than with Lesmok.

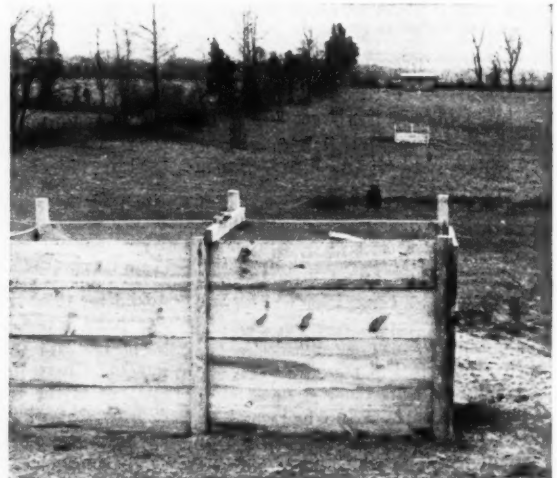
Our Model 19 N. R. A. Savage takes the .045 gauge. The Model 5 Savage, bolt-action, and the Model 29 Savage, slide-action, close more snugly on this same gauge. Our most accurate moderate-price target rifle is the Stevens-Sears Ranger which just accepts the .046 gauge.

The most loosely breeched of our

given a thorough test as yet. So far Lesmok has given the smallest group, 1.38 inches at 100 yards against 1.85 inches for smokeless. Barr's 57 Winchester takes the .044 gauge and it does best with Lesmok loads. So far we have found nothing to support the theory that smokeless does better in a snugly breeched rifle and vice versa. At the other extreme we have our International heavy-barrel Springfield with .050-inch headspace. Barr shot it with iron sights at 100 yards. His 30 shots with Super Match averaged 1.760

enclosed by the receiver in front when closed. New bolt handle seems more nearly vertical and farther back. Cocks on up stroke. New firing pin, now divorced from safety lock, has acquired a new head. New safety lock on the right side. No longer engages firing pin directly, but locks sear into firing pin and out of trigger engagement when "On". Also locks bolt against being turned. External control is a push-and-pull lever ahead of the bolt handle.

The new speed lock gives two trigger



Two more views of the new range. Left: the shooting house, showing ports for prone, bench rest and offhand firing, and one on the left for machine rest tests. Right: a photograph taken from behind the 200-yard butt, with the house in the distance

rifles is the B.S.A. (Martini S.-S.) which readily accepts the .050 gauge. Our heavy barrel International .22 Springfield also accepts the .050 gauge. None other in our collection will do so except the M-41P Remington. This low-price bolt-action shoots best of all with Super Match and on this account averages slightly better with smokeless than with Lesmok.

Our tightest rifle is my heavy-barrel 52 Winchester which refuses the .044 gauge and just accepts .043 inches. According to theory this one should do best with smokeless. However, our 1936 book shows 270 shots of Lesmok averaged .681 inch and smokeless averaged .788 inch for 290 shots. At 100 yards smokeless averaged 2.048 and Lesmok, 1.806 inches.

Our next tightest rifle readily accepts the .043 gauge but refuses .044 inches. This is the Model 43 Mossberg. Our most accurate Mossberg is the old Model 35 S.-S. which accepts the .046 gauge. The 46A Mossberg takes the .047 gauge.

Other tight rifles which we have are our Pope-Ballard (.044 tight) the standard 52 Winchester (.044 tight) another heavy-barrel 52 W (.044 tight) and our M2 Springfield, barrelled by Eric Johnson, which readily accepts the .044 gauge. This 8-groove job by Eric has not been

inches and 30 shots with Lesmok (Precision) average 1.830 inches.

Other rifles which we checked with the Eric Johnson headspace plugs came through as follows:

Gun	Go	No Go
M-37 Remington.....	.047 (loose)	.049
341-P Remington.....	.045	.046
34 N. R. A. Remington.....	.045	.046
33 N. R. A. Remington.....	.047 (tight)	.049
M-69 Winchester.....	.045 (tight)	.046
60-A Winchester.....	.046 (tight)	.047
M-39 Marlin.....	.046	.047

NEW 52 WINCHESTER ANNOUNCED

THAT ancient and honorable winner of small-bore matches, the 52 W, which was born 18 years ago, has been improved once more; this time with radical changes in the action. Even the receiver has been strengthened and stiffened to make it compare more favorably with a younger rival. Who has ever heard of a cracked 52 receiver? Bill Schweitzer did. Greater locking area, deeper seating depth of the bolt and less cutting away of the left side are features of the new and stronger receiver. The bolt, unchanged except very minorly, seats $\frac{1}{8}$ th inch and becomes

adjustments calculated to end old trouble with variable contact, tension or weight of pull. The new adjustments treat contact or engagement and force or weight of pull separately. Designed for uniform engagement of sear and firing pin until pull is completed. These two adjustments are in the new patented trigger mechanism. The ignition speed remains as was. By turning a screw at the rear, visible when the bolt has been removed, the weight of pull is adjusted by slacking or compressing a coil spring which bears directly against the trigger. The trigger and sear engagement is controlled by another screw in the upper arm of the trigger. This screw directly contacts the sear and can be regulated from creep to crisp let off. Success depends on constancy of this contact, and time alone can answer. Factory adjusts to crisp but safe let off and $\frac{3}{4}$ -pound weight of pull. There is no preliminary take up.

The standard Target stock has a semi-beavertail forestock with a new barrel band, split for give and take to avoid barrel pressure. The drop is $1\text{-}9/16 \times 2$ inches. The pistol grip is more sharply curved toward the trigger. This Target stock is standard on the standard weight barrel, but the Marksman stock can be

substituted to order. The standard weight, with sights and sling, is 10 pounds.

The Heavy Barrel Marksman stock is much bigger and a heavier, especially in its wide, full-beavertail forestock. The forestock is unfastened to the barrel but the receiver is bolted to it front and rear. The drop is 1-9/16 x 1 1/4 inches, with a full, straight comb for telescope sighting or for individual alterations. The Heavy Barrel weight, with sights and sling, is 12 pounds.

Both stocks are of walnut with waterproof semi-gloss finish inside and out. Both have a length of pull of 13 1/4 inches. Both are equipped with the new Winchester adjustable-position sling swivel and composition hand-support in an inset chromium-plated base designed to suit any length of arm or reach. Both barrels are 28 inches long, interior hand-lapped for fine smoothness. Both rifles can be bought without sights, or with any one of a wide choice of combinations front and rear, including the new Lyman 57F micrometer, and 48FH micrometer receiver sights. A descriptive folder, now in preparation by Winchester, will give complete details.

EQUIPMENT FOR QUICK SHOOTING

ALTHOUGH a sizable group of our readers are interested in such things as quick-draw holsters and "belly guns" their discussion in a medium devoted to shooting as a sport calls for some justification. The reason which I shall give is: an academic interest in the possibilities as opposed to a serious interest in any practical application. There is also involved a romantic interest. Quick, point-blank shooting with carbine and six shooter by our Western pioneers is as definitely a part of our romantic American history as the more deliberate defensive shooting of American riflemen on our earlier Colonial frontiers. Hence we recognize much the same urge as that which impels us in rifle shooting when we assay the short-barrel handgun and the shoulder holster.

While I appreciate the advantages of moderately short barrels in quick shooting, my tastes do not include such snub-nose revolvers as the Banker's Special, the Detective Special and New Defender, which have 2-inch barrels solely for the purpose of concealment. Because I am not a peace officer I have no use for the practical Detective Special and if I were I would want the barrel twice as long. A 4-inch barrel is very practical even for accurate shooting at 50 yards and it is very portable as well as fast in any form of quick shooting. Undoubtedly friend "Fitz" and some of my friends among law-enforcement groups will not agree

WARNING

DESPITE our still-continued faith in J. B. Sweany of Winters, California, aside from business relations, and our belief in his inherent honesty, we feel compelled because of numerous complaints to caution members against placing orders with him for .220 Swift rifles or reloading tools. His continued refusal to answer correspondence, as well as to complete work already paid for, makes this warning necessary.

with me, but such difference of opinion has no effect on personal preference.

The Upside-down "Lightnin"

I know what has been done on Standard American targets with a 3 1/2-inch S. & W. Magnum. I have seen the 2-inch Detective Special in action at short range on man-size targets. I met J. H. Martin while watching his exhibition of the quick-draw from Berns-Martin holsters at Camp Perry last fall. I became interested in his upside-down shoulder holster and ordered one for my 4-inch K-38. He said this "Lightnin" model was made only for the 2-inch M. & P., Banker's Special or Detective Special. On November 15, Jack wrote from Calhoun City, Mississippi, saying that he would make his shoulder holster for my 4-inch barrel but would never make another even if it did prove successful, which he seemed to doubt. When finished, however, it worked so well Jack became enthusiastic and decided to let me mention it. Later he said he would be glad to make them to order.

The holster is the usual Berns-Martin, straight-top, open-front type for quick draw. A bent-wire spring of one piece of special oil-tempered piano wire keeps the open-front gap closed and also encloses and retains the gun by closing the mouth edge of the holster about the gun behind the cylinder bulge. The gun cannot be shaken out or jarred loose although it hangs butt down and comes out easily when purposely drawn. Horsehide straps

adjustably laced to top and bottom of the holster cross to form a shoulder loop. A slidable slotted leather keeper at the intersection permits further adjustments to suit different bodies. The opposite arm goes through the end loop formed by the same two straps which cross the body in back below the neck. Being light in weight and soft, the rig is not uncomfortable to the wearer. Hank Adams told me he improved his by adding a single elastic suspender fastened to the waist button of his trousers. The holster is made of 6-ounce skirting leather covered with 5-ounce horsehide. See the small cut below.

For quick-draw, Martin's "Lightnin" holster should be kept from under the arm. Properly adjusted, it rides over the left nipple for a right-hand draw and the butt points to the left. The hand comes up and the fingers hook the grip while the extended trigger finger slides over the outside of the holster and contacts the trigger as the gun clears the leather. The slight cross-body angle of the draw serves to pivot the gun on its muzzle and pry apart the open front without conscious effort. The gun is fired double-action, of course. For a quicker shot it may be fired across the body to the side the moment it is out. For safety and accuracy the target should be faced at only a slight angle and the arm extended toward the front before firing.

I am not fast enough to develop the potential speed of draw possible with this "Lightnin" holster. Also I am too much concerned with accuracy to gain any great speed. With accuracy at short range my time has been about the same as with the Jewett Safety holster which is a belt holster with a spring release. Starting with my hand down and ending with the report of the gun, my time runs between a full second and a scant two seconds. Because of the longer reach to the shoulder holster

We tried two practical Holsters—the Berns-Martin belt (below) and shoulder (right)



the belt holster has an advantage when the hand is kept down. They are placed on par when the drawing hand is held at "raise-pistol" position.

We cut off the barrel of our K-22 and removed the rear sight to approximate our 4-inch K-38 for practice with this

holster. In my only target check I got fifteen straight on the 50-yard rifle target (9 x 7 inches) while aiming at its 3-inch black. Only three hits were outside the 6-inch scoring area fired in the time of less than 2 seconds per shot. That is only fair time, but creditable grouping.

Berns-Martin Belt Draw

The other small cut shows the belt outfit in basket-weave pattern, complete at \$12.50. I gave Martin my waist measure, gun model and barrel length and it was delivered promptly. Everything fitted perfectly but the holster appeared to be too new and stiff for quick draw. Trial soon convinced me it was plenty fast, even as issued. This open-front belt holster has a flat retaining spring which partially encircles the cylinder. In addition the back part of the top is rounded to conform with the curve of the trigger guard and it is stitched closed to prevent releasing the gun when it is pulled straight up.

This outfit was made for the S. & W. 1917-Model revolver, which has a 5½-inch barrel. I also have a U. S. Army model S. & W. in .45 Colt caliber which fits identically. To adapt the outfit for both calibers I had Jack sew on five loops for the .45 Colt, five for the .45 Auto Rim and five for the .45 A.C.P. cartridge. These fifteen loops are placed near the large, flat, metal buckle of the belt. Because the gun comes out so easily when properly tipped forward for release there is some danger of accidentally dislodging it in rough going, as I learned while climbing a big snag to get a field shot one day. To prevent such mishaps an auxiliary retaining strap is provided which may be quickly snapped into place, and again out of the way when a quick draw is contemplated. It then does not show.

With the hands swinging at the sides in normal walking position this belt holster is faster than the "Lightnin" shoulder holster. On a signal I can get the gun out and fired in less than a second. My best time without aim is 2/5 second. For fairly accurate aim at 12 feet my best time was a scant second. The technique of quick-draw with this holster is to wear it high and snugly to the side, bring the hand up from behind the butt and "break" it forward, pivoting the gun on its muzzle until the cylinder is clear. This makes barrel-and-length fit important. I noticed Jack had made the belt loop a very snug fit on the belt, probably to prevent any time-losing yield or give.

I tried my 4-inch K-.38 in Frank Wyman's Berns-Martin outfit built for his 5-inch Official Police and found it to be comparatively slow on account of the inch discrepancy in barrel length. My K-.38 is two inches short for my Jewett Safety holster (previously reviewed) but

it works perfectly in quick-draw and is as fast as anything I have tried for hip shooting. For accuracy with the arm extended I prefer the Berns-Martin belt holster and the S. & W. Model-1917, which points naturally for me, and shoots remarkably close to the mark without aim, even as far as twenty yards.

RECENT 12 GAUGE PATTERNS

ALL year we have been getting modified-choke patterns with our full-choke 12-gauge barrels. Recently we have checked on these results but without much improvement. We can only assume we have not found the right load although a variety was tried. It may be that our counting of the pellets for an average instead of using the accepted standard count prevents our getting improved-modified (68%) or full-choke (75%) percentages at 40 yards.

A Remington M-32 full-choke with 2¾-inch chambers, will finely break Blue Rocks for us at seemingly long ranges. At 20 yards 1¼ ounces of No. 7½ chilled in this barrel will put 429 of its 455 pellets in a 20-inch circle. This 2¾-inch load spreads nearly 24 inches at 20 yards and gives us 2.76 hits per 3-inch square at 40 yards in the modified barrel and 3.02 hits in the full-choke barrel, which is no better than 53%.

Finer shot in a 2½-inch case acts normally and spreads 26 to 27 inches at 20 yards. At 40 yards this load of 1½ ounces No. 9 chilled gives from 3.45 to 4.12 hits per 3-inch square, but of course the percentage of the pellets in the 30-inch circle is poor.

Big shot in a heavy duck load, like 1¼ ounces No. 4 chilled in a 2¾-inch case will put 163 of its 169 pellets in a 20-inch circle at 20 yards and will spread 22 to 23 inches at that range. At 40 yards we get an average of 1.08 hits per 3-inch square with the modified barrel and 1.17 hits with the full choke, which is 47% in the 30-inch circle.

The Marlin M-90 gave identical results when these same loads were tried in its modified and full-choke barrels, respectively. This led to trying new Western Field loads in the Marlin which raised its full-choke patterns to 60% in a 30¼-inch circle. Some new Federal Hi-Power loads of No. 6 chilled went to 57% under the same conditions.

In the M-32 Remington the new Federal No. 6 load averaged 51.8% in the modified barrel and 56.2% in the full choke. The latter spread 23 inches at 20 yards and gave 2 hits per 3-inch square at 40 yards. New Federal Hi-Power No. 4 chilled spread 21.5 to 23 inches at 20 yards and averaged 1.25 hits per square and 61.25% in the 30-inch circle at 40 yards,

for ten patterns with both barrels, modified and full choke alike.

Long Range Patterns

For a check we tried these loads in our M-28 Savage with the Cutts Compensator and the .725-inch choke tube. The full-choke tubes run: .705, .690, .680 and .675 inches in the 12 gauge. Western Super-X with 1¼ ounces of No. 6 chilled spread 22 inches at 20 yards and gave practically 2 hits per square and 56% in the 30-inch circle at 40 yards. At 50 yards the pattern fell off to 33.3% and at 60 yards to 29.4% in the 30-inch circle.

Federal Hi-Power with the same load of No. 6 chilled also spread 22 inches at 20 yards. The best pattern at 40 yards was 56.6% and the average was 53%. At 50 yards the pattern fell off to 33.7% and to 23.7% at 60 yards in the 30-inch circle.

Federal Hi-Power loaded with 1¼ ounces No. 4 chilled spread 21 inches at 20 yards. The low pattern was 58.8% and the high, 67.5%, with an average of 62% at 40 yards. At 50 yards it fell off to 45.6% and at 60 yards to 27.5% in the 30-inch circle.

In the .705 Cutts full-choke tube we tried Federal Monark loaded with 1¼ ounces of No. 7½ chilled. The hits in the 30-inch circle at 40 yards ranged from 283 to 294. By the standard count of 431 pellets we had an average of 67%. By our own actual count of 455 pellets average in the load the true percentage was only 63.4%.

Trajectory of Shot

We had Belding & Mull fit a B. & M. Hunter scope sight on this M-28 Savage shotgun and they did a fine job of placement for correct eye relief in the interest of the fast sighting which is necessary in wing shooting. One difficulty, however, was getting it zeroed properly as it shoots too high and apparently we cannot adjust it much lower, without decentering the post.

With Federal Hi-Power No. 6 chilled the angle of departure is about 42 minutes. With Super-X No. 6 chilled it is 35 minutes, and with Federal Hi-Power No. 4 chilled the elevation is apparently 25 minutes. This sends our patterns from 14 to 19 inches above aim at 60 yards and the scope axis is 1.656 inches above the bore as mounted. The three loads, respectively, show the following gravity drop from muzzle to target at 60 yards: 7.34 inches, 6.70 inches and 7.02 inches. At 12½ yards the impacts are 3¾, 2¾ and 1½ inches above aim, respectively. At this short distance the spread is from 9 inches to 11 inches.

The load of No. 4 chilled, worked out into the following drop figures (muzzle to target) as based on a small definite aiming point pasted to our pattern paper: 12½ yards, .131 inches; 20 yards, 1.32 inches;

40 yards, 3.66 inches; 50 yards, 4.69 inches and 60 yards, 7.02 inches.

Because of the great spread of the shot charge, which opens at the rate of a foot or more every 12½ yards, it is difficult to exactly determine the center of impact at the longer ranges and our figures may be only approximately correct. The true trajectory can be more definitely obtained with the new rifled slugs which give a definite impact. However, with these slugs our muzzle elevation or angle of departure appeared to be 80 minutes, and we will not be satisfied with our figures until a further check substantiates them. Our first results show a gravity drop of 1.8 inches at 25 yards and 5.3 inches at 50 yards. By the factory trajectory of .58 inch the drop should be about 2½ inches over 50 yards.

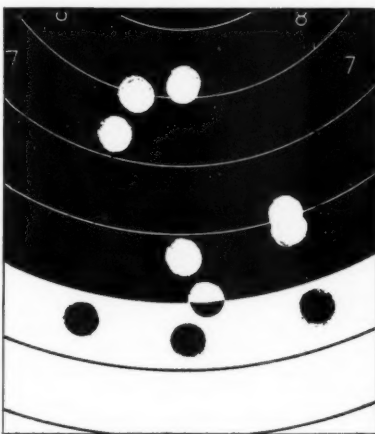
MISCELLANEOUS

An Unusual Sling Strap is made by Mr. Sam Kurtz of the W. S. Brown, Inc., Sporting Goods Store located at Wood Street and Oliver Avenue, Pittsburgh, Pennsylvania. This sling is complete for use without the customary leather keepers, claw-hook fasteners and auxiliary arm pad. Large buckles are used in place of the keepers and hook fasteners. The arm band is 2 inches wide and 23 inches long. It cannot slip or loosen its adjustment once it is buckled on the shooter's arm. The 1¼-inch swivel strap is adjustable for any desired length. It is connected to the arm band by a heavy metal link. Brass rivets are used for fastening the buckles and link.

The sling may be used with or without the Arnold Equalizer. The price is \$2.50 when ordered with the equalizer and \$1.50 without it.

An Altered N.R.A.-Hensley Bullet. The .30 caliber N.R.A.-Hensley glance-proof bullet was designed as a safe lead-alloy bullet for varmint shooting in settled communities where it is vitally important to have a bullet that will break up on impact. A thorough test was made with it in the spring of 1935, and the results reported in the June AMERICAN RIFLEMAN of that year. Since then we have obtained even better accuracy with this 130-grain (134 grains with gas-check) bullet, as reported on page 12 of the August 1936 issue. A number of shooters have also experimented with this bullet and the result of one of the experiments is an altered bullet (converted by Mr. Starr) that will feed through the Krag magazine.

Mr. Ernest E. Starr of Connorsville, Indiana, uses special dies to close in the square front end of the big cavity in this bullet. This gives it a better, round-nose shape for wind bucking, yet it will break



Comparative accuracy of the N. R. A.-Hensley bullet (lower group) and standard 220-grain cartridge in our Krag

up on impact when the velocity is kept slightly higher than that usually given the unaltered bullet. The rounded point makes for as good or better accuracy at the higher velocity.

A number of the altered bullets were sent in for tests, and our best load with them in the Krag was 21 grains of No. 4198 powder. This load made a ten-shot group of 2.85 inches at 100 yards from bench rest. We used as much as 25 grains of No. 4227 powder in the .30-'06 caliber. This load was accurate except for a single bullet that apparently blew up in flight and missed the target. Our five-shot groups with this load were 1.72 inches, 2.50 inches and 2.52 inches at 100 yards. Five shots made a 9.75-inch group at 200 yards. The same bullet was used with 23 grains of No. 4198 and the five-shot groups ran 1.38 inches and 2.18 inches, with four of the last five shots in 1.15 inches.

Because our supply of bullets was limited, only five shots with the 23-grain load were tried at 200 yards. The group measured 5.10 inches. All of the bullets

used for ricochet tests seemed to break up well even at very flat angles. Incidentally, we found this altered glance-proof bullet duplicates the elevation and impact of the factory 220-grain cartridge in the Krag at 100 yards when the lead-alloy bullet is driven by 22 grains of No. 4227. Apparently this gives the Starr-altered bullet too much velocity for the best accuracy.

The N.R.A.-Hensley Glance-proof bullet groups as well, when fired in our Krag sporter, as the W.R.A., 220-grain, F.M.J. load which we purchased from the D.C.M. We have a Krag carbine equipped with 29-S Weaver scope sight and Mosher Myrtle Wood stock, which we fired from bench rest in this 100-yard comparison test.

The 134-grain, hollow-point, glance-proof, gas-check bullet was loaded, nine months ago, ahead of 17 grains No. 4227 powder. Its ten shots made a 2.45-inch group which landed 2.60 inches below aim. The extreme horizontals were 2.0 inches and the extreme verticals, 2.22 inches.

The 220-grain factory load landed 3.50 inches above aim, and made a ten-shot group of 2.75 inches. The extreme horizontals were 2.33 inches and the extreme verticals, 2.72 inches. There were no wild shots in either group and the dispersion was much the same in both. Both groups are shown together in this issue of the Dope Bag for visual comparison.

Another Glance-Proof Bullet is made by gunsmith F. R. Krause, 801 E. Coal Avenue, Albuquerque, New Mexico. He uses the 169-grain Squibb gas-check bullet to make a .30-caliber bullet with blunt nose and large V-shaped cavity. It weighs 122 grains as altered with nearly ¼-inch removed from the point. From a supply of these bullets we tried some for accuracy and others for ricochets in a Model-70 Winchester.

Our bench rest results at 100 yards indicates that it is about as accurate in this rifle as the 122-grain N.R.A.-Hensley glance-proof bullet. The 134-grain N.R.A.-Hensley gave better results in several other .30-caliber rifles.

The best 5-shot groups with the Krause bullet were made with 22 and 24 grains No. 4198 powder. The groups measured 1.95 inches and 2.10 inches. The 10-shot groups in the same rifle were not nearly as small. The smallest 10-shot group measured 3.60 inches. It was loaded with 21 grains HiVel No. 3 powder. All other loads grouped consistently in 4.1 to 4.4 inches at 100 yards. These loads were 23 to 25 grains No. 4198, 21 to 23 grains HiVel No. 3 and 20 to 21 grains No. 4227.

To test the glance-proof qualities we tried them by shooting into water at about 25 yards. The result of every impact was

a shattered bullet except from the very flat angle of about 5 degrees. At this or flatter angles the bullet would glance, burying itself in the steep bank several feet above the water level. This was because the slightly tapered part of the bullet near the blunt nose would strike the water instead of the square-edged, flat end. This tapered nose portion should facilitate loading through the magazine. But with the M-70 every bullet fed from the left side would invariably jam before entering the chamber.

Mr. Krause also makes the same bullet into a 152-grain flat-end bullet without the cavity. The 207-grain Ideal bullet No. 308284 is altered to 154 and 167 grains with deep cavities and 191 grains with small hollow point. We did not have enough of these bullets for test, but do not consider the solid flat-end bullets safe from ricochets.

An Improved Magazine for the Model-C Hi-Standard makes it a very reliable autoloading pistol for .22 Shorts. With two of the original magazines we had very regular jams when loaded with ten shots. But with the improved magazine in a rapid-fire functioning test a single failure was experienced. This failure was probably caused by a fouled chamber and action from some old Lesmok Shorts. More than two hundred rounds were fired with Lesmok and smokeless loads in this test. Low velocity cartridges and the Hi-Speed variety with plated bullets were also used.

The New Badger Kit, an improvement on the one formerly sold by Wes Hansche and Lew Bulgrin through their Badger Shooters Supply Company at Owen, Wisconsin, reached us recently. This newest version of their excellent carry-all features sturdier construction, stronger metal-hinged top instead of the old fabric hinge, two heavier trunk-type catches, one lock, in place of the unnecessary reverse arrangement on the former case, and better looking black simulated leather covering, which should be better wearing as well. The price is \$5.85.

It is now available in 24 and 27-inch lengths. The compartments in its single lift-out tray are the same: one extending the whole length, the other divided into three shorter spaces. The tray of the 24-inch case will hold a Targetspot or Fecker 1½ inch while any standard scope including the big Fecker 1½ inch will fit the 27-inch kit. We understand twelve of these 27-inch cases will go to England with the Pershing Trophy team this summer.

Velvetone Stock Refinisher should be satisfactory for those who prefer a smooth, glossy finish on a gunstock and this without spending hours of hand-rubbing so essential to a good oil finish. Velvetone is

applied to the clean, sanded stock with a small brush. It dries to a thin, transparent coating which does not penetrate into the wood. The thickness of the protective coating depends upon the number of applications. Grain, figure and natural color of the wood are brought out when Velvetone is applied.

We used Velvetone on several gunstocks with satisfactory results, but a complete failure was experienced when it was applied to a stock that had been previously finished with oil. This was because the oil had penetrated into the stock so far that it was not all removed before using Velvetone. Equally good results were obtained when it was applied to the stock with a cloth instead of brushing it on. Our experience with Velvetone indicates that it will not withstand the same rough, hard use as a good, dull, oil finish. It is distributed by Theodore C. Roberts, Waukegan, Illinois.

An Improved Magazine for the .45 pistol is the handiwork of shooter Jack Walton of the Walton Airplane Company, Tampa, Florida. The spring and follower of the improved magazine are depressed through a cut-away section on the left side of the magazine. As the follower is depressed to the bottom, it engages a cut or slot provided for it in the magazine. Thus the follower is held down out of the way and the cartridges are easily loaded through the cut-away in the left side of the magazine. The hold-down catch of the follower is released and the cartridges are held in place by the tension of the magazine spring until it is placed in the pistol. This is an improvement over the conventional magazine for the .45 Colt pistol which necessitates loading each cartridge under pressure of the strong follower spring. The only effort required to load the improved magazine is depressing the spring and follower to the bottom of the magazine.

A Rechecked Buttplate. We have had the privilege of examining a fine hacksaw rechecking job on a Winchester 52 buttplate. To Mr. A. D. Winegar of Cushman, Oregon, goes the credit for this evidence of skill with a hacksaw. The saw cuts are made about 3/32-inch apart to leave 1/16-inch diamonds, the tops of which are left flat so the sharp corners can get a good grip on the shooting coat. The buttplate was heat-blued after rechecking. The job is a neat one and the results effective.

New Bullets indicate fine accuracy in our initial tests. Next month we will report results with the new series of W.T.&C.W. .25-caliber H.P. bullets in the .250 Savage and .257 Roberts and with the new Sisk 40-grain Express Magnum S. P. bullets in .22-caliber barrels of 1-16 and 1-20 twist.

Best Results with the .25-20 Single-Shot. In our tests with this rifle we used seven different powders and a variety of bullets. Our lightest loads gave best results. One of the best 100-yard ten-shot groups (2.10 inches) was made with 4.5 grains Unique and the Loverin 72-grain, gas-check, hollow-point bullet No. 257616 seated in the rifling ahead of the case. This bullet gave good accuracy with 4 grains Unique when seated to normal depth in the case. Five shots measured 1.78 inches. A 438 Lyman scope was used for this shooting.

With the Remington, .25-20, 60-grain, Hi-Speed and W.T.&C.W., 70-grain, cavity-point bullets our best loads were 12.5 to 13.5 grains No. 4227, 14 to 15 grains No. 4198 and 13 to 14 grains HiVel No. 3. When these loads were increased several fliers or unaccountable shots increased the vertical spread of nearly every five-shot or ten-shot group.

One afternoon at 100 yards we tried five different powders behind the 60-grain bullet, each of which nearly filled the case. The groups were: 16 grains Pyro D.G., 4.20 inches, 4 shots in 1.73 inches; 16.5 grains No. 4198, 2.35 inches, 4 in 1.58 inches; 16.5 HiVel No. 3, 4.22 inches, 4 in 1.88 inches; 18 grains HiVel No. 2, 2.36 inches, 4 in 1.48 inches and 17.0 grains No. 1185, 3.30 inches, 4 in 2.28 inches. Each load seemed to be good, discounting the inevitable flier.

In view of these results we suspect the barrel of this rifle is slightly bent, unless some other undiscovered defect prevents good accuracy with our best handloads. The bore of its 28-inch octagon barrel is in perfect condition. The Winchester No. 2, case-hardened, Winchester Single-Shot action is very tight and apparently rigid enough. Its beautiful select stock is very secure. Perhaps it is just "ornery".

Letters to the Dope Bag

A LETTER TO PACIFIC

I WOULD like some advice on a hollow-point, gas-check bullet to be used in the Hornet. At present some of my customers and myself are using Ideal bullet No. 225415 sized to .224. This bullet weighs about 48 grains and we are using 10 grains of 1204 with it, getting an estimated velocity of 2100 f.-s. or so. Now we want a bullet to use on jackrabbits and prairie dogs in hollow-point at about the same velocity as the bullet we are using. What would bullet No. 225415 weigh if hollow-point? Would some other bullet such as No. 22836, 7-35, with hollow-point and gas check work or would it be too long for the 16-inch twist of the Hornet? Would the resizing dies we now have (.224) work with this bullet? We note that this bullet is cast .228 according to the number of same.

Perhaps either bullets Nos. 22636 or 22637 would be better in the proper weight and with gas checks and in hollow-point. In any

case any help you can give us on this question will be appreciated. We know that you are busy people but we have searched through every available source of information including six years of back numbers of THE AMERICAN RIFELMAN and could find nothing to cover this particular question.

We also know that we should be using jacketed bullets, but we have lots of time and bullet metal and as one of our rifles has a carbon-steel barrel the cast bullet is what we are interested in. Thanking you for any assistance you can give.—HOMER E. REID.

A REPLY BY REQUEST

SOMETIME ago I realized that there was a great need for a better bullet for the Hornet than the Ideal 225415. Therefore I designed a bullet to duplicate, both in size and shape, the regular .22 Long Rifle bullet. Lyman numbered this Ideal bullet, 225438. It weighs "as cast" 43 grains in solid form and 41.4 grains in hollow-point form. This bullet is over .06-inch shorter than No. 225415, and this shorter length is just right for loads duplicating the .22 L.R. in the 16-inch twist of .22 Hornet rifles. Also this lighter bullet permits very high velocities. It is very accurate at both low and high velocity. I blew up many a chuck last summer with this bullet and 10½ grains of Hercules No. 2400.

I would certainly NOT recommend sizing this bullet down to .224 inch. Although my die is marked .225 it actually leaves the bullets closer to .226 inch. This is one ideal combination for this lighter bullet, as the extra resistance involved in sizing down .004 inch develops a higher breech pressure, necessary to make the powder burn. At least this is my humble opinion.

I think another advantage of using this bullet at a .226-inch diameter is that case necks need very little resizing. With Winchester cases in a Winchester M-54 rifle I have to reduce the necks only slightly, in a .238-inch neck die. This actually works the brass so little that the cases should last longer than those of any other caliber.

I am not in the least surprised to learn from some of my customers that 3 grains Hercules Unique makes a super-accurate medium load, as this powder in 5-grain charges is Donaldson's favorite load in a .25-20 S.S. I have not found it advisable to seat this bullet so far out that it touches lands; it has given the best accuracy to seat it deep enough so the properly resized neck holds the bullet in perfect alignment with the bore. An overall length of about 1-11/16 inches is good with the solid bullet, and a little shorter with hollow point type.—H. GUY LOVERIN.

(NOTE: The mold for this Ideal bullet No. 225438, only in solid form, can be obtained from the Lyman Gun Sight Company. The hollow-point form of this bullet and the regular bullet, both ready to load, can be obtained from H. Guy Loverin, Lancaster, Massachusetts, but no molds.

In such rifles as the .22 Hornet, .22-Lovell and .22 Niedner we have obtained excellent accuracy when using light charges of No. 80 powder behind this gas-check bullet. All these rifles had a 16-inch twist, too slow for the old standard Ideal bullet No. 225415, which is a longer bullet that might work well in a 14-inch or 12-inch twist.

Recently L. W. Jordan, Walter Oakey and ourselves have been using 3 grains Hercules Unique behind the Loverin gas-check bullet in the .22 Hornet for a squirrel, target and small-game load of super-accurate type. Judge Oakey has been getting them all in one hole at 50 yards with his 30-inch Hornet. He gets nearly as good groups with 3 grains bulk shotgun smokeless screened for uniformity.

H. Guy Loverin and others have been getting good accuracy up to 200 yards with this bullet, even in hollow-point form and driven at jacketed-bullet velocities by 10½ grains No. 2400, approaching 2750 f.s. muzzle velocity.—F.C.N.)

"THE DELIGHTFUL .220 SWIFT"

IT IS a wonder, sometimes, how everything works out for the best. I had been experimenting with Enfields and Springfields, and .250-300's to find the flattest trajectory I could get in order to reach out and get magpies.

Now everyone doesn't know it, but magpies afford some of the most sporting shooting there is in this part of the country (Colorado). They are the most numerous of the predatory birds which we have. So far as I know, the fact that they are almost entirely detrimental to the interests of other wildlife has never been challenged, at least not by anyone who knows anything about the subject. They rob the eggs from other bird's nests and eat the young. They kill young pheasants, grouse, and prairie chickens. They carry cattle and hog diseases. They have even been known to light on the back of a sick cow and peck holes in her skin.

So there can be no harm done by killing magpies, and if anyone thinks it's easy to do—just let him try it. As long as a car is moving it can drive within twenty feet of one, but just let the car stop, and see how quickly the magpie will leave. And he won't fly just a little ways; he will fly from 150 to 300 yards before he stops, nearly every time. The part of them that you have to hit to kill them is just about as big as the 10-ring on a 100-yard target, and they don't sit still as long as a target does either.

I had experimented with various calibers, mostly .30-'06, to find something that I could depend upon to hit a magpie at 150 yards, or even 250 yards without adjusting the sights. I loaded the 110-grain bullet in front of 48 grains No. 17½, and it worked all right. But if I used more powder than that the group spread out, and even with 48 grains I didn't hit very many magpies at 200 yards, and I couldn't guess the distances closely enough to adequately adjust the sights.

So along came Winchester with their .220 Swift announcement, and I didn't waste any time placing an order. In developing my load for it I began with 32 grains No. 3031 and the Sisk 55-grain bullet. This charge was increased ½ grain at a time until I reached 40 grains when the maximum pressure apparently had been reached, judging from the primer. The groups remained uniformly small with all the charges. With 40 grains it surely reached out, but occasionally a primer blew out, so I decreased the charge to 39 grains. I also used No. 4064, beginning with 36 grains, and increased to 42 grains before the primers ruptured. The groups were some better with 4064 than with 3031, but I found 40 grains to be the heaviest load I could safely use, and also the groups were best with 40 grains.

By some swapping and selling off of guns which I didn't use, I managed to promote a Zeiss Zielvier scope and have Redfield alter the M-54 bolt handle and mount the scope. Boy, that's the sweetest outfit I ever put to my shoulder. If a magpie lights at less than 300 yards, he had just as well "give up the ghost."

Sam and I were out on a lonely prairie road a few days ago, and drove up over a rise. There was a deserted shack about 250 yards, off in the field. On top of the shack sat seven magpies. Sam says, "Knock one of them off. I hung a rabbit up in that shack the other day and those magpies picked it to pieces." I leveled down, and, believe it or not, a piece of that magpie blew off him and hit the magpie next to him so hard that it knocked him out. We drove on down to the shack and finished the second one with a pistol.

And so the deer season rolled around. There was some apprehension among the gang as to whether my Swift would kill a deer. I had some apprehension myself, but I do like that gun, so decided to stake my bet on my Swift. The story of that one week deer hunt is a story in itself, so I will narrow it down to just a few minutes. Two hours after daylight on the morning of the opening day I was sitting on a little knoll when I saw my buck. As nearly as I could step it off, it was 224 yards. It was a beautiful shot, the buck standing nearly broadside. All I had to do was pick the exact spot behind the shoulder; the Swift did the rest. That buck dropped in his tracks, and there wasn't any more question in my mind about the killing power of a Swift. When I cleaned him out I found that the heart was completely blown to bits. There was no bullet left, at least I could not find any, and apparently all the blood had drained to the heart cavity, because it surely cleaned out nice, and the buck was the best I ever ate. A 55-grain Sisk bullet and 40 grains No. 4064 did it.—THOMAS L. LLOYD.

OPEN SIGHTS SOMETIMES O.K.

WILL you kindly assist me in diagnosing and suggesting appropriate treatment for my case which is as follows:

From the time I was eight years old up to twenty years ago, at which time I was nineteen years old, I did a good deal of deer hunting along with still more hunting for small game. I was considered a good marksman. Since I perused the outdoor magazines and sporting goods catalogs at every opportunity, I couldn't help reading about peep sights and as a result always "wanted" one, but did not have the good fortune to acquire one. Consequently, the sights used were those that came with the rifles—a .25-35 Winchester rifle and a .30 Winchester carbine.

During the last twenty years, I spent some time each fall hunting small game with a shotgun or with a .22 rifle equipped with open sights. During these twenty years, my shooting, although not spectacular by any means, was usually a little bit better than the average for the group. My vision is and always has been excellent.

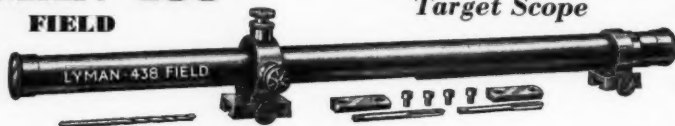
Last fall, I hunted deer. The shooting equipment consisted of a Krag, the barrel of which had been cut down to 22 inches and on which I had mounted a Pacific receiver sight to take the place of the regular Krag rear sight. I had sighted the rifle in on the rifle range—prone position—so that I knew the rifle shot accurately. I did not, however, do any off-hand shooting at a target with it. The off-hand shooting at targets was done with a .22 rifle equipped with open sights. Since I did quite well with the .22, I did not think it necessary to spend good money on expensive Krag ammunition for the same type of practice.

While deer hunting, I had some most excellent misses: one buck standing broadside on an old logging road at sixty paces; one standing facing me at one hundred four paces; and one walking broadside at one hundred sixty paces. Along with these, there were some running shots that might have been almost anybody's hits or misses. In all these cases not a hair was touched. There may have been some excuse for missing the deer at one hundred sixty paces, but I really do not see how I managed to miss the other two standing shots when I consider my average run of shooting. I was not afflicted with buck-fever nor am I addicted to flinching.

I have about come to the conclusion that the reason for these misses lies in my not

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knowing how to adapt myself to the use of the peep sight. Almost everywhere I read that the peep sight is better than the open sight, but I can't help wondering just a bit—I do know there are several seasoned hunters in this region—men who have hunted deer successfully for anywhere from twenty-five to sixty or more years—who would not accept a peep sight as a gift if it were stipulated that they would have to use it while hunting. I am also acquainted with several younger hunters who "bring home the bacon" and who are of the same attitude with reference to the peep sight. For these reasons, I can't help wondering if the peep is so universally better than the open rear sight as the literature would indicate.

Just before the deer-hunting season opened, I ordered a .348 Winchester Model-71 rifle. It did not arrive, however, until after the season had ended so I did not have an opportunity to use it for hunting. It is equipped with the Winchester peep sight. I am wondering if I might not have the same type of experience with it next fall that I had with the Krag last fall. In fact, I am thinking seriously of removing the peep sight and substituting an open rear sight.

Since we are discussing the subject of sights, I would like to ask about one other item: What practical advantage or disadvantage is there in the use of the Marble's

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Improved Sight compared with the conventional front sights under average hunting conditions in timbered country where long range shooting is not a factor? I have never used the Marble's Improved Sight, but it appears to me that the bead on that type base could be lined up more quickly and easily than if it were mounted on the conventional stem-type base. The bead I have in mind in either case is the 3/32-inch ivory bead.—R. P.

Answer: Your letter on the subject of peep sights versus open sights interested me greatly. After reading your letter I believe that you use a mental image or picture in sighting. I have done this in aerial target shooting and have been able to hit very small targets without any sights on the rifle during intensive practice, but could get better accuracy during the necessarily brief period of aim and could hit smaller targets and maintain a better average by using familiar open sights or familiar peep sights, according to the system I was using in intensive practice at the time.

Any one who uses a mental image or picture in aiming is very sensitive to changes in sight equipment and it is a mistake to practice with open sights and then use peep sights. In other words, you cannot even try a peep sight thoroughly until you are as familiar with it as with open sights and I understand you failed to do this. By all means equip your .22 rifles for intensive practice with the type of sights you intend to use occasionally in hunting so that their use becomes not only thoroughly familiar, but sort of a second nature.

We are interested in developing trained rifle-men and the peep sight is essential. At the same time, I consider the open sight very well adapted for certain forms of practical shooting. In deer hunting I would possibly prefer open sights for 60-yard brush work and would expect to do well with them on deer up to 100 yards. In cover which is less dense, however, permitting shots beyond 75 yards I would greatly prefer the peep sight as I know it would assure me of a margin in practical accuracy which would increase my average effectiveness with the same rifle.

As long as you use a large ivory bead front sight I do not think it would matter materially whether you had this on an open hood or on a stem. You might like it better after trying it, but that is a matter of personal preference. The only theoretical advantage of the open hood beneath the bead is that it would permit holding over and still seeing your game through the aperture. Practically, that is no advantage at all. If, on the other hand, you used a peep sight and could use the front aperture beneath the bead for your

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front sight you might gain some advantages from it at times or under certain conditions. My suggestion to you is to equip your .22-caliber rifle with the identical peep sight and front sight which you intend to use on your hunting rifle and practice intensively with it between now and the next hunting season or until you are definitely certain about your preference either way. I would caution you about using a small aperture in the rear peep sight as this is not necessary and adversely affects the speed of aim. If your peep-sight stem is threaded for a peep disc or target eye cup, remove the latter entirely and use the stem aperture alone. In sighting hold the top of the bead in the center of the aperture. After you have used it awhile you can forget the aperture entirely as the eye will naturally center the top of the bead in it, and then you need merely contend with your front sight and your target. I would suggest that you try it faithfully before attempting to arrive at any conclusion.

IMPROVING THE 52-W REAR SIGHT

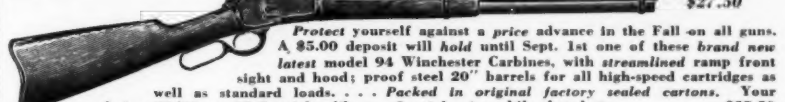
I HAVE just purchased a heavy barrel 52 equipped with a leaf sight. I was wondering if you can give me any information on the Westchester adaptor and extension tube (which permits the use of a Lyman disc and brings the aperture 2 inches nearer the eye). Would you advise purchasing one of these gadgets for use until I can purchase a Vaver? —P. F. W.

Answer: The Westchester adaptor and extension tube for the factory leaf sight of the Model-52 Winchester is an appreciable and very definite improvement and worth while having, but it is not nearly as good as the Goss or Vaver receiver sights which have extension bases.

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ABOUT a year ago I wrote to your department about using the .303-British, Western Tool & Copper Works, 150-grain bullet of .311-inch diameter in the M-1917 rifle, as most of these barrels mike .310-inch to .311-inch. I have since then given this bullet a thorough try out and find it the most accurate game bullet I have ever used, surpassing the N.M. bullet in this rifle. Groups at 500 yards run 5½, 6 and 8 inches with iron sights. This bullet with 50 grains No. 17½ seems to be made for this rifle. This is my second barrel on the Enfield, and it also prefers this bullet, which is built for a velocity of 2600 f.-s. and opens up dependably at all ranges to 500 yards.

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That is as far as I have tried it out on green poplar wood (for mushrooming effect). I intend using this load for deer and thought it might interest others looking for an accurate bullet for this rifle. Kindly advise me what the velocity of this load is.
 .310 barrel, 26 inches long.
 .311 bullet, 150-grain, pointed, cavity in nose.
 50 grains 17½ powder.
 F.A. No. 70 primer.—O. A. K.

Answer: The velocity of your load of 50 grains No. 17½, behind a .311-inch bullet weighing 150 grains, jacketed, in a .310" barrel, 26 inches, with the old-style No. 70 Frankford Arsenal primer, should be 2825 f.-s. I am glad to have your dope on the effectiveness for accuracy of the oversized jacketed bullet in your M-1917 barrel. We found it necessary to use such bullets in the Ross, Newton, 7.62-mm. Russian and .310 Mauser .30-caliber barrels for accuracy. We have some of these bullets on hand, but we find them too large for our M-1917 bore. Evidently your bore diameter is abnormally large. The .311-inch bullet would cause dangerous pressures in normal .308-.309 inch bores with normal full loads.

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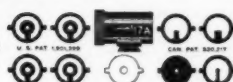
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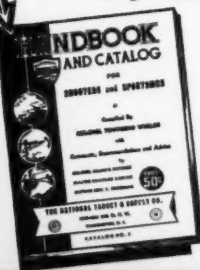
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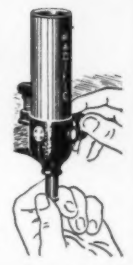
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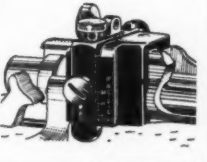
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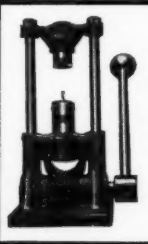


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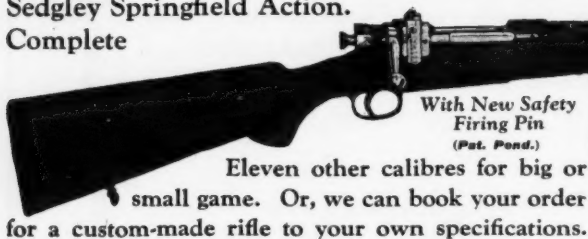
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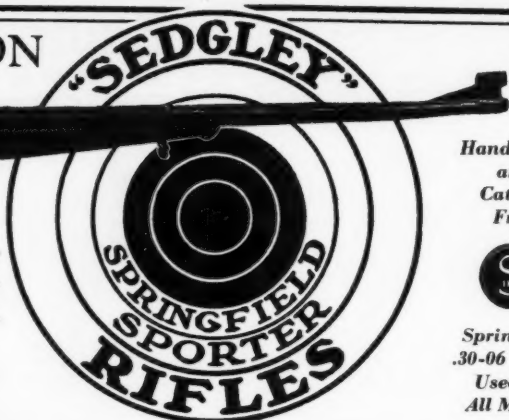
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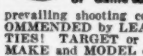
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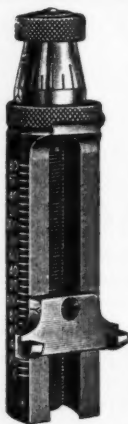


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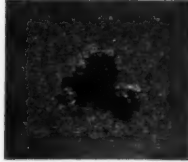
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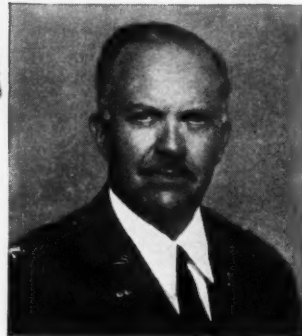
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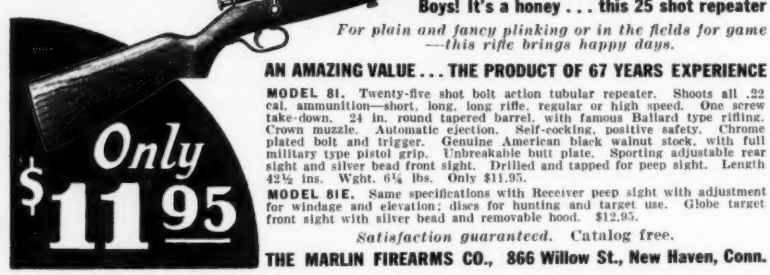
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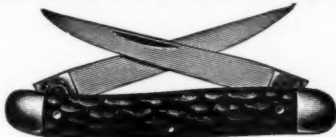


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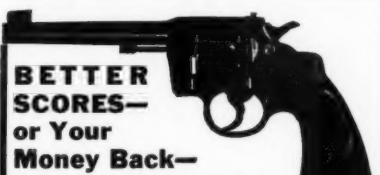
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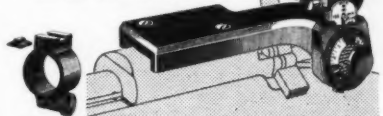
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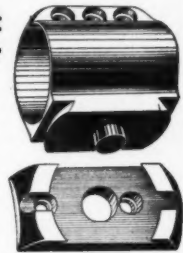
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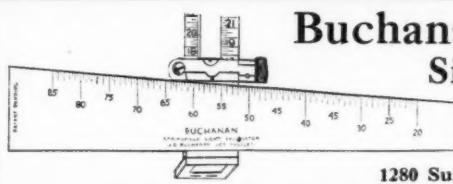
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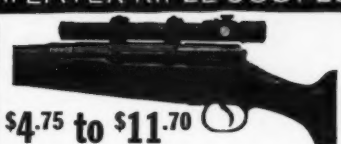
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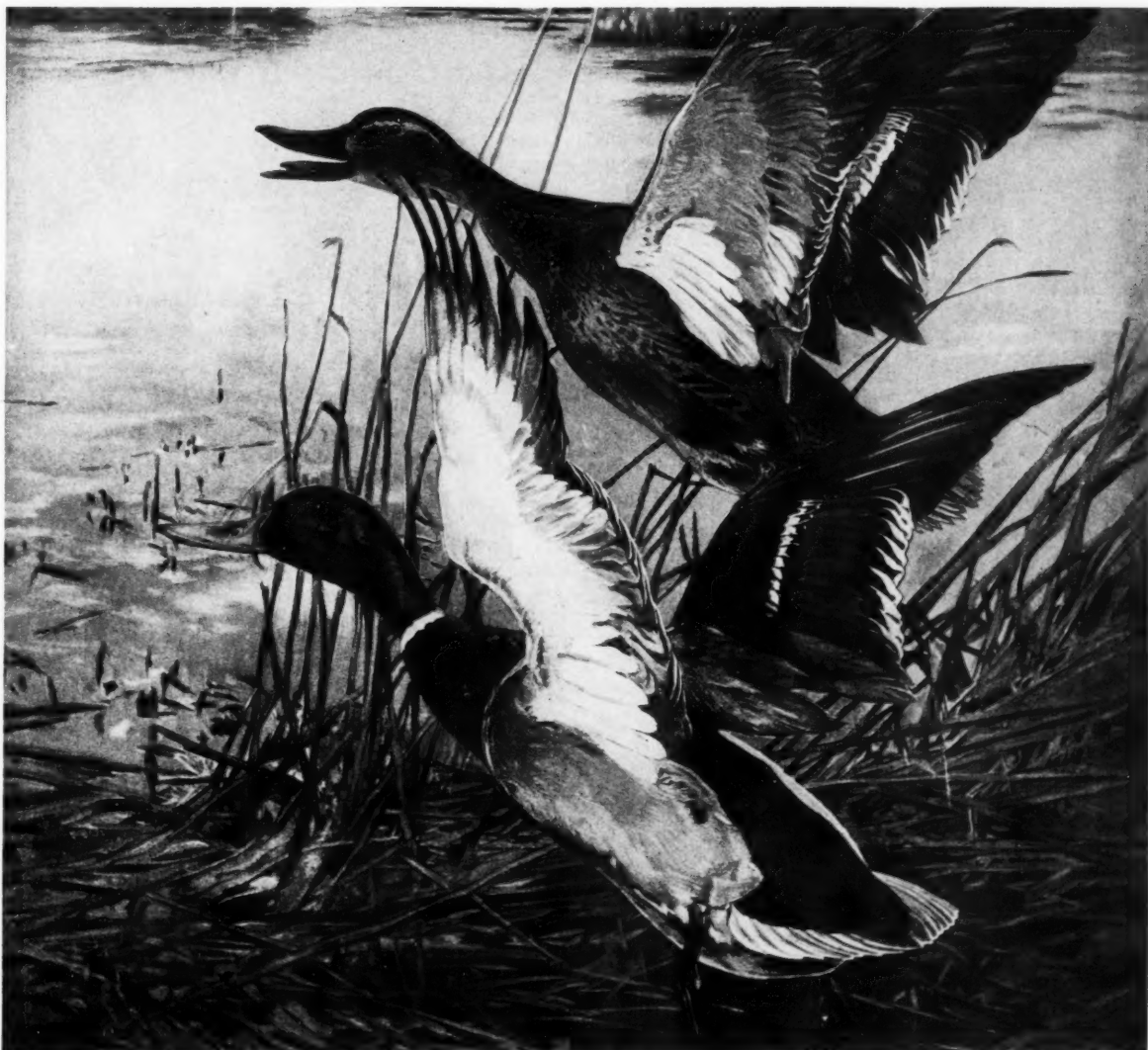
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