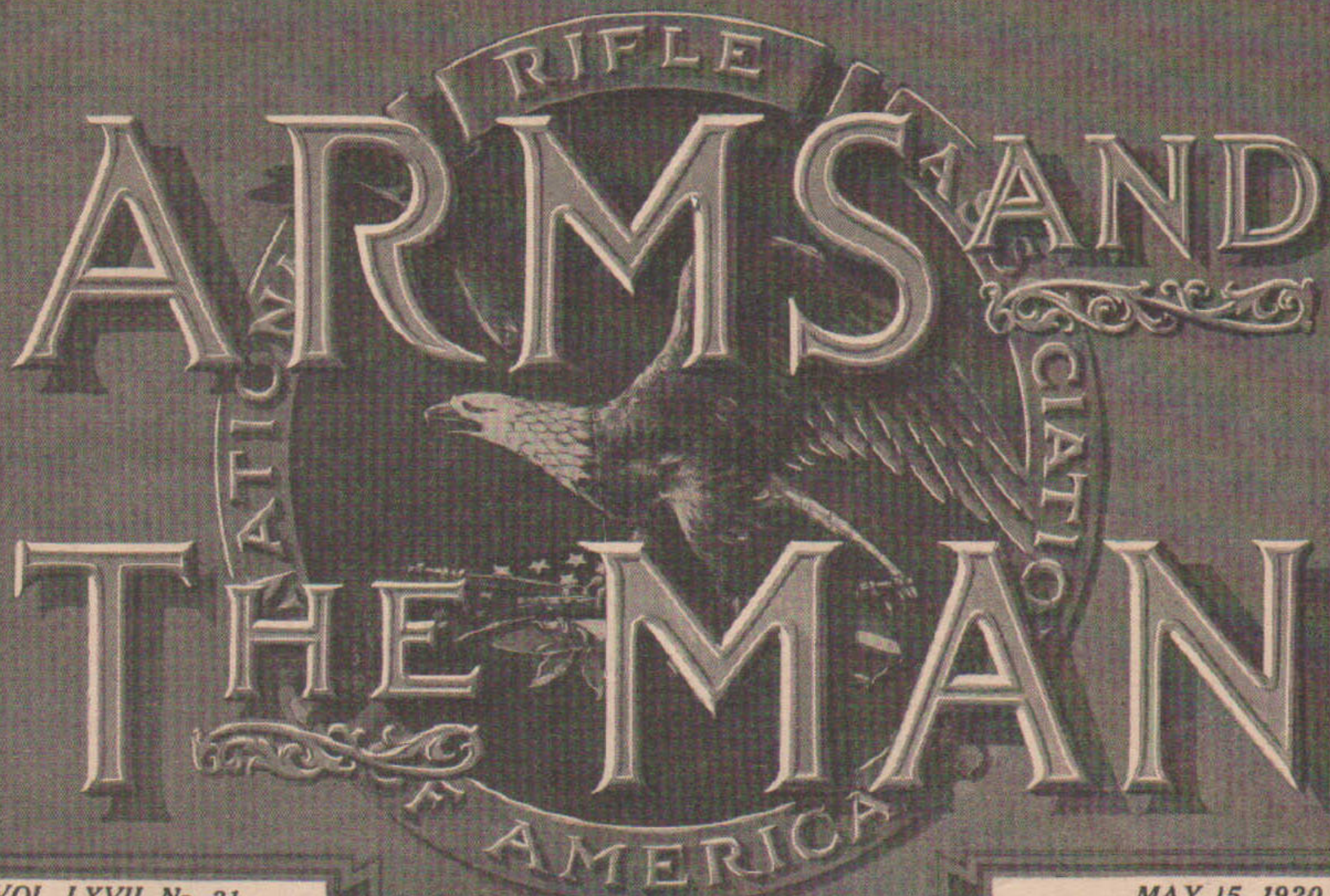


THE AMERICAN RIFLEMAN'S MAGAZINE



VOL. LXVII, No. 21

MAY 15, 1920



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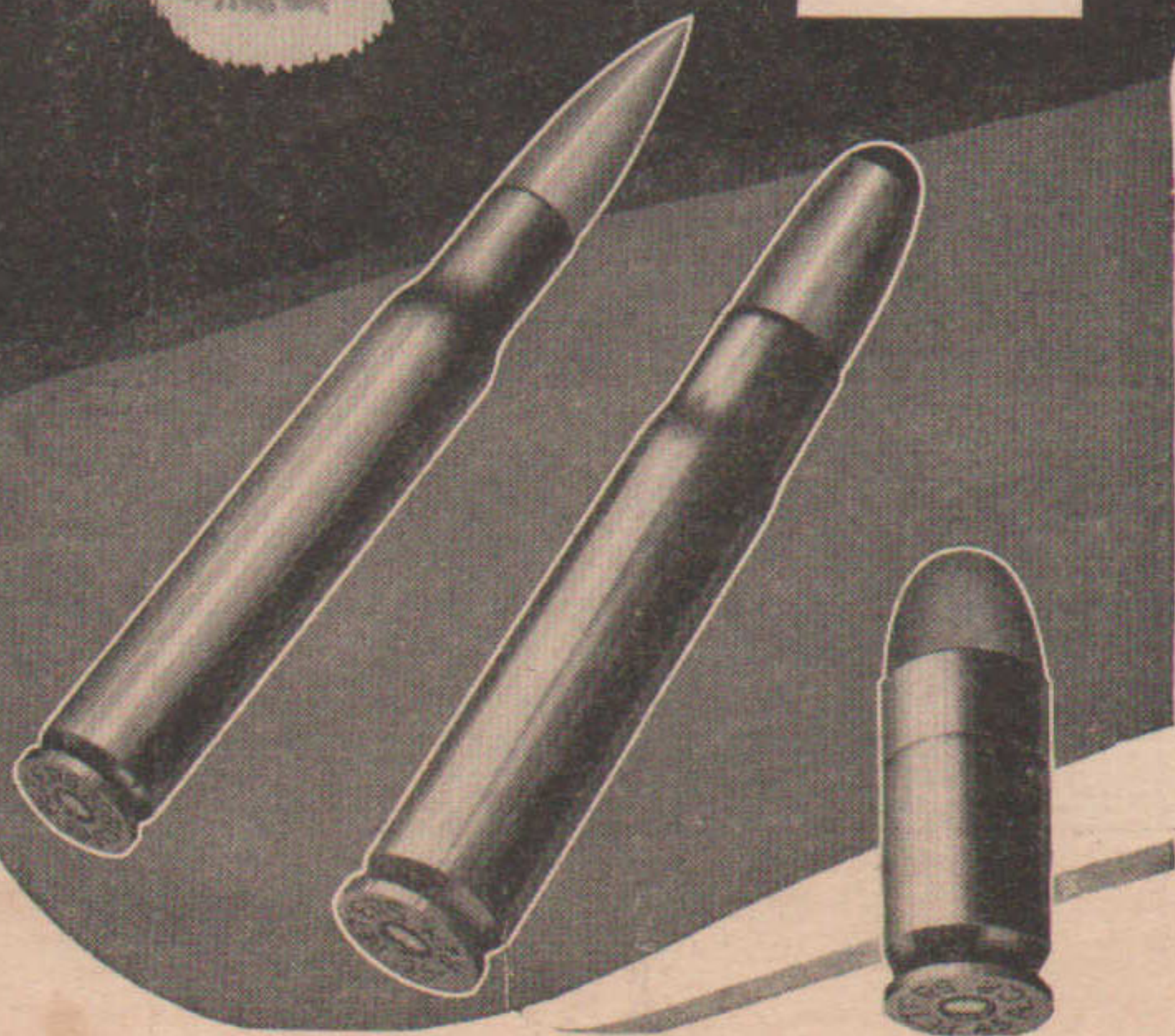
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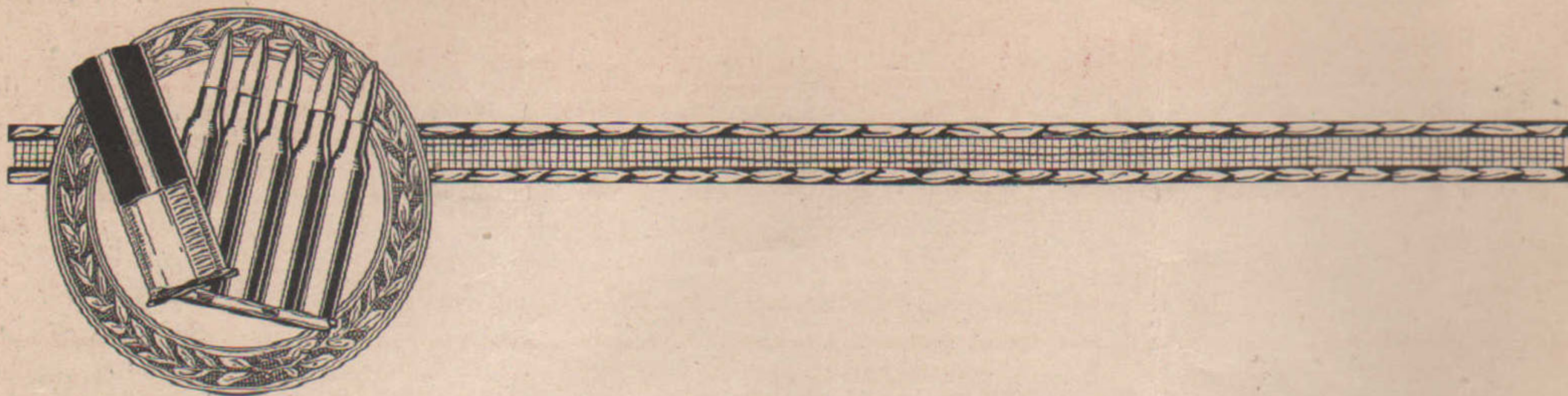
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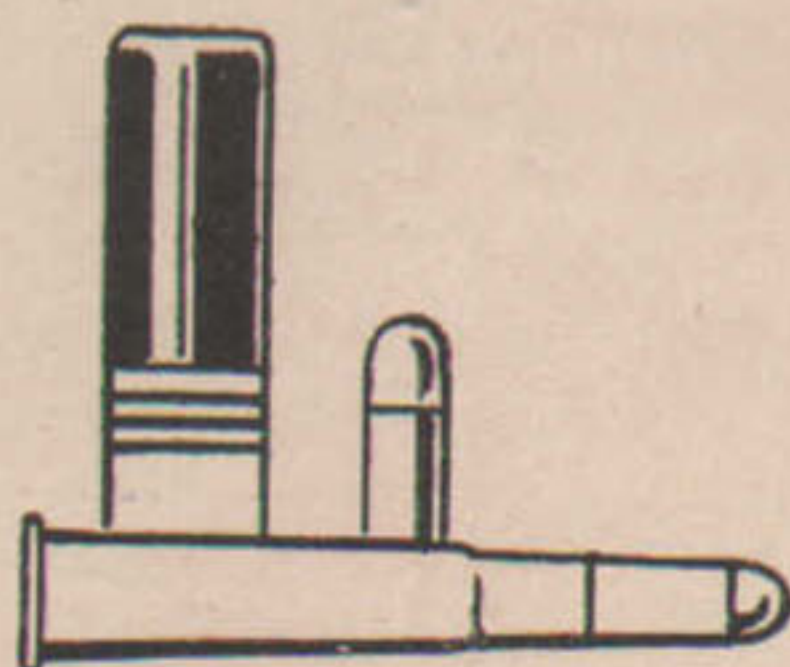
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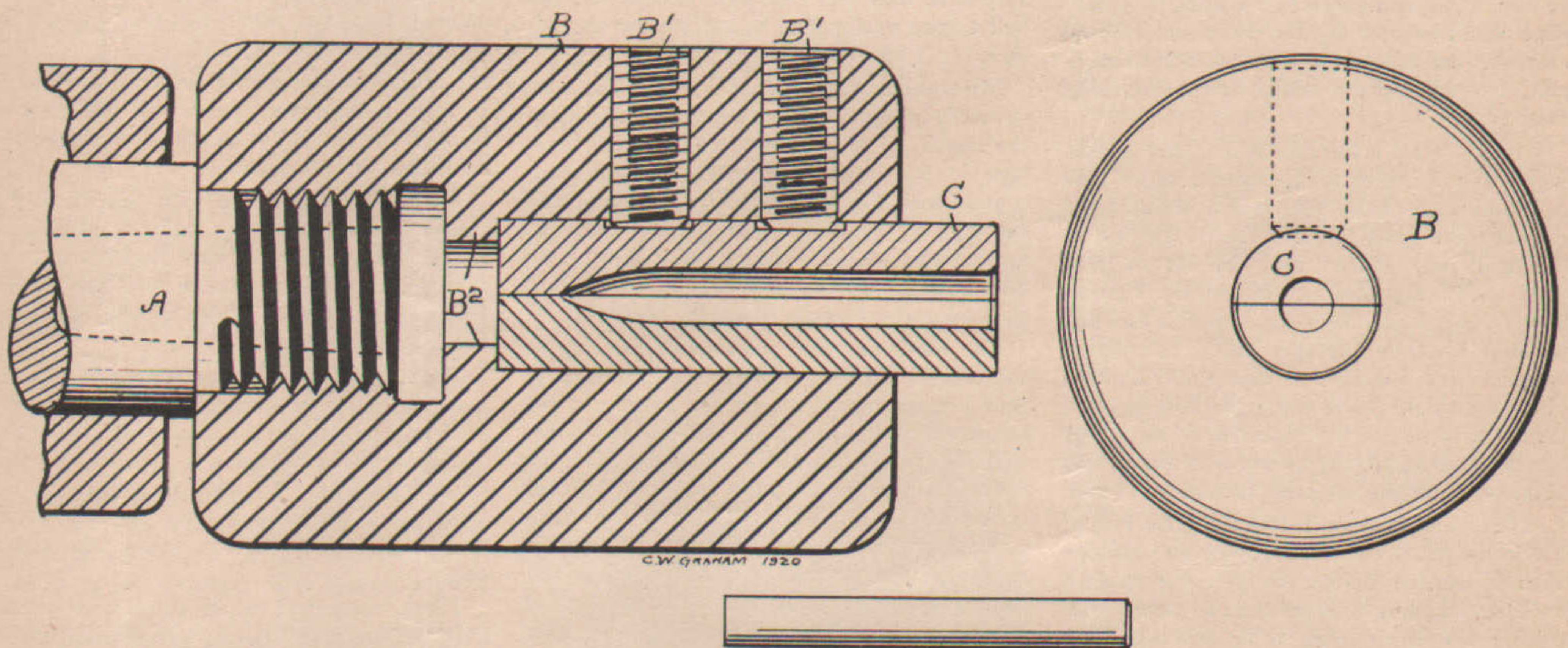
Volume LXVII, No. 21

WASHINGTON, D. C., May 15, 1920

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Swaging .25 Calibre Bullets for a Newton .256

By CHARLES W. GRAHAM



ONE of the first problems that confronted me when I began my experiments with the Newton Rifle was to procure cheap bullets so that I could shoot whenever inclined and not have too much expense attached to it.

It is probably quite generally known that this rifle has a bore diameter that is .006-inches to .007-inches larger than the commercial .25 calibre bullets as used in the ordinary .25 calibre rifles and a groove diameter that is around .012-inch larger than the groove diameter of the regular .25 calibre barrels.

If a person therefore wishes to reload his shells with light-weight loads for shooting small game and short range target practice, and wishes at the same time to keep his shooting expense down as low as is consistent with getting good results it is desirable that he use the commercial .25 calibre bullets, since they can be purchased for about one-third to one-quarter the cost of bullets made for the Newton Rifle.

By commercial bullets I mean the 86-grain full patch and soft points made for the 25-20 cartridges and the 117-grain full patch and soft points made for the 25-35 cartridge both of which will shoot with excellent results if sized to properly fit the bore.

I have used several thousand of these bullets and found both sizes to shoot very well indeed. Both cost the same and during last summer and fall I purchased bullets in these weights for about \$7.85 per thousand; these bullets with 18

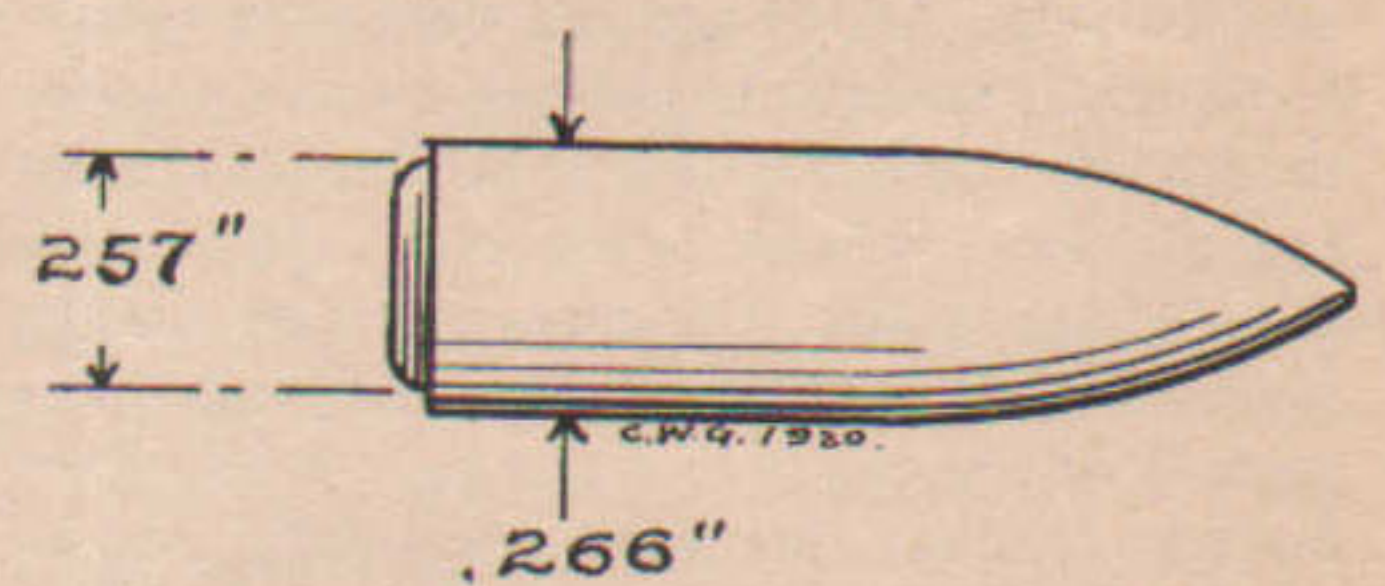
grains of Du pont No. 80 powder permits one to practice quite extensively at a reasonable cost.

I think I like the 86-grain bullet rather the best for a light load since you can put considerable speed behind it and hold

sufficient accuracy to make it a good hunting cartridge. The 117-grain bullet shoots with a little better accuracy but is a little heavier for small game than necessary.

The first bullets I experimented with were the UMC 101-grain sharp point. Through an error I was permitted to purchase 500 of these bullets and 500 of the Savage 87-grain bullets for the price of the regular 25-20 bullets, but when I attempted to repeat this order the price had risen considerably.

This condition brought me around to the point of trying the regular bullets and I found them so very satisfactory that I would just as soon have them as the others, both requiring swaging to adapt them to the Newton Rifle so that the same work expended on the higher priced bullets will also cover the cheaper ones as there is no difference in the manipulation,



Working drawing of Swage for the Newton .256; Below, profile of Swaged bullet.

and subsequent experiments showed that the cheaper bullets shot almost equally as accurate as the sptizer pointed ones.

Some years ago while experimenting with a Savage .303 Rifle and Wire-patched bullets I was confronted with a problem that puzzled me for some time before I solved it.

The difficulty I had was to make a swage that would not permit a thin fin of lead to appear on the bullets at the joint of the swage. Lead being soft and plastic, I had considerable trouble from fins, for, in order to properly swage the bullets I was then experimenting with, I had to use considerable pressure compared to what would have been necessary if I had only been swaging plain lead bullets. I however finally struck upon a plan of making a swage that I thought would permit me to exert as much pressure as I desired and that would still eliminate the troublesome fins.

The solution of the problem as it first came to my mind contemplated making a swage that would become tighter the more pressure exerted; just how to do this was a little difficult, but was finally solved in the following manner.

I took a steel collar about 3 inches in diameter and 2 inches long, bored a taper hole in it and finished the hole with a Morse taper reamer that gave about $\frac{3}{4}$ -inch diameter at the small end. Then I took two flat pieces of steel about $1\frac{1}{4}$ -inches by $\frac{1}{2}$ -inch by 3 inches long and after placing a dowel pin in one end to hold the two together when completed, sweated them together so they could be handled as a single piece, centered each end and turned a taper on the piece to fit the collar leaving a straight portion on each end of less diameter than the tapered portion.

A hole was then drilled in the large end of the taper about two inches deep and reamed with a pointed reamer to give the desired bullet shape; first however the two pieces comprising the taper plug were separated by melting the sweated joint and thoroughly cleaning the surfaces. With a proper plunger this made an ideal swage and worked perfectly. I could put sufficient pressure on the plunger to extrude the metal in a thin film up around the plunger without producing a fin on the sides of the bullet; the more pressure on the plunger the farther the taper swage was pushed in the collar and the tighter the joint became so that fins were practically impossible.

This early experience in swaging bullets gave me a fair idea of what I needed for the job in hand, but I hesitated to adopt a taper swage because I contemplated making swages of different shapes and diameters and as I had no taper attachment on my foot lathe the making of taper plugs would be difficult so I began studying the problem to try and find a simpler type of swage that would do the work in a satisfactory manner and that would be practical for me to make on my foot lathe.

It finally occurred to me that I was dealing with a somewhat different type of bullet than was used in my previous experiments in that it was metal-jacketed and would therefore not be likely to extrude at the joints of the swage

and produce fins, so I decided to try a plan that had been passing through my mind.

This plan contemplated taking a tool steel sleeve about an inch in diameter and having a hole through it just the size I wished the bullet to be, with a counterbored recess in one end about $\frac{1}{2}$ -inch in diameter and $\frac{3}{4}$ -inch deep.

This construction required that the counterbore and the bullet bore be exactly concentric, the idea being to fit a plug in the counterbore to support the point of the bullet during swaging, and also permitting the removal of the swaged bullet from the sleeve by simply pushing the bullet and plug straight out of the sleeve by means of the swaging plunger and then jarring the bullet out of the plug with a rap or two of a brass rod.

I was able to get a sleeve made that was hardened, with the bore and counterbore accurately ground to size so that I am reasonably sure that the two were concentric, the bullet bore was ground to a diameter of .266-inch.

My troubles began however, when I started to make plugs for the counterbored end of the sleeve. I found that I could finish them true in my lathe, having the outside concentric with the recessed end that supported the end of the bullet, but when I came to harden this plug I found it very difficult to hold it to size so that it would just push into the counterbore easily but with no shake.

The hardening and subsequent drawing of the temper changed its shape just enough so that I was obliged to refit the outside to the counterbore by polishing the surface down with emery cloth until it would slip into the counterbore without shake and in doing this it would invariably be thrown out of concentricity with the bore so that the point of the bullet after swaging would not be axially central with the body. I, of course, could have experimented and found a hardening solution that would not have changed the shape of the plug, or its size, but while working on this swage another and better idea occurred to me so that I was not inclined to spend much more time on this particular type of swage. While these bullets shot quite accurately I was never satisfied that the targets were as good as they might have been if the bullets were perfectly balanced. This uncertainty caused me to abandon this type of swage for a split type I will now describe.

The accompanying illustration shows very clearly the construction of this swage.

As will be seen by the sketch—which is drawn to scale—a cast iron bushing is accurately counterbored and threaded to screw onto the nose of the lathe spindle A, the bushing B is then finished on the spindle so that it will run true for future operations, the finishing consisting in boring the hole for receiving the swage C, and leaving a shoulder at B2 to take the thrust of the swaging operation, and finishing the outside and end so the bushing will be in balance.

I decided to adopt the simplest possible swage so that I could make any number needed for the different sizes and shapes of bullets I intended trying, the design finally

worked out was produced in the following manner.

I went to a small machine shop where I knew I could get accurate work done and had them take a three-foot piece of $\frac{3}{4}$ -inch round tool steel drill rod and mill it full length to a half round section that measured about .377-inch to .380-inch; now by cutting this bar up into pieces about $2\frac{1}{2}$ inches long and putting two of them face to face I had a round split die blank. I then rubbed each half on a smooth file until it measured .375-inch, thus the two pieces together measured .750 inch and should just slip into the hole in the bushing freely; a little shake will not matter.

This pair of die blocks was then placed in the bushing B and the ends trued off, being held securely by the hollow set screws B1, and then finished by boring and reaming. Thus completed I had a swaging die that I could replace in my lathe at any time and perform any further operations of turning or reaming and that would run true enough for all practical purposes.

I make reamers out of drill rod 5–16ths of an inch in diameter, the whole rod passing through the hole in the spindle of the lathe and held by a three-jaw chuck.

After some experience with this kind of a swage I found that the reamers would cut about .002-inch larger than their normal size so that by making the blanks .002-inch smaller I usually procured a swage within .0005-inch of the size wanted.

The reamer blank was carefully turned, sized and polished, measuring being done with a micrometer caliper graduated to .0001-inch. The point of the reamer was usually made the same shape as the point of the bullet, but not always as I will explain later; the shank end was then relieved slightly below the reamer size.

These reamers I made about four inches long and finished them by two settings in the chuck. My lathe is not fitted with split collets so I have to be content with an ordinary three jaw chuck, which does not run absolutely true, in fact it runs out about .005-inch but by setting the rod out far enough at first to finish the actual reamer portion and then moving the bar forward carefully without turning it I find I can reset it so it will run true within a thousandth or two, which is true enough for the purpose as the shank does not have to be exactly central with the reamer portion because I use it as a floating reamer when reaming out the swage.

I then take the blank and file it down to half its diameter back about an inch from the point, measuring carefully when getting near the center so as not to get it too thin; I usually leave it about a thousandth large as after hardening and drawing it should be honed to give it a keen edge.

Some years ago I purchased one of the Motorcycle size Presto Light Tanks with a burner nozzle and want to say that this outfit gives me the best and hottest fire for hardening and tempering small tools that I have ever had and it is always instantly ready; just the touch of a match and you have the maximum heat at once and it will heat anything

up to a half inch in diameter, quickly and uniformly.

I have found that the drill rod I get here hardens nicely in just plain cold water; after heating the reamer to a cherry red and quenching it in the water I immediately place it in the flame until it gets hot enough to vaporize the moisture; this relieves the strain of hardening. I then polish it carefully—if you are not careful you can easily chip the edges while it is intensely hard—and draw the temper by heating it to a dark brown just entering a purple; the drawing operation must be carefully done so as not to get the reamer too hot in spots, which will bring the color so fast you cannot check it easily. I think that letting the reamer cool naturally after drawing the temper is rather better for it than quenching it to cool it.

After drawing the temper I usually whet the edges with a small oil stone. By laying the reamer on my first finger and holding it with

my thumb. I can rub the stone over the flattened side with the other hand without a rocking motion; the two hands seem to move together with such unison that the stone does not rock over the edge; this gives a keen sharp edge that cuts freely.

I made several swages before I found a simple way to manipulate the reamer in cutting to prevent it from digging in or gripping the surface, thus causing grooving; this I discovered accidentally.

To finish the swages I was in the habit of taking the bushing with the die in it off of the lathe spindle and placing it in the Emmert Vise—with which my workbench is equipped—and holding it between the jaws with just a light pressure. Turn the bushing with the die in it by hand while holding the reamer from turning with the lathe dog resting against the edge of the vise jaw. This gives a very smooth and nice finish and I noticed that no matter how much pressure I applied to the reamer

under these conditions it did not have any tendency to grip and always produced a nice smooth hole.

It finally dawned upon me that the reason for this was that there was enough spring to the vise jaws to prevent undue crowding of the reamer, hence it cut freely and did not dig into the surface, so the next time I reamed in the lathe I rested the shank end of the reamer against a piece of wood held between it and the tail spindle, and from then on I had no further trouble from grooving and the reamer always cut smooth.

The manner of actually making a swage by this method is as follows: The die blanks are placed in the holder that is screwed on the lathe spindle and secured in place with the two hollow screws, the ends of the blanks are now faced off true and square so that the end in the bottom of the holder will rest solidly against the shoulder at the bottom of the hole;

(Continued on page 8)

Taking Care of the Handgun

By VAN ALLEN LYMAN

AFTER keeping his pet pistols in the original factory pasteboard boxes for months the writer finally woke to a realizing sense of the fact that the thing he really needed was a wooden case for them, somewhat similar to those in which duelling pistols used to be kept in.

After several had been made and found wanting in one respect or another the one shown in the illustration was evolved, and this one has been in steady use for several years and found satisfactory in every respect. The wood from which it is made is about a quarter of an inch thick and came originally from an old onion crate. The hinges, instead

of being fastened with screws were put on with copper belt rivets which passed through holes bored in the wood and were riveted into the countersunk screw holes in the hinges, thus making an exceptionally strong job. As will be also noted two dowel pins between the top

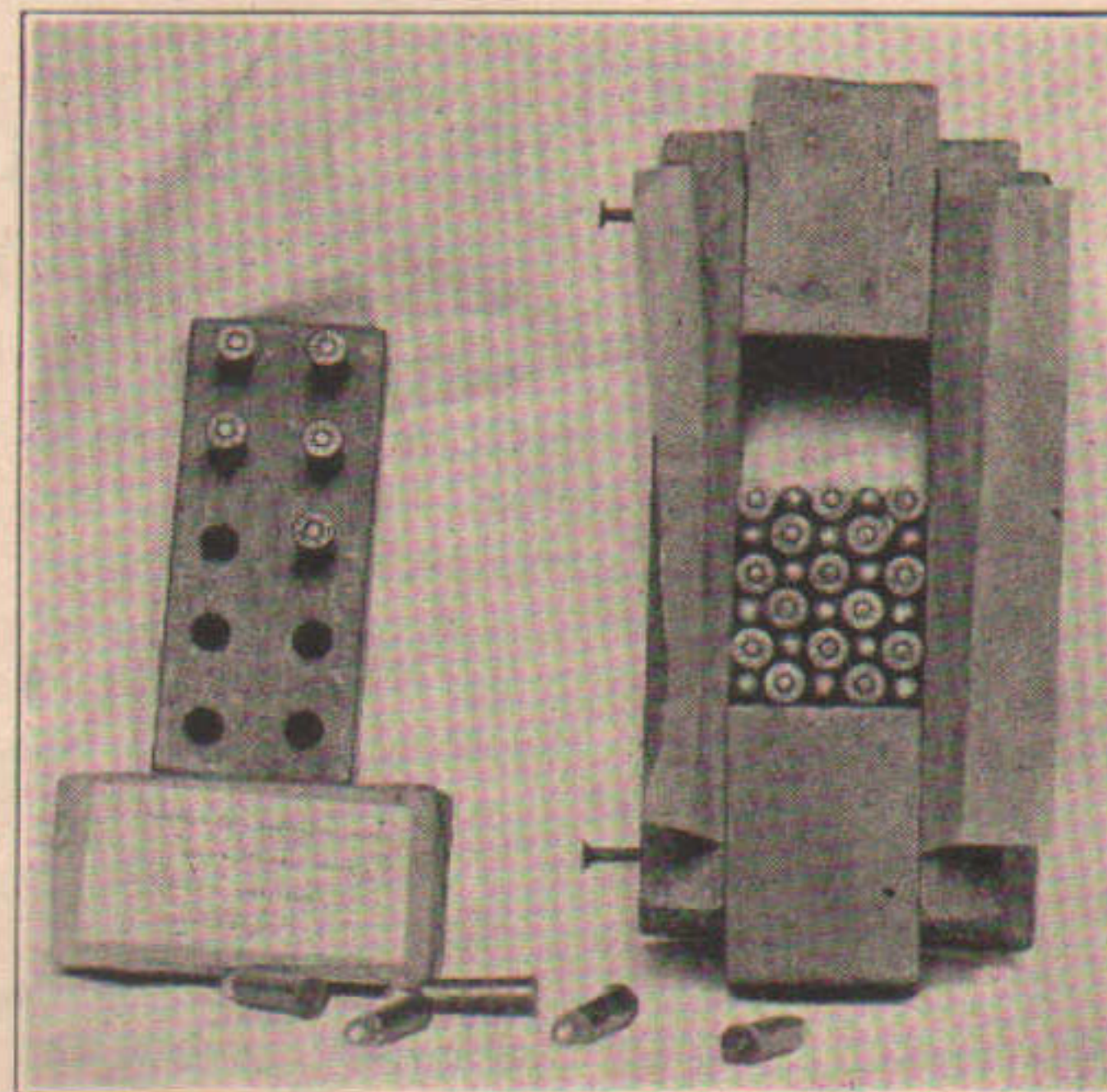
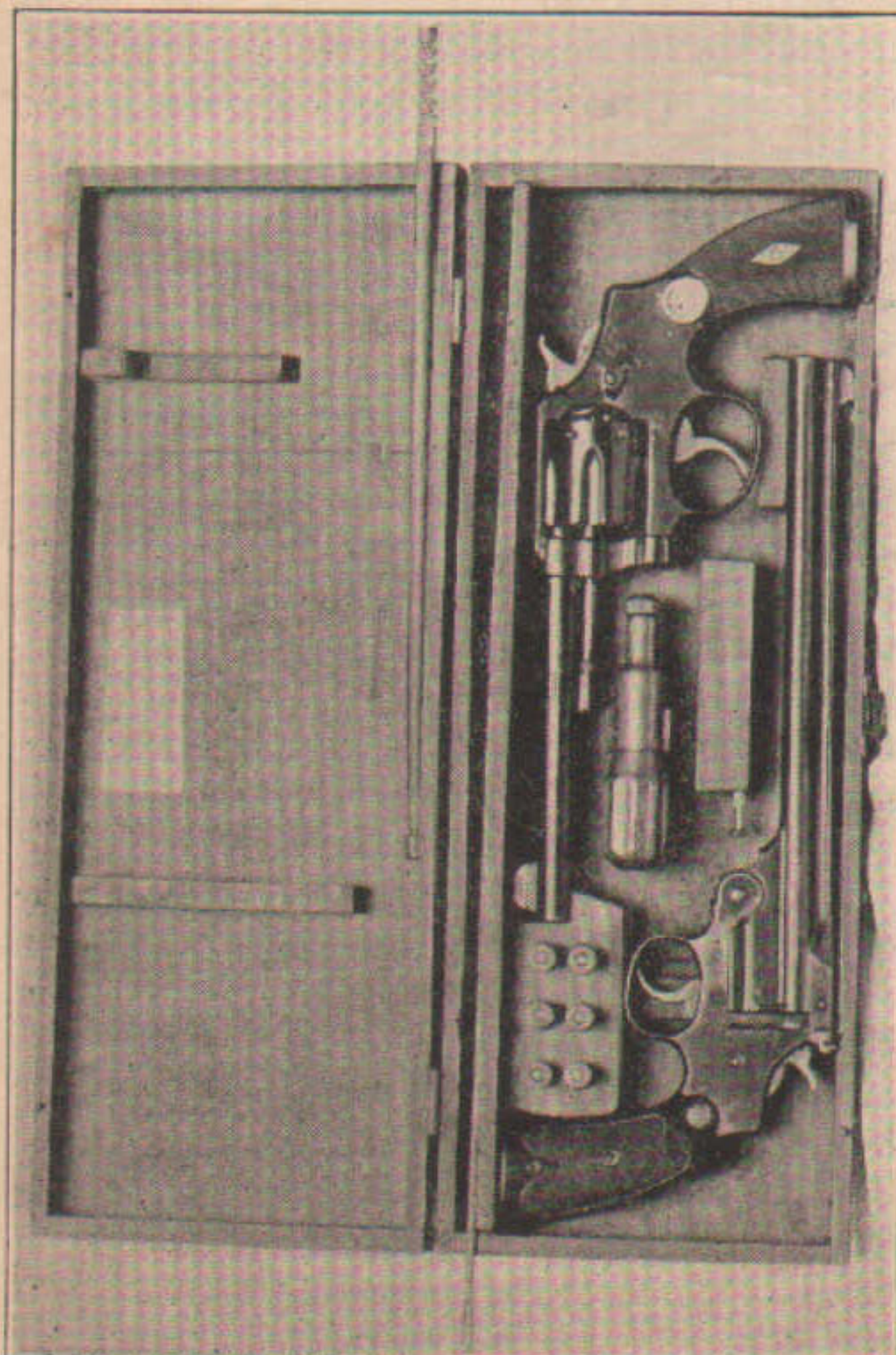
six holes in another block so that there may always be six loads instantly available for the big gun in case it might be needed in a hurry. Cleaning rod space was also provided for and data as to the ballistics of the .38 Spl. cartridge pasted in the lid. The whole arrangement has proven most fortunate in every respect and might be followed with advantage by other shooters who wish cases for their arms. No dimensions are given as the size of case would necessarily differ for different arms; it is merely a case of making it no larger than need be.

A cloth lining for such cases is not at all desirable, in fact in certain climates it would be practically certain to hold enough moisture to cause the arm to rust. Just wood, well-oiled is best.

Once upon a time the writer used to carefully save up old .38 calibre pistol cartridge boxes so that he might have something in which to pack his pistol cartridges as he reloaded them. Never again, it isn't necessary. The illustration shows how he does it now.

The little wooden box, or trough, with removable ends just holds fifty cartridges. A piece of heavy wrapping paper of proper dimensions is inserted, the ends put in place and held by the two nails which pass loosely through holes, and the cartridges put in place. The paper is then pasted down on top. Then one end is removed and the paper folded in place on the end and pasted and the end replaced, the same being done at the other end. This completes the package except for pasting a label on the top. Better leave it in the wooden box for awhile till the paste gets dry on the ends. This makes a very neat way of putting up cartridges and is, of course, applicable to any size.

In the same photograph is shown a 'loading block' holding ten cartridges, the usual number used when shooting a 'string' at a target. It is a decided convenience in target work for by its use one never makes the mistake of shooting an extra shot and being penalized for so doing.



Left, the hand guns in their case. Right, Cartridge box and loading block.

and bottom of case also add to its strength. A snap fastener which came originally from one end of a cheap straw suit case serves to hold the cover in place when closed and it is ideal for this purpose.

Satisfactory disposal of the Smith & Wesson screwdriver was a problem until the thought occurred that it might be held in a clamp and a clamp for this purpose was quickly found in the form of an old holder for a sixty ampere electric fuse cartridge; these are obtainable at almost any electrical repair shop. A hole was bored in the small block for the purpose of holding the jeweller's screwdriver with which the sights of the target pistol are adjusted, and

The Camp Table and the Sportsman's Lave

Being the seventh of a series of talks for the Out-of-doors man

By CAPTAIN FRANK WINCH

ONE of the problems of camp life is a suitable camp table—light, compact, and still when set up, that will stand firm enough not to wobble the coffee in your lap.

Those to whom price is no object, a card table with folding legs will do, and then, too, there are many on the market costing from two dollars upward. But for the chap who would rather do a little tinkering at home I suggest a table that costs nothing to make and will better serve the purpose than any found in the stores.

The table is made from a shoe packing box—thirty-eight inches long and thirty inches wide, and aside from any other feature—will prohibit the idea of forgetting to pack the knives and forks and plates and better yet, is a constant reminder not to leave them in camp when starting for home.

The legs are made from a siding of the box, split down to the proper width with a hand axe and then smoothed off with a pocket knife or plane. Nail a cross piece at the top, another one just below the center and fasten to table with leather hinges or canvas—then knot a piece of rope on one end and fasten with staple driven underneath the table top at the center, tie this end to the other leg and drive the staple home to engage the rope. Repeat on the other legs. When set up slant the legs outward from the table until the guy ropes are taut and you will have a table that stands as rigid as the one at home.

Tack a strip of leather or canvas on the underneath side making divisions to fit the knives and forks, and further over put on a square piece of canvas, tacking the four corners—this for the enamel ware plates. Or do as I did by taking the sleeve of an old shirt, cutting it off at the elbow, stitching the bottom and tacking only the two upper opposite corners.

The legs on the right hand side fit flush to the edge of the table—those on the left are made to nest in the others, fold the ropes in the space left between the tableware and both pair of legs will fit close to the table.

A piece of oil cloth tacked over the edges of the wider legs provides a backing for the table and keeps the knives, forks and plates clean and away from damage, and serves also as a table cloth.

When folded flat the table occupies but little space in thickness and serves as the top of the grub box, which in turn when emptied at camp provides a seat. A little canvas, some string, three cents worth of copper rivets and a tap here and there with a hammer, will give the camper, be he out for the week end or a month, as neat a little lavation outfit as one would care to have.

Wash basin, water bucket, soap holder, tooth brush rack, a place for towels and the shaving paraphernalia can be home-made at an

expense of less than fifty cents providing the material needed can not be rustled out from the cast-offs in the linen closet.

First, the water basin. Take a piece of heavy canvas or denim, two feet by three, folding it at the longer ends so that it gives a depth of about six inches. Draw the ends toward the center, and through these folds drive a copper rivet, spreading the tines on the inside. Repeat at the other end.

At each extremity sew on three loops of ordinary cotton binding tape a half or three quarter inch long. One on the end and one in the center just over the rivet. With adhesive tape bind the edges and the basin is complete. For the purpose, this canvas will be waterproof; should it be desired to make it more so, dip in an alum solution either before or after making.

Cut four forked sticks and implant in the ground, run a light cross bar through either end and place on the embedded sticks. The basin is ready for use.

The water bucket is just as simple to make. Fold a strip of heavy canvas in a circular

shape. Double stitch the seam, about one-quarter inch apart. Cut a round piece to fit in at the bottom, sew in this a piece of stout cord or light manila rope, leaving enough of the edge to be sewn on the end of the upright strip already made. To further strengthen bucket sew on a cross bar of quarter inch manila rope across the bottom. Turn in the edges at the top and make a hoop of medium weight wire, sew this with a double seam, attach the handle and the bucket is finished. A treatment of alum solution will make this bucket leakproof.

Using the soap of preference, run a hole through one end with a shoe string, knot it and at the other end fasten to the limb of a tree, fasten the bucket from another branch so that it can be easily tilted over the basin. A twine with loops at intervals of two or three inches apart furnishes the tooth brush rack, to which also can be attached the shaving powder can and tooth paste. To both of containers fasten a wire bent "S" shape with a piece of string and hook on to the twine holding the brushes. Another short rope from limb to limb furnishes the towel rack, and the lave is complete.

Bucket, basin and twine all fold into a space small enough to occupy negligible room in the camping kit.

Aside from the "campy" appearance the outfit gives, it will be found mighty useful, everything in its place and placed just where you want it when you want it.

The Sportsman's Debts

By L. E. EUBANKS

IF "TAXATION without representation" is unjust, representation without taxation likewise is unjust. The sportsman's representation consists of his legal protection in the pursuit of sport, in the right and privileges extended to him by the laws and his brother sportsmen. His taxation consists of compliance with and support of these laws, and all the help he can give to the cause, to the promotion of clean, square sport.

It is a lamentable fact that some sportsmen (?) demand every right which law, custom and courtesy extend, and many that are not extended, and at the same time decline to "pay their taxes"—figuratively and literally. To them, protection is a narrow robe intended only to cover *their* dogs, their guns, and the game they wish to take. The golden rule is wholly insignificant to them, they never reverse a situation to test its justice. "What's yours is mine and what's mine is my own" is such a man's motto. "Let posterity look out for itself; I'm going to get all the game I can." This poltroon "beats" his dog license, then sues the city for the loss of his dog; borrows a gun and "loses it in the river;" works you for ammunition, tobacco—and money, if you're "tender" enough.

Ostracism is too good for this type of sportsman. In fact, it is no punishment at all for him, because he would just as leave be alone—unless perhaps he has some ulterior motive in

seeking company. Of course real fellows ostracise him, but they should do more. He should be made to pay fully for his misdemeanors and be advertised among all upright fellows. Make it so warm for him that he will either give up the game or make some reform overtures.

Sport in itself is clean, constructive, developmental; it makes for manhood of the highest type. We cannot, must not, permit it to be depraved and placed in a false light to those who do not know it.

There is a long list of don'ts for the man who would do his share to hold up sport, but we must not be content with negative assistance. What we *do* counts with even more force. Every man who loves his sport owes that sport actual nourishment. You have learned the art of shooting; the work of others made that possible for you, built up the science and paraphernalia. Perhaps some one taught you; have you taught anyone?

Do something for the work you love, the game you call your own, something to broaden and brighten the subject. Don't be content to follow only, but do a little thinking and experimenting on your own hook. Remembering that research is the basis of progress, dare to be original. Study, experiment, deduce, and bring your mite of learning, be it never so small, to the common center. See it tested in the crucible of united knowledge around the fire with your pals, and abide by the

results. Lack of self-confidence keeps many really ingenious sportsmen from trying out their theories, and over-diffidence often restrains them from giving the cause the benefits of their discoveries. If every user of the gun would follow out this suggestion, all would be surprised at the amount of "new stuff." It would not have to be new to all to be of great value to some. When it dawned on me that shooting into water gave a fine opportunity to study shot patterns, I passed it on, and have been thanked several times. Not until afterward did I learn that a number

of others had "beaten me to it." But the information was no less valuable to shooters who had not tried it.

One of our greatest debts is to the novice. From experience you know he can be made or marred very easily. Do all you can to help him learn properly, and protect his confidence from pseudo-sportsmen who would impose on it.

And do we not owe something to the dumb instruments of our enjoyment? Believe me, there is a good deal of character exposition in a man's treatment of his gun and dog. Those

who scoff at sentiment between a man and a gun surely do not give the matter serious thought. We get back what we put into a thing. Literally, it is true that the weapon cannot feel a slight nor appreciate consideration; but in effect, it does both: Neglected and abused, it becomes unreliable; properly cared for, it responds with the best service in it. And isn't that eminently human? Yes, you can judge a workman by the care of his tools; it is a measure of practical morality and business sense.

New Records Set By Final Scores In N. R. A. Series

TOPPING a list of nearly 150 competitors, including the fastest company of small bore shots in the United States, the Quinnipiac Rifle and Revolver Club, of New Haven, Connecticut, has won the N.R.A. Civilian Gallery Championship Match.

The shooting of the Quinnipiac Club throughout the series has been remarkable for its consistency. The total score of 9,991 for the ten stages means that an average of less than 1 point—to be exact .9 of a point—was dropped in each stage of the match which pretty nearly approximates perfect shooting. What makes the performance all the more remarkable as an unusual example of consistent holding is that the points dropped were all lost during the first three matches of the series. The individual average of this club for the entire N.R.A. Indoor season was 1998.2 points out of 2,000, or 99.91 per cent.

The score which the Denver City, Colorado, Rifle Club hung up last year, and which was regarded as a remarkable team record for the 75-foot gallery range—9,956 points out of a possible 10,000—is 35 points lower than that of the Quinnipiac boys. It is a record which will not easily be broken.

Although the Quinnipiac total may be regarded as exceptional in every way, the New Haven score should not be permitted to entirely eclipse the totals made by many of the leading clubs in the civilian match. The first team of the Lakewood, Ohio, Rifle Club piled up a total which would have given them last year's match by a margin of 28 points but which was only good for second place this year. The Denver City Rifle Club, winners of the 1920 Championship, beat its own record by 23 points, and landed in third place. Looking over the final aggregates shows that two other clubs bettered last year's record—the Bridgeport, Connecticut, Rifle Club, in fourth place and the Marion, Ohio, Rifle Club in fifth place.

Excellent scores are also noticeable in all the other leagues, the total of the Northfield University in the College competition being 18 points above that on which the University of Pennsylvania won the competition in 1919. St. John's Military Academy won its competition on a total of 9,956, which equals the high civilian score of last year, and which is 124 points better than the aggregate which gave

Culver the victory last year. In defending its title as the Champion High School the Central High School Rifle Club of Washington bettered its 1919 total by 34 points.

In addition to the trophies offered by the N.R.A. in the small-bore league for 1920, a B.S.A. target rifle will be awarded to the individual competitor who made the highest score using this arm. This award will be made, at the request of the B.S.A. Company, by *Arms and The Man*, and all competitors who used a B.S.A. rifle are requested to send in their names accompanied by a certificate from the club secretary.

In accordance with the conditions of the Interclub Gallery Matches, State Championships were decided by the aggregate scores, wherever five or more clubs were entered from one state. This resulted in the award of eleven Civilian State Championships and three high school championships. There are:

1920 STATE CHAMPIONS.

Civilian.

- Connecticut:**—Quinnipiac Rifle & Revolver Club, New Haven, Conn.
- Ohio:**—Lakewood Rifle Club, 1st Team, Lakewood, Ohio.
- Colorado:**—Denver City Rifle Club, Denver, Colo.
- Massachusetts:**—Lynn Rifle and Revolver Club, Lynn, Mass.
- Montana:**—Butte Indoor Rifle Club, Butte, Mont.
- Pennsylvania:**—Philadelphia Rifle Association, Philadelphia, Pa.
- New Jersey:**—Arlington Rifle & Pistol Club, 1st Team, Arlington, N. J.
- Illinois:**—Irving Park Rifle Club, Chicago, Ill.
- California:**—Olympic Pistol & Rifle Club, San Francisco, Calif.
- New York:**—Auburn Rifle Club, Auburn, N. Y.
- Michigan:**—Pentwater Rifle Club, Pentwater, Mich.

1920 STATE CHAMPIONS.

High Schools.

- California:**—Watsonville Union High School, Watsonville, Calif.
- New York:**—Jamaica High School, Jamaica, N. Y. City.
- District of Columbia:**—Central High School, Washington, D. C.

THESE clubs have officially been declared the winners in the N. R. A. Interclub Gallery Matches:

Civilian Clubs.

Quinnipiac Rifle and Revolver Club, New Haven, Conn., 9,991 points out of a possible 10,000.

College Clubs.

Norwich University, Northfield, Vt. 9,921 points out of a possible 10,000.

Military School Clubs.

St. John's Military Academy, Delafield, Wis., 9,956 points out of a possible 10,000.

Military Units.

Officers' Rifle Club, Camp A. A. Humphreys, Va., 9,542 points out of a possible 10,000.

High School Clubs.

Central High School, Washington, D. C., 9,938 points out of a possible 10,000.

The Official scores in the N. R. A. series are:

CIVILIAN CLUBS

	<i>Final Aggregate Score</i>
1. Quinnipiac Rifle & Revolver Club, New Haven, Conn.	9991
2. Lakewood Rifle Club, 1st Team, Lakewood, Ohio	9984
3. Denver City Rifle Club, Denver, Colo.	9979
4. Bridgeport Rifle Club, Bridgeport, Conn.	9967
5. Marion Rifle Club, Marion, Ohio	9959
6. Bangor Rifle Association, Bangor, Me.	9952
7. Ordnance Rifle Club, Washington, D. C.	9937
8. Lynn Rifle & Revolver Club, Lynn, Mass.	9933
9. Butte Indoor Rifle Club, Butte, Mont.	9927
10. Birmingham A. C. Rifle Club, Birmingham, Ala.	9926
11. Brattleboro Rifle Club, Brattleboro, Vt.	9924
12. Remington UMC Rifle & Gun Club, Bridgeport, Conn.	9921
13. Philadelphia Rifle Association, Philadelphia, Pa.	9908
14. Santa Fe Rifle Club, Santa Fe, New Mexico	9906
15. St. Paul Rifle & Pistol Association, St. Paul, Minn.	9905
16. Arlington Rifle & Pistol Club, 1st Team, Arlington, N. J.	9901
17. Warren Rifle Club, Warren, Pa.	9900

(Continued on page 12)

ARMS AND THE MAN

1111 WOODWARD BUILDING, WASHINGTON, D. C.

SEMI-MONTHLY—ON THE 1st AND 15th DAY

Editor

BRIG.-GEN. FRED H. PHILLIPS, JR., Secretary N. R. A.

Associate Editor

KENDRICK SCOFIELD

Entered as second-class matter, April 1, 1908, at the post-office at Washington, D. C., under the Act of Congress of March 3, 1879.

That a man shall serve his country in time of war is noble, brave and patriotic; but that a man shall properly prepare himself in time of peace to serve in war is all of these things and more. It is noble with a nobility which is real, not ideal. It is brave with a bravery which assumes in time of unemotional peace many burdens, among them that of bearing the lack of appreciation of those who do not consider military preparation or training necessary.

THE ARMY PISTOL FOR THE NATIONAL MATCHES

MANY handgun enthusiasts object to that provision of the rules governing the National Matches of 1920 wherein the .45 calibre pistol, Model of 1911 is prescribed as the arm with which the National Individual Match must be shot. Most of these critics argue that inasmuch as the .45 calibre revolver, Model 1917 was regulation overseas, that contestants should be permitted to use either the Colt or the Smith & Wesson, taking the pistol cartridge; others stand for a wide-open policy of either revolver or pistol of .38 calibre or greater. The facts are that the U. S. revolvers, Model of 1917, have been declared obsolete—which may properly be regarded as an excellent reason why these arms are not con-

sidered eligible; and that there are several circumstances to be taken into account with relation to a wide-open policy in government competitions, which do not appear to have been generally recognized by those who have criticised the rules.

In limiting the National Pistol Match to the Army automatic, those drafting the National Match rules acted wisely and consistently. They held in view the necessity of keeping inviolable the purposes of the National Matches—the encouragement of small arms practice among tyros rather than experts.

The open door policy, permitting the use of weapons other than military arms, and refinements not found on the "as issued" small arms, may well be encouraged whenever practicable in the Matches of the N.R.A. and the various state associations, to the ultimate development of higher standards of accuracy. But it is just as well to limit the government competitions to government arms, as prescribed in government regulations. In no other way is it possible to place several hundred contestants in an open field and no favor. In no other way is it possible to obtain a proper basis of comparison. The National Matches are not held to the glory of the already expert shot, but were instituted as the common meeting ground of men not already proficient to the end of helping the inexperienced to become skilled. Nothing should be done which may result in curbing the enthusiasm of the rank-and-file service shot or the civilian of limited means. To throw open the National Matches to the expert who can and does supply himself with all the expensive refinements of the shooting game, would so result in many instances.

The handgun matches of the National Rifle Association will this year leave little to be desired in the open door policy. The man who desires to enter competitions where revolvers, target sights and smaller calibres can figure will be amply accommodated. In fact, more attention is being given this year than ever before in providing an attractive and varied program for the hand gun.

SWAGING .25 CALIBRE BULLETS

(Continued from page 5)

a hole is then drilled to within $\frac{1}{2}$ -inch of the inner end.

Since this swage is for a .25 calibre bullet which is about $\frac{1}{4}$ -inch in diameter, too large a drill must not be used for the preliminary drilling; I generally start with a $\frac{1}{8}$ -inch drill as it is not hard to drill quite fast with this size on a foot lathe, if the $\frac{1}{8}$ -inch drill ran reasonably true I follow with a 7-32-inch drill, if not with a 3-16-inch drill. Then with the largest boring tool that will enter the hole I bore out the remaining stock to within a few thousandths of the size of the reamer, using the shank of the reamer as a sizing plug. This shank end I usually make about three to five-thousandths smaller than the reamer proper so that it can be used for this purpose.

On the last setting of the boring tool I run it through several times to get the hole as true and round as possible; then before removing the boring tool from this setting I counter-bore the end of the hole for about a half inch in, of a size that will just let the reamer enter. This centers it perfectly with the bore before

it begins to cut and seems to start it better than where the cutting must begin right at the mouth.

The die is now removed from the holder by loosening the hollow set screws and is thoroughly cleaned and the flat sides of the two halves rubbed on a dead smooth file to remove the burrs set up by the drilling and boring.

The die is then replaced in the holder, the set screws turned down tight, the hole well oiled with pure neatsfoot oil, or some other good cutting oil and the reaming proceeded with.

During the reaming operation the half-dies must be removed frequently to thoroughly clean out the chips and remove the burrs set up on the edges of the bore by rubbing them on a smooth file with just a light pressure, then recoil and continue the reaming until the reamer has seated deep enough to give a perfect impression.

For final finishing I like to take the holder off the lathe and finish in the vise as previously mentioned, don't neglect to use a piece of wood between the end of the reamer and the tail spindle of the lathe when reaming by power.

The next requisite is a swaging plunger. If the reaming has been well done and the hole is smooth and true a plunger can be made that will just fit the hole, that is a plunger that is practically the same diameter as the hole.

The plunger is made in the same manner as that described for the reamer, the same drill rod is used and manipulated in much the same manner, the end of the plunger is of course faced off or profiled to give the shape to the base of the bullet desired.

After finishing in the lathe the plunger is hardened and the temper drawn the same as for the reamer except that I draw the plunger to a purple. It is desirable to temper the plunger its entire length otherwise the continued pressure of swaging will upset and bend it; it need not extend more than a half inch beyond the die with the bullet in.

I have found that the plungers I make expand about .001-inch in hardening so that if they are made just the size of the bore the expansion of hardening will make them just large enough to polish down to exact size.

Suppose the die we have just made is for swaging the 86-grain full metal patched bullet, the point of the reamer should be as near

the shape of the point of the bullet as possible so that in swaging only the body of the bullet is enlarged, and there should be about half the length of the body straight, to take the rifling.

The 117-grain bullet can be swaged in a die made for the 86-grain bullet and the 86 can be swaged in a die made for the 117-grain bullet but neither are as good as when swaged in a die made for each, as the points are quite different in shape and the bearing on the lands of the rifle should be different for each; since the dies are comparatively easy to make it is better to have a die for each bullet length.

It is my belief that the bearing on the lands of the rifle should not be too long as it creates unnecessary friction in the bore and retards the speed of the bullet in passing through and incidentally creates an excessive gas pressure in the chamber.

I am still undecided as to the best length of bearing on the lands for this diameter and am experimenting with a length equal to bore diameter. I believe that a bullet having a bore diameter section either in front or back of the groove diameter section will need only a narrow band for the groove diameter section to take the rifling and give it the proper spin and I think a rather long bore diameter section having a narrow band in the center of groove diameter would act well. I am experimenting along these lines and will know more about it in the near future. Now that we have digressed from our subject we will get back to the business in hand and swage a few bullets.

After a lot of experimenting I have found the following steps of procedure preferable. Place the split die in the holder, always with the same half next to the set screws—which half should have flat spots under the points of the screws—drop a bullet in and the plunger on top of it. Now tighten the set screws as tight as they can be drawn with the little wrench that comes with them. The plunger, having been made the same size as the bore of the die, will by this method be tightly clamped in the die and be perfectly centered to it, and with just a trace of oil rubbed on its surface will move through the die easily when pressure is applied and swage the bullet with a base that is perfectly true and square with the body. Now by loosening the set screws the die can be easily lifted out with the fingers, a little side pressure on the plunger will separate the halves with the bullet adhering to one of them. Now lay this half in the palm of the hand and strike the back sharply with a brass rod about a half inch in diameter and eight or ten inches long and the bullet will be jarred out in your hand; sometimes it may take two or three raps. I have also found that by striking near the open end of the die farthest from the bullet it seems to drop out easier.

For swaging you can use a fairly heavy vise and try and give the same pressure each time; this is easily done by noting the position of the vise handle when the correct pressure is found and always thereafter bringing the handle to this position while using this particular die and plunger.

You will be surprised how little pressure is needed with a good vise; a twenty-five pound

pull on the handle will usually be found sufficient; and excessive pressure must be avoided as you will only make oval bullets. No matter how tight you have set screws holding the die in the bushing there will be enough spring under heavy pressure to let the die open up a few thousandths and thereby make the bullet oval, but with just sufficient pressure to fill the body of the bullet into the die and bring the base up square the bullet does not expand over a half thousandth which amount has not seemed to effect the accuracy in my experiments and with light loads could not be detected in the accuracy. A round corner base is rather easier to swage with a light pressure than if the base is made square.

During my experiments I tried a great many different shape bases, and one particular shape that seemed to give rather better results than any other was made like the sketch herewith:

Note that the base of this bullet is flat with a rounded corner abutting a square shoulder, the diameter of the round corner where it touches the shoulder was .257-inch, the bore diameter of my barrel, and the body diameter was .266-inch. This bullet at thirty and fifty yards gave me some of the best targets I secured with any bullet, but it was late in the season when I tried it and I did not have time to test it to the extent I would have liked, but will give it a thorough tryout when I get going in the spring.

It occurred to me after making a few swages that if I made the bore of the swage with a pointed reamer I could swage the UMC or Savage bullets as well as the 86- and 117-grain, thinking that the flat points of the latter would not rupture under the pressure since they would have no support, and I found that the plan worked very well; the taper part of the flat points would fill the taper of the die part way which was found to give enough abutment to take the swaging pressure and only a slight bulge was made on the flat point which was of no consequence. This plan worked all right if the bases were made rounded but if they were square and sharp at the corners the pressure needed to bring them up full was sufficient to split the points at times.

The secret of success with a swage of this kind is in getting the shape of the reamer exactly like the bullet to be swaged so that the least amount of upset is needed to bring the bullet to the size and shape desired, and preferably having a round corner base; then carefully gaging the pressure during the swaging operation and having it the same for each bullet.

There is a particular feature in loading shells for a Newton or any other high power rifle using a fairly heavy bullet that should be thoroughly understood by every experimenter or he will surely get into trouble.

This is the relation of the diameter of the chamber neck of the rifle and the outer diameter of the neck of the cartridge with the bullet in.

Before starting with experiments a sulphur cast of the chamber of the rifle should be made so that the actual diameter of the neck can be accurately measured. This diameter then,

which in my case is .294-inch at the end of the shell and 2.95-inch at the beginning of the taper, is the constant that should be consulted and compared with every batch of shells that are loaded with high-power loads and bullets of standard weights. It does not seem to be necessary with 86-grain or the Savage 87-grain, in the Newton Rifle.

I have read numerous articles dealing with this feature and there seems to be a difference of opinion as to the necessary clearance. When experts disagree the experimenter must find out for himself, so I decided to run this doubtful question to a solution, at least as far as I was concerned.

When a cartridge is fired having a full high-power charge the whole shell is expanded into the chamber of the rifle to a perfect fit, but immediately, through the natural resilience of the metal, springs back when the pressure is released about a thousandth of an inch, so that practically the shell fits the chamber. Now, if the diameter of the neck of the cartridge was enough smaller than the neck diameter of the chamber and the metal expanded enough to permit the gases to surround the base of the bullet so that it was not upset before being pushed into the bore, no excessive pressure would be generated in the chamber.

With light loads I did not find that a tight-fitting neck or a neck that had a clearance of a few thousandths made much difference although I am inclined to believe a fairly tight fitting neck is preferable since the pressure of the powder gases in the light loads is not enough to upset the metal-cased bullets; so that it seems desirable to have a fairly tight-fitting neck with a bullet of practically groove diameter so the expansion of the neck of the shell around the bullet will not be more than one or two-thousandths. This condition will confine the gases so well that almost the entire force will be exerted against the base of the bullet and it will be quickly forced into the rifling.

At various times I loaded cartridges with exactly the same bullets and powder charges but in two sets of shells, one having necks with a clearance of four to five-thousandths of an inch and the other set having a clearance of not more than one or two-thousandths. These I fired at targets under identical conditions and was not able to see any material advantage in one over the other, although I feel that the tight necks should give better results in light loads.

When you come to full charges it is an entirely different proposition. After experimenting for a while with the light loads and the different neck clearances I thought I would see just what the effect would be with tight necks and full charges with the standard 129-grain Newton bullets.

To get the effect of a tight chamber I procured some thick neck shells of the Newton Co. which I sized and reamed out so the necks would measure about one to one-and-one-half thousandths smaller than the chamber when the bullets were seated. These shells I loaded with 44 grains of Du Pont No. 16 powder and proceeded to fire. I was amazed at the results. The primers blew out, the shells stretched and gas blew out of the vent hole and blackened

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ARMS AND THE MAN

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my hand and the recoil and report were terrific and the bullets went wild. I fired three shots and was so surprised that it took me some time to realize just what the trouble was. You see I had been shooting light loads with tight chambers and not having had any trouble, I was unprepared for what happened. All of the full charges I had previously fired were with standard shells having a proper neck clearance so that such behavior from my shells was surely a surprise. I sat down and began to ponder over the occurrence and it finally dawned on me that tight chambers were a delusion and a snare and I must not tamper with them.

I did not fire any more of these shells but drew the bullets out and put the powder back in the can.

This experience was a very forceful lesson to me and I don't think I will ever forget it.

At a later date I experimented further with tight chambers and full charges as I wanted to find out definitely the minimum clearance necessary for full charges. I stretched quite a few shells in these further experiments and blew out some primers and found that *Three-Thousandths of an Inch* was the minimum clearance that was safe with my rifle and I

further found that *Five-Thousandths* was a still safer clearance.

This loose fit in the neck cannot in any manner permit the neck to drop to the lower side of the chamber since all fired shells fit the chamber in the body and are therefore properly centered whether the neck touches the chamber or not.

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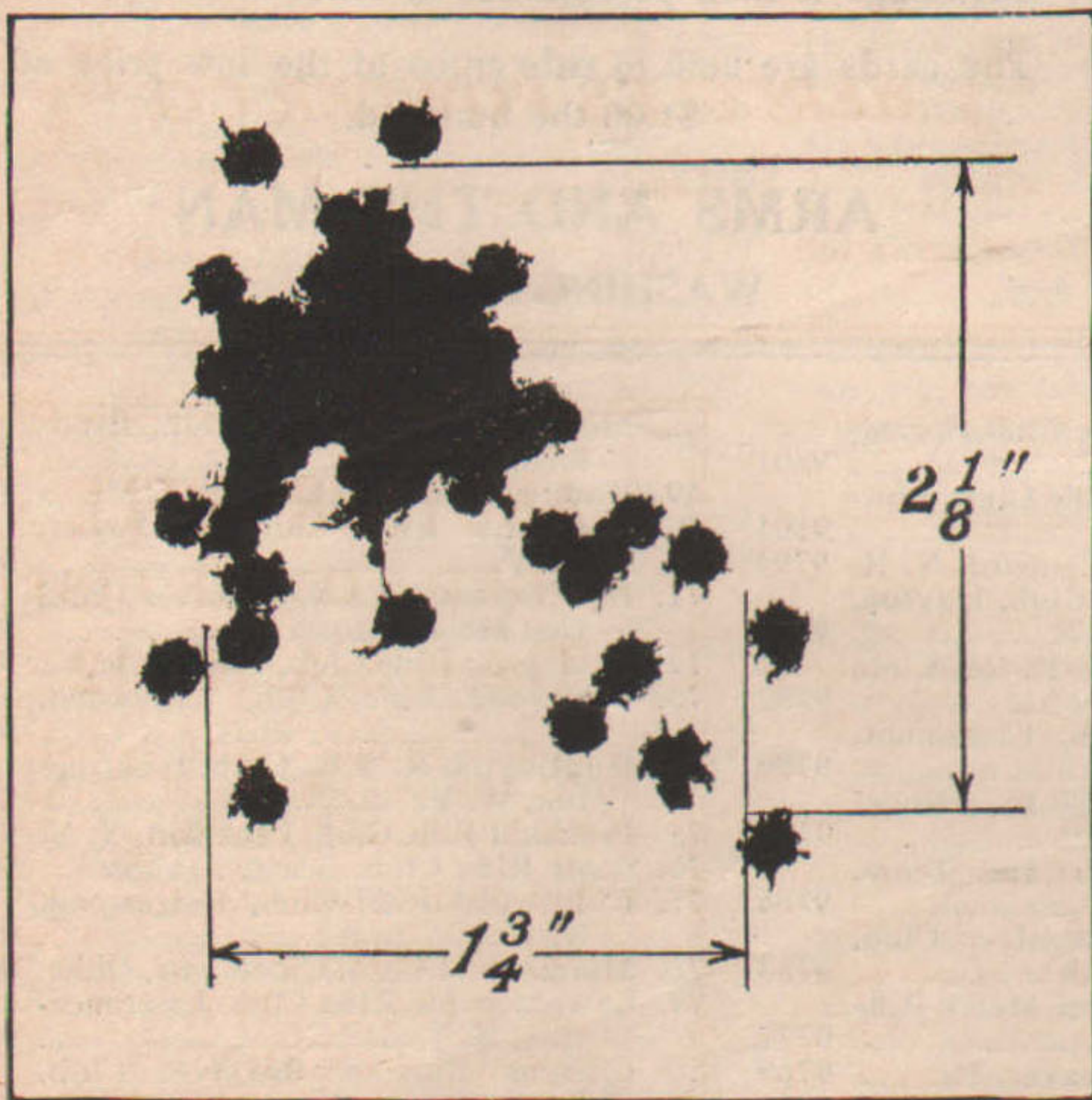


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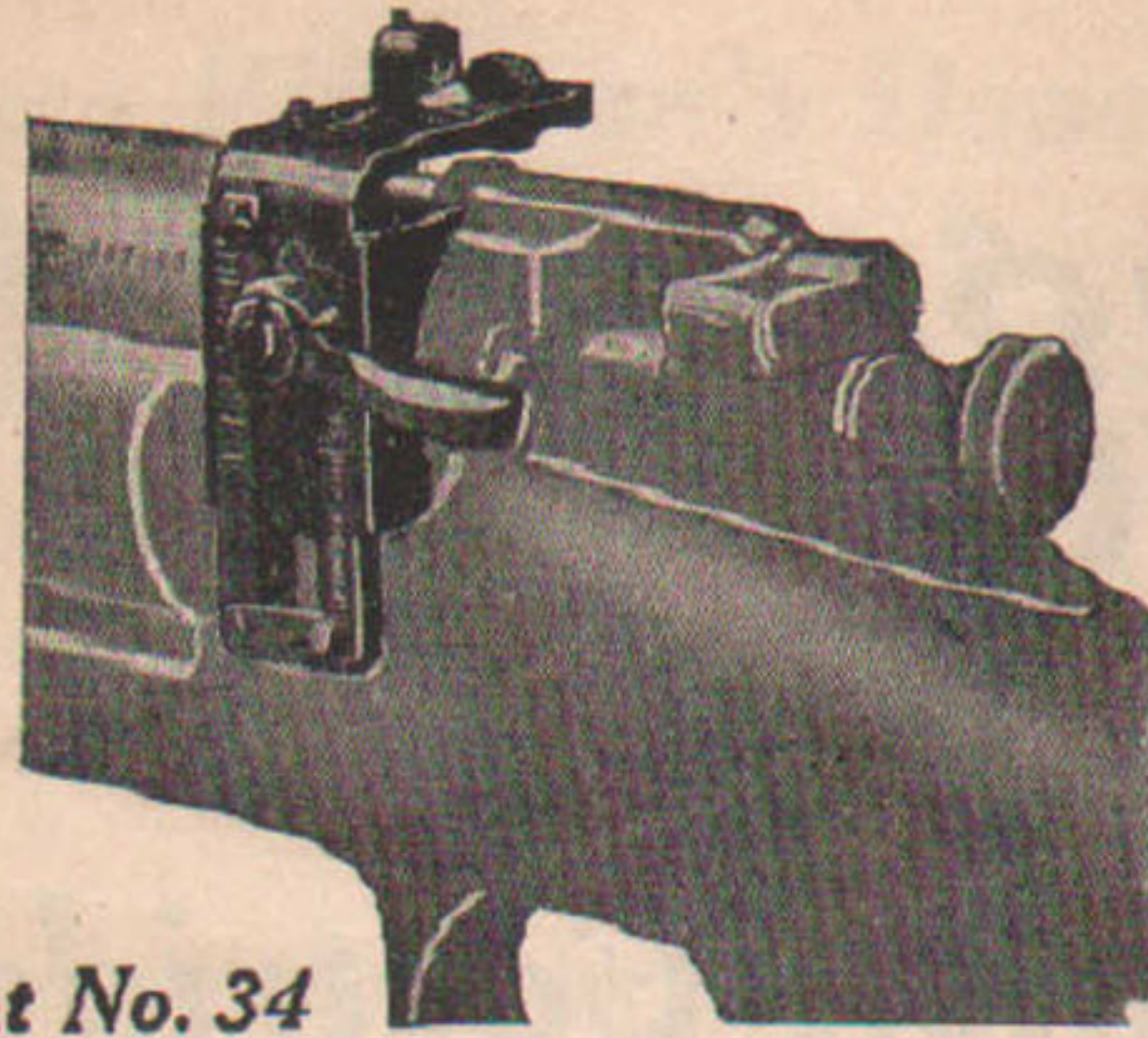
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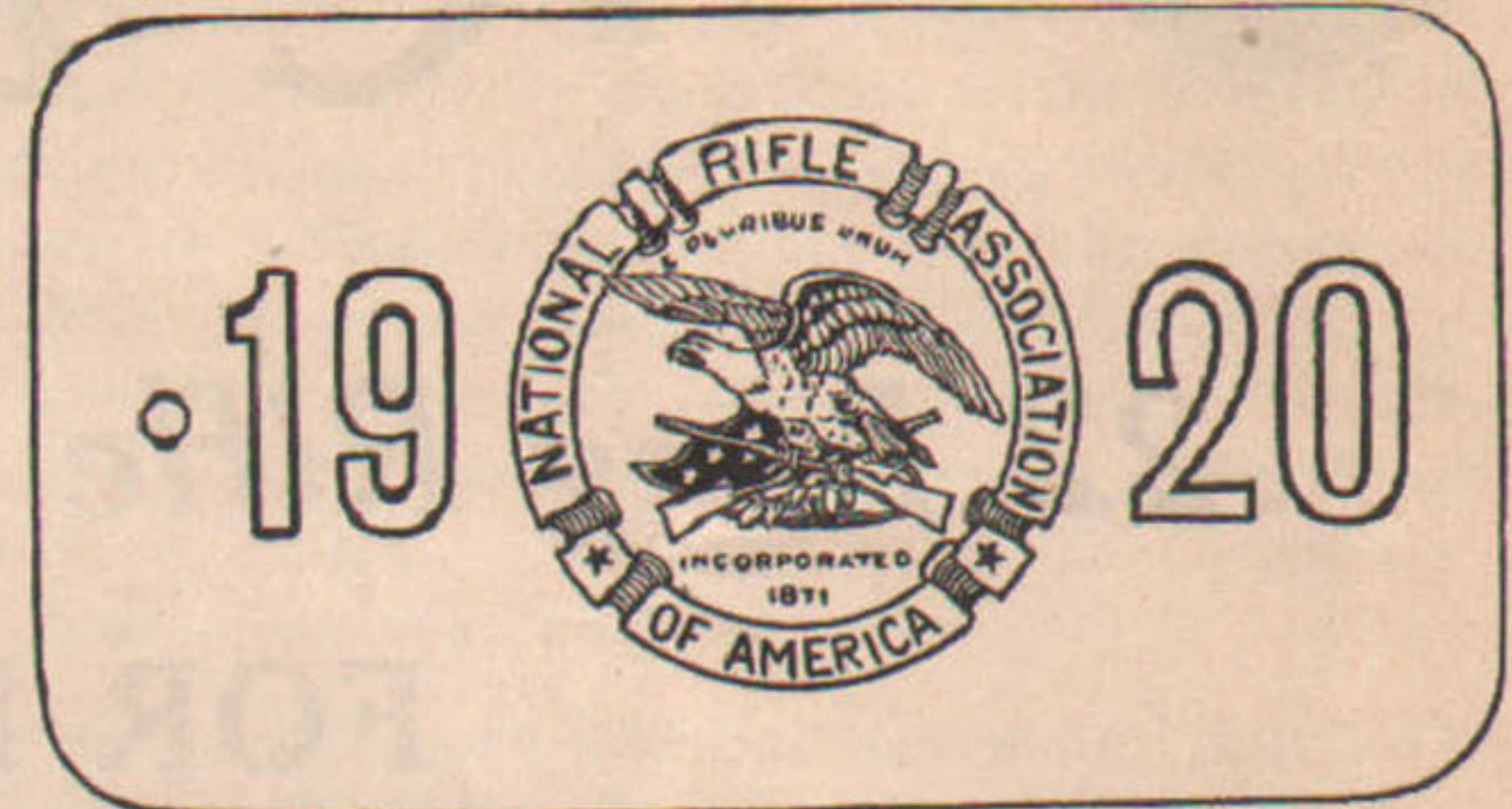
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ARMS AND THE MAN
WASHINGTON, D. C.

NEW RECORD SET

(Continued from page 7)

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20. Jacksonville Rifle Club, 1st Team, Jacksonville, Fla.....	9888	45. Concord Rifle Club, Concord, N. H.....	9794	70. Rochester Rifle Club, Rochester, N. Y.....	9687
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38. Chicago Rifle Club, Chicago, Ill.....	9814	63. Grand Forks Rifle Club, Grand Forks, N. D.....	9742	88. Mound City Rifle Club, St. Louis, Mo.....	9574
39. Jacksonville Rifle Club, 2nd Team, Jacksonville, Fla.....	9808	64. Riverside Rifle Club, Riverside, Calif.....	9741	89. Norwalk Rifle Club, 2nd Team, Norwalk, Conn.....	9568
40. Los Angeles R. & R. Club, Los Angeles, Calif.....	9807	65. Hawthorne Rifle Club, Chicago, Ill.....	9738	90. Roundup Rifle & Pistol Club, Roundup, Mont.....	9566
41. San Francisco Telephone Rifle Club, 1st Team, San Francisco, Calif.....	9807	66. Fort Wayne Rifle & Revolver Club, Ft. Wayne, Ind.....	9735	91. Altoona Rifle Club, 1st Team, Altoona, Pa.....	9559
42. Middletown Rifle Club, Middletown, N. Y.....	9804	67. Maynesboro Rifle Club, Berlin, N. H.....	9710	92. Wewoka Rifle Club, Wewoka, Okla.....	9512
				93. Hoosier Rifle Club, Indianapolis, Ind.....	9510

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97. Chibridge Rifle Club, Greenville, Pa.....	9476
98. East Saginaw Rifle Club, Saginaw, Mich.....	9472
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102. Varnum Continentals Rifle Club, E. Greenwich, R. I.....	9438
103. Lamar Rifle Club, 3rd Team, Lamar, Colo.....	9435
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106. Shawnee Rifle & Revolver Club, Lima, Ohio.....	9413
107. Du Pont Rifle Club, Flint, Mich.....	9412
108. Nemadji Rifle Club, Superior, Wis.....	9397
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111. Berkeley Defense Corps Rifle Club, Berkeley, Calif.....	9377
112. Interwoven Rifle Club, New Brunswick, N. J.....	9370
113. Superior Rifle Club, Superior, Wis.....	9352
114. Liberty Rifle Club, Dubuque, Iowa.....	9340
115. Lamar Rifle Club, 1st Team, Lamar, Colo.....	9339
116. Military Service Rifle Club, Elizabeth, N. J.....	9322
117. Lamar Rifle Club, 4th Team, Lamar, Colo.....	9319
118. Cromwell Rifle Club, Cromwell, Ind.....	9273
119. Commencement Bay Rifle Club, Tacoma, Wash.....	9267
120. Lamar Rifle Club, 2nd Team, Lamar, Colo.....	9260
121. Eclipse A. A. Rifle Club, Franklin, Pa.....	9220
122. New Bedford Rifle Club, New Bedford, Mass.....	9181
123. Cazenovia Rifle Club, Cazenovia, N. Y.....	8978
124. Camden Rifle Club, Camden, N. J.....	8911
125. San Francisco Telephone Rifle Club, 2nd Team, San Francisco, Calif.....	8815
126. Nevada City Rifle Club, Nevada City, Calif.....	8793
127. Ewa Rifle Club, Ewa, Hawaii.....	8718
128. Groton Rifle Club, Groton, Mass.....	8592
129. Watertown Rifle Club, Watertown, Mass.....	8590
130. Yellowstone Rifle Club, Billings, Mont., 2nd Team.....	8552
131. Ottumwa Rifle Club, Ottumwa, Iowa.....	8347
132. Company G. Rifle Club, Springfield, Mass.....	7760
133. Mt. Washington Lyceum Rifle Club, Pittsburgh, Pa.....	6853
134. Yellowstone Rifle Club, 1st Team, Billings, Mont.....	6026
135. Atlanta Rifle Club, Atlanta, Ga.....	
10th Match Missing.	
East Orange Rifle Club, E. Orange, N. J.....	8797
Tacoma Rifle & Revolver Club, Tacoma, Wash.....	8623
John Forrester Rifle Club, Pittsburgh, Pa.....	8378
Grass Valley Rifle Club, Grass Valley, Calif.....	8153
5th, 6th, 7th, 8th, 9th and 10th Matches Missing.	
Onondaga Rifle Club, Syracuse, N. Y.....	3697
4th, 5th, 6th, 7th, 8th, 9th and 10th Matches Missing.	
Marine Corps Civilian Rifle Club, Springfield, Mass.....	2878

2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th and 10th Matches Missing.	
196 Company H. D. R. Rifle Club, No. 1, Tonawanda, N. Y.....	894
Rupert Rifle Club, Rupert, Idaho.....	613
No Matches Reported.	
1799 Rifle Club, New York City.....	
Washington Marine Draftsmen Rifle Club, Washington, D. C.....	
Pershing Rifle & Revolver Club, Millvale, Pa.....	

COLLEGE CLUBS

	<i>Final Aggregate Score</i>
1. Norwich University, Northfield, Vt.....	9921
2. Syracuse University, Syracuse, N. Y.....	9888
3. University of Pennsylvania, Philadelphia, Pa.....	9882
4. Massachusetts Institute of Technology, Cambridge, Mass.....	9763
5. Dartmouth College, Hanover, N. H.....	9761
6. Worcester Polytechnic Institute, Worcester, Mass.....	9742
7. Columbia University, New York City.....	9730
8. Massachusetts Agricultural College, Amherst, Mass.....	9683
9. University of Pennsylvania, Freshman, Philadelphia, Pa.....	9643
10. Princeton University, Princeton, N. J.....	9634
11. Bowdoin College, Brunswick, Me.....	9590
12. Iowa State College, Ames, Iowa.....	9426
13. Lehigh University, So. Bethlehem, Pa.....	9324
14. Leland Stanford, Jr., University, Stanford University, Calif.....	9182
15. University of Maine, Orono, Me.....	9120
16. University of Washington, Seattle, Wash.....	9069
17. Massachusetts Institute of Technology, Freshman, Cambridge, Mass.....	8961
18. Cornell University, Ithaca, N. Y.....	8800

10th Match Missing.

University of California, Berkeley, Calif.....	8433
6th, 7th, 8th, 9th and 10th Matches Missing.	
Ferris Institute ROTC, Big Rapids, Mich.....	

MILITARY SCHOOL CLUBS

	<i>Final Aggregate Score</i>
1. St. John's Military Academy, Delafield, Wis.....	9956
2. Culver Military Academy, Culver, Ind.....	9879
3. Western Military Academy, Alton, Ill.....	9533
4. New York Military Academy, Cornwall-on-Hudson, N. Y.....	951
5. Bordentown Military Institute, Bordentown, N. J.....	9317
6. Castle Heights Military Academy, Lebanon, Tenn.....	9306
7. Northwestern Military & Naval Academy, 1st Team, Walworth, Wis.....	9221
8. Tennessee Military Institute, Sweetwater, Tenn.....	9194
9. Miami Military Institute, Germantown, Ohio.....	8811
10. Northwestern Military & Naval Academy, 2nd Team, Walworth, Wis.....	8667
11. Nazareth Hall Military Academy, Nazareth, Pa.....	6437
12. Morgan Park Military Academy, Chicago, Ill.....	6251

10th Match Missing.

Army & Navy Prep. School, Washington, D. C.....	8394
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9th and 10th Matches Missing.

Tabor Academy, Marion, Mass.....	6550
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4th, 5th, 6th, 7th, 8th, 9th and 10th Matches Missing.

St. John's School, Manlius, N. Y., 1st Team.....	2558
--	------

3rd, 5th, 6th, 7th, 8th, 9th and 10th Matches Missing.	
St. John's School, Manlius, N. Y., 2nd Team.....	

No Matches Reported.

Albany Academy Rifle Club, Albany, N. Y.....	
Kentucky Military Institute, Lyndon, Ky.....	
Missouri Military Academy, Mexico, Mo.....	

MILITARY UNITS

	<i>Final Aggregate Score</i>
Officers' Rifle Club, Camp A. A. Humphreys, Va.....	9542

HIGH SCHOOL CLUBS

	<i>Final Aggregate Score</i>
1. Central High School, Washington, D. C.....	9938
2. Business High School, Washington, D. C.....	9873
3. McKinley Manual Training School, Washington, D. C.....	9799
4. Jamaica High School, Jamaica, N. Y. City.....	9743
5. Lawrenceville School, Lawrenceville, N. J.....	9582
6. Western High School, Washington, D. C.....	9579
7. Evanston Township High School, Evanston, Ill.....	9559
8. Ridgewood High School, Ridgewood, N. J.....	9519
9. Springfield Tech. High School, Springfield, Mass.....	9408
10. Davenport High School, Davenport, Iowa.....	9327
11. Commercial High School, Brooklyn, N. Y.....	9289
12. Crosby High School, Waterbury, Conn.....	9221
13. Watsonville Union High School, Watsonville, Calif.....	9168
14. Tempe Normal School, Tempe, Ariz.....	8954
15. Dinuba Union High School, Dinuba, Calif.....	8907
16. Lewis & Clark High School, Spokane, Wash.....	8787
17. Fresno High School, Cadets, Fresno, Calif.....	8721
18. Fresno High School, Cadets, Fresno, Calif.....	8701
19. Bonita Union High School, La Verne, Calif.....	8537
20. San Jose High School, San Jose, Calif.....	8448
21. Red Bluff Union High School, Red Bluff, Calif.....	8308
22. Erasmus Hall High School, Brooklyn, N. Y.....	8127
23. San Bernardino High School, San Bernardino, Calif.....	7677
24. Orland Joint Union High School, Orland, Calif.....	7352
25. Richmond Hill High School, Richmond Hill, N. Y.....	6079

10th Match Missing.

Iowa City High School Iowa City, Iowa.....	7834
--	------

5th, 6th, 7th, 8th, 9th and 10th Matches Missing.

South Pasadena High School, Los Angeles, Calif.....	1918
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4th, 5th, 6th, 7th, 8th, 9th and 10th Matches Missing.

Eastern High School, Washington, D.C.....	2776
Pomfret School Rifle Club, Pomfret Centre, Conn.....	2305
Citrus Union High School, Azusa, Calif.....	1937

3rd, 4th, 5th, 6th, 7th, 8th, 9th and 10th Matches Missing.

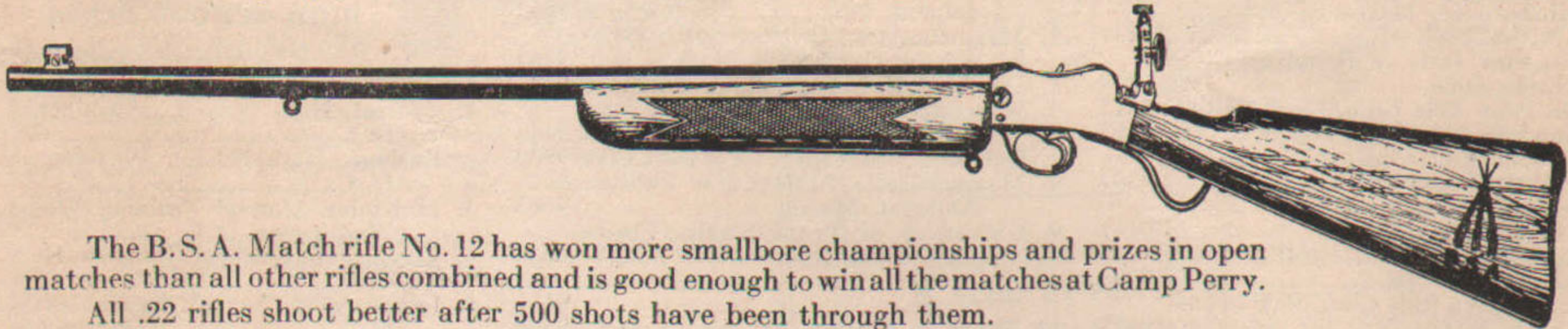
Inglewood High School, Inglewood, Calif.....	470
Boy's High School, Brooklyn, N. Y.....	549

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2nd to 10th Matches Missing.	
Fillmore Union High School, Fillmore, Calif.....	741
Huntington Park Union High School, Los Angeles, Calif.....	683
No Matches Reported.	
Shasta Union High School, Redding, Calif.	
San Rafael High School, San Rafael, Calif.	
Eureka High School, Eureka, Calif.	
3rd, 6th, 7th, 8th, 9th and 10th Missing.	
Roseville Union High School, Roseville, Calif.	
90% MEDALS—CIVILIAN CLUBS—1920	
Clouet, A. A., Quinipiac R. & R. C.....	199.9
Lee, T. K., Birmingham A. C. R. C.....	199.9
Andrews, W. C., Lakewood R. C., 1st Team, O.....	199.7
Pridy, L. G., Denver City R. C.....	199.7
Breuler, Wm., Quinipiac R. & R. C.....	199.6
Johnson, Chas. H., Phila. R. Assn.....	199.6

Richard, W. H., Quinipiac R. & R. C...	199.6	Leighton, R. F., Butte Indoor R. C.....	198.6
Beck, H. W., Jr., Denver City R. C.....	199.4	Miller, J. E., Hillsboro, R. C.....	198.6
Foster, M. M., Lakewood R. C., 1st Team, O.....	199.4	Vanstone, C. W., Bridgeport R. C.....	198.6
McConaughy, D. C., Denver City R. C.	199.4	August, R. D., Remington R. C.....	198.5
Naramore, C. B., Bridgeport R. C.....	199.4	Bronson, C. H., Franklin R. C.....	198.5
Derville, Jack, Butte Indoor R. C.....	199.3	Keefauver, S. N., Philadelphia R. A.....	198.5
Fry, Frank C., Lakewood, 1st Team, O.	199.3	Knight, A. E., Brattleboro R. C.....	198.5
Gussman, H. J., Quinipiac R. & R. C...	199.3	Woodyatt, C. W., Lakewood R. C., 1st Team, O.....	198.5
Somers, L. W., Bangor R. A.....	199.3	de Funiak, A. F., Birmingham A.C.R.C.	198.4
Tindall, E. E., Lakewood, 1st Team, O.	199.3	Miller, Leonard J., Brooklyn R. C.....	198.4
Sherman, F. C., Citizens R. & R. C.....	199.2	Coons, W. F., Arlington R. C. 1st Team	198.3
Fisk, Chas. J., Lynn R. & R. C.....	199.1	Keller, F. A., Warren R. C.,	198.3
Parkhurst, T. H., Santa Fe R. C.....	199.1	Strong, G. A., Bridgeport R. C.....	198.3
Rowe, R. L., Lakewood, 1st Team, O.....	199.1	Sylvester, E. M., Bangor R. A.....	198.3
Court, W. F., Marion R. C.....	199.	Whaley, G. C., Marion R. C.....	198.3
Ladwig, R. E., Denver City R. C.....	199.	Barnard, E. A., Brattleboro R. C.....	198.2
Birks, A. L., Remington UMC R. C.....	198.9	Nuesslein, L., Ordnance R. C.....	198.2
Redding, Floyd., Denver City R. C.....	198.9	Sammons, A. R., Marion R. C.....	198.2
Richard, Virgil, Quinipiac R. & R. C...	198.9	Short, I. M., Lakewood, 1st Team, O.....	198.2
Somers, V. H., Bangor R. A.....	198.9	Souther, F. H., Boston R. & R. C.....	198.2
Adams, H. J., Quinipiac R. & R. C.....	198.8	Sutherland, J. B., Rogers Park R. C.....	198.2
Naramore, W. W., Bridgeport R. C.....	198.8	Wilber, H. D., Victory R. C.....	198.2
Littlehale, P. E., Quinipiac R. & R. C.	198.7	Blanck, C. T., Olympic R. & R. C.....	198.1
Lively, L. A., Irving Park R. C.....	198.7	Turner, R. L., Haverhill R. & R. C.....	198.1
Rose, R. E., Bridgeport R. C.....	198.7	Allen, Chas. P., Bangor R. A.....	198.
Clark, E. B., Pentwater R. C.....	198.6	Barnes, C. M., Corvallis R. C.....	198.

Morgan, A. M., Ordnance R. C. 198.
 Perkins, J. R., Danbury R. C. 198.
 Plummer, J. E., Marion R. C. 198.
 Wilcox, Geo. E., Quinpiac R. & R. C. 198.
 Carroll, M. E., Marion R. C. 197.9
 Clark, R. E., Sante Fe R. C. 197.9
 Houck, J. F., Ft. Wayne R. C. 197.9
 Narum, E. J., St. Paul R. & R. C. 197.9
 Riviers, F., Norwalk R. C., 1st Team 197.9
 Schriver, O. M., Ordnance R. C. 197.9
 Stokes, W. R., Ordnance R. C. 197.9
 Toth, David, Dayton YMCA R. C. 197.9
 Watters, T. B., Denver City R. C. 197.9
 Mader, C. P., Olympic R. & R. C. 197.8
 Naramore, Earl, Bridgeport R. C. 197.8
 Neagles, A. L., Lynn R. & R. C. 197.8
 Stebbins, J. H. W., Auburn R. C. 197.8
 Taylor, H. H., San Diego R. C. 197.8
 Hardy, A. H., Denver City R. C. 197.7
 Moser, J. R., Moraine Nat'l R. C. 197.7
 Arnold, P. O., St. Paul R. & R. C. 197.6
 Brady, L. D., Marion R. C. 197.6
 Byrd, J. E., Jacksonville R. C., 1st Team 197.6
 Chilcott, S. S., Bangor R. A. 197.6
 Frazee, L. N., Arlington R. C., 1st Team 197.6
 Mackenzie, Geo., Lakewood R. C., 2nd Team, O. 197.6
 Mooney, O. J. St. Paul R. & R. C. 197.6
 Morse, R. H., Wisner R. C. 197.6
 Greene, R. H., Arlington R. C., 1st Team 197.5
 Liggett, Geo. R., Lakewood, 1st Team, O. 197.5
 Maguire, C. E., Corvallis R. C. 197.5
 Shandoney, R. A., Dayton YMCA R. C. 197.5
 Wood, Owen, L., Santa Fe R. C. 197.5
 Middleton, S., Rogers Park R. C. 197.4
 Young, Geo., Victory R. C. 197.4
 Fletcher, H. C., Madison R. C. 197.3
 Frenzler, O. A., Wisner R. C. 197.3
 Garl, O. L., Birmingham, A. C. R. C. 197.3
 Hall, E. S., Jr., Remington UMC R. C. 197.3
 Lee, B. C., Corvallis R. C. 197.3
 Stokes, R. C., Ordnance R. C. 197.3
 Van Amburgh, C. J., Remington UMC R. C. 197.3
 White, Kirby, Hillsboro R. C. 197.3
 Blasse, W. F., Olympic R. & R. C. 197.2
 Coberly, Carl, Robbins & Myers R. C. 197.2
 Fullerton, R. P., Santa Fe R. C. 197.2
 Peterson, F., Warren R. C. 197.2
 Albrecht, H. J., Remington UMC R. C. 197.1
 Huebner, A. J., Centennial R. C. 197.1
 Markle, W. B., Franklin R. C. 197.1
 Neidner, A. O., Boston R. & R. C. 197.1
 Osterman, John, Remington UMC R. C. 197.1
 Bellon, W., San Diego R. C. 197.
 Gerrish, O. E., Boston R. & R. C. 197.
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 McGarity, R. H., Nat'l Capitol R. C. 197.
 Mickels, Wm., Victory R. C. 197.
 Poe, D. G., Haverhill R. C. 197.
 Williams, Ray, Marion, N. C. 197.
 Yob, J. C., Butte Indoor R. C. 197.
 Abbott, Wm. T., Lynn R. & R. C. 196.9
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 Day, J. F., Santa Fe R. C. 196.9
 Ferguson, J. C., St. Paul R. & R. C. 196.9
 Hassett, R., Bus. & Prof. Men's R. C. 196.9
 Jordan, H. F., Brattleboro R. C. 196.9
 Kinnear, R. M., Bucyrus R. C. 196.9
 Minium, Clarence, Warren R. C. 196.9
 Richardson, C. C., Lynn R. & R. C. 196.9
 Speer, C. A., Brattleboro R. C. 196.9
 Wheeler, L. C., Auburn R. C. 196.9
 Dubbs, R. L., Phila. R. A. 196.8
 Pew, Wm. H., Victory R. C. 196.8
 Schnerring, J. Geo., Phila. R. A. 196.8
 Schroder, Carl, San Diego R. C. 196.8
 Esprey, H. C., Ordnance R. C. 196.7
 Imbody, E. W., Marion R. C. 196.7
 Johnson, F. L., Concord R. C. 196.7
 Keys, G. W., St. Paul R. & R. C. 196.7
 McConvery, Jas. C., Santa Fe R. C. 196.7
 Moore, Person, Birmingham A. C. R. C. 196.7
 Snavely, C. C., Minneapolis R. C. 196.7
 Watson, F. G., Lynn R. & R. C. 196.7
 Bessey, C. A., Irving Park R. C. 196.6
 Hancke, A. C., Irving Park R. C. 196.6

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 Hendrick, J. B., Pentwater R. C. 196.5
 Tilley, Chas. W., Arlington R. C., 1st Team 196.5
 Allen, W. C., Grand Forks R. C. 196.4
 Bensley, R. D., Univ. of Chicago Civ. R. C., 1st Team 196.4
 Croneis, F. W., Bucyrus R. C. 196.4
 Dillin, J. Capt., Phila., R. A. 196.4
 Leadbeater, A. C., Arlington 1st Team 196.4
 McCarty, J. P., Birmingham A. C. R. C. 196.4
 Narum, E. F., Jr., St. Paul R. & R. C. 196.4
 Perkins, C. D., Jr., Ordnance R. C. 196.4
 Wayland, Rupert, Corvallis, R. C. 196.4
 Bastey, Dr. J. L., Boston R. & R. C. 196.3
 Carney, C. T., Des Moines R. C. 196.3
 Dow, A. M., Jacksonville R. C., 2nd Team 196.3
 Emerson, G. H., Fremont R. C. 196.3
 Foley, W. A., Robbins & Myers R. C. 196.3
 Hankin, Chas., Arlington R. C., 1st Team 196.3
 Keefauver, Mrs. S. N., Phila. R. A. 196.3
 Laud, W. J. G., Univ. of Chicago Civ. R. C., 1st Team 196.3
 Myrick, E. D., Los Angeles R. & R. C. 196.3
 Rogers, A. C., Olympic R. & R. C. 196.3
 Roper, R. M., E. Orange R. C. 196.3
 Smith, J. L., Warren R. C. 196.3
 Benson, C. S., Haverhill R. & G. C. 196.2
 Blankenbiller, D. P., St. Paul R. & R. C. 196.2
 Lauffer, F. P., Warren R. C. 196.2
 Simpson, D. S., Arlington R. C., 2nd Team 196.2
 Turner, John, Centennial R. C. 196.2
 Wilson, W. C., Minneapolis R. C. 196.2
 Graffins, H. E., Remington UMC R. C. 196.1
 La Garde, R. D., National Capitol R. C. 196.1
 Lang, R. G., Manchester R. C. 196.1
 Page, S. D., Jacksonville R. C., 1st Team 196.1
 Sengier, F. L., Commonwealth-Edison R. C. 196.1
 Simms, B. G., Des Moines R. C. 196.1
 Welch, J., Auburn R. C. 196.1
 Dolan, Wm., Butte Indoor R. C. 195.9
 Dunsford, S., Concord R. C. 195.9
 Bensley, R. R., Univ. of Chicago Civ. R. C., 1st Team 195.8
 Burlingame, N. H., Centennial R. C. 195.8
 Cutting, Ned. E., Los Angeles R. C. 195.8
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 Leizear, H. H., National Capitol R. C. 195.7
 Martin, C. T., Concord, R. C. 195.7
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Bryson, Frank E., Jacksonville R. C., 1st Team.....	195.6	Baker, J. A., Jr., Norwalk R. C., 2nd Team.....	194.7	Pemberton, R. L., Scott R. C.....	194.1
Luft, C. G., Fremont R. C.....	195.6	Chase, C. S., Lakewood R. C., 2nd Team, O.....	194.7	Kranich, Arno, Bucyrus R. C.....	194.1
Marshall, W. D., Atlanta R. C.....	195.6	Cutting, G. L., Worcester R. C.....	194.7	Patterson, E. J., Roberts Island R. C.....	194.1
Nelson, A. E., Rogers Park R. C.....	195.6	Fisher, A. A., E. Orange R. C.....	194.7	Sargeant, M. W., E. Orange R. C.....	194.1
Reed, A. J., Manchester R. C.....	195.6	Fuhlrodt, A. F., Wisner R. C.....	194.7	Tilley, Chas. A., Arlington R. C., 1st Team.....	194.1
Riley, Lincoln, Wisner, R. C.....	195.6	Garner, F. A., Dayton YMCA R. C.....	194.7	Towner, H. M., Towanda R. C.....	194.1
Aman, J. M., Haverhill R. & G. C.....	195.5	Mendez, Lee, Riverside R. C.....	194.7	Danburg, W. M., Santa Fe R. C.....	194.
Ayres, H. S., Chicago R. C.....	195.5	Sanford, W. H., Roberts Island R. C.....	194.7	Gebhard, C., Brooklyn R. C.....	194.
Drew, Rex A., San Diego R. C.....	195.5	Whitehouse, Hilton, Maynesboro R. C.....	194.7	Phinney, H. L., San Francisco Tel. R. C., 2nd Team.....	194.
Felsenthal, Dr. L., Los Angeles R. C.....	195.5	Wiswall, A. E., Irving Park R. C.....	194.7	Tollner, R. E., Brooklyn R. C.....	194.
Little, G. W., Arlington R. C., 2nd Team.....	195.5	Bradbury, M. C., Rochester R. C.....	194.6	Tom, W., Chibridge R. C.....	194.
Warner, G. C., Caremont R. C.....	195.5	Higgins, H. O., Riverside R. C.....	194.6	Clark, C. H., Robbins & Myers R. C.....	193.9
Dow, W. T., Jacksonville R. C., 1st Team.....	195.4	Hill, N. M., Jacksonville R. C., 1st Team.....	194.6	Hall, F. B., Ft. Wayne R. C.....	193.9
Gawehn, G. R., Ft. Wayne R. C.....	195.4	Holt, F. W., National Capitol R. C.....	194.6	Hart, A. H., Los Angeles R. C.....	193.9
Graham, C. S., Jacksonville R. C., 1st Team.....	195.4	Jacoby, Wm. H., Victory R. C.....	194.6	Hansford, Creed, Roberts Island R. C.....	193.9
Hogan, Frank, Salt Lake R. C.....	195.4	Olm, Geo., Roberts Island R. C.....	194.6	Kendel, J. H., Irving Park R. C.....	193.9
Murphy, W. J., Haverhill R. & G. C.....	195.4	Witwer, Edw. B., Centennial R. C.....	194.6	Libby, A. G., Grand Forks R. C.....	193.9
Sweeney, E. B., San Francisco Tel. R. C., 1st Team.....	195.4	Deiss, Leo. J., Joliet R. C., 1st Team.....	194.5	Lundh, E. R., Chicago R. C.....	193.9
Ward, I. E., Auburn R. C.....	195.4	Dezert, Leon, Los Angeles R. C.....	194.5	McGurk, N. O., Paterson R. C.....	193.9
Campbell, W. M., Brooklyn R. C.....	195.3	Hale, E. M., Roberts Island R. C.....	194.5	Newman, W. L., E. Orange R. C.....	193.9
Cole, J. H., Auburn R. C.....	195.3	Hayes, B. M., Olympic R. & R. C.....	194.5	Ockenden, W. A., Auburn R. C.....	193.9
Dale, C., Corvallis R. C.....	195.3	Heald, H. R., Commonwealth-Edison R. C.....	194.5	Sleeper, H. A., Claremont R. C.....	193.9
Dunn, O. B., McKean Co. R. C.....	195.3	Horton, E. E., Beaver R. C.....	194.5	Stokes, Wm. L., Salt Lake R. C.....	193.9
Gibbons, W. S., Boston R. & R. C.....	195.3	Lee, Ora, Salt Lake R. C.....	194.5	Chambers, H., Saginaw R. C.....	193.9
Patterson, J. M., Roberts Island R. C.....	195.3	Seright, L. A., San Francisco Tel. R. C., 1st Team.....	194.5	Atkin, B. L., San Francisco Tel. R. C., 1st Team.....	193.8
Smith, D. R., Towanda R. C.....	195.3	Kaiser, W. C., Chicago R. C.....	194.4	Bohn, H. E., Hawthorne R. C.....	193.8
Stout, W., Hillsboro R. C.....	195.3	Kranich, Wm., Bucyrus R. C.....	194.4	Johnson, J. E., Salt Lake R. C.....	193.8
Vance, U. S., Hillsboro R. C.....	195.3	Madison, J. R., Irving Park R. C.....	194.4	Nichols, D. R., Worcester R. C.....	193.8
Wildes, Chas. M., Haverhill R. & G. C.....	195.3	McIntire, E. L., McKean Co. R. C.....	194.4	Schuyler, A. L., Hawthorne R. C.....	193.8
Brown, J. P., Irving Park R. C.....	195.2	O'Brien, R., Pentwater R. C.....	194.4	Wallace, E. W., Claremont R. C.....	193.8
Jacobsen, C. B., Rogers Park R. C.....	195.2	Pyper, John, Dayton YMCA R. C.....	194.4	Winnock, B. E., Victory R. C.....	193.8
Jones, H. S., Birmingham A. C. R. C.....	195.2	Searight, J. A., Beaver R. C.....	194.4	Barnes, E. J., Towanda, R. C.....	193.7
Jones, R. W., Jacksonville R. C., 2nd Team.....	195.2	Senter, Wm. A., Salt Lake R. C.....	194.4	Might, W. E., Reed Indoor R. C.....	193.7
Clarke, O. T., Robbins & Myers R. C.....	195.1	Andoruz, F. S., Minneapolis R. C.....	194.3	Hilsinger, H. I., E. Orange R. C.....	193.7
Garceau, T. E., Claremont R. C.....	195.1	Carr, J. I., San Francisco Tel. R. C., 2nd Team.....	194.3	Parrish, C. F., Hawthorne R. C.....	193.7
Hall, Chas. A., Jr., Bus. & Prof. Men's R. C.....	195.1	Emerson, B. C., Huntington R. & R. C.....	194.3	Roberts, H. V., Chicago R. C.....	193.7
Haywood, A. S., Worcester, R. C.....	195.1	Grose, H. D., Joliet, R. C., 1st Team.....	194.3	Vogt, H. D., Saginaw R. C.....	193.7
Williams, A., Jr., Jacksonville R. C., 1st Team.....	195.1	Nickerson, F. W., Jacksonville R. C., 2nd Team.....	194.3	Berger, O. P., Grand Forks R. C.....	193.6
Williamson, A. A., Ridgewood R. C.....	195.1	Picard, C. J., Middletown R. C.....	194.3	Breckheimer, F. W., Minneapolis R. C.....	193.6
Fabian, Victor, Centennial R. C.....	195.	Robertson, W. C., National Capitol R. C.....	194.3	Crouch, H. D., Towanda R. C.....	193.6
Murphy, C. E., National Capitol R. C.....	195.	Wolfe, C. Dale, Wewoka, R. C.....	194.3	Gustafsen, G. A., Commonwealth-Edison R. C.....	193.6
Sarles, C. N., Pentwater R. C.....	195.	Bean, F. L., Rumford R. C.....	194.2	Loder, A. B., Middletown R. C.....	193.6
Spolarich, Jos., Joliet R. C., 1st Team.....	195.	Bradley, A. C., Hoosier, R. C.....	194.2	Mogge, H. M., Huntington R. & R. C.....	193.6
Berg, A. C., Lakewood R. C., 2nd Team, O.....	194.9	Glazier, G. G., Madison R. C.....	194.2	Smith, S. E., Jacksonville R. C., 1st Team.....	193.6
Jensen, Daniel, Lakewood R. C., N. J.....	194.9	Kelley, Chas. H., Boston R. & R. C.....	194.2	Daley, C. H., Danbury R. C.....	193.5
McKee, Carl, Joliet R. C., 1st Team.....	194.9	Reid, Percy, Birmingham A. C. R. C.....	194.2	Elmore, H., Hillsboro R. C.....	193.5
Paul, August, Peekskill R. C.....	194.9	Rice, Martin, Grand Forks R. C.....	194.2	Hudson, E. S., Bus. & Prof. Men's R. C.....	193.5
Bruce, E. M., Boston R. & R. C.....	194.8	William, Ben, Salt Lake R. C.....	194.2	Kimball, J. C., Joliet R. C., 1st Team.....	193.5
Craig, J. Brad, Beaver R. C.....	194.8	Anderson, O. C., Miami R. C.....	194.1	Newton, Floyd, Rumford R. C.....	193.5
Otto, H., Brooklyn R. C.....	194.8	Dodge, S. P., Manchester R. C.....	194.1	Thibault, H., Scott R. C.....	193.5
Parkér, Roy D., Middletown R. C.....	194.8	Frost, F. W., Towanda R. C.....	194.1	Wantut, H. G., Grand Forks R. C.....	193.5
		Nichols, C. K., Ridgewood R. C.....	194.1	Daniel, J. B., Miami R. C.....	193.4
				Grover, E. W., Commonwealth-Edison R. C.....	193.4

Kerns, C. M., Altoona R. C., 1st Team..	193.4	Reynolds, A. R., Jacksonville R. C.,		Paugh, Chas. T., Detroit R. & R. C.....	190.2
Lear, A. F., Claremont R. C.....	193.4	2nd Team.....	191.8	Stotts, E. R., Des Moines R. C.....	190.2
Marston, R. E., Concord, R. C.....	193.4	Slack, J. E., Reed Indoor R. C.....	191.8	Weikel, M. W., Covington R. C.....	190.2
Patridge, M. F., Boston R. & R. C.....	193.4	Fuchs, Edw., Hawthorne R. C.....	191.7	Black, Geo., Victory R. C.....	190.1
Bronwell, A. F., Commonwealth-Edison		Harmon, W. M., Covington R. C.....	191.7	Knapp, J. B., Huntington R. & R. C.....	190.1
R. C.....	193.3	Hayes, S., Beaver R. C.....	191.7	Shearman, Earl, Lakewood R. C., N.J.	190.1
Davis, C. H., Commonwealth-Edison		Jones, Jas. H., Ridgeville R. C.....	191.7	Wilson, C. M., Claremont, R. C.....	190.1
R. C.....	193.3	Lovell, Guy H., Concord R. C.....	191.6	Church, S. W., Norwalk R. C., 2nd	
Frahm, Geo. E., Olympic R. & R. C.....	193.3	Milne, J. D., Norwalk R. C., 1st Team..	191.6	Team.....	190.
Havens, H. E., Lakewood R. C., N. J...	193.3	Reed, N. W., McKean R. C.....	191.6	Colwell, A. B., Providence R. & R. C.....	190.
Hendrick, Ray, Pentwater R. C.....	193.3	Thomas, B. F., Riverside R. C.....	191.6	Fox, Fred J., Rochester R. C.....	190.
La Mena, C. J., Irving Park R. C.....	193.3	Whitley, W. K., Elmira R. & R. C.....	191.6	Harrison, Fred J., Chibridge R. C.....	190.
Brownfield, G. A., Reed Indoor R. C.....	193.2	Brisco, R. O., Elmira R. & R. C.....	191.5	Hobbs, W. S., Univ. of Chicago Civ.	
Garner, W. A., Dayton, YMCA R. C.....	193.2	Clueas, Geo. W., Rogers Park R. C.....	191.5	R. C., 1st Team.....	189.9
Waters, H. O., Salt Lake R. C.....	193.2	Frost, H. C., Rumford R. C.....	191.5	Roebler, C. J., E. Saginaw R. C.....	189.9
Bosk, A. C., Fremont R. C.....	193.1	Goodwin, B. W., Rumford R. C.....	191.5	Mansfield, A. M., Danbury R. C.....	189.8
Cramer, L. J., San Francisco Tel. R. C.,		Rainey, F. N., Arlington R. & R. C.,		Mayconnel, W., Rumford R. C.....	189.8
1st Team.....	193.1	2nd Team.....	191.5	Parker, W. T., Roundup R. & R. C.....	189.8
Dick, Lester, W., Liberty R. C.....	193.1	Banks, H. D., Varnum Continentals		Potter, W. H., Providence R. & R. C.....	189.8
McBean R. S., Hoosier R. C.....	193.1	R. C.....	191.4	Townsend, L. S., Ancon R. & P. C.....	189.8
Mencel, Otto, Chicago Engineers R. C.	193.1	Johnston, J. H., Roundup R. & R. C.....	191.4	Putnam, E. L., Concord R. C.....	189.7
Ratrie, J. A., Covington R. C.....	193.1	Lawrence, F. H., Arlington R. C., 1st		Stephenson, R. L., Joliet R. C., 1st Team	189.7
Trombley, J. A., Saginaw R. C.....	193.1	Team.....	191.4	Taylor, F. W., Lawrenceville R. C.....	189.7
Walter, H. C., Danbury R. C.....	193.1	Marsden, W. S., Detroit R. & R. C.....	191.4	Wailles, Lawrenceville R. C.....	189.7
Blaisdell, Jas., McKean Co. R. C.....	193.	Stendfield, V. J., Riverside R. C.....	191.4	Willners, J., Lt., Phila. R. A.....	189.7
Cocroft, W. L., Ridgeville R. C.....	193.	Sulcer, E. D., Chicago R. C.....	191.4	Carter, J. W., Altoona R. C., 2nd Team	189.7
Sawyer, A. L., San Francisco Tel. R. C.		Hudson, R. B., Bus. & Prof. Men's C..	191.3	Leadbeater, E., Arlington R. C., 2nd	
1st Team.....	193.	Barber, Chas. W., Joliet R. C., 2nd		Team.....	189.6
Stanley, E. R., Maynesboro R. C.....	193.	Team.....	191.2	Newhall, F. P., Santa Fe R. C.....	189.6
Clark, A. N., Norwalk R. C., 1st Team	192.9	Irvin, J. C., Bus. & Prof. Men's C.....	191.2	Olson, H. G., Altoona R. C., 2nd Team..	189.6
Gerrans, H. W., Ancon R. & R. C.....	192.9	Martin, Ned. D., Concord R. C.....	191.2	Aunnon, Jno. H., Beaver R. C.....	189.5
Lust, U. B., Fremont R. C.....	192.9	Stine, G. I., Fremont R. C.....	191.2	Greene, H., Varnum Continentals R.C.	189.5
McNett, R. F., Robbins & Myers R. C.	192.9	Turner, H. M., Towanda R. C.....	191.2	Schenck, Geo. L., Norwalk R. C., 1st	
Tiffany, G. F., Claremont R. C.....	192.9	Bigelow, L. E., Jacksonville R. C., 2nd		Team.....	189.5
Black, Albert, Albion R. C.....	192.8	Team.....	191.1	Boulton, J. H., Lawrenceville R. C.....	189.4
Brown, J. S., McKean Co. R. C.....	192.8	Bowen, W. V., Providence R. & R. C.....	191.1	Boswell, C. S., Franklin R. C.....	189.4
Eckert, A. L., San Diego R. C.....	192.8	Clausing, G. W. T., Shawnee R. C.....	191.1	Clarkson, T. L., Joliet R. C., 3rd Team	189.4
Farmer, E. G., Hawthorne R. C.....	192.8	McKee, Rex, Joliet R. C., 1st Team.....	191.1	Hutchinson, B. H., E. Orange R. C.....	189.4
French, M., Bangor R. C.....	192.8	Ruschaupt, C. F., Hoosier, R. C.....	191.1	Arnold, L. A., Franklin R. C.....	189.3
King, J. W., Riverside R. C.....	192.8	St. John, H. W., E. Saginaw R. C.....	191.1	Breiden, Robt., Covington R. C.....	189.3
Resig, E. W., Altoona R. C., 1st Team..	192.8	Tymstra, S. R., Detroit R. & R. C.....	191.1	Lauer, F. A., Joliet R. C., 2nd Team..	189.3
Smith, H. L. D., Detroit R. & R. C.....	192.8	Butts, L. E., Centennial R. C.....	191.	McIntosh, Roderick, Saginaw R. C.....	189.3
Duff, R. H., Beaver R. C.....	192.7	Forrest, Wm. M., Arlington R. C., 2nd		Moore, M. J., Joliet R. C., 1st Team..	189.3
Higginbotham, J. J., Jacksonville R. C.		Team.....	191.	Moulton, A. A., Du Pont R. C.....	189.3
1st Team.....	192.7	Frecker, A. W., Rumford R. C.....	191.	Reed, W. V., Minneapolis R. C.....	189.3
Mackey, W. W., Franklin R. C.....	192.7	Swint, Eugene, Fremont R. C.....	191.	St. Clair, J. S., Franklin R. C.....	189.3
Snyder, Milo D., Cromwell R. C.....	192.7	Wolcott, T., Hawthorne R. C.....	191.	Searle, Geo. S., Citizens R. & R. C.....	189.2
Stilwell, C. J., Robbins & Myers R. C...	192.7	Bente, Glenn, Ft. Wayne R. C.....	190.9	Sunderland, P. B., Danbury R. C.....	189.2
Zuckweiler, G. C., San Diego R. C.....	192.7	Gossard, G. L., Reed Indoor R. C.....	190.9	Ross, Wm. E., Arlington R. C., 2nd	
Gardner, T. C., Peekskill R. C.....	192.6	Jobson, G. B., Franklin R. C.....	190.9	Team.....	189.1
Kimmel, F. C., Mound City R. C.....	192.6	Lawson, Wm., Beaver R. C.....	190.9	Rutan, P. B., Elmira R. & R. C.....	189.1
Parminhier, A. J., Lakewood R.C., N. J.	192.6	Compton, K. R., Commonwealth-Edi-		Argabright, W., Reed Indoor R. C.....	189.
Tucker, N. H., Jacksonville R. C., 2nd		son R. C.....	190.8	Baskerville, Eileen, Joliet R. C., 2nd	
Team.....	192.6	Kelly, F. M., Needles R. & R. C.....	190.8	Team.....	189.
Neff, E. D., Los Angeles R. C.....	192.6	Neigebaur, C. R., Detroit R. & R. C.....	190.8	Blow, R. A., Lawrenceville R.C.....	188.9
Alexander, W. N., Scott R. C.....	192.5	Leatherman, Geo., Albion R. C.....	190.8	Byrne, E. V., Paterson R. C.....	188.9
Fabian, E., Riverside R. C.....	192.5	Manning, Jack, Joliet R. C., 2nd Team	190.8	Gilbert, C. A., Peekskill R. C.....	188.9
Haley, H. M., Salt Lake R. C.....	192.5	Reed, F. C., Reed Indoor R. C.....	190.8	Haines, Jos. M., Rumford R. C.....	188.9
Thibault, Jas. K., Jr., Scott R. C.....	192.5	Swan, W. J., Roundup R. & R. C.....	190.8	Kennedy, J. W., Beaver R. C.....	188.9
Francke, R. W., Altoona R. C., 1st		Beers, C. E., E. Orange R. C.....	190.7	Rudasill, S. T., Altoona R. C., 2nd	
Team.....	192.4	Greene, F. W., Claremont R. C.....	190.7	Team.....	188.9
Hamel, C. W., Dr., Chicago R. C.....	192.4	Grosenbaugh, R. A., E. Orange R. C.....	190.7	Pfieger, C. L., Camden R. C.....	188.8
Montango, F. D., Towanda R. C.....	192.4	Hughes, Geo., Victory R. C.....	190.7	Baker, C. H., Peekskill R. C.....	188.7
Skinner, L. M., Auburn R. C.....	192.4	Jackson, C. H., Arlington R. C., 2nd		Gorsuch, John F. Cromwell R. C.....	188.7
Walker, J. R., Hawthorne R. C.....	192.4	Team.....	190.7	McDonald, H. T., Rumford R. C.....	188.7
Fraser, H. R., Claremont R. C.....	192.3	Larke, R. W., Ridgeville R. C.....	190.7	Montgomery, L., Riverside R. C.....	188.7
Willard, H. S., Ridgewood R. C.....	192.3	Paul, Herman, Des Moines R. C.....	190.7	Evans, O. J., Altoona R. C., 1st Team..	188.6
Brown, C., Reed Indoor R. C.....	192.2	Boyce, H. S., Des Moines R. C.....	190.6	Dawley, N. B., Joliet R. C., 2nd Team..	188.6
Cummings, A. R., Wewoka R. C.....	192.2	Baney, J. W., McKean C. R. C.....	190.5	Giles, F. H., Needles R. & R. C.....	188.6
Lasiter, Fred, Wewoka R. C.....	192.2	Irvin, John, Bus. & Prof. Men's R. C..	190.5	Hoelting, Mrs. A. R., Roundup R. & R.	
Mathews, J. L., Citizens R. & R. C.....	192.2	Gamlin, H. N., Ridgeville R. C.....	190.5	C.....	188.6
Rose, E. H., Middletown R. C.....	192.2	McKee, W. E., Joliet R. C., 1st Team..	190.5	Hofstetter, F. C., Commencement-Bay	
Welch W. L., Rumford R. C.....	192.2	Barton, C. B., Maynesboro R. C.....	190.4	R. C.....	188.5
Wickham, O. F., Pentwater R. C.....	192.2	Coleman, F. H., Saginaw R. C.....	190.4	Nichols, E. C., Paterson R. C.....	188.5
Brotherston, A., Arlington R. C., 2nd		Ernstwiler, C. B., Minneapolis R. C.....	190.4	Deitz, Geo., Peekskill R. C.....	188.4
Team.....	192.1	Mayor, P. Hawthorne R. C.....	190.4	Holdridge, R. D., Cazenovia R. C.....	188.4
Griffiths, M., Remington UMC R. C.....	192.1	Murphy, H. P., Huntington R. & R. C.	190.4	Lyman, Chas. A., Middletown R. C.....	188.4
Robertson, J. H., National Capitol R.C.	192.1	Fry, Harry C., Beaver R. C.....	190.3	Rea, Ernest C., Des Moines R. & R. C.	188.4
Armitage, W. F., Auburn R. C.....	192.	Gaensslen, C. A., Chicago Engineers		Babbage, C. H., E. Orange R. C.....	188.3
Neblett, J. W., Riverside R. C.....	192.	R. C.....	190.3	George, A. W., Jr., Detroit R. & R. C...	188.3
Topham, J. M., Covington R. C.....	192.	Kelley, G. B., Providence R. & R. C.....	190.3	Heinish, H. G., Huntington R. & R. C.	188.3
Williamson, E. L., Riverside R. C.....	192.	Lewis, Wm. W., Citizens R. & R. C.....	190.3	Carmichael, L. D., San Francisco Tel.	
Bates, H. A., Elmira R. & R. C.....	191.9	Meigs, P., Jr., Ridgewood R. C.....	190.3	R. C., 2nd Team.....	188.2
Hutchinson, Lawrenceville R. C.....	191.9	Stonemetz, H. M., Bus. & Prof. Men's		Anderson, A. W., Brooklyn R. C.....	188.2
Varian, C. J., Peekskill R. C.....	191.9	R. C.....	190.3	Estudillo, M., Riverside R. C.....	188.1
Beckett, M. J., Lakewood R. C., N. J...	191.8	Westerman, Jesse G., Mound City R. C.	190.3	Shafer, V. F., Needles R. & R. C.....	188.1
Childs, D. L., San Diego R. C.....	191.8	Wheeler, N. C., Elmira R. & R. C.....	190.3	Stapleton, H. C., Rochester R. C.....	188.1
Funk, Ben. F., Lawrenceville R. C.....	191.8	Butts, E. R., Scott R. C.....	190.2	Walker, C. R., Dayton YMCA R. C.....	188.1
Kilborn, Fred G., Interwoven R. C.....	191.8	Franklin, E. R., Minn. Marine R. C.....	190.2	Boland, A. E., Needles R. & R. C.....	188.
Krepp, Geo. Jr., Eclipse A. A. R. C.....	191.8	McKee, Will, Joliet R. C., 2nd Team..	190.2	Turney, Sam. S., Nemadji R. C.....	188.
Lethridge, M. W., Victory R. C.....	191.8	Neilly, D. H., McKean Co. R. C.....	190.2	Black, Wm. J., Chibridge R. C.....	187.9

Forsyth, Ed. L., Needles R. & R. C.	187.9	Jonland, Ole, Nemadji R. C.	185.8	McKenny, J. H., Citizens R. & R. C.	182.5
Pazely, A. J., Joliet R. C., 3rd Team	187.9	Krepp, Geo. J., Eclipse A. A. R. C.	185.8	Strain, Ray, Lamar R. C., 4th Team	182.5
Throssel, R., Yellowstone R. C., 2nd Team	187.9	McGuth, R. J., Lamar R. C., 1st Team	185.8	Hammer, F. I., Shawnee R. C.	182.4
Turner, Helen, Univ. of Chicago Civ. R. C., 1st Team	187.9	Nugent, L. M., Altoona R. C., 1st Team	185.8	Williams, J. F., Nevada City R. C.	182.4
Wallridge, C. W., Ancon R. C.	187.9	Ferlanto, Paul, Liberty R. C.	185.7	Breault, Geo. L., New Bedford R. C.	182.3
Dodson, H. E., Citizens R. & R. C.	187.8	Hoffa, H. H., Altoona R. C., 2nd Team	185.7	Lehman, F. K., Camden R. C.	182.3
Hewins, H., Liberty R. C.	187.8	Ridlin, Chas. W., Hoosier R. C.	185.7	Johnson, C. E., Varnum Continentals R. C.	182.
Merriman, J., Norwalk R. C., 2nd Team	187.8	Birns, J. E., Commencement-Bay R. C.	185.6	Satavia, Geo., E. Saginaw R. C.	182.
Perry, L. E., Niagara Falls R. C.	187.8	Daniel, C. F., Lamar R. C., 1st Team	185.6	Cockrell, H. E., Varnum Continentals R. C.	181.9
Ten Broeck, E. H., Military Service R. C.	187.8	Heinrich, G. A., Chicago Eng. R. C.	185.6	Jessen, F. C., Covington R. C.	181.9
Waite, F. L., Needles R. & R. C.	187.8	Davis, A. D., Lakewood R. C., N. J.	185.5	Robinson, J. M., Lamar R. C., 1st Team	181.8
Rayfuse, H. J., Norwalk R. C., 1st Team	187.7	Elwell, Mrs. F. D., Moraine National R. C.	185.5	Hartley, D., Joliet, R. C., 3rd Team	181.7
Bagley, E. H., Peekskill R. C.	187.6	Turek, R. F., E. Saginaw R. C.	185.5	Sera, J. L., McKean Co. R. C.	181.6
Curtis, A. S., Jacksonville R. C., 2nd Team	187.6	Anderson, John J., Shawnee R. C.	185.4	Giles, D. T., Needles R. & R. C.	181.5
Edwards, E., McKean Co. R. C.	187.6	Hickok, J. C., Berkeley Def. Corps R. C.	185.4	Percy, Wm. J., Niagara Falls R. C.	181.3
Grimcs, John S., Centennial R. C.	187.6	Neely, Howard C., Shawnee R. C.	185.4	Werff, W., Shawnee R. C.	181.3
Latimer, Thos. E., Arlington R. C., 2nd Team	187.6	Shirghey, W. L., Reed Indoor R. C.	185.4	Clausing, H. F., Shawnee R. C.	181.2
Martin, J. E., Moraine National R. C.	187.6	Warder, Chas., Rochester R. C.	185.4	Williamson, E. L., Berkeley Def. Corps R. C.	181.2
McWhorter, Frank P., Univ. of Chicago Civ. R. C., 2nd Team	187.6	Flower, John C., Lakewood R. C., 2nd Team, O.	185.3	Larimer, R. S., Ridgeville R. C.	181.
Shriffer, R. M., Lakewood R. C., 2nd Team, O.	187.6	Linderman, H. W., Liberty R. C.	185.3	Turner, H., Hillsboro R. C.	180.9
Thornburg, C. F., Huntington R. & R. C.	187.6	Woodworth, Geo. L., Cazenovia R. C.	185.3	Pentreath, G. D., Peekskill R. C.	180.9
Bell, Erma, Joliet R. C., 2nd Team	187.5	Brown, H. T., Scott R. C.	185.2	Bay, F. E., Lamar R. C., 2nd Team	180.8
Dynbrack, P. C., Covington R. C.	187.5	Lovejoy, Earl, Lamar R. C., 1st Team	185.1	Fiscel, Chas., Yellowstone R. C., 1st Team	180.8
Hibbard, W. W., Roundup R. & R. C.	187.5	Blackwell, J. D., Chicago Eng. R. C.	185.1	Clendon, G. W., Shawnee R. C.	180.6
Bullis, E. J., Rochester R. C.	187.4	Kendrick, H. W., Franklin R. C.	185.1	Beavers, A. L., Lamar R. C., 1st Team	180.3
Harris, Creston, Nemadji R. C.	187.4	Miller, W. F., Lamar R. C., 4th Team	185.1	Eichman, M., Liberty R. C.	180.2
Hart, V. D., Lamar R. C., 4th Team	187.4	Moife, E. N., E. Saginaw R. C.	185.1	Clark, Glen D., Lamar R. C., 3rd Team	180.
Kline, F. A., Towanda R. C.	187.4	Kennedy, E. G., Moraine National R. C.	185.	Nicholson, Tom., Grand Forks R. C.	180.
McGrew, N. W., Du Pont R. C.	187.4	Spencer, Chas., Saginaw R. C.	185.		
Miller, J. E., Franklin R. C.	187.3	Fraser, G. M., E. Saginaw R. C.	184.9		
Smith, Roy, Lamar R. C., 3rd Team	187.3	Johnson, Leo A., Ancon R. C.	184.9		
Steinkoenig, L. A., Miami R. C.	187.3	Miller, M. C., Cromwell R. C.	184.9		
Armstrong, W. R., Rochester R. C.	187.2	Elmer, Chas. D., Cazenovia R. C.	184.8		
Brown, Gordon, Scott R. C.	187.2	Johnson, C. O., Superior R. C.	184.8		
Paxton, J. D., Lamar R. C., 3rd Team	187.2	Servey, J. A., Chibridge R. C.	184.8		
Johnson, Chas. F., Lamar R. C., 2nd Team	187.1	Carroll, Jos. L., Victory R. C.	184.6		
Meek, C. A., Berkeley Def. Corps R. C.	187.	Lee, H. P., Berkeley Def. Corps R. C.	184.6		
Robbins, E. L., Yellowstone R. C., 2nd Team	187.	Shannon, H. G., Chicago Eng. R. C.	184.6		
Folger, Theo., Miami R. C.	186.9	Wadman, V. H., Rochester R. C.	184.6		
Stephen, E. J., Joliet R. C., 2nd Team	186.9	Cushing, C. B., Covington R. C.	184.5		
Lavery, H. C., Nemadji, R. C.	186.8	Hansen, Fred, Grand Forks R. C.	184.5		
Monahan, W. H., Minn. Marine R. C.	186.8	Jeffries, A. J., Pentwater R. C.	184.5		
Murphy, F. I., Des Moines R. C.	186.8	Wagner, L. H., Niagara Falls R. C.	184.5		
Stedke, A. T., Shawnee R. C.	186.8	Cook, Geo. J., Phila. R. A.	184.4		
Hicker, Eugene, Commencement-Bay R. C.	186.7	Dana, Homer, Niagara Falls, R. C.	184.4		
Newton, W. S., Arlington R. C., 2nd Team	186.7	Fisher, W. E., Lamar R. C., 4th Team	184.4		
Yale, C. W., Joliet R. C., 2nd Team	186.7	Lee, J. D., Scott R. C.	184.4		
Brownlee, J. E., Lamar R. C., 3rd Team	186.6	Scharff, Otto Peekskill R. C.	184.4		
Campbell, C. M., Franklin R. C.	186.6	Lawrence, D., Varnum Continentals R. C.	184.3		
Shunk, D. W., Niagara Falls R. C.	186.6	Lofgren, W. E., Chicago Eng. R. C.	184.3		
Rydell, Chas. B., Superior R. C.	186.5	Norton, H. C., Military Service R. C.	184.3		
Stain, Frank E., Lamar R. C., 2nd Team	186.5	Petrie, Frank N., Lamar R. C., 3rd Team	184.3		
Brown, B. P., Elmira R. & R. C.	186.4	Garner, A. E., Dayton YMCA R. C.	184.2		
Finlay, Thos. H., E. Saginaw R. C.	186.4	Halferty, M. L., Albion R. C.	184.2		
Terwilliger, N. M., Interwoven R. C.	186.4	Harker, W. C., Lamar R. C., 4th Team	184.2		
Sweatt, Merle, Rumford R. C.	186.4	Shrigley, G. P., Scott R. C.	184.2		
Brownwell, E. L., Norwalk R. C., 2nd Team	186.2	Thorne, H. C., Cazenovia R. C.	184.2		
Ellis, E. B., Berkeley Def. Corps R. C.	186.2	Constans, M., Grand Forks R. C.	184.1		
Reynolds, B. J., Norwalk R. C., 2nd Team	186.2	Fredericks, L. H., Joliet, 3rd Team	184.1		
Constans, M. W., Grand Forks R. C.	186.1	Hatfield, R. F., Hawthorne R. C.	184.1		
Munn, A. J., Nemadji R. C.	186.1	Pierce, D. A., Joliet R. C., 2nd Team	184.1		
Ott, Claude A., Ancon R. C.	186.1	Winfrey, T. H., Des Moines R. C.	183.9		
Westerfield, N. H., Lamar R. C., 3rd Team	186.1	Beil, Harry Chibridge R. C.	183.8		
Grosser, N. O., Moraine National R. C.	186.	Durocher, A., New Bedford R. C.	183.8		
Klok, W. C., Ridgeville R. C.	186.	Faulkner, Walter, Miami R. C.	183.7		
Barrett, W., Minneapolis, R. C.	185.9	MacDonald D., Military Service R. C.	183.6		
Carlson, A. E., Chibridge R. C.	185.9	Chandler, A. E., Chibridge R. C.	183.5		
Large, J. M., Joliet R. C., 3rd Team	185.9	Desjardins, L., New Bedford R. C.	183.4		
Lund, Anthony, Nemadji R. C.	185.9	Havens, A. D., Lakewood R. C., N. J.	183.4		
Moore, D. W., Lamar, 3rd Team	185.9	Voight, L. S., Joliet R. C., 3rd Team	183.4		
Gardner, Philip, Lamar R. C., 1st Team	185.8	Gorsuch, Cyril K., Cromwell R. C.	183.3		
Ground, Wm. E., Superior R. C.	185.8	Henderson, A. B., Nemadji R. C.	183.3		
Hollister, F. B., Eclipse A. A. R. C.	185.8	Coderre, Prudent, New Bedford R. C.	183.		
		Foehs, Geo. P., Military Service R. C.	183.		
		Gotschika, L. Z., Joliet R. C., 3rd Team	182.8		
		Mirzl, Geo., Needles R. & R. C.	182.8		
		Reynolds, Lillian G., Univ. of Chicago Civ. R. C., 1st Team	182.8		
		Vinton, E. K., Huntington R. & R. C.	182.8		
		Powell, Lyman, F., Superior R. C.	182.7		
		Danzinger, J., Joliet R. C., 3rd Team	182.6		
		Lowry, J. T., Joliet R. C., 3rd Team	182.6		
		Sedgewick, P. J., Univ. of Chicago Civ. R. C., 1st Team	182.6		

Scores of the ten high teams in the ninth and tenth matches follow:

MATCH No. 9

Civilian Clubs—Ten High Teams.

	<i>Club total</i>
1. Quinnipiac Rifle & Revolver Club, New Haven, Conn. A. A. Clouet, 200; W. H. Richard, 200; Wm. Breuler, 200; H. J. Gussman, 200; Virgil Richard, 200	1000
2. Lakewood Rifle Club, 1st Team, Lakewood, Ohio. W. C. Andrews, 200; Frank C. Fry, 200; E. E. Tindall, 200; C. W. Woodyatt, 200; Geo. R. Liggett, 200	1000
3. Marion Rifle Club, Marion, Ohio. W. F. Court, 200; J. E. Plummer, 200; E. W. Imbody, 200; Ray Williams, 200; J. E. Messenger, 200	1000
4. Brattleboro Rifle Club, Brattleboro, Vt. A. E. Knight, 200; E. A. Barnard, 200; C. A. Speer, 200; C. F. Bingham, 200; Pearl T. Clapp, 200	1000
5. Irving Park Rifle Club, Chicago, Ill. L. A. Lively, 200; C. A. Bessey, 200; C. J. Levey, 200; J. P. Brown, 200; J. H. Kendel, 200	1000
6. Denver City Rifle Club, Denver, Colo. L. G. Pridy, 200; H. W. Beck, Jr., 200; D. C. McConaughy, 200; R. E. Ladwig, 200; Floyd Redding, 199	999
7. Bridgeport Rifle Club, Bridgeport, Conn. C. W. Vanstone, 200; G. Z. Smith, 200; F. E. Staples, 200; J. W. Hession, Jr., 200; C. B. Naramore, 199	999
8. Santa Fe Rifle Club, Santa Fe, New Mexico. T. H. Parkhurst, 200; R. P. Fullerton, 200; J. F. Day, 200; Jas. C. McConvery, 200; R. E. Clark, 199	999
9. Bucyrus Rifle Club, Bucyrus, Ohio. R. M. Kinnear, 200; F. W. Croneis, 200; J. W. Miller, 200; J. W. Sharrock, 200; Wm. Kranich, 198	998
10. Bangor Rifle Club, Bangor, Me. L. W. Somers, 200; V. H. Somers, 200; O. T. Bradford, 200; H. W. Chapman, 199; S. S. Chilcott, 198	997

MATCH No. 9

College Clubs—Ten High Teams.

	<i>Club total</i>
1. Syracuse University, Syracuse, N. Y. R. W. Woodworth, 200; A. L. Gibson, 200; R. K. Day, 199; A. J. Schmidt, 199; A. E. Fivaz, 199.....	997
2. Norwich University, Northfield, Vt. R. K. Shaw, 200; A. S. Kerr, 200; H. W. Tyler, 199; P. M. Martin, 198; A. V. Harrington, 198.....	995
3. Dartmouth College, Hanover, N. H. R. R. Wells, 200; S. D. Kilmarx, 199; H. W. Reed, 198; J. K. Wetherby, Jr., 198; F. D. Johnson, 198.....	993
4. University of Pennsylvania, Phila., Pa. E. I. Bensen, 199; P. Marquette, 199; P. D. Ten Broeck, 198; J. B. Cooley, 198; D. M. Steele, 198.....	992
5. Bowdoin College, Brunswick, Me. H. S. Ingraham, 200; P. R. Low, 199; A. M. Benton, 197; M. W. Hurlin, 195; J. W. Hone, 195.....	986
6. Columbia University, New York City. F. B. Morell, 198; W. P. Schweitzer, 197; J. R. Twiss, 197; J. B. Hawkes, 197; L. R. Condon, 195.....	984
7. Worcester Polytechnic Institute, Worcester, Mass. R. E. Chapman, 198; O. H. Dodkin, 196; W. A. Ellsworth, 196; J. L. Marston, 195; R. W. Cushman, 195.....	980
8. Massachusetts Institute of Technology, Cambridge, Mass. P. M. Johnson, 200; G. G. Kearful, 195; V. E. Whitmon, 194; J. C. Irwin, Jr., 194; G. E. Dean, 193.....	976
9. Princeton University, Princeton, N. J., R. Hopkinson, 199; H. Page, 196; W. E. Benna, 196; D. E. McWilliams, 195; H. M. Richardson, 190.....	979
10. Massachusetts Agricultural College, Amherst, Mass. P. L. Robinson, 195; R. D. Tillson, 191; R. B. Lambert, 191; H. E. Wentsch, 193; R. H. Sanderson, 190.....	960

MATCH No. 9

Military School Clubs—Ten High Teams

	<i>Club total</i>
1. St. John's Military Academy, Delaware, Wis. John Christ, 200; G. T. Campbell, 199; Geo. Greene, 199; T. E. Ibberson, 199; A. V. Purinton, 199.....	996
2. Culver Military Academy, Culver, Ind. R. P. Hoffman, 200; R. E. Wolfe, 198; A. W. Morse, Jr., 198; K. Whitehead, 197; G. R. Colcord, 196.....	989
3. Western Military Academy, Alton, Ill. R. B. Reed, 197; R. L. Shelton, 197; J. Herrin, 196; J. C. McCluer, 193; S. Roberts, 191.....	974
4. Bordentown Military Institute, Bordentown, N. J. Thos. H. Keon, 196. M. R. Rollins, 193; D. M. Eichelberger, 192; Walter Veit, 191; Wm. H. Slep, 191.....	957
5. Northwestern Military & Naval Academy, 1st Team, Walworth, Wis. R. H. Mayer, 190; W. J. Orr, Jr., 188; G. D. Sawyer, 187; W. W. Baker, 187; T. Winston, 186.....	938
6. New York Military Academy, Cornwall-on-Hudson, N. Y. L. S. Kent, 191; H. E. Greene, 187; A. L. Wagner, 187; C. X. Mathews, 186; J. B. Meek, 186.....	937
7. Castle Heights Military Academy, Lebanon, Tenn. M. Johnston, 193; Jas. L. Armstrong, 193; W. L. Ball, 190; Hoyt Chick, 181; E. D. Lanford, 180.....	937
8. Tennessee Military Institute, Sweetwater, Tenn. J. D. Lincoln, 197; A. A. Ferrell, 181; A. G. Harkleroad, 180; R. Hunt, 180; J. P. Hobson, 175.....	910

9. Miami Military Institute, Germantown, Ohio. F. G. Trowbridge, 189; M. Mulford, 181; K. Brown, 180; J. H. Kilby, 180; John P. Mulford, 179.....	909
10. Northwestern Military & Naval Academy, 2nd Team, Walworth, Wis. J. H. Harlow, 192; V. M. Gail, 191; W. M. McHattie, 165; J. B. Schuster, 163; J. C. Dawson, 149.....	860

MATCH No. 9

High School Clubs—Ten High Teams.

	<i>Club total</i>
1. Central High School, Washington, D. C. J. R. Greeley, 200; A. H. Elliot, 200; M. H. Stow, 199; H. Everett, Jr., 199; Claude Hudspeth, 198.....	996
2. Business High School, Washington, D. C. H. S. Rosenberg, 199; S. Middleton, 198; Wm. J. Burrows, 198; G. R. Trimble, 197; W. Cherry, 197.....	989
3. Lawrenceville School, Lawrenceville, N. J. F. W. Taylor, 198; F. P. Cook, 196; E. T. Wailes, 196; Ben F. Funk, 195; Wm. H. Phelps, Jr., 195.....	980
4. McKinley Manual Training School, Washington, D. C. J. M. Barry, 199; Jos. Wrenn, 197; A. G. McNish, 197; R. L. Speer, 193; A. Speer, 192.....	978
5. Jamaica High School, Jamaica, N. Y. City. Kimball Gray, 197; Jack Eldert, 197; G. Vosburgh, 195; R. Binning, 193; D. W. Wilsey, 191.....	981
6. Ridgewood High School, Ridgewood, N. J. Bradford Simpson, 197; F. S. Willard, 195; P. Meigs, 3rd, 193; P. Zabriskie, 191; H. Rouchere, 185.....	960
7. Davenport High School, Davenport, Iowa. R. W. Ballard, 196; A. W. Rorison, 194; Hugh Bradford, 194; Alvord Boeck, 190; Roland Schmidt, 186.....	960
8. Springfield Technical High School, Springfield, Mass. G. A. Bliss, 198; J. A. Johnston, Jr., 193; H. Ackerman, 191; K. W. Woodworth, 188; M. Johnston, 187.....	957
9. Evanston Township High School, Evanston, Ill. S. Platt, 193; John E. Kamper, 192; R. Waring, 192; M. B. Gamet, 189; R. B. Dickson, 189.....	955
10. Western High School, Washington, D. C. Fred Tschiffely, 196; J. P. Roberts, 194; H. Shantz, 192; F. M. Bradley, 187; Wm. T. Brown, 185.....	954

MATCH No. 10.

College Clubs—Ten High Teams.

	<i>Club total</i>
1. Norwich University Rifle Club, Northfield, Vt. W. G. Smith, 200; Wm. G. Barrett, 200; R. K. Shaw, 199; D. V. Anderson, 199; H. W. Tyler, 199.....	997
2. Syracuse University, Syracuse, N. Y. R. K. Day, 200; A. L. Gibson, 200; R. W. Woodworth, 199; H. R. Spelman, 199; A. J. Schmidt, 198.....	996
3. University of Pennsylvania, Phila., Pa. D. M. Steele, 200; E. I. Bensen, 199; H. R. Robertson, 199; J. R. Byrne, 197; P. D. Ten Broeck, 196.....	991
4. Dartmouth College, Hanover, N. H. S. D. Kilmarx, 199; J. F. Ingraham, 198; R. R. Wells, 198; F. D. Johnson, 198; E. H. Johnson, 197.....	990
5. Massachusetts Institute of Technology, Cambridge, Mass. P. M. Johnson, 199; A. B. Alland, 198; S. J. Powers, Jr., 198; G. E. Dean, 197; V. E. Whitmon, 196.....	988

6. Columbia University, New York City. F. B. Morell, 198; J. R. Twiss, 198; Ralph Kerr, 197; J. B. Hawkes, 197; Edgar N. Smith, 196.....	986
7. University of Pennsylvania, Freshman, Phila., Pa. M. K. Fleishman, 198; J. D. Conwell, 198; Jas. A. Pray, 198; L. Hoodley Sellers, 197; S. F. Lilley, Jr., 194.....	985
8. Worcester Polytechnic Institute, Worcester, Mass. R. M. Eldred, 199; O. H. Dodkin, 198; W. A. Ellsworth, 197; J. L. Marston, 194; R. E. Chapman, 194.....	982
9. Princeton University, Princeton, N. J. R. Hopkinson, 198; H. Page, 197; D. E. McWilliams, 197; H. M. Richardson, 195; H. Cunningham, 192.....	979
10. Massachusetts Agricultural College, Amherst, Mass. R. D. Tillson, 199; R. H. Sanford, 196; P. L. Robinson, 195; R. H. Sanderson, 194; R. B. Lambert, 191.....	975

MATCH No. 10.

Military School Clubs—Ten High Teams

	<i>Club total</i>
1. St. John's Military Academy, Delaware, Wis. A. H. Lorimer, 200; T. E. Ibberson, Jr., 200; G. T. Campbell, 199; John Christ, 199; M. W. Whittlesey, 198.....	996
2. Culver Military Academy, Culver, Ind. R. P. Hoffman, 198; A. W. Morse, Jr., 198; K. Whitehead, 197; C. G. H. Godwin, 197; A. W. Walter, 196.....	986
3. Western Military Academy, Alton, Ill. R. R. Howey, 196; R. B. Reed, 194; J. Herrin, 194; S. Roberts, 193; J. I. Hincke, 192.....	969
4. Bordentown Military Institute, Bordentown, N. J. Walter Veit, 194; D. M. Eichelberger, 192; Thos. H. Keon, 192; J. B. Ellis, 190; Wm. H. Slep, 189.....	957
5. Castle Heights Military Academy, Lebanon, Tenn. W. L. Ball, 195; Hoyt Chick, 193; M. Johnston, 192; Jas. L. Armstrong, 187; D. Kendall, 186.....	953
6. New York Military Academy, Cornwall-on-Hudson, N. Y. A. L. Wagner, 194; H. E. Greene, 190; R. H. Akridge, 189; C. X. Mathews, 186; L. S. Kent, 186.....	945
7. Northwestern Military and Naval Academy, 1st Team, Walworth, Wis. S. M. McGough, 189; G. E. Martin, 188; W. W. Baker, 188; R. H. Mayer, 184; W. J. Orr, Jr., 184.....	933
8. Northwestern Military and Naval Academy, 2nd Team, Walworth, Wis. V. M. Gail, 196; J. H. Harlow, 186; W. M. McHattie, 178; J. B. Schuster, 178; J. C. Dawson, 175.....	913
9. Miami Military Institute, Germantown, Ohio. Baugh, 186; F. G. Trowbridge, 185; John P. Mulford, 185; M. Mulford, 178; J. C. White, 177.....	911
10. Tennessee Military Institute, Sweetwater, Tenn. J. D. Lincoln, 188; R. Hunt, 187; J. S. Breitenback, 179; J. M. Crow, 178; L. R. Peterson, 178.....	910

MATCH No. 10.

High School Clubs—Ten High Teams.

	<i>Club total</i>
1. Central High School, Washington, D. C. J. R. Greeley, 200; A. H. Veitch, 199; T. H. Rider, 199; M. H. Stow, 198; J. M. Blanton, 198.....	994

2. Business High School, Washington, D. C. S. Middleton, 199; Geo. A. Anadale, 197; H. S. Rosenberg, 196; Wm. J. Burtows, 195; L. E. Wolfe, 195.
3. Jamaica High School, Jamaica, N. Y. City. L. D. Bates, 199; Kimball Gray, 198; Jack Eldert, 196; Jacob Rapelje, 194; G. Vosburgh, 194.
4. McKinley Manual Training School, Washington, D. C. J. M. Barry, 200; A. G. McNish, 198; Baxter Smith, 195; Jos. Wrenn, 193; F. L. Ghormley, 192.
5. Lawrenceville School, Lawrenceville, N. J. F. P. Cook, 197; F. W. Taylor, 195; R. A. Blow, 194; Ben F. Funk, 193; Ned. B. Tilt, 193.
6. Western High School, Washington, D. C. Fred Tschiffely, 197; J. P. Roberts, 195; F. M. Bradley, 194; Lloyd Berrall, 191; H. T. Nicolson, 190.
7. Ridgewood High School, Ridgewood, N. J. F. S. Willard, 198; Bradford Simpson, 193; P. Zabriskie, 191; P. Meigs, 3rd, 188; Edw. R. Morey, 188.
8. Evanston Township High School, Evanston, Ill. John E. Kamper, 194; R. B. Dickson, 191; L. Wilkinson, 190; R. Waring, 190; R. J. Harper, 188.
9. Springfield Technical High School, Springfield, Mass. J. A. Johnson, Jr., 197; T. Lovett, 192; K. W. Woodworth, 187; H. Ackerman, 184; H. Smith, Jr., 184.
10. Commercial High School, Brooklyn, N. Y. I. Rothenberg, 194; David Goodfellow, 186; Jos. Sherman, 188; Wm. Nettleship, 185; D. Zimmerman, 180.

MATCH No. 10.

Civilian Clubs—Ten High Teams.

- | | <i>Club total</i> |
|---|-------------------|
| 1. Quinnipiac Rifle and Revolver Club, New Haven, Conn. A. A. Clouet, 200; W. H. Richard, 200; Wm. Breuler, 200; F. J. Haas, 200; August Klocker, 200. | 1000 |
| 2. Lakewood Rifle Club, 1st Team, Lakewood, Ohio. W. C. Andrews, 200; M. M. Foster, 200; E. E. Tindall, 200; R. L. Rowe, 200; J. R. Humphrey, 200. | 1000 |
| 3. Denver City Rifle Club, Denver, Colo. L. G. Pridy, 200; D. C. McConaughy, 200; R. E. Ladwig, 200; A. H. Hardy, 200; Chas. E. Younkman, 200. | 1000 |
| 4. Marion Rifle Club, Marion, Ohio. W. F. Court, 200; M. E. Carroll, 200; G. C. Whaley, 200; A. R. Sammons, 200; L. D. Brady, 199. | 999 |
| 5. Butte Indoor Rifle Club, Butte, Mont. Jack Derville, 200; R. F. Leighton, 200; John Osterman, 200; Ray Cloke, 200; Jack West, 199. | 999 |
| 6. Brattleboro Rifle Club, Brattleboro, Vt. E. A. Barnard, 200; W. J. Cain, 200; Pearl T. Clapp, 200; A. E. Knight, 199; C. A. Speer, 199. | 999 |
| 7. Irving Park Rifle Club, Chicago, Ill. A. C. Hanke, 200; C. J. LaMena, 200; H. Newgard, 200; L. A. Lively, 199; C. A. Bessey, 199. | 998 |
| 8. Jacksonville Rifle Club, 1st Team, Jacksonville, Fla. S. D. Page, 200; A. Williams, Jr., 200; J. E. Byrd, 199; Frank E. Bryson, 199; Wm. McNamee, 199. | 997 |
| 9. Bucyrus Rifle Club, Bucyrus, Ohio. R. M. Kinnear, 200; F. W. Croneis, 200; J. M. Zeigler, 200; J. W. Miller, 199; Arno Krannich, 198. | 997 |
| 10. Birmingham A. C. Rifle Club, Birmingham, Ala. T. K. Lee, 200; A. F. de Funiak, 200; A. L. Garl, 200; Person Moore, 198; J. P. McCarty, 198. | 996 |

CONCERNING THE CROSSMAN GROUPS

982 THE publication of the groups shot by Captain E. C. Crossman at Daytona Beach, Florida, has called forth comment from two old-timers, Maj. C. W. Hinan, of Massachusetts, and Charles E. Rueger, of Spokane.

Major Hinman says:

Winchester, Mass., April 30, 1920.

978 *Editor Arms and the Man.*

972 In your issue of April 15 Captain E. C. Crossman seems to assert that a group of ten shots at 200 yards recently made by him at Daytona, Fla., is a record for that distance. The group in question he stated was one and seven-eighths inches (1 7/8-inches) from center to center of the two wide shots. This may be a record for Springfield rifles and ammunition but better groups have been made with other rifles and ammunition.

967 For instance, at the rifle range of the Mass. Rifle Association at Walnut Hill, there have been made some half dozen scores of ten shots; each shot of which touched the 12 of the Standard American Target. As this 12 is only 1 41/100-inch in diameter and the rifles used were .38 calibre, none of the groups could possibly have measured more than 1 79/100-inch from center to center. As these scores were fired in competitions a clean target was placed in position, the ten shots fired and the target brought in and the shots scored. In other words the ten shots were not scored by placing the 12 ring after the shots were fired, where it would give the best result. Probably the average group of these scores of 120 would measure about one and a half inches from center to center of the outside shots.

944 Some of these scores were made with Winchester single shot rifles weighing about twelve pounds, and the other rifles used were similar. The rifles were fitted with telescopes and were fired using a muzzle rest and the butt resting against the shoulder of the shooter who was seated at a bench.

933 The bullet used was a flat-pointed lead bullet of about 330 grains, patched with one thickness of paper on the "chase" system. It was placed in the barrel from the breech and was followed by a cartridge-case holding about 60 grains of black powder.

I am not claiming that these Walnut Hill groups are the best on record for I think that some groups as good as these have been made with muzzle-loading rifles.

C. W. Hinman."

Mr. Rueger goes back into muzzle-loader history to prove what the old type of target arms were capable of doing, and writes:

"Spokane, Wash., April 28, 1920.

999 *Arms and the Man,*
Washington, D. C.

In your issue of April 15th, E. C. Crossman in an article entitled "Two groups worth seeing" refers to some exceptionally fine groups made from machine rest with the Springfield 180-grain match ammunition. As indicated in Colonel Hatcher's article in the same issue, these groups were shot from an especially heavy barrel, bored and rifled with extreme care, and chambered with the minimum tolerances. The groups measured from center of outlying shots; 1 7/8ths, 2 1/8ths, 2 1/4ths, and 2 3/4ths, constituting forty consecutive shots. Exceptionally fine accuracy it must be admitted.

997 In concluding his article, Mr. Crossman asserts that this performance proves that with a good heavy Springfield barrel and good ammunition, the best shooting of the antiquated Schuetzen muzzle loading type of cannon can be beaten, not to mention the ability to fire more than three shots in an afternoon. That assertion is somewhat exuberant, and does not conform with the facts. It tends to mis-

lead many of the younger riflemen, who are not familiar with the accuracy of a fine muzzle loading target rifle like the Pope or the Schoyen.

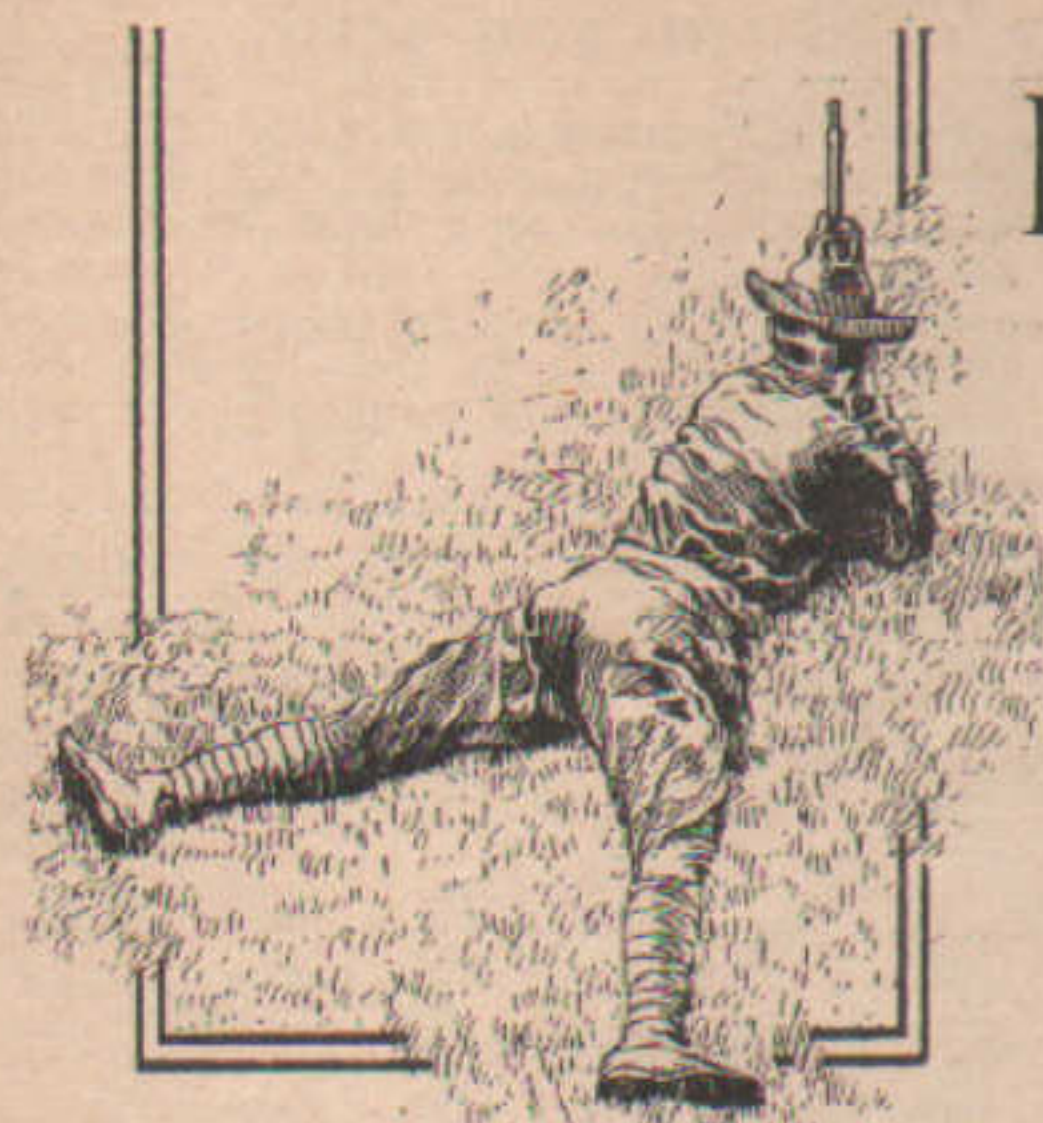
No one who has actually shot a Pope muzzle loader from machine rest to any considerable extent, and who is really familiar with the subject, would assert that the foregoing groups beat the best performance of a fine muzzle loading target rifle. Such groups as Mr. Crossman mentions were quite common under reasonably calm weather conditions. The lead bullets were, of course, much more sensitive to variable air currents than the high velocity spitzer. The files of *Shooting and Fishing*, and of *Arms and The Man* during the past twenty years will amply confirm this statement. Pope, himself, shot a sixty shot 200 yard group of 2 inches; measuring distance from center to center of two widest shots. The writer has quite often shot forty, or fifty-shot groups of 2 3/4-inch, without attaching any special importance to them. Ten shot groups at 200 yards of 2 inches were of such frequent occurrence as to excite no comment. John D. Kelley, of Williamsport, Pa., made many ten shot groups measuring one inch over the 200 yard range. At least one ten shot group measuring 3-4-inch was made by C. W. Rowland, of Boulder, Colo., with a 32-40 Pope at 200 yards. The latter were, of course, very exceptional performances, and were published at the time in *Shooting and Fishing*.

Hence there is no warrant for Mr. Crossman's assertion that his groups prove that the special Springfield barrel shows superior accuracy to a fine muzzle loader. It may show equal, but certainly not superior accuracy.

The groups reported by him, fine as they are, do not equal the best performances of the Pope rifle. About all that can be said is that it is possible to equal—not beat—the accuracy of the best muzzle loaders, provided a heavy barrel is bored with extreme care and with minimum tolerances. That in itself will be a notable accomplishment, considering that the bullet is fired from the shell. This is merely a restatement of Dr. Mann's conclusions; so interestingly commented on by Colonel Townsend Whelen in his book entitled "The American Rifle."

My foregoing comments are directed purely to the matter of comparative accuracy. When it comes to the military value of being able to shoot a bullet from the shell with such accuracy as Mr. Crossman mentions, every intelligent rifleman will concede its practical importance. It has been one of the astonishing developments of recent years.

The Pope muzzle loaders were designed essentially for offhand target shooting at 200 yards. They answer that purpose very well; they combine extreme accuracy with cheapness of ammunition. The present cost is about one cent per shot; this would not appeal to many since thrift has ceased to be fashionable. For 200 yard off-hand slow fire, the Pope is perfectly satisfactory. With two shooters firing alternately, sufficient time elapses in signaling shots to permit comfortable reloading. Hence the system is perfectly adapted to this style of shooting. It is a specialized form of the sport, and its votaries derive both recreation and ballistic knowledge from it. Off-hand shooting with any kind of a rifle cultivates co-ordination of the faculties. An intelligent rifleman would not advocate the use of a refined target rifle for a purpose for which it was not designed. Heavy rifles with double set triggers are not wholly impractical; they were the common equipment of the more expert hunters during the development of the original West. The outstanding fact is that a vast number of riflemen practice off-hand shooting solely for pastime, and without any intention or even desire to fit themselves for either hunting or warfare. There is no reason why rifle shooting should not be liberalized within reasonable limits to permit indulgence in the sport to suit the individual temperaments.



Loads And Re-loads

In this column, conducted by Capt. Townsend Whelen, will be answered inquiries pertaining to target and hunting small arms, hunting licenses, game guides, and kindred subjects. An effort will be made to reply to inquiries direct by mail before the appearance in this column of the answer. This service is free to all, whether the inquirer is a subscriber to Arms and the Man or not. All questions are answered at length by mail. Those portions of general interest are published here.

I HAVE recently purchased a 250-3000 Savage bolt action rifle. I cannot use an open sight with any satisfaction and wish to use a Lyman peep rear sight, such as the No. 103, attached to the cocking piece. I am told that miss-fires may result. Is it practicable to attach this sight, or could a receiver sight be used to better advantage?

I also own a 1919 N. R. A. Savage .22 Bolt Action. I am trying to combine in it a gun which will be good for small game shooting and really good target shooting. Can you suggest a special sighting equipment to give this result? As there is no tang, it seems impossible to attach a peep sight to top of grip so as to be strong enough to stay put. Is there a .22 cal. repeater on the market as near man-size as this one? Is there any maker who could turn out such a gun as a special job. I used the .22 long rifle on jack rabbits this winter, and lost only two that were hit, and was much surprised at the killing power of this little cartridge.

I am at present having a Springfield 30-06 remodelled into a sporting rifle with 103 sight on cocking piece and ivory front sight. I have not the facilities nor opportunity for reloading. What cartridge (factory make) do you recommend as being best for moose? Is the 250-3000 Savage large or powerful enough for the smaller bear (not grizzly)?

F. N. W., Chicago, Ill.

Answer: I have just had a 103 Lyman rear sight fitted to my 350-3000 Savage bolt action rifle. I fired it May 6, for the first time on the range. Everything worked splendidly. There was not the slightest tendency toward miss-fire. The accuracy with hand-loaded sight was all right.

With regard to the Savage .22 bolt action, however, the sighting problem is more serious. I do not know really what could be done in regard to putting a special sight on this rifle, except perhaps to fit it with a Lyman 48 receiver sight with a special base to make it fit correctly. This rifle is the nearest approach to a man-size .22 rifle on the market. The new Winchester bolt action rifle, will not be out for three or four months yet.

From my own experience in big game hunting I can not conceive that the 250-3000 would be powerful enough for black bear. It takes a pretty big load to stop a black bear.

As to a proper load for the Springfield for moose, I think with the Winchester or UMC 150 grains expanding bullets at 2,700 feet per second will do the work. Personally, I prefer a heavier bullet, but this has to be loaded by hand until some one of the company brings out such a load.

I NOTICED in "The Arms and The Man" for April 15th the qualifications for the small bore contest. Please send me the particulars of this match. I have a .22 Savage box magazine 1919 model rifle. They in the time limit clause that the magazines must be empty, will this rule apply to these magazines as they take considerable time to

fill? Will the Lyman rear sight No. 52a be eligible in this contest? This sight makes the rifle shoot far to the left. I moved the wind-gauge over to the right as far as it will go. Will putting a piece of paper under the sight remedy this fault? I also noticed that members of the N. R. A. could purchase the Springfield Rifle. I am a member of the organization. Where can I obtain one and the approximate cost?

I intend to take a camping trip this summer in New Jersey; I would like to take a pistol and a rifle along for target practice. Will this be permissible if I have a hunting license?

W. F. S., Collingswood, N. J.

Answer: The time limit clause of two minutes for rapid fire was placed in order to put the users of repeating and single shot rifles on the same basis. It was contemplated that the riflemen would then use the repeater as a single shot rifle. If you wish to use your repeater rifle for rapid fire you can use it as a single loader or you can fill your magazine within the time limit. This puts you on equal terms in this match with one using a single shot rifle.

Lyman 52a rear sight is eligible in all small bore matches. If your rifle shoots too far to the left with this sight it is probably due to incorrect placing of the sight on the rifle. Anything which will move it further to the right will be satisfactory. I would suggest a peice of thin brass under the sight as being more stable than paper.

Regarding taking a pistol and rifle along on a camping trip for target practice only I am inclined to think that while you are within the law if you use it for target practice only, you might have a hard time proving your case and it will be much safer and avoid unpleasantness to take out a hunting license.

USING bullet No. 308,334, do you recommend 25.5 grains of No. 21 powder? Can a charge of No 18 Powder be used to give equivalent results? Do you advise the use of mobilubricant in Springfield rifles at pressures of 53,000 lbs. and more?

Can you suggest any loads of No. 16 powder behind 180 grain bullets in the Springfield? I do not see any recommended in "The American Rifle."

A correspondent in "Arms and The Man" speaks of pulling the bullets from war time, model 1906, ammunition and reloading some to suit. Now how do you do that with crimped shells without deforming either the bullet or the shell?

In your statement in "Arms and The Man" relative to sporting bullets for the model 1903 rifle, you say that it is practically impossible to advise on powder charges unless one knows the particular lot of powder. Do you mean by this that is unsafe to follow the various loadings you advise on page 250 of your book "The American Rifle"?

R. W. S., Roxbury, Mass.

Answer: I think you will get even better results using No. 18 powder than No. 21.

Would suggest that you start in with 22 grains and work up until you begin to get in accurate results. Much depends upon the temper and fit of the bullet.

Mobilubricant is all right for use in Springfield Rifles provided it is used intelligently, with a light even coating on the bullet only.

No. 16 powder was not mentioned for use with 180. grain bullet in the Springfield as it is not as good for this use as No. 15. It burns quicker and gives a higher breech pressure.

I do not like the idea of pulling bullets from shell and then seating another bullet unless one has a machine especially made to do this. If not he is almost sure to deform the shell and the results will not be accurate.

In regard to the powder charges recommended in the "American Rifle." Since the book was printed the Du Pont Company have slightly changed almost all of their powders, especially the No. 20. Moreover, they are changing them and making improvements every few months. It is impossible to keep a book up to date under these circumstances. You might go into a sporting goods store in one city and buy a lot of No. 15 powder manufactured three months ago by Du Pont and at another store buy a lot manufactured a week ago. The two lots might require two or three grains difference to give the same results. The latest lot might enable you to get a little more velocity. My book gives the principles, but for the absolute data you ought to follow the labels on the canister, which now gives velocity as well as the charges.

IN YOUR table of loads for the 1906 cartridge, you give one of 46.6 grains of No. 20 powder and the 180. grain bullet, which I have tried out at 1000 yads. and find it a wonder for accuracy, but rather a terror for recoil, which has made me a little cautious.

This load was made up with 46.6 grains of the last lot of regular Government pyro powder which we purchased from Frankford in 1918, and the charge recommended by them for the standard load with 150 grain bullet was very close to standard Du Pont No. 20 as to strength.

In a previous letter from DuPont, a load of 43 grains of No. 20 with this bullet is recommended, stating that same is very accurate. I presume he refers to standard DuPont No. 20.

However, I preferred to use the load as given by you as it necessarily must be of considerable higher velocity, but the heavy recoil made me think that possibly this powder I was using was of greater strength than I expected, although to judge by the primer, which by the way, is the Winchester No. 35 and a rather heavy brass primer, it would seem that the pressure was excessive, as primer is not flattened much more than the old H-48 with the standard 150 gr. bullet.

In your opinion am I entirely safe in using this load of this particular lot of powder, or would it be better to reduce the load somewhat. In case the load is safe, recoil don't matter.

Also I have used some of the 47.6 grain, No. 15 and 180. grain bullet for the same range and while it is a much more pleasant load to shoot, it does not seem to have the accuracy of the No. 20 load.

The load of 51.5 grains, No. 15 with 180 grain bullet, I have shot but a few shots, not enough to form an idea of its accuracy, but have been a little afraid of it on account of the high breech pressure of over 56000 lbs., although I notice that you recommend it for use in the Springfield.

How does this latter load compare with the first mentioned load of No. 20 powder as to erosion of the barrel, also what is the maximum breech pressure allowable in a 1903 rifle which is in first-class condition?

Will say that I always use a lubricant on bullets, made up of mobilubricant, Japan wax, bees wax and Acheson graphite, 1340 grade and have heard it said that using grease

2. Business H

D. C. Anadani has a tendency to increase breech in the neighborhood of 5000 lbs. Wm. do you believe this to be correct?

Another question on which I would appreciate advice is on the mounting of a Winchester A-5 scope on the Springfield.

I secured with the scope what is called the Iowa mount, that is a block to fasten to the barrel with two screws for the front mount, the rear mount block being fastened to the fixed base of the rear sight by two screws, after removing the movable base.

This front mount I do not like as I have an idea that these two screws tapped into the barrel not more than one-eighth of an inch, are not sufficient to hold this mount against the recoil of the rifle and anyway I don't like the idea of tapping these holes in this barrel.

My idea for a front mount was to make a band about one inch wide, fitting the taper of the barrel at the point of attachment exactly, this band to be split at the bottom end-wise and clamped by two machine screws through the lug at bottom of ring. This ring would have formed on its top surface a dovetail block to receive the forward mounting of sufficient height to bring the line of sight in the proper place.

It occurred to me however, after making this block that I might get into trouble with this band around the barrel idea, on account of the expansion of the rifle barrel inside this band from the heat of firing and this is the point on which I would like your opinion.

I had intended to sweat this band to the barrel and while the solder was still fluid, tighten up the clamping screws, which would make an extremely solid job and one not likely to give trouble from working loose.

Do you think this band idea a good one or would it be better to make a block in the form of a segment of a ring, such as is shown in illustration of the Mann taper dove-tail mount, fastening same to barrel by sweating and the usual two screws? Do you think tapping these two holes in any way injures or weakens the barrel or increases the flip?

This matter of whether the tapping of the holes weakened the barrel is the one question in my mind which caused me to try and design a mounting that would avoid drilling barrel, but I will feel perfectly safe in relying on your judgment in this matter, as I know that you have had a great deal of experience with telescope mountings.

W. H. R., Oakland, Cal.

Answer: The load of 46.6 grains of No. 20 powder and the 190-grain bullet was perfectly safe for that lot of No. 20 which the DuPont Company had on the market in 1908.

I think it is also safe for the present lot of DuPont No. 20 being put up by the DuPont Company. That sold by the Ordnance Department varies a little in strength. The majority of it is not quite as strong as the DuPont Company's trade lot, but once in a while might get a hold of a Government lot much stronger; however, I think you are perfectly safe in using this load with any DuPont No. 20 powder.

I want to caution you about the primer, however. Different primers sometimes make a great difference in breech pressure. You can depend upon DuPont's powders giving the pressure stated only with the Frankford Arsenal primer and with the U. S. Cartridge, No. 8 primer.

With regard to the use of No. 15 powder this powder has been changed several times by the DuPont Company and improved each time. The present lot on the market is much better than former lots, but it requires a slight change in the weight of the charge, for which you should follow the marking on the canister. My impression is that the last lots of No. 15 powder give less erosion than No. 20.

It is true that lubricant on the bullets does increase the breech pressure because it is

practically impossible to keep the grease out of the chamber. The grease in the chamber prevents the full expansion of the shell and practically gives you a greater density of loading. In some cases it might amount to as much as 5,000 pounds. I do not believe you will have any trouble in using grease with any load recommended in my book, provided you are careful. I have been using it for years and have never run into any trouble.

In regard to mounting telescopes on the Springfields, I think I would try the clamped-on and soldered band as you suggest. I do not believe it could do any harm and it would be a good experiment to make. It might be, however, that the expansion of the barrel will break up the solder. This can only be told by experiment. The Mann tapered dove-tail mount fastened to the barrel by a segment, both screwed and soldered, has worked all right. If you run into trouble with your band completely round the barrel just try this tapered dove-tail and I think you will be satisfied.

I HAVE just bought a new 1886 model Winchester cal. 45.70 26-inch nickel steel barrel, half magazine twist of rifling one turn in 22 inches.

I want to develop a high-power load using jacketed bullets for moose in Northern Quebec, where shots are not over two hundred yards, approaching in power trajectory, etc. to the Winchester .405 if possible.

What powder other than Sharpshooters' and weights would you recommend to get the highest velocity consistent with accuracy up to say, 300 yards? What weight of bullets? What velocity might I expect from the load you recommend? At what range would you advise the sights to be set for such a load?

What is your opinion of the above rifle, calibre and load you recommend for the work suggested?

Would it be better if I had a barrel made with a 14-inch twist the same as the 1895 model 405? Could the Winchester .405 cartridge be adapted to the model 1886 Winchester?

I prefer a tang sight to a receiver sight, and am trying to get a No. 103 Lyman tang sight for this rifle. Do you think a clearance of about 2 1/2 inches is sufficient to prevent sight from striking my eye from the heavy recoil of a high-power load?

I also expect to do a lot of reloading with lead bullets and black and bulk smokeless powder, the loads for which I am familiar with.

E. G. B., Montreal, Canada.

Answer: Relative to loads for the 45.70 rifle with nickle steel barrel: the only data I have as to modern loads for this cartridge is the 300-grain metal case bullet. 50.7-grain, with No. 16 powder will give you a velocity of 1890 feet with a chamber pressure of about 22,000 pounds. 55 grains of No. 16 will give you a velocity of 2,142 feet with a pressure of about 31,500 pounds.

The Winchester Company considers 35,000 pounds pressure is about the maximum safe working pressure for the model 1886 action. I agree with them and would not advise that the pressure be exceeded. The pressure for the 405 Winchester runs up to 45,000 pounds, so that you can see that it would not be at all suitable for this action, even if the shell could be adapted to it.

I am inclined to think that a tang sight on your rifle will be too near the eye for comfort and safety, especially as you are going to use cartridges giving excessive recoil. I would rather advise a receiver sight. Relative to setting the sights for any of these loads, you will of course have to target your rifle and determine the sight setting. I would suggest that they ordinarily be carried set at 100 yards.

WANTS AND FOR SALE

Each subscriber to ARMS AND THE MAN is entitled when his subscription is paid up for one year, to one free insertion of a half-inch want ad in this column.

All he needs to do is to send in the advertisement for insertion at the same time calling attention to the date when his subscription was paid.

OLD-TIME and modern firearms bought, sold and exchanged. Kentucky flint-lock rifles, old-time pistols, revolvers, guns, swords, powder horns, etc. Lists free. Stephen Van Rensselaer, 805 Madison Avenue, New York City.

WANTED—Model 1903 Springfield Action and Stock, condition of barrel no object; action must be good. Also cheap. C. P. Zimmer, Fullerton, Calif., R.F.D. No. 2.

FOR SALE—Savage .22 Hi Power, checkered stock, sling swivels, Lyman 30 1/2 rear, Sheard middle and front sights. Loading tools, quantity bullets, adaptor for .22 long, shell extractor, cleaning rod and leather carrying case. Perfect condition. Wanted: Lyman No. 48 sight for Springfield. Geo. R. Newcomer, 802 Citizens Bldg., Cleveland, Ohio.

FOR SALE—Stevens 414 Armory Model Rifle chambered for .22 L. R. cartridge, equipped with No. 210 Globe front, and No. 100 Vernier Stevens sights; also Stevens No. 368 Telescope and No. 8 Mounts. Rifle and sights in first-class condition. Fired less than 500 shots. Price \$40.00. Will ship same by express securely boxed and guarantee it to be as described, on receipt of price. R. C. Whittington, 3118 Davis st., Oakland, Calif.

FOR SALE—Ballard action fitted with 404 Stevens .22 cal. barrel, single trigger New condition. First \$30.00 takes it. Also have a 5A Winchester telescope. B. M. Hayes, 1171 Clay St., San Francisco, Calif.

FOR SALE OR TRADE—U. S. Springfield .03 for Remington 25 Model 14. In new condition. H. W. Wicks Denton, Mont.

SELL OR TRADE—New Mauser sporting and military rifles and auto pistols all calibres, \$7.50 up. Also .50 Remington pistol, .45 Springfield, 6x Zeiss Field Glass, .45 Colt and S. & W. revolvers. Lebel rifle, French military carbine, odd lots cartridges, etc., Apt. 404 "Netherlands" Washington, D. C.

WANTED—Gas checks for .30 calibre bullet or for 303. Will purchase any quantity and pay good price. A. J. Kolar, Jr., 3944 Cottage Grove Ave., Chicago, Ill.

WILL EXCHANGE—Winchester S. S. .32 W. S. Nickel steel barrel, Lyman sights, mould and shells, for telescopic sight Sidle, Winchester Malcolm or Stevens. V. R. Olmstead, 572 Valley Road, Upper Montclair, N. J.

FOR SALE—One rifle .22 long rifle, Winchester musket action, Andrews barrel, Winchester windage front and Winchester vernier rear with Martin discs sights, 3 power Stevens telescope, Circasian walnut stock and fore end. C. Woodyatt, 2121 West 95th st., Cleveland, Ohio.

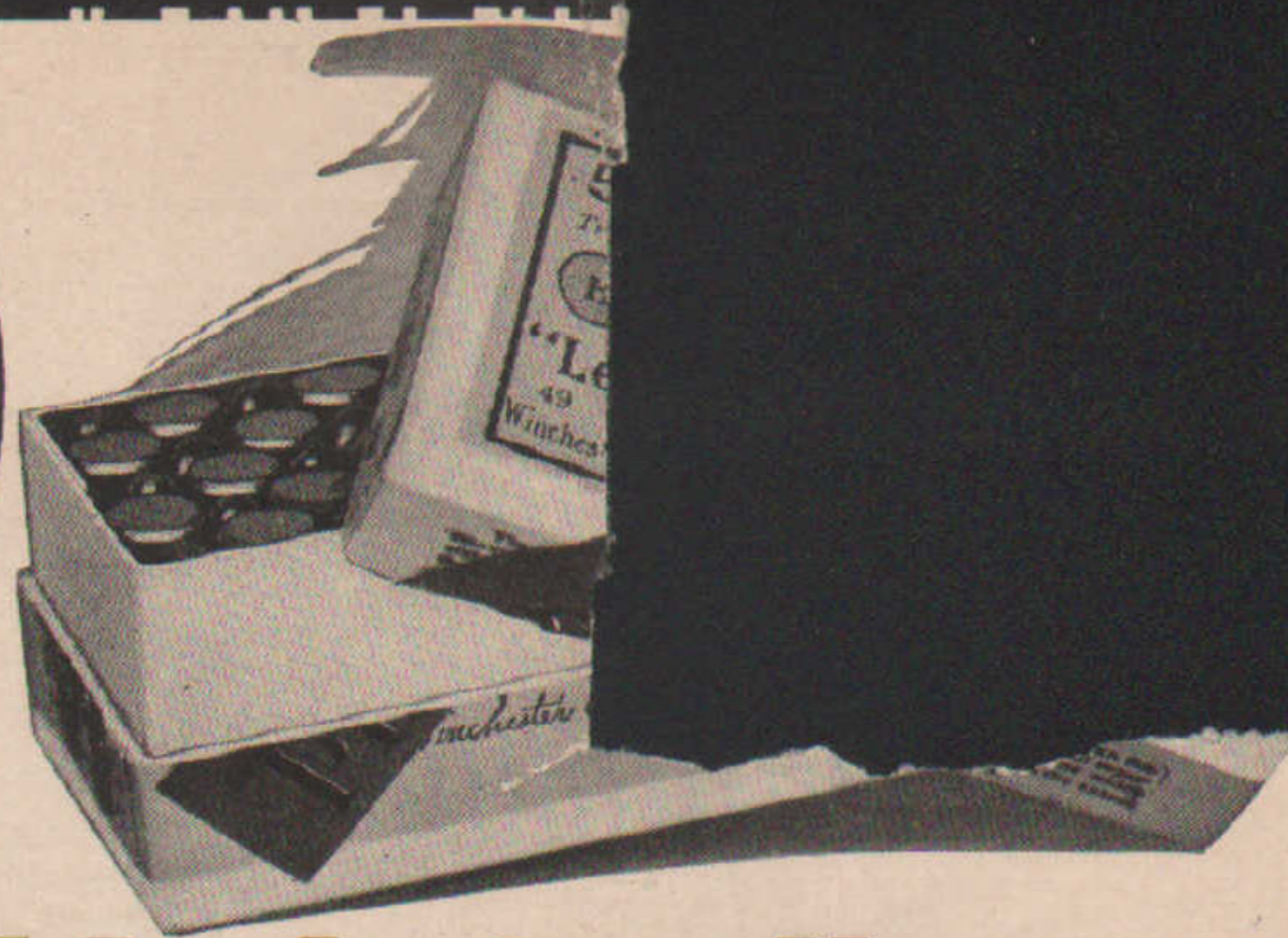
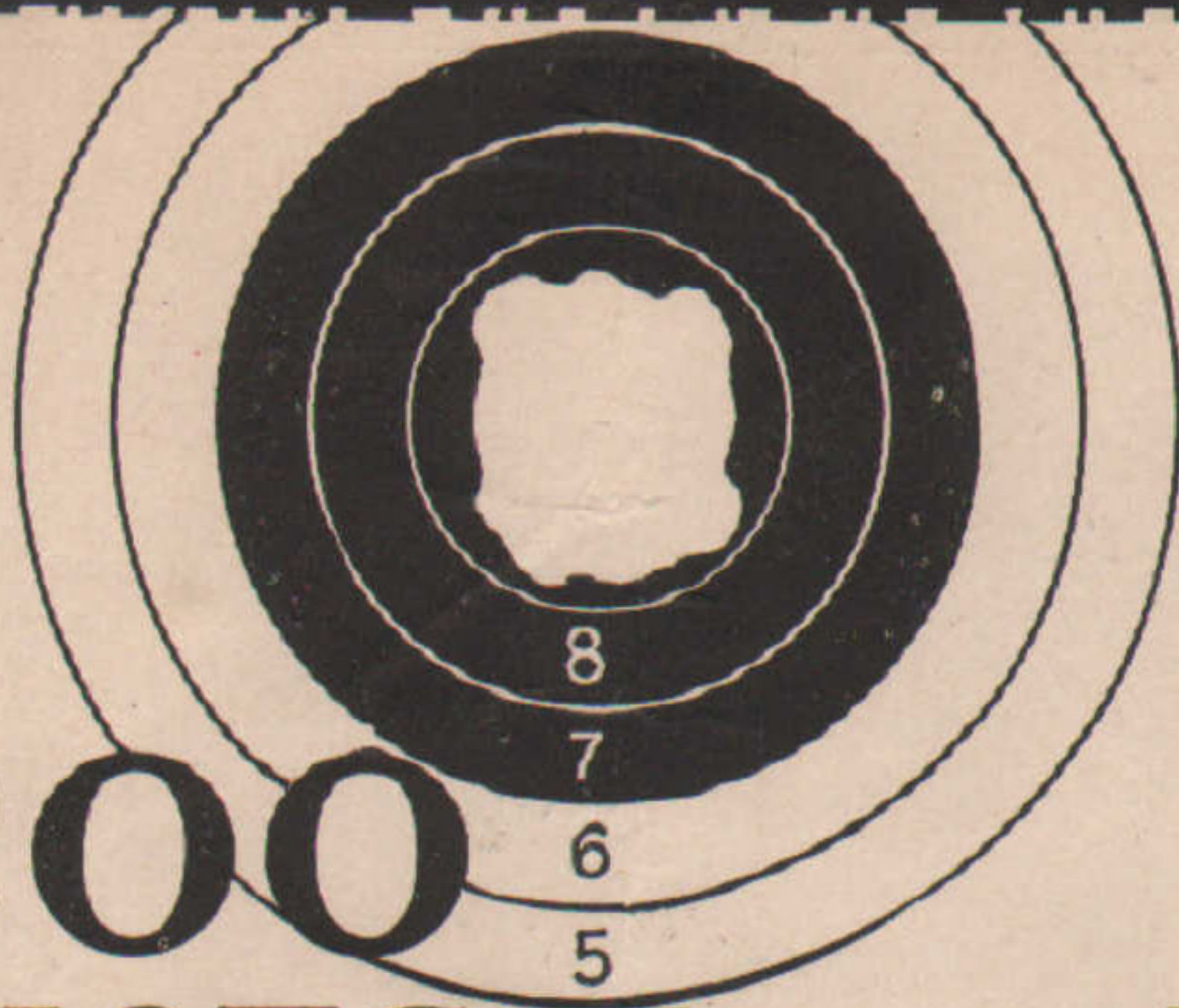
WANTED—First-class Gunsmith. George Potcher-nick, San Antonio, Texas.

For SALE—3,000 empty Krag cartridges. Best bid for f.o.b. shipment will get them. E. L. A. Bruger, 501 S. E. 3rd st., Ladysmith, Wis.

FOR SALE—One Remington N.R.A. model, .22 cal. rifle, chambered for long rifle cartridge. Pistol grip, Lyman peep rear sight, windgauge front sight, with sling strap. Absolutely new condition inside and out. \$30.00. One Newton .30 cal. rifle, practically new, used but little, perfect condition, peep rear and gold bead front sights, sling swivels, 60 cartridges, \$60.00. First P. O. money order gets them, or will send C. O. D. C. I. Julian, Omak, Wash.

FOR SALE—Springfield barrel and receiver in fair condition, three boxes .25-20 cartridges. Highest cash offer for either or both. R. W. Storer, 10 Pleasant ave., Boston, 32, Mass.

RADIUMIZED LUMINOUS SIGHTS now ready for the .45 Colt Automatic Pistol; also for Lyman No. 1 and similar stem rear sights and Lyman ivory bead and similar front sights. Snap on and off instantly. Sent postpaid on approval for \$3.50, with money back guarantee if dissatisfied. E. F. Watson, Dumont, N. J.



200 SHOTS *that a Nickel will cover*



A. A. CLOUET, Capt.



W. O. BREULER



J. H. J. ADAMS



H. J. GUSSMAN



P. E. LITTLEHALE

BREAKING every record since Adam, the Quinnipiac Rifle and Revolver Club of New Haven won the N.R.A. Gallery Matches for 1920 with a mark of 9991 x 10000.

In the ninth match all ten shooters scored twenty bull's-eyes on the half-inch bull at 75 feet. A five cent piece would cover the 200-shot group. In six of the ten matches the five counting shooters made perfect scores. In ten matches the lowest team mark was 997 x 1000.

Every shot was fired in accordance with N.R.A. rules, four shots upon each of five targets. The targets were revolved so that the shooter always fired at the bottom target.

Capt. W. H. Richard, thrice winner of the Leech cup, declares, "No such shooting has been done since the invention of gunpowder."

American arms and ammunition made for American shooters did the trick.

This phenomenal record was made with Winchester Precision Ammunition in the Winchester .22 cal. Bolt Action

Box Magazine Rifle—three of those that helped win the International Small-Bore Match at Caldwell being available.

It was a pioneer experiment with a combination of rifle and ammunition such as is or soon will be available on the market to every shooter.

Only with supremely accurate and reliable ammunition in a superaccurate and perfectly functioning rifle could even the best of shooters achieve such results.

Precision ammunition is accurate primarily because it is uniform. Every cartridge is the twin brother of its fellow. Results are obtained in direct proportion to the uniformity of your ammunition.

Winchester Precision cartridges are made with specially gauged and micrometered tools which are discarded as soon as slightly worn. Expert operators set up and adjust the machines. Only experts work upon them. Every possible device is employed to prevent any variation in dimension or in loading. As a result these cartridges are so uniform they shoot in practically the same groove.

Give yourself the advantage of the accuracy of Winchester Precision ammunition when you want to register the highest score. Made in .22 caliber "Precision 75" for shooting up to 100 yards and "Precision 200" for shooting from 50 yards to the extreme range for .22 caliber rifles.

WINCHESTER



W. H. RICHARD



P. HASS



A. KLOCKER



V. RICHARD



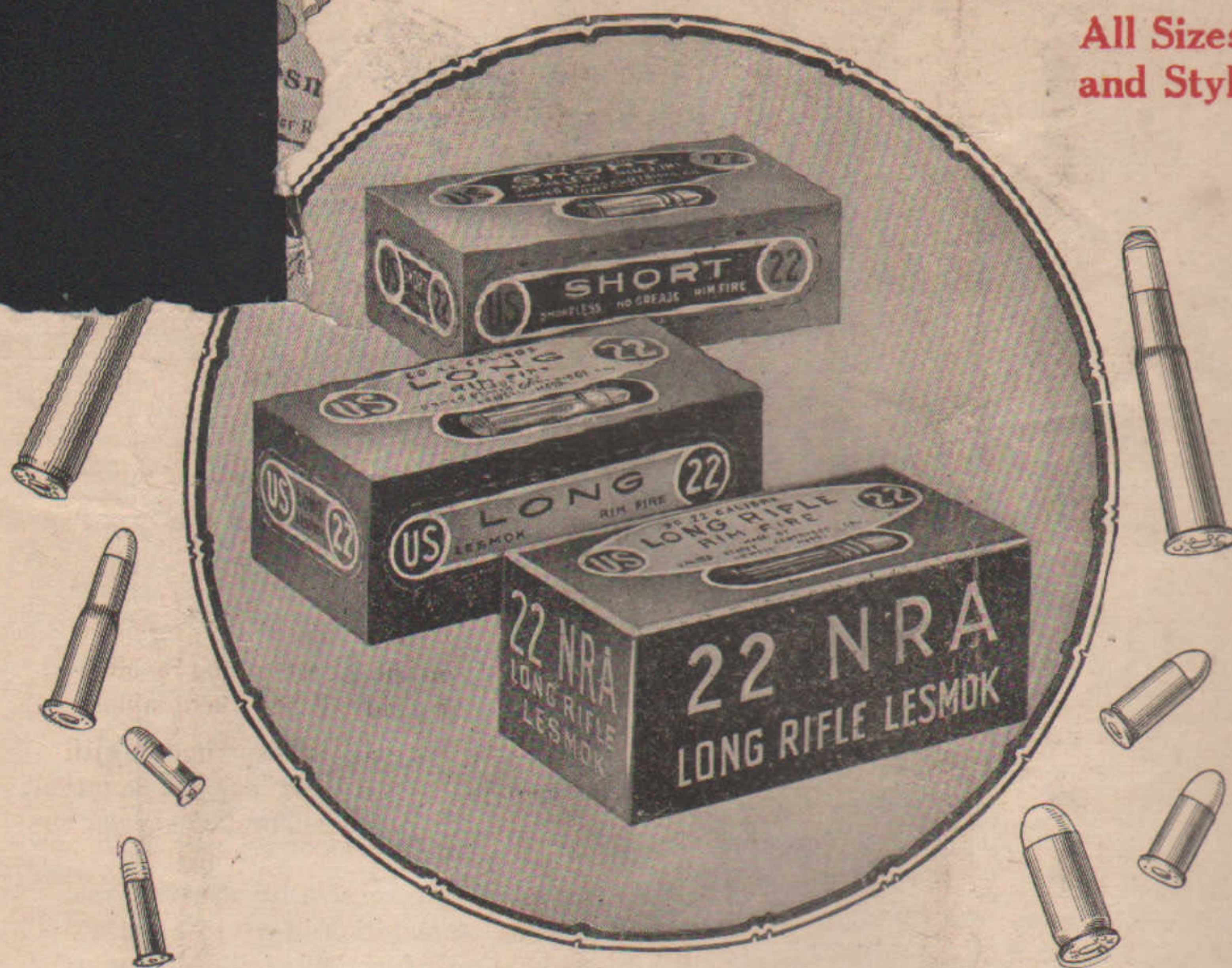
G. WILCOX

THE SCORE BY MATCHES

1.....	999	6.....	1000
2.....	997	7.....	1000
3.....	997	8.....	1000
4.....	1000	9.....	1000
5.....	998	10.....	1000

Total 9991 x 10000.

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