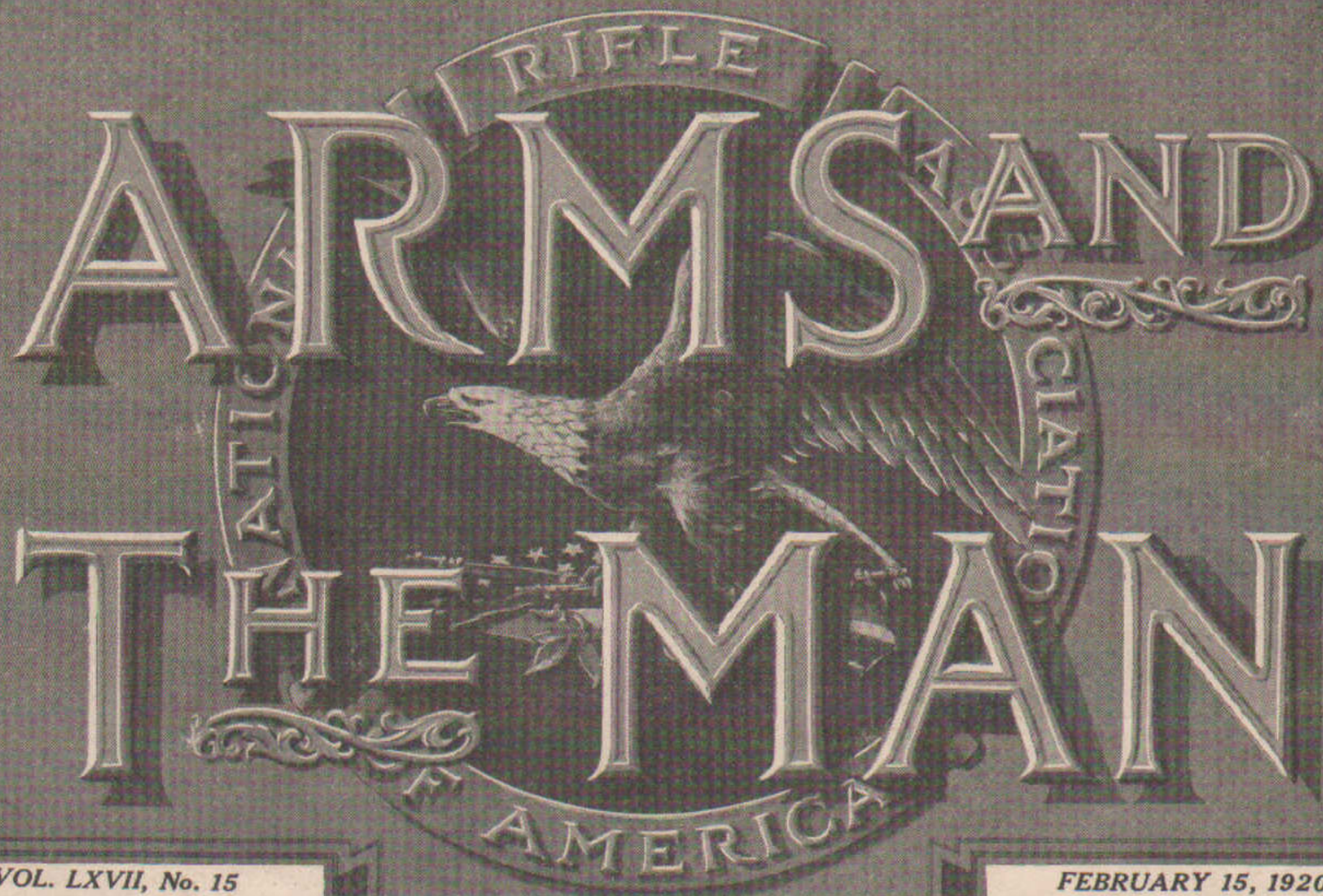


THE AMERICAN RIFLEMAN'S MAGAZINE

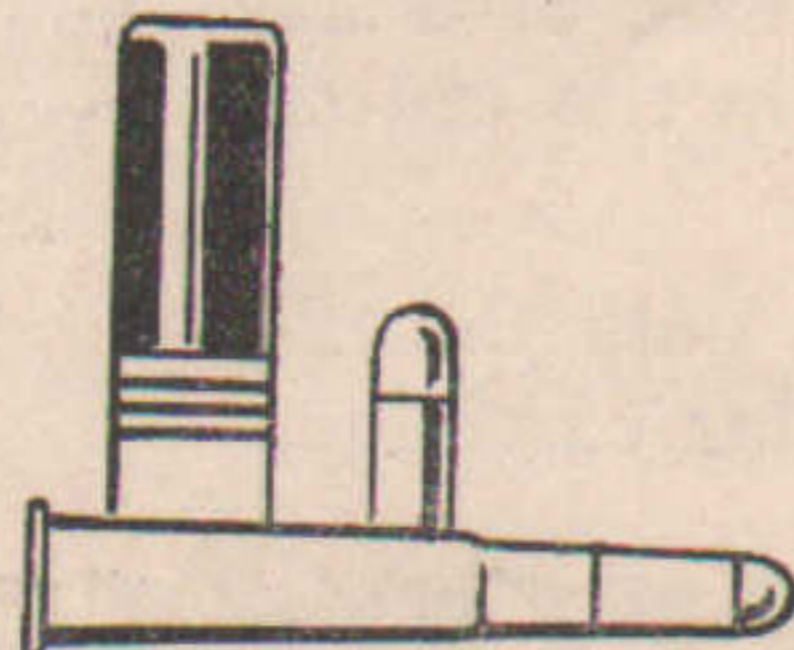


VOL. LXVII, No. 15

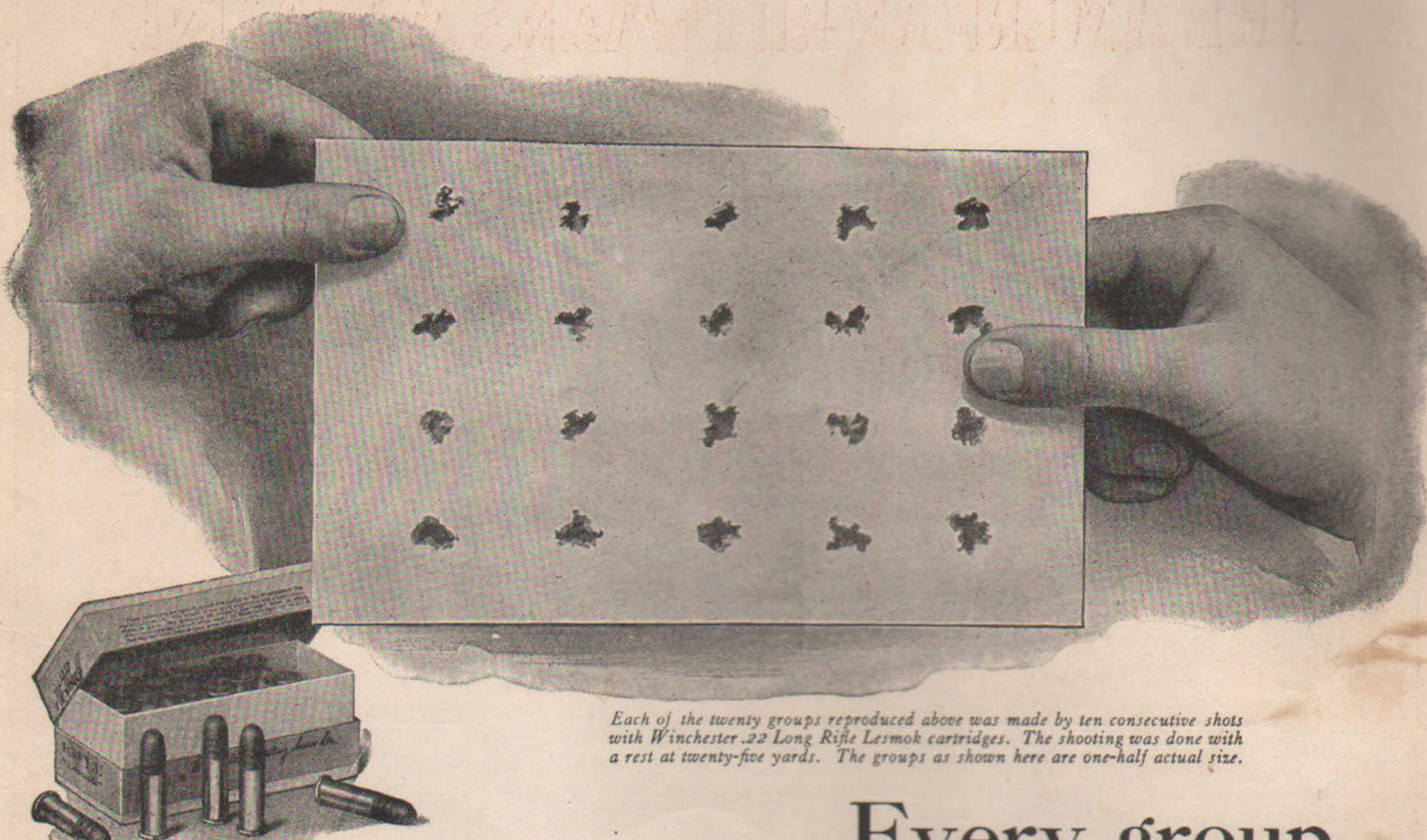
FEBRUARY 15, 1920



For one hundred and seventeen years Du Pont has meant "the powder" to sportsmen and to the military.



E. I. du Pont de Nemours & Company, Inc.
WILMINGTON, DELAWARE



Each of the twenty groups reproduced above was made by ten consecutive shots with Winchester .22 Long Rifle Lesmok cartridges. The shooting was done with a rest at twenty-five yards. The groups as shown here are one-half actual size.

Every group can be covered with a dime

THE twenty groups of ten shots each shown on the card above, were made at twenty-five yards with Winchester .22 caliber Long Rifle Lesmok cartridges.

The ammunition for this test was picked at random from different factory lots, manufactured during different months, and on different machines throughout the plant.

Each one of the groups in its original size can be completely covered by a ten-cent piece. Every one of these two hundred shots would have struck the base of a .22 caliber cartridge shell placed in the center of the group.

This test demonstrates not only the extreme accuracy of this particular cartridge,

but the absolute uniformity of manufacture from month to month throughout the great Winchester plant.

All types of Winchester ammunition, from the smallest .22's to the most powerful big game cartridges, receive the same care in manufacturing, the same rigid series of inspections, and the same practical tests of performance.

Men who shoot Winchester cartridges have the confidence which comes from knowing that as long as their aim is true every bullet will land square in the bull's-eye.

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ARMS AND



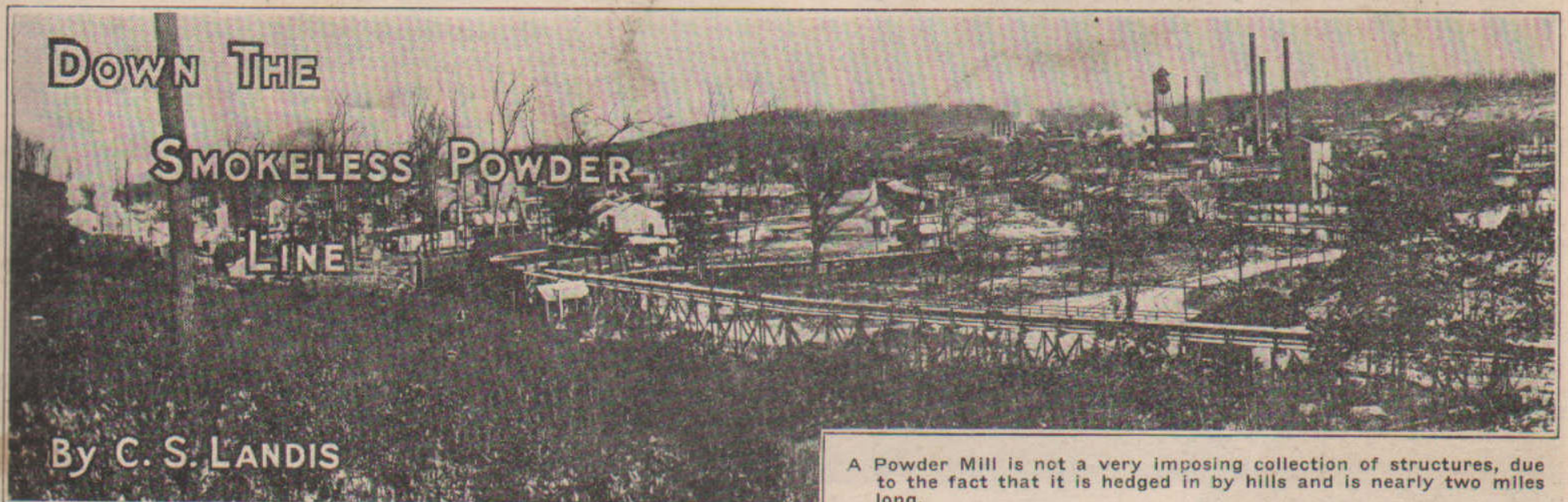
THE MAN

The Official Organ of the National Rifle Association of America

Volume LXVII, No. 15

WASHINGTON, D. C., February 15, 1920

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By C. S. LANDIS

A Powder Mill is not a very imposing collection of structures, due to the fact that it is hedged in by hills and is nearly two miles long.

IF we tear open a shotgun, rifle, or pistol cartridge, the thing that rivets our attention is the little pile of grains, flakes or cylinders that we call "powder." An article about powder that fails to mention its supposed Chinese origin and what it was made of hundreds of years ago is a violation of all tradition; nevertheless, this time we will omit the usual introduction and transport the reader into the Jersey village of Kenvil and introduce him to a modern powder mill, where smokeless sporting powders are made.

The first thing that attracts the attention of the visitor is the fact that a powder mill is not a very imposing looking collection of structures. The architecture of the Woolworth Building has not been copied to any appreciable extent and one is soon led to wonder "where they keep it when it's home," due to the fact that the plant is hedged in by densely wooded hills, and you don't see it all at one time, because it is nearly two miles long.

However, the auto soon slows up in front of a barbed wire enclosure, a gate swings open, and a business-like individual "frisks" our pockets, mentioning that he is looking for matches, after which we are allowed to proceed, feeling a little like a kid who has been caught in some other person's cherry tree. Having all of \$2.79 in our right hip pocket, which he appears to have overlooked, we take courage and prepare to face the future.

A collection of scattered buildings resolves itself into "the powder mill," and we soon reach the main office, where the Superintendent exchanges the usual formalities, introduces the office force, and we start down the powder line, escorted by the Assistant Superintendent, who has been making powder for a lifetime, and who probably has forgotten more about powder making than most experts know about it. Being a sociable chap, he promptly tells the party the "stock" joke up at the plant, which might be entitled "When the Vinegar Bugs Become Pickled."

In making the 46,000,000 pounds of smokeless rifle powder that this little Jersey village turned out during the war, it was necessary to provide a new source of supply for Acetone, the solvent that is used in making Cordite, so it was proposed to make it out of vinegar. However, it was

found there were not enough apples in America to make the vinegar required for 46,000,000 pounds of Cordite, so it was proposed to make the vinegar from alcohol and wood shavings, a method most commonly used commercially. The shavings are placed in wooden tanks and a small amount of vinegar is added to provide the bacteria which produce Acetic Acid. Alcohol is then added and Acetic Acid is continually formed through the bacteriological action set up by the priming charge of vinegar.

However, in the Spring of 1916 these "vinegar bugs," as the bacteria were known, had a sudden attack of spring fever, and it was necessary to provide them with a small amount of beer, in addition to the grain alcohol, to give them the necessary "pep."

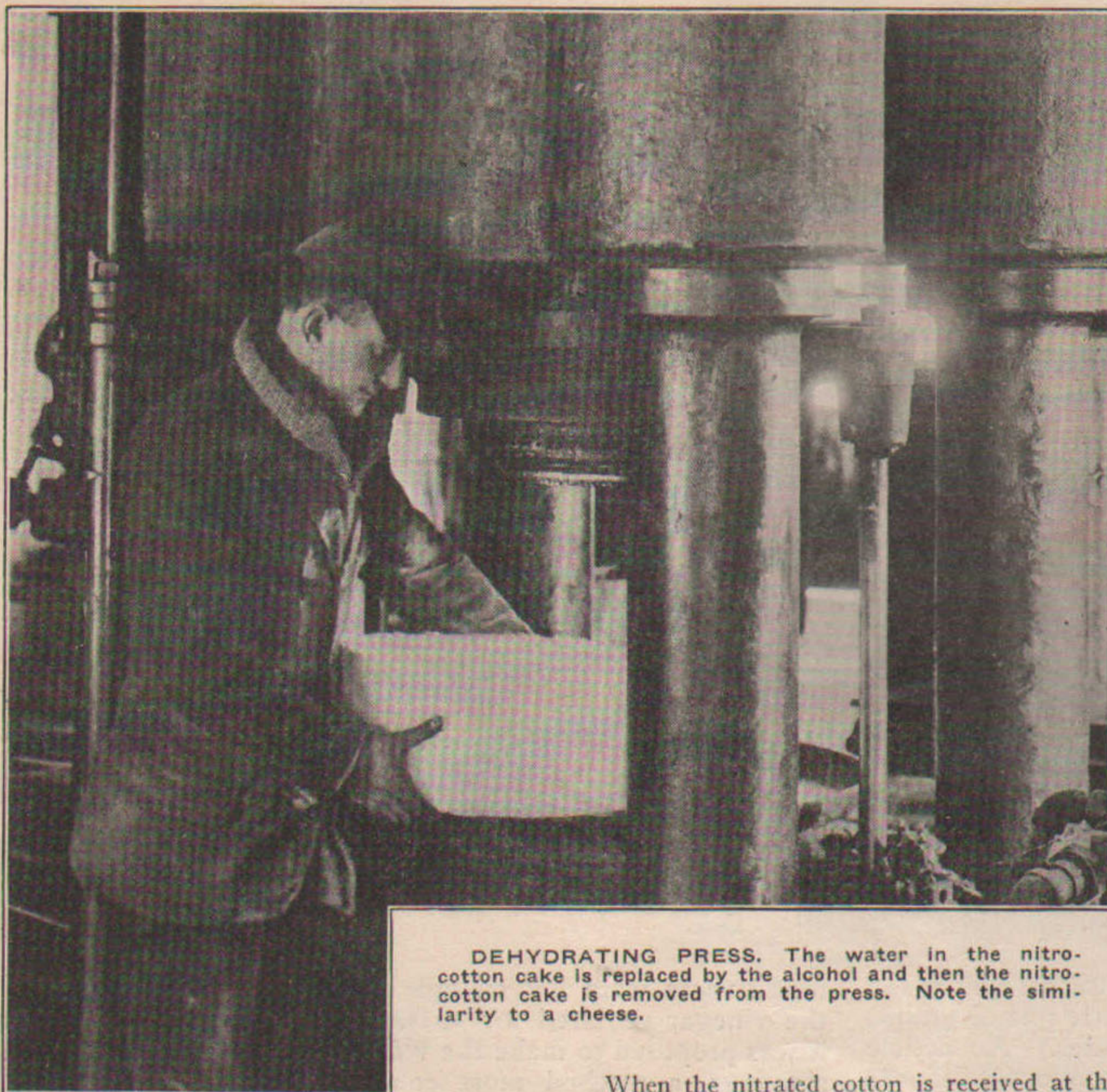
As warm weather drew on they seemed to suffer from spring fever, and later from heat prostration. As it was necessary for everyone to do his "bit" in the war, the chemists very obligingly increased the "bugs'" beer ration. This had the desired effect.

However, quite soon the "bugs" got too much beer, with the inevitable result, and malt extract had to be substituted before they would work properly.

The constant query around the vinegar plant at Baltimore, on the powder line at Kenvil, and at the home office, was "How are the bugs working this morning?" for, be it known, when a plant is turning out 2,000,000 pounds of Cordite a month, in addition to T. N. T. and Dynamite, it takes large quantities of Acetic Acid to keep things moving properly.

After we heard the "bug" story and everyone had worked up an elegant thirst right in the middle of a powder plant, which is as dry as the Sahara Desert, our guide proceeded to show us how smokeless powder is made.

At Kenvil, Hercules No. 300, No. 305, and No. 308, all nitrocellulose rifle powders; Lightning, Sharpshooter, and W. A. .30 Cal., double base dense rifle powders, and Bull's-eye pistol powder are manufactured. In addition, they make their Infallible shotgun powder here, but as this is written for riflemen, we will not bother about shot gun powders in this section, but leave the target busters and



DEHYDRATING PRESS. The water in the nitro-cotton cake is replaced by the alcohol and then the nitro-cotton cake is removed from the press. Note the similarity to a cheese.

duck hunters to their fate until later.

I suppose we ought to select a particular grade of powder and follow it through, but as Pyro powders are made in much the same manner, we can treat the matter about as "Bill did his best girl." Bill had announced his engagement, and as his fellow clerks gathered around to offer their congratulations or condolences, as the occasion seemed to demand, one said: "Bill, I understand that you are engaged to a girl who is one of twin sisters. How do you tell them apart when you call?" "Well," Bill replied, "you know Jennie comes from a very nice family, and so I don't bother very much about it."

In describing the manufacture of Pyro rifle powders, we will therefore follow Bill's method of reasoning and treat the subject so as to apply to the three brands.

In making a Pyro rifle powder there are thirteen steps between the box of nitro-cotton and the finished product. These are known as:

1. Dehydration.
2. Block breaking.
3. Mixing.
4. Preliminary block pressing.
5. Pressing.
6. Cutting.
7. Solvent recovery.
8. Air drying.
9. Glazing.
10. Sieving.
11. Preliminary blending.
12. Final blending.
13. Packing.

When the nitrated cotton is received at the plant, it is unloaded from the railroad cars to the trailers that carry it to the nitro-cotton storehouse, where it is stored until needed for the manufacture of powder.

The cotton comes packed in wooden boxes, and contains about 30 per cent of water. The water is necessary to make it safe from sparks and to comply with shipping laws. Therefore, dehydration is first in order.

Dehydration is a high-sounding word, but to dehydrate anything is merely to take the water out of it. This is done in the "Dehy" house in the dehydrating press. The Dehy press is a large vertical hydraulic press fitted with two rams that push toward each other.

The cotton is weighed out into 50-pound portions, one of which is placed in the press, and then the top ram pushes down onto it and presses it into a large cake that looks like a cheese.

At the beginning of this operation the press works at a pressure of 250 pounds per square inch. Alcohol is pumped onto the cake through a pipe in the side of the bowl of the press, and the pressure is raised to 3,500 pounds per square inch.

This pressure is about as great a pressure as is created in the chamber of a 12-gauge shotgun when it is fired with a light load.

This pressure forces the alcohol down through the nitro-cotton cake and thereby forces the water out ahead of the alcohol.

This operation forms what is known as "a dehydrated cotton cake." Then the "Dehy" cake comes out of the press in the shape of a cheese. It is white in color, and weighs about 88 pounds, due to the absorption of alcohol. After being weighed to see that it is the correct weight, the cake is placed in a fibre container and transferred on a hand truck to the block-breaking house.

The block breaker is a machine that is octagon-shaped on the ends and about 5 feet long. It looks much like a section of an enormous, Octagon-shaped rifle barrel. The sides are covered with wire of three-eighths inch mesh.

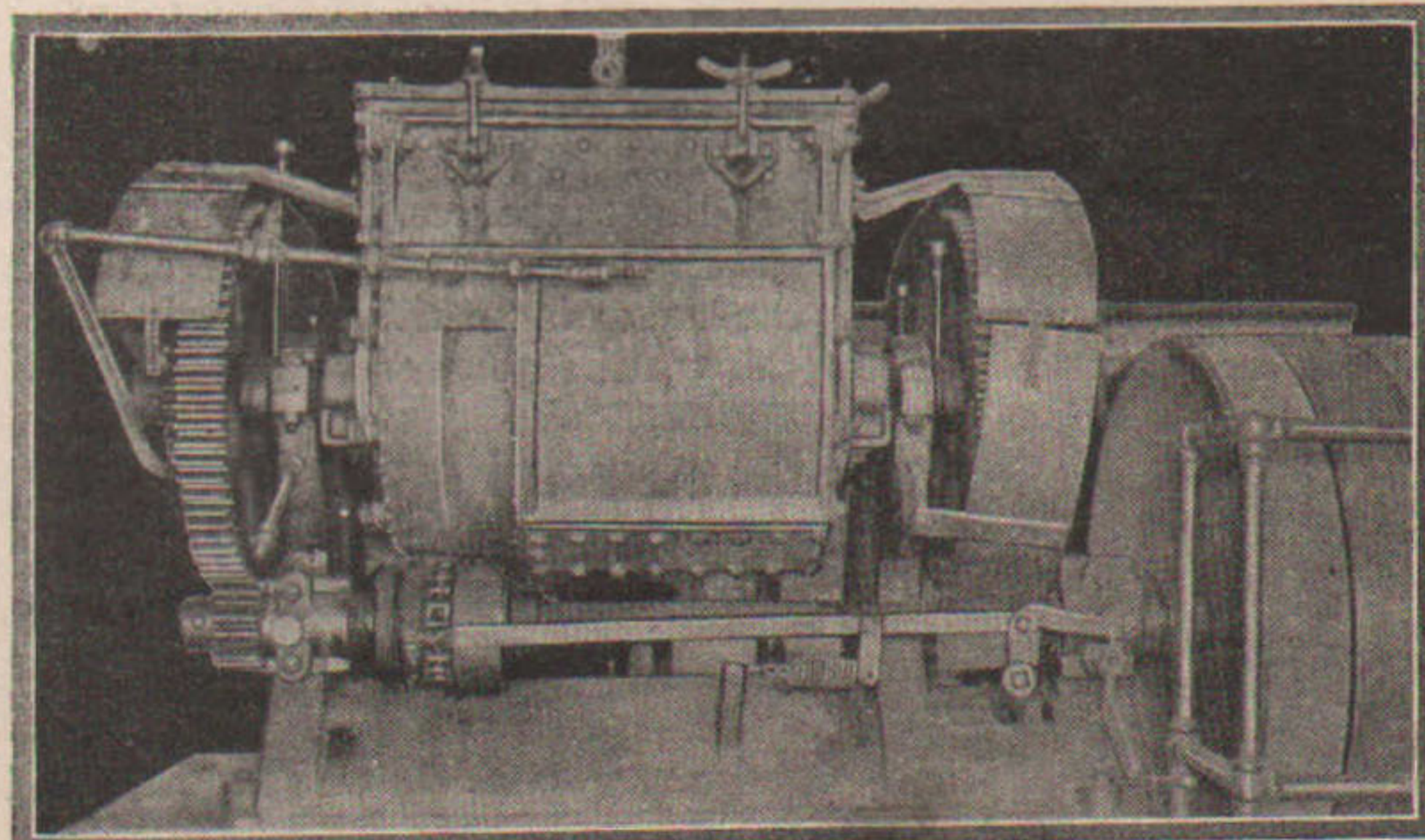
The method of operation is to drop a nitro-cotton cake into a hole in the end of the machine and then revolve the machine. This motion causes the block to be bounced around onto teeth that are placed at each angle of the octagon.

As the block is revolved, it is torn into fine particles which sift through the interstices of the screen into a box at the bottom of the machine. At this stage of the game the cotton is known as "broken nitro-cotton." From here it is removed to the mixing house.

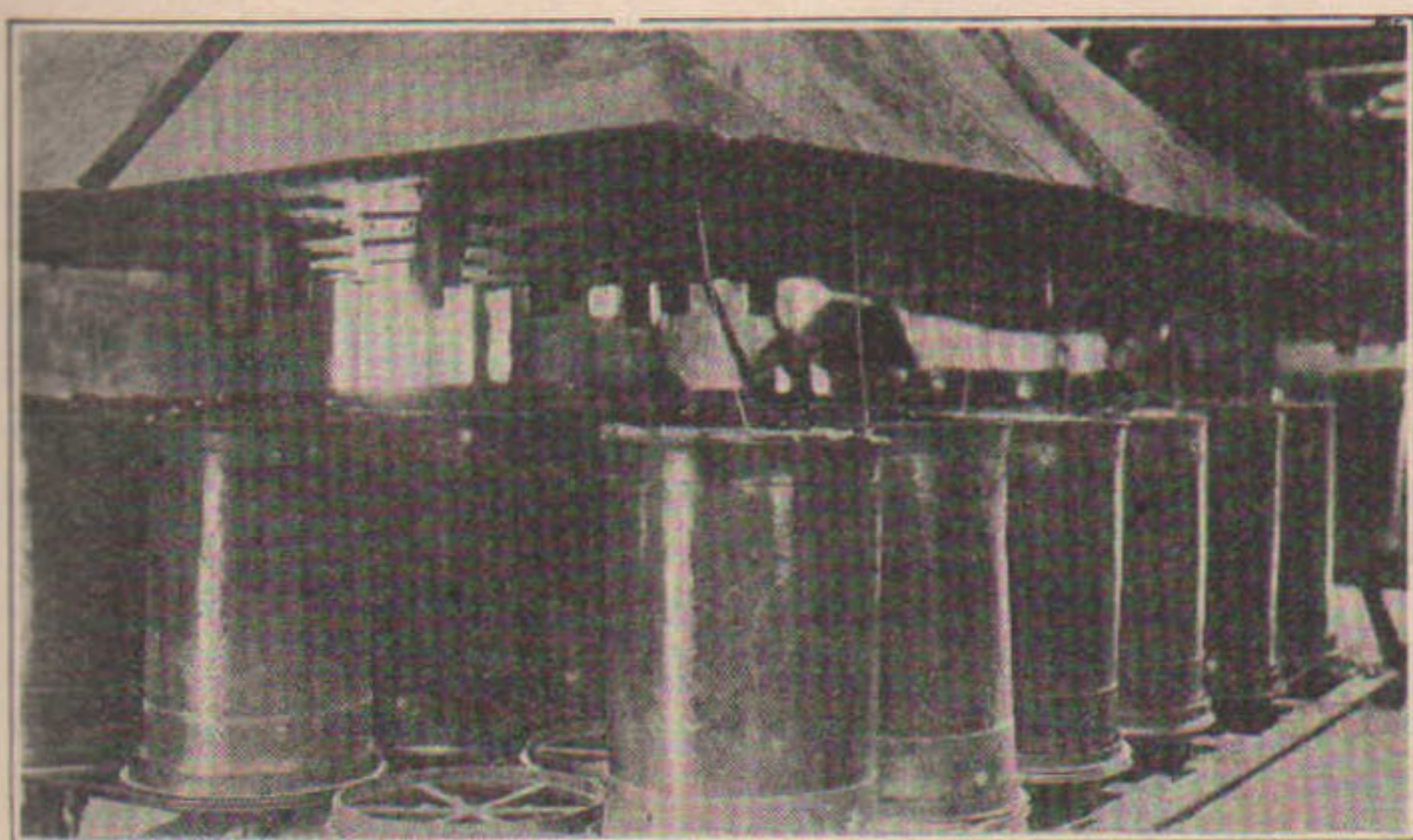
The mixing house contains the mixer. Two hundred pounds of broken nitro-cotton are placed in the mixer. Then a mixture of ether and diphenylamine is allowed to run into the bowl. The diphenylamine had been added to the ether as a stabilizer.

The ether that is used at the Kenvil plant is all made right on the ground. This operation is quite interesting.

Ether is made from sulphuric acid and alcohol. The sulphuric acid mixed with ether is contained in lead stills about 7 feet in diameter and 5 feet high. Alcohol is added to the sulphuric acid in the still, and then the temperature is raised to 125 degrees C. This liberates ether in vapor form. The ether va-



THE MIXER. The broken nitro-cotton is placed in the bowl of the mixer, the solvents are added, and then the paddles are revolved until the components are thoroughly amalgamated.



THE PRESS

When the cylinders of powder are placed in the press they are squeezed into endless strings that resemble macaroni or heavy twine. These strings are caught in fibre cans where they coil up into cone-shaped piles. When the fibre cans are sufficiently filled the strings are cut loose from the press, the ends carefully tied to keep them from tangling, and the trays are removed to the cutting machines.

por is passed through caustic soda scrubbers to remove any acids that may be carried over by the vapor.

The ether passes up through a copper column and then through various condensers and a cooler and eventually runs into a storage tank, where it is contained in liquid form.

When the ether is needed in the mixer, it is pumped up into a mixing tank, where it is mixed with diphenylamine, and care is taken to be sure that the proper amounts are used.

From the mixer the "paste," as it is then called, is drawn out into cans and sent to the preliminary block press house. Here the paste is pressed into blocks 12 inches in diameter and 18 inches long for the purpose of colloidizing and condensing it to such an extent that it will fit the chamber of the finishing press. In the preliminary block press house the mass is kept in the hydraulic press about one minute to cause it to colloid and press into the required block. From here it goes to the final press house.

The press house contains the vertical presses in which the powder is pressed into string form. Each press will contain two blocks each, 12 inches in diameter by 18 inches long. These cakes weigh about 60 pounds each, including the solvent.

The powder cake is pressed through a coarse screen, then through a very fine screen, known as a "55" mesh screen, and then through another coarse screen, which supports the middle or fine screen.

This operation removes any foreign matter that may have fallen into the powder cake and also gives it a thorough mixing.

At the bottom of the press the powder comes out in the form of endless strings that automatically coil up into cones. Thirty-six of these strings are squeezed out of the press at one time and look like outline twine or macaroni. These cones of macaroni strings are coiled into fibre cans, thirty-six of which are placed under the machine at one time.

I know many fishermen who will use outrageous language in trying to untangle one innocent looking tangled fish line. Just imagine the language of a "powder money" who has a backlash in each of the thirty-six

lines at one time, especially if the machine keeps on feeding out line.

After leaving the presses the cans of powder strings are carried on trucks through the doors to the cutting machines.

Cutting is the most interesting operation in powdermaking. Trays of cans are arranged in regular order in front of the machines and the strings fed into the rolls of the machines. Each machine will cut forty strings at a time.

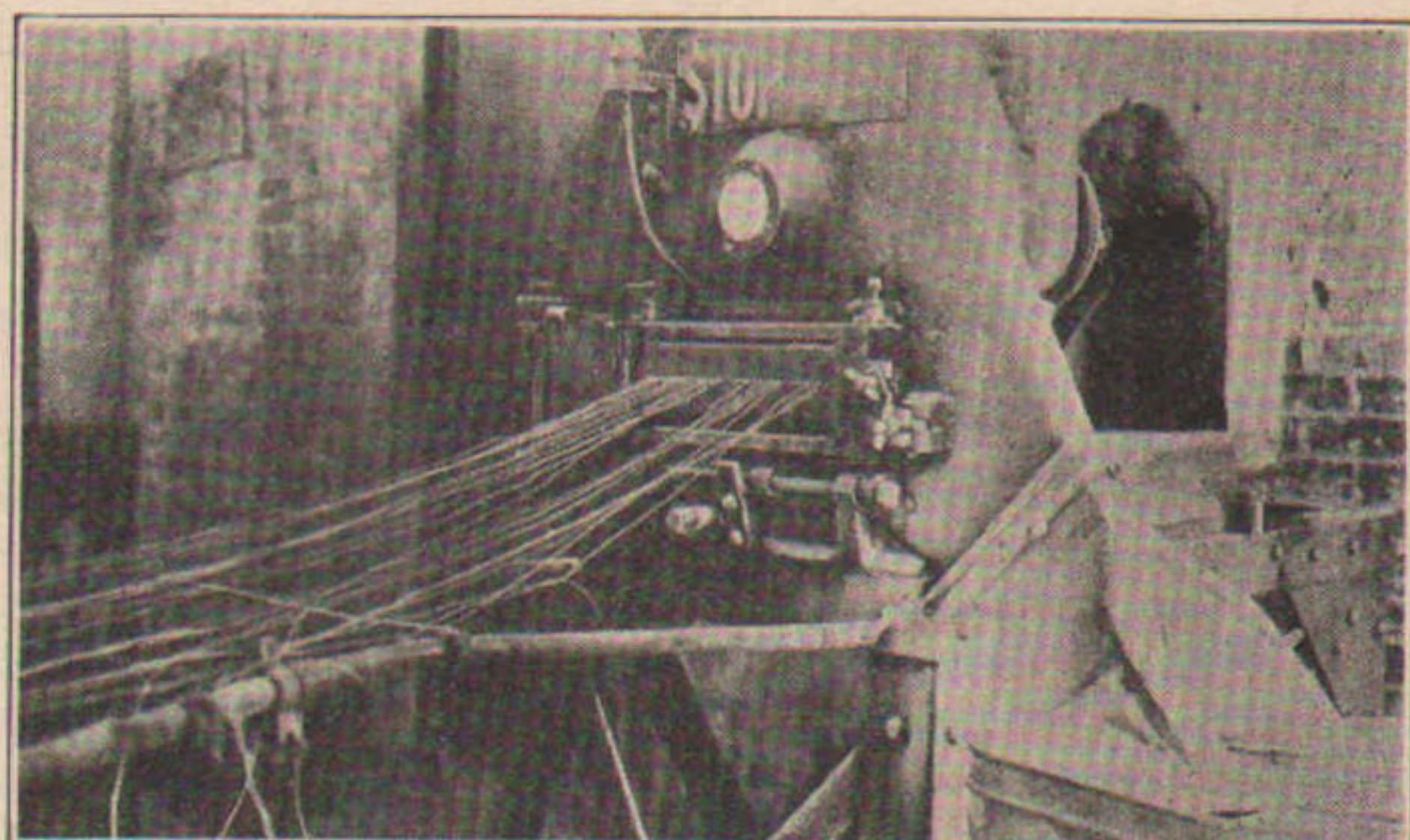
These machines contain revolving knives geared to cut at about 800 revolutions per minute. They cut the powder strings into small cylinders of equal length. These small grains or cylinders of powder fall out of the bottoms of the machines into bags or cans, just as corn drops out of a corn sheller.

The length of cut, or, in other words, the length of the powder grain, is regulated by the rate of speed of the feed rolls. The coarser powders, like Hercules No. 300 and No. 308, are naturally cut longer than No. 305. Among the double-base powders, Lightning is cut longer than Sharpshooter and much longer than Bullseye.

The *outside diameter* of the powder grain and *diameter* of the *hole* in the grain are determined by the size of the dies and pins through and around which they are squeezed in the press. Their length is determined by the cutting machines. It is practically impossible for either to vary, even very slightly.

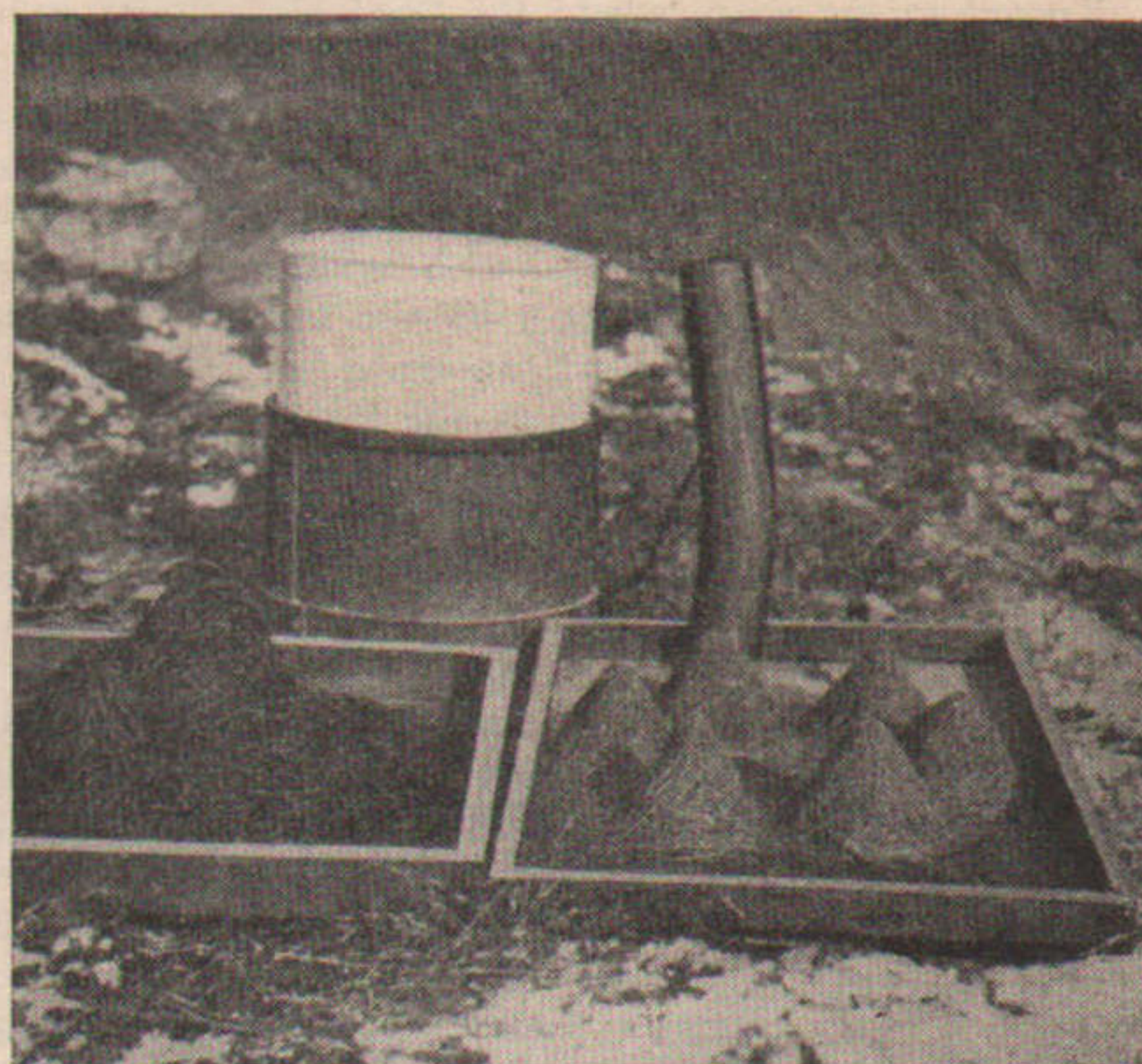
The cutting machines are not hard to run, but they require deft fingers and quickness in keeping the rolls supplied with powder strings or else the output will be cut down.

After leaving the cutting machines the powder is placed in cans holding 25 pounds each, and these are placed in a car called the solvent-recovery car. This car holds 1,400 pounds of powder. When it is filled it is run



THE CUTTING MACHINES

When the trays of powder are taken to the cutting machines they are arranged so that the strings will feed into the machines without tangling. Notice the way that the strings of powder feed into the rolls. The cut powder grain drops into a bag at the right of each machine and is then taken to the Solvent Recovery.



This photograph shows the three principal stages of powder manufacture. The White Cake in the rear is smokeless rifle powder in the form of a dehydrated nitro-cotton cake. On the right is a cylinder of dense smokeless rifle powder after it leaves the preliminary Block Press. The tray on the right side of the foreground contains strings of Bull's-eye Powder ready for the cutting machines. The tray on the left shows Lightning Powder ready for the cutting machines.

over into the solvent-recovery building, where steam is turned into a coil at the back of the car. This causes hot air to pass over the powder and dries the solvent vapors out of the powder. No water is contained in the powder at this stage of manufacture.

The ether and alcohol vapors pass through the *bottom* of the car, which is a screen, and then strike a cold pipe, which condenses them.

The operation of solvent recovery takes from five to seven days, after which from 5 to 10 per cent of solvent remains in the powder. When this is completed, the solvent line is shut off, and the tank is filled with water.

The powder is then water dried for five days at a temperature of 55 degrees. In other words, it soaks in water for five days. This process of water drying takes out all but about 1½ per cent of residual solvent.

(To be concluded.)

Saturday-to-Monday Camping

Being the second of a series of talks for the out-of-doors man

By CAPT. FRANK WINCH

CAMPING out is THE thing after all. It matters not a whit whether ye sportsman carried a gun or a rod, whether in quest of feather, fur or fin, whether the destination be a nearby lake, an oozing brook, forest, field or mountain top—nor does it count how close or far—nor whether one journeys by canoe, saddle horse, train, auto, or trolley, there's the one sterling basic principle in the sportsman's mind that overshadows all else—the supreme climax of his nomadic pleasure is camping out.

To get in the open, where the "real big blissful moments of truant-time freedom are drunk into the very soul." We all, you and I, have an inherent hankering for that period of carefree rest in the great outdoors. You and I, have read with avidity every advertisement glowing with the fulsome lure of woodland or waterway in Maine, Wisconsin, the Cassiars—the Rockies—or faraway Canadian wilderness of joy.

Year after year, you and I, have taken phantom journeys to these elysian retreats and yearned the harder for a reality made impossible by force of circumstances over which you and I have no control. "Too far away—can't spare the time—and too expensive"; these are the triangular sided boundaries that stood a mountain high barrier to that longed and hoped for vacation of yours and mine.

Then we day-dream a hope that next year may bring about a change—that conditions will improve for us; we'll have the money—that distance will mean nothing—and time—why, bless your heart, you couldn't measure that evasive thing with a multiplying triplicated non-back lashing thousand-yard Ingersoll clock spring!

That's what we—you and I—thought ten years ago and annually ever since, and, by the same precedent, will keep on thinking.

Or, will we?

Emphatically, NO!

Let's get out in the open, live in a tent, let your whole being be permeated with the tonic, God given, in the wind, the sunshine, the aroma of the earth, the succulent fragrance of balsam, hemlock and pine—the salt of the briny deep, the ozone of nature uncontaminated, unfettered with any man-made horizon.

"But," say you, "Time? Distance? Expense?"

These points I will answer so convincingly that it will bring a smile to your lips just so wide that you'll have to edge it sideways through the door as you go to spread the good tidings to friend wife.

Time—Saturday-to-Monday.

Distance—Anywhere from a mile upward from where you sit as you read these lines.

Expense—No more, mayhap not as much, as if you anchored in your present spot for the week-end.

And here's the how of it all.

First off, what is meant by camping out? To the uninitiated or perhaps one who has had the "experience" and says "never again," with t-r-e-mendous emphasis, camping out runs the gamut of discomfort, grease-fried meals, a galaxy of canned cookery, and slumberless nights of aching bones bruised upon a cold, clammy, rock-studded ground.

The which being not camping, but torture and quite removed from the outdoorsman's idyllic week-end in the woodland.

Bear this in mind: There are only three fundamental essentials to be considered for those who crave the enjoyment of camp life, be it for a day, week, month or season—only three, and, briefly said, they are "eats, sleeps, and duffle."

In this and the two succeeding articles it will be my aim to suggest some pointers—some do's and dont's as it were—for the benefit of those who need only the final word of encouragement to commence a series of vacationing that will redound in pleasure, recreation, and health-giving pastimes. Mind you, I do not do this in any pedagogic manner, nor with any notion that these suggestions must be followed to the minutest detail, and do not misconceive my motives. I have yet a lot to learn about the ways of the outdoors. My twenty years of following the trail—hunting, fishing and camping—have taught me that as yet I am a mere tryo—a beginner—just over the edge of the kindergarten in outdoorsman lore. But what I do say comes from experience, and in that light only it may be of some little benefit to the fellow who should be one of us, who has the desire and who has hesitated merely—because—

Of one point be assured, camping out is NOT an expensive luxury. Its requirements can be gauged to meet the needs of war-time economy. Somewhere nearby there is a stream, quietly lolling on its way to somewhere; an abandoned orchard, a woodland, a valley, a strip of ocean, or a craggy old mountain-top snuggled away in silence. Select the choice of your whim; find a way to get there; set the time, and—go.

For companions, there are none better than the wife and kiddies, or select a young married couple from your circle of friends, limiting the adult membership to four. There are reasons for not having too many in the party, but none to prevent making a trip alone, just with your dog, the mem-

ories of the one you had or the wish of having one now.

There are just four of us—two adult couples. We have enjoyed many a week-end, some time going in their machine, at others in mine, or again carrying a pack-sack apiece we have trolled to the end of the line and tramped the remaining mile or so to the camping site. We favor no particular place, though many have been visited, and nearly all we found to be a treasure land of nature. Still, as we all hanker to do a little bit of pioneering, we rarely revisit the same spot; this fact alone indicating that there is a wide range of choice to be had anywhere outside the sweltering confines of the city limits. One may choose for himself his own allotment in the kingdom of the wonderously great outdoors.

We, like you, have not been able for various reasons to go far away on an extended trip to the country where game abounds, so for food we have had to rely on what we could tote along, with the exception of the fish or small game that would cross the path of rod or gun. As a matter of fact, in all our Saturday-to-Monday camping trips fishing and hunting have maintained a place of only secondary importance.

But not so the "eats," and in a very large measure the success of your outing will depend on the attention that has been given to this feature.

Years ago, when I horsebacked alone over the wilds of the Rocky Mountains, my cuisine depended almost wholly on the accuracy of my gun pointing. A hunk of bacon, some flour and coffee totalled the inventory of my saddle-bag larder in those days.

Later, when "Peter Pan" decided to share with me what she termed the uncertainties of camp dyspepsia, it was our habit to go from home with grub-bag empty, getting our supplies from some country store en route. A few years of this sufficed. Now we have a plan—carried into successful execution for many seasons past—by which we go forth fully equipped, and no longer rely on the village department store, which, as a rule, carries the things you don't want or some that you do—have to be excused on account of venerable old age.

Some days before each of our trips, our party of four get together, then and there make up the menu for every meal we will have in the open. In this way the tastes of each are catered to, the menu completed, we get what we want and will use; there is no waste and every meal a delight in itself. From the menu we determine the quantity, a list is prepared, taken to the store, goods ordered, checked off and packed.

A concrete example: We decided to spend the Fourth of July and week-end at a nearby lake some thirty-odd miles from New York City. We made the trip in a five-passenger touring car, carrying beside

the four members of the party every detail of equipment that goes to make a camp complete, from tents to eats. The succeeding stories will explain in detail impediments other than the culinary essentials, also going into particulars of cooking and what to use.

We planned to arrive at camp in time for supper Thursday night and remain until the evening meal on Sunday evening, making a total of ten meals to be prepared for four people. Each meal, as pre-mened, follows:

Thursday.

Supper—Fried spring chicken, Southern style; cream gravy, browned potatoes; fig newtons; pickles; bread; butter; jam and coffee.

Friday.

Breakfast—Baked bacon; soft-boiled eggs; hot camp biscuits; jam; coffee.

Dinner—Corn beef hash; sliced tomatoes; bread; butter; coffee.

Supper—Broiled perch and pickerel (fresh from lake); succotash; candied dates; crackers; jam and coffee.

Saturday.

Breakfast—Baked beans; broiled pork fritters; hot biscuits; coffee.

Dinner—Vegetable soup, chipped beef in cream; sweet pickles; bread; butter; jam; coffee.

Supper—Broiled perch; bass; pickerel; stewed tomatoes; mashed potatoes on plank; fig newtons; jam; hot ranchman bread; butter; coffee.

Sunday.

Breakfast—Hot biscuits; pancakes with maple syrup; eggs; jam and coffee.

Dinner—Cold boiled eggs; sliced tomatoes; cold sliced corn beef; bread and butter; jam and coffee.

Supper—Hot biscuits; chipped beef sandwiches, in gravy; sweet red peppers; potatoes baked in the embers; candy and coffee.

All cooking done in camp over the open fire and with reflecting baker. Sound good?

As for cost and quantity, the following list tells its own tale:

2 pkgs. fig newtons	.....	.28
2 bots. pickles	.....	.48
2 lbs. coffee	.....	.70
2 cans corn beef	.....	.70
1 box crackers	.....	.14
1 lb. self-raising flour	.....	.28
1 bot. maple syrup	.....	.20
2 cans vegetable soup	.....	.20
1 jar chipped beef	.....	.32
2 cans condemned milk	.....	.21
1 can Crisco	.....	.30
1 bot. Worcestershire sauce	.....	.24
2 cans pork and beans	.....	.25
2 lbs. butter	.....	1.10
2 cans succotash	.....	.50
1 peck potatoes	.....	.75
2 lbs. bacon	.....	1.15
1 lb. salt pork	.....	.60
1 doz. eggs	.....	.60
1 spring chicken	.....	1.35
1 pkg. candied dates	.....	.25
3 jars ajm	.....	.45
3 loaves bread	.....	.36
fresh tomatoes	.....	.50
box candy	.....	1.00
sweet peppers	.....	.30
		<u>\$13.21</u>

At this figure each meal, per person, cost about 33 cents. Peter Pan and I are trying to figure why we can't do this well at home. Note back over the menu and you will see an absence of "greasy-fried" articles, which are the ban and gustatory nightmare of most campers. They are as unessential as needles. Camp cookery, however, is an art in itself, acquired mostly by experience, and that comes only from actual contact.

Get out your pencil and paper; make up the menu; choose the other members of your party, and make the week-ends something to be remembered by Saturday-to-Monday camping trips.

Blueing Receipts

By T. T. PIERCE

SOME information on mixtures for blueing ing guns and on application, being extracts from report on "Blueing Solutions" recently tested at the National Proving Station.

1. On barrels it is necessary to protect the bore in every blueing operation. The standard and most practical method is that of driving taper fit pine plugs into each end of the barrel, leaving a projecting end of these plugs to provide a means of handling barrel without touching with the hands the metal to be blued.

2. All work to be blued must be well polished and should be cleaned by following process:

- (a) Wipe clean and dry.
- (b) Wipe with cloth moistened with alcohol.

(c) Wash with a solution of (1) powdered lime and water; (2) whiting and water. Coat work with solution and allow to dry, then wipe with clean, dry brush or boil work in one of above solutions for about twenty minutes.

3. Remember that weather conditions, as well as amounts of carbon in steel, govern both time for, and number of, applications of the blueing solution. The relative value of weather conditions in their effect on rapidity and strength of the chemical action are:

- (a) Hot and moist.
- (b) Hot and dry.
- (c) Cold and dry.
- (d) Cold and moist.

SOLUTION NO. 1.

1 oz. corrosive sublimate.
2 ozs. sweet spirits of nitre.
1 oz. alcohol.
Add distilled water to bring solution to weight of 6 ounces.

SOLUTION NO. 2.

1 dram nitric acid.
¼ oz. corrosive sublimate.
¼ oz. brimstone.
½ oz. bluestone.
1 oz. spirits of nitre.

1 oz. saltpetre.
1 oz. tincture of iron.
1½ qts. distilled water.

SOLUTION NO. 3.

½ oz. sweet spirits of nitre.
½ oz. corrosive sublimate.
¼ oz. tincture of iron.
60 drops acqualifis.
4 grains nitrate silver.

SOLUTION NO. 4.

3 ozs. corrosive sublimate.
3 ozs. sweet spirits of nitre.
3 ozs. tincture ferri chloride.
3 ozs. alcohol.
3 qts. distilled water.

SOLUTION NO. 5.

¼ oz. corrosive sublimate.
¼ oz. nitric acid.
1½ ozs. sweet spirits of nitre.
1½ ozs. tincture of iron.
⅛ oz. copper sulphate.
16 ozs. distilled water.

SOLUTION NO. 6.

1 oz. tincture of iron.
1 oz. spirits of nitre.
1 oz. saltpetre.
½ oz. bluestone.
¼ oz. corrosive sublimate.
1 dram nitric acid.
¼ oz. brimstone.
1½ qts. distilled water.

SOLUTION NO. 7.

6 ozs. tincture of iron chloride.
6 ozs. sweet spirits of nitre.
1 oz. corrosive sublimate.
1 oz. nitric acid.
1 oz. sulphate copper.
2 qts. distilled water.

METHOD OF APPLICATION.

SOLUTIONS 1 TO 7, INCLUSIVE.

1. Coat work with solution, using clean cloth or sponge.
2. Allow to stand six to twelve hours or two to four hours after appearance of a thin coat of rust.
3. Remove rust by light rubbing with 00 steel wool.
4. Repeat application and operation until desired color has appeared (3 to 12 days).
5. After final rubbing, dip work in boiling solution of distilled water and logwood.
6. Repeat dipping six to twelve times.
7. Oil work with a good, heavy-body oil.

SOLUTION NO. 8.

This is a quick solution for barrels as well as smaller parts. Requires one to two hours to dissolve solution. Boil solution for six hours in a lead-lined trough. Let cool in trough and keep for use as needed. Apply by dipping work; polish off with clean cloth. Repeat six to eight times.
3 lbs. bluestone, dissolved in
3 gallons water.

(Concluded on page 13)

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 RECRUITING DRIVE

THE three months' intensive campaign which is being waged by the Army, with the object of maintaining the regular establishment at its authorized strength, should receive the hearty support and cooperation of all American riflemen. The restoration of the rifle to its proper place as the most important weapon of the infantryman, which has resulted from our experiences in the war with Germany, has laid the foundation for a unity of purpose in the future work of the rifle club member and the army officer. Each is seeking to maintain our national heritage of straight shooting and each can profitably help the other in any way that will work to this common end.

The War Department early in the stress of wartime recognized the aid which the civilian riflemen could give to our national forces, and now that hostilities have ceased the War Department freely accords full credit to the American rifleman for what his influence, both direct and reflected, accomplished toward sending a properly trained army into the field. As a result of the place which the American rifleman has won for himself in the regard of the War Department, the Secretary of War believes that the influence of civilian rifle clubs throughout the United States can be of untold benefit in stimulating recruiting. This letter has been addressed by the Secretary of War to the President of the National Rifle Association:

War Department
Washington

A. G. 341-1

January 28, 1920.

The President,
National Rifle Association of America,
1108 Woodward Building,
Washington, D. C.

My Dear Colonel Libbey:

The War Department is now engaged in an intensive campaign having for its object the maintenance of the Regular Army at authorized strength. Before March 31,

1920, 75,000 enlistments will have to be secured to replace losses, due to expiration of term of service and furloughs to the reserve.

With the present demand for men in almost every walk of life this will be no easy task. From now until March 31st not only the General Recruiting Service, but all organizations of the permanent establishment, will cover the entire country with special parties. In addition, the War Department has decided to marshal to its aid every American agency which can help in this vital undertaking.

In order to secure that local attachment between the citizens of a State and the units of the permanent establishment, a feeling heretofore non-resistant, yet so very much to be desired, I have caused the various regiments to be allocated to particular States for recruiting purposes.

This measure will identify each State with the regiment or regiments to which its citizens go; it will foster in those units a spirit of State and National pride and emulation, and will, I trust, develop between the citizen in uniform and the citizen out of uniform such a deep and abiding mutual respect and interest as will build up a real citizen army backed by the good-will and affection of the people.

It would prove of inestimable service to the country and to the new army that has come into being if we could secure through your National Rifle Association the aid of the rifle clubs all over the country.

"The Army Builds Men" is our slogan. It is my desire and hope to bring to the full knowledge of the country all that the Army does and will do in education and training of the men who enlist in its ranks, and to facilitate the continuance of the complete understanding between the Army and the people as to their mutual obligations and their common interests.

In this great work I am enlisting the aid of the Governors of our States and of the heads of all the civic organizations that participated in the war. May I not also count on your aid in the furtherance of this patriotic purpose?

Very cordially and sincerely yours,

NEWTON D. BAKER,
Secretary of War.

Prior to our entrance into war, the army recruit was prone to feel that the citizens took little heed of him and manifested no interest in his existence. The coming and passing of hostilities has changed all this, and we should not permit the recruit to forget that soldiering in the ranks is an honorable occupation and one which carries with it opportunities bounded only by individual limitations.

Every rifle club should immediately take steps to identify itself with the recruiting drive now on in its own community, and should not only exercise its influence with other rifle organizations, but should undertake some active work in connection with maintaining the Army. Each club might profitably undertake to obtain as many recruits as possible, and with the entrance of these recruits into the Army place them on the rolls of the rifle club, constituting these recruits the club's representatives in the service. This is only one of the many methods which might be followed to the end of actively identifying every rifle club with the recruiting drive. The maintenance of the Army is a matter of National concern and of patriotic responsibility which should be assumed by every citizen.

More About Australian Rifle Shooting

By HENRY WALTER FRY

THERE is just one little incident in connection with rifle shooting in Australia that I forgot to mention in my previous articles on the subject.

When the war broke, all the club shooting with the service rifle was stopped by the military authorities, and nearly all those who were used to spending their Saturday afternoons on the rifle range found that the practice of their favorite pastime had suddenly come to a full stop. All but one man. That man was I. I pride myself upon being, like Henry Albert Bivens in one of Kipling's *Just-So Stories*, "a person of infinite resource and sagacity," and if I can't shoot in one way, why, then, I turn to another. So when Saturday afternoon came along, I would take my little .22 Stevens Favorite, a telescope and some ammunition and spend the afternoon alone on the deserted range, trying various brands of ammunition at 100, 150 and 200 yards. My rifle was fitted with an aperture rear sight on the tang of the stock and a fine-bead front sight, and my practice was to put up a 6-inch square card at 100 yards, or a 12-inch square card at 200, hold the sight bead in the middle and let drive. At 100 yards I had no difficulty in getting 3-inch groups with good ammunition, and at 200 I got one very good one with all shots well within an 8-inch circle, which was not bad going for a light, 4½-pound rifle, which was badly ringed about 8 inches from the breech and from which I had fired at least 12,000 shots on the smallbore range in the old country. This experimental work was very interesting and almost compensated me for the loss of my usual weekly shoot with the big military weapon. As a matter of fact, it gave me a great deal more practice, for with the service rifle it was very seldom that a man could find an unoccupied target for a practice shoot when once he had finished his competition allowance of fourteen shots and two sighters. Usually by the time all the clubmen on the range had had their turn, the afternoon was gone. It is in this respect that the smallbore rifle scores over the military arm—one can put in five or six times more shots in an afternoon with it than time or expense will usually allow to most men with the service weapon, and there is little doubt that the more practice a man has, no matter with what kind of rifle, the better shot he will be with any. A very striking example of the working of this rule once occurred in England. In the city of Birmingham there are, or were, large numbers of workingmen's air rifle clubs, whose members held their matches usually in rooms at the back of various saloons in the town. Shooting was usually done standing, at a three-eighths inch bull's-eye, at a distance of 7 or 8 yards, and constant and regular practice had developed many fine shots among the

club men. One day some of the men of the local volunteer regiment, talking shooting matters with some of the airgunners, spoke rather sneeringly about their style of practice, calling it pothouse shooting, silly, useless, impractical, etc. The airgun men fired up at once and challenged the volunteers there and then to a match with the service rifle at full military ranges. The match came off, and the air-rifle men, using a gun that they did not practice with, beat the volunteers shooting their own familiar weapon. A friend of mine in the old country, an old sergeant of regulars, told me he had made his the best shooting company in the regiment by means of practice in the barrack room on winter evenings with a couple of cheap airguns. But this is wandering somewhat astray from the main track of my subject.

All shooting with the .303 rifles having been stopped, the committee of the league of clubs called the Twenty-one District Rifle Clubs Union, met one evening to consider the question, among others, of the usual monthly gold medal competition. I attended the meeting, taking with me my 200-yard, 8-inch group, and after various schemes had been mooted, got up and proposed that we hold the match at 200 yards with .22-calibre rifles, laying my 8-inch group upon the table as evidence of what the smallbore weapon would do at that range. That upset the apple cart and put all the fat in the fire, so to speak. There was a fine to-do, the real old conservative, dyed-in-the-wool, service-rifle men, who, most of them, had never shot a .22 in their lives, fiercely opposing it, calling it ridiculous, impracticable and absurd. One man in particular, the secretary of one of the leading clubs of Melbourne, was especially bitter, and he and I had a real hammer-and-tongs verbal scrap over the question, but other men from clubs which had a smallbore range at their headquarters, backed me up, and it was agreed to hold the competition on the conditions proposed. The match came off, and was an unqualified success. Quite a number of men turned up, many of them bringing rifles from their club's smallbore ranges, and I carried down a consignment of German "R" brand long-rifle black powder ammunition for the use of all the competitors, deriving a kind of ironic satisfaction at using German cartridges to help Australians to learn to shoot Germans. The conditions were: 200 yards, 10 shots at a green target with a khaki head and shoulders in the center; highest possible, 50. There were separate practice targets at which men were allowed to shoot to find their elevation, and when once they had found the target they had to stop until their turn came for competition shots. It was a still, grey afternoon, with no wind to bother us and a good steady light, just right for .22 shooting, and the crowd was much astonished

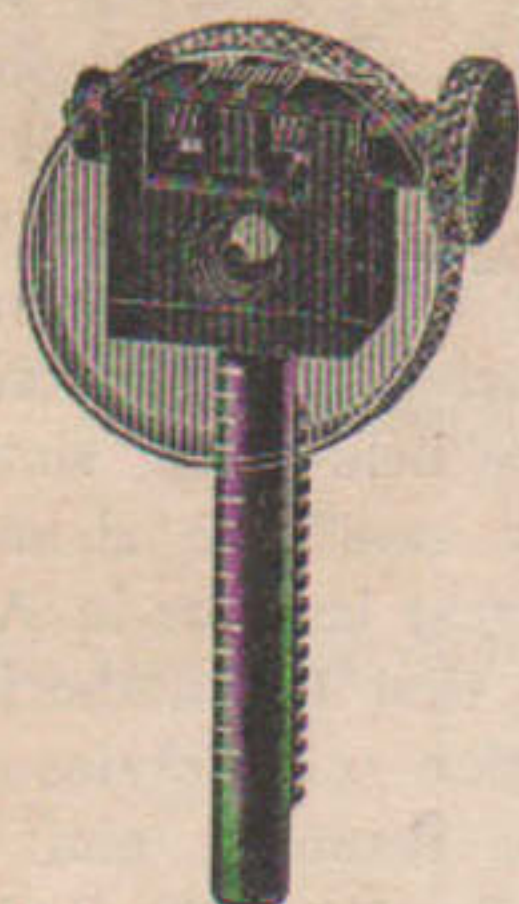
to find how well the little cartridges performed. The top scorer made 48. I, with my little Favorite, made 44, and my opponent of the committee meeting, who did all he knew to beat me, made 42. The match was voted a great success by all those who took part in it, and other matches would certainly have been arranged to be held under similar conditions, and out-door smallbore shooting would have received a great impetus in Australia, but shortly after that the authorities withdrew their prohibition of service-rifle work, which was again resumed, and the smallbore rifle was confined to the indoor ranges.

As regards sporting rifles and game shooting in Australia, there is not much to shoot at but kangaroos, rabbits and foxes. I have often thought what a shock it would be to a fox hunter from the English shires, where to kill a fox except by the orthodox way is reckoned several degrees worse than murder, to come suddenly in front of an Australian gun store and see in the window rifles labeled "Good for shooting foxes." The poor man would never get over it. In certain places there are deer, and away in the back blocks a few wild turkeys. The only game that might be called dangerous are the crocodiles in the rivers of the Northern Territory, which need a pretty high-power rifle to kill them. Concerning these a gunsmith friend of mine in Melbourne told me about a man who for the work had imported at great expense from England a high-grade double .475 nitro express, which by the time he got it had perhaps let him in for some five or six hundred dollars. It's the kind of gun which when a man fires it makes him think that the heavens and the earth had come together with a sudden crash, and, as another friend put it, "Most men, if they had fired a shot at a tiger and had missed him, and then, if they had to choose between firing a second shot and letting the tiger eat them, would choose the tiger."

My gunsmith friend who had to target this fearsome weapon, said that in all his long experience it was the only one which ever gave him gun headache, which, he said, feels as if the roof of one's skull were being lifted off and put back again at short intervals.

At any rate, the owner of the rifle took it up to the Northern Territory. He fired just two shots with it. With great deliberation, he then took it by the muzzle, smashed off the stock against a rock and threw lock, stock and barrels into the river, and the bag of cartridges after them.

American rifles of all sizes and makes are imported into Australia for sporting work, but for smallbore target work, the B. S. A. bolt or Martini action rifles are preferred, though a fair number of 1904 bolt-action Winchesters are also used for 25-yard shooting. These, and the 1902 Winchesters, are a good deal used for rabbits, and were on sale at all the gunsmiths, sporting goods houses and hardware stores. Rifles chambered for the .32, .38 and 44 W. C. F. cartridges were



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Announcement

The MANUFACTURING & SALES CORPORATION, Oliver L. Badger, President, has purchased the business of The Kerr Adjustable Strap Co. Inc., and will continue same at the old address.

Gun Slings for all rifles supplied to the trade.

Rifle Clubs and riflemen unable to obtain our slings from dealers may order from us.

The favorite sling of the Army, Navy and Marine Corps.

MANUFACTURING & SALES CORP.

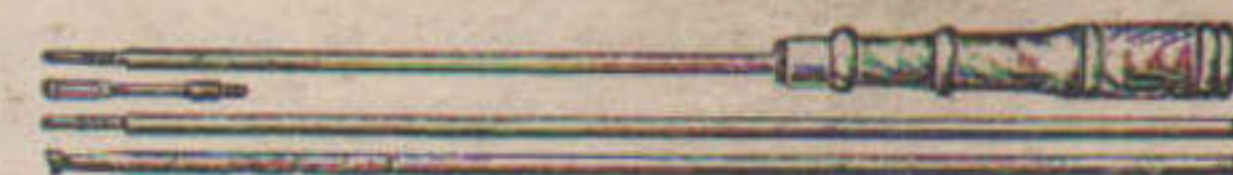
40 Cedar Street
NEW YORK

also largely stocked and sold, and the Winchester reloading tools for these three cartridges were carried in stock at many of the Melbourne stores, though I don't fancy they were very much used. The Australian, like the Englishman, is very seldom anything of a rifle crank, preferring to let his gun and cartridge maker work out and solve all the various problems of loads and calibres to bothering about it himself. So he buys the rifle he fancies with the ammunition to fit, shoots them and shoots them well, and throws the fired shells away. Even among the men who shoot the Lee-Enfield rifle every week upon the range, there are plenty of men, fine shots, too, who couldn't tell you the number, depth, and twist of the grooves in their rifle nor the weight and muzzle velocity of the bullet. They simply are not curious on the subject, not having that passion for investigation and experiment which develops so many gun bugs and rifle cranks in this country. One has only to listen to the talk of a couple of American countrymen in front of a gunsmith's window to grasp the fact that they possess much more interest in and knowledge of rifles than two men of the same kind in Australia. At the same time, there can be no doubt that there are hundreds of thousands, perhaps millions, of Americans in the cities who have never fired a gun in their lives, but we must look to the

smallbore club movement to do something to remedy that condition of things.

All kinds of rifles are used for kangaroos, the .44 W. C. F. being as popular as any. A kangaroo sometimes takes quite a lot of stopping, and I have known of a case of one getting away after being shot clean through with a 9 mm. high-power Mauser rifle. A big old kangaroo driven into a corner can be a very nasty customer to tackle. With one of his sharp hind hoofs he can rip a dog, or a man for the matter of that, clean open, or he will clasp a dog in his forepaws, carry him to the nearest waterhole, and hold him under till he is drowned. I do not know whether he has ever served a man that way, but wouldn't at all care to risk it. But in the ordinary way kangaroos are quite harmless, and the most dangerous creatures to be met in the bush are the snakes, and they will nearly always get out of the way when they hear anyone coming; and though I was several years in Australia and tramped many miles through the bush, I never in all that time saw a live wild snake, though plenty of their tracks were in the dust of the roads and pathways.

Rabbits are abundant at certain times and places, and for them the .22 is the favorite rifle, though I have seen the .25 Stevens used with great effect, especially with the hollow-



MARBLE'S Jointed Rifle Rod

Made of brass, with steel joints. Can't wobble, bend or break. Swivel in end section prevents joints from unscrewing when in barrel. Gives whirling movement that cleans thoroly. Wood handle. All lengths. All calibres from .22 to .50. Price, including cloth bag, \$1.10.

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ATTENTION RIFLE CLUBS

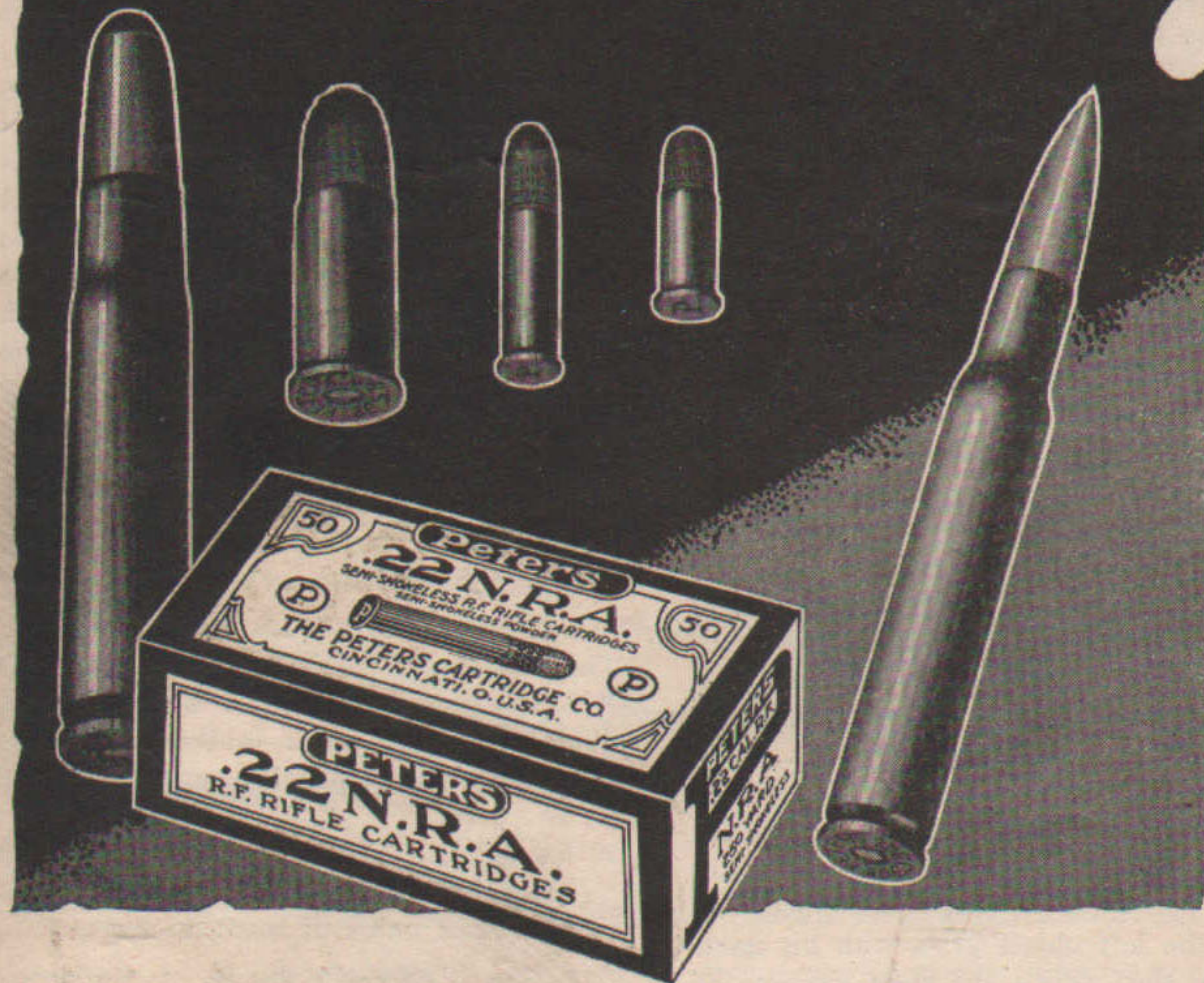
SOLVOL in one quart cans. Just the right size for use on the gallery cleaning rack. A trial can will be sent, postage paid, upon receipt of \$1.65.

Manufactured by
CAPT. BASIL MIDDLETON
Culver, Ind., U. S. A.

fronted bullets. For foxes, which are great pests and very cunning, nothing smaller than a .25 calibre would be of much account, and an accurately sighted rifle, too, as it is rather difficult to get within easy range of one.

That, I think, about completes what there is to say about Australian rifle shooting, and I trust my readers will excuse the somewhat egotistical style of this narrative, which is almost as full of capital "I's" as certain fisherman's yarns; but the nature of some of the incidents related made it unavoidable.

Peters Cartridges



THE announcement by the United States Revolver Association of the winners of the Outdoor Pistol and Revolver Championships again points to the leadership of Peters Cartridges.

The World's Record, by Dr. Snook, a record by a wide margin, and the excellent scores made by T. K. Lee are added to the evidence of former years and demonstrate the genuine quality of Peters Semi-smokeless Cartridges which have for years been used by many winners of the U. S. R. A. and N. R. A. matches.

Whether your requirements call for .22 calibre or the big .45 Cartridge, there is a P brand cartridge ready to show you what perfection in ammunition amounts to and that its accuracy and uniformity will prove of great assistance in making a good score.

A wise choice in buying ammunition is an important factor in the making of a high score.

Users of the P Brand Won Three Out of Four of the 1919 Outdoor Championships of the United States Revolver Association

- Match "A" (Revolver Championship of America), T. K. Lee, Birmingham, Ala., 463x500.
- Match "B" (Pistol Championship of America), T. K. Lee, Birmingham, Ala., 472x500.
- Match "C" (Individual Military Championship of America), Dr. J. H. Snook, Columbus, Ohio, 651x750. World's Record.

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CINCINNATI, OHIO

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Get the **P** Brand

The Best from Contemporary Sources

IMPROVEMENTS in field glasses have kept pace with improvements in weapons. In 1916 our infantry was equipped with prism binoculars. The present war has shown the necessity of training privates, as well as officers and noncommissioned officers, in the use of field glasses.

The field glass consists of two telescopes, each of which consists of an objective and an ocular. The first telescopes were made in Holland about 1600, and were used by Galileo about 1609 in astronomical research. The telescope consisted of a double convex objective and a double concave ocular. The former tended to produce an inverted, reduced image; the rays, however, were intercepted and made divergent by the ocular, which produced an increased, virtual image, re-inverted. The Dutch field glass was the only one in use up to a few years ago.

The prismatic field glass is derived from the astronomical telescope invented by Kepler in 1611. This consists of a double convex objective and a double convex ocular. The former tends to produce a real, inverted image; the latter produces from this image an inverted and increased image. For terrestrial use, the latter must be re-inverted, which is done by means of a third lens. This, however, lengthens the glass. In 1893 Abbe invented the prism glass, in which the re-inversion is produced by two right-angled prisms, one of which inverts in a vertical and the other in a horizontal plane. This invention had been made by Porro in 1852, but forgotten.

The availability of a field glass depends on its clearness, power, field of view, and aberration. Clearness depends on the size of the eye opening. If this is equal to or greater than the pupil of the eye, the clearness is the same as with the naked eye, except for loss of light. The power is the ratio of the angle subtended by an object, at the eye, to the angle subtended by the image of the object as seen in the glass; this equals the ratio of the focal distances of objective and ocular. The field of view diminishes as the power increases. It can be determined as follows: At 100 meters draw a line perpendicular to the line of sight, and mark on it the extreme points in the field. If the distance between these points is a , then the angular measure of the field, in degrees, equals $a \times 57.03$. Aberration is either spherical or chromatic. Each blurs the image around the edges of the field. Aberration may be reduced by cutting out all but the center of the field, or by combination of crown and flint glass lenses.

As increase in power is conditioned on decrease in field and clearness, the glass must

be so chosen as to conform to particular requirements. The six is better for infantry, as the glass cannot be held steady; further, it must often be given to noncommissioned officers little trained in its use. Artillery, on the other hand, finds the light better; observation is at greater distances, and circumstances permit steadier holding.

Though in general the prismatic glass is better than the Dutch glass, which is practically limited to six power, the latter loses only 0 per cent of the light, whereas the former loses 40 per cent, and the Dutch glass is cheaper. The prismatic glass is indispensable for artillery, because the formation of a real image permits the addition of a mil scale, from which deflections and heights of burst can be determined. Further, ranges can be determined if a given measurement at the target is known. The scale interval divided by focal distance of objective is .001. Range is, therefore, one thousand times the known measurement, divided by the number of intervals subtended thereby. Another advantage of the prismatic glass lies in the fact that perception of depth is as good with a six-power glass as it is with a ten-and-a-half-power ordinary glass.

Proper use of glasses is of great military importance. The observer should place the glass to his eyes, keeping both open, but covering the left object glass with his hand. He should then adjust the right eyepiece on a distant object. He should then adjust the left. In the case of nearsightedness, the index will show a negative, in the case of farsightedness, a positive, number. Wearers of spectacles should make the adjustment both with and without glasses. The numbers indicated should be memorized. The distance between the eyes should be measured and memorized, and set off on the glass. The interposition of a yellow glass is of value, especially in strong light.

Prismatic glasses require great care, especially against dampness. They should be cleaned with buckskin. Dust particles should be blown off. They should never be taken apart.—*International Military Digest*.

IHAVE shot over several kinds of decoy ducks; the wooden ones, fashioned and painted as nearly as possible like the real duck; the "Allen" folding profile, and the inflated (rubber) decoy. After nearly forty years shooting wildfowl, I consider the wooden decoys to be the most alluring, their

only drawback being their bulk and awkwardness to carry, as no one but a fowler who has packed a sackful in and out of a duck marsh before sunrise and again after dark, can realize. The folding profile, *e. g.*, an

oval block of inch cedar, with the "profile" duck, fashioned from thin, galvanized metal and finished "in oils," hinged thereon, to be erected when in use and flattened for carrying, is a convenient makeshift, but not so satisfactory in use as the wooden decoy, from the fact that the incoming birds often suddenly lose sight of the lure, from the latter's presenting a knife-edge view or possibly no view at all to the stooping fowl that perhaps but a moment before had had a bird's-eye view of three or four most gorgeous mallard drakes, resplendent in their full plumage, and which have suddenly and mysteriously disappeared from view, thus causing, I believe, both surprise and suspicion, where but a moment before all was trust and confidence. The rubber (inflated) decoy has but little to recommend it beyond lightness and portability. They sit too high out of the water and are too sensitive to every breath of wind to fool any but the most confiding and unsophisticated of fowl. Besides, a stray pellet or two accidentally reaching them

(Concluded on page 16)

BLUEING RECEIPTS

(Concluded from page 7)

SOLUTION NO. 9.

This solution is used only on small parts and is not recommended for barrels. It is applied by dipping work in boiling solution one to six times, depending upon heats and sizes of parts.

10 lbs. sulphur. Boil for two hours and let cool, heat again to boiling and add
8 ozs. black oxide of manganese.

SOLUTION NO. 10.

This solution is used principally for quantity blueing of small parts. It is the standard with the larger arms plants. In application the solution should be heated in a cast-iron vessel to about 427 degrees Centigrade and should be kept well stirred. The work is dipped in solution and the time of immersion regulated by size of parts to be blued, ranging from immediate removal to several minutes.

10 lbs. black oxide of manganese.
100 lbs. refined potassium nitrate or saltpetre.

COLORING DURING CASEHARDENING.

To combine coloring with casehardening: In steel containing about 0.35 per cent carbon (common average) furnace heats are raised to about 750 degrees centigrade. The work is heated at this temperature from one to three hours and upon removal care must be taken not to allow work to become exposed to the air. Plunge work in oil bath to get uniform blackening. Shaded casehardening colors can be obtained by same process by using an oil and water bath, by chemically treated oils and by light, quick dipping.

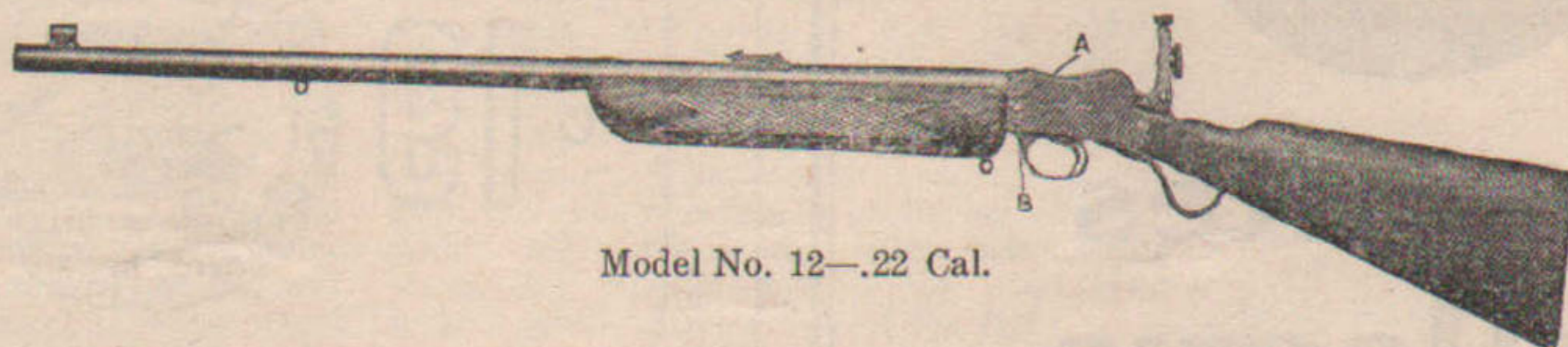
COLORING BY ALCOHOL FLAME.

Small parts can be very quickly colored when well polished by heating over a good-sized alcohol flame until appearance of the second shade of heat color, when part should be quickly dipped in oil. Sperm oil is most satisfactory for this coloring.

THE N. R. A. 1920 INDOOR MATCHES

your best chance of winning is to use the famous super-accurate

B. S. A. MATCH RIFLE



Model No. 12—.22 Cal.

The Rifle That Beat Every Other Smallbore at Caldwell

Capt. "Tackhole" Lee, says—"that honestly was the first rifle I've ever had that I could bet would hit exactly where I held it."

A SHIPMENT NOW IN NEW YORK DOCKS

SPECIAL PRIZE ANNOUNCEMENT

A 30 power Target Spotting Telescope value, \$25, will be awarded to the competitor making the highest score with a B. S. A. rifle.

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NEW YORK CITY

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SHOOTING NEWS AND COMMENT



SMALLBORE outdoor shooting will be introduced to members of N. R. A. Clubs through a series of matches on the open range, scheduled for May and June.

The decision of the N. R. A. to hold these matches has been announced in the form of a bulletin, which has been sent to all rifle clubs. The bulletin embodies a letter from Lieutenant-Colonel Townsend Whelen, chairman of the Smallbore Committee of the National Rifle Association, which is addressed to members of the National Rifle Association, secretaries of rifle clubs, members of rifle clubs, and to all other American citizens interested in rifle shooting. The letter reads in part:

The N. R. A. will start outdoor smallbore shooting throughout the United States early in May. It is desired that each rifle club be ready then with its range, its equipment, its rifles, its ammunition, and its members. If you do not belong to a rifle club, join one, or else organize a club in your own town and come on and shoot with us.

Here is the plan:

We will have two team matches and one individual match, or more if you want them and will make a go of them. The following conditions have been proposed for matches to be shot during May and June. (Let me know what you think of them.)

SMALLBORE TEAM MATCH.

Shot weekly for six weeks commencing about May 1, 1920. Any member can shoot, scores of ten high men to count for record. Each man to fire the following scores:

- 50 yards; decimal target (2-inch bull)—
10 shots; slow fire, kneeling or sitting; time limit, 5 minutes.
- 10 shots; rapid fire, prone; time limit, 1 minute for repeaters, 2 minutes for single-shot rifles.
- 100 yards; decimal target (4-inch bull)—
20 shots; slow fire, prone; time limit, 20 minutes.

SMALLBORE LONG-RANGE TEAM MATCH.

To be shot the last week of the six weeks' season, about June 15, 1920. Any member can shoot, scores of eight highest men in each club to count for record. Each man to fire the following scores on smallbore target C-5:

- 150 yards; slow fire, prone; 2 sighters and 15 shots.
- 175 yards; slow fire, prone; 2 sighters and 15 shots.
- 200 yards; slow fire, prone; 2 sighters and 15 shots.

SMALLBORE LONG-RANGE INDIVIDUAL MATCH.

To be shot last week of the season. Individual competition, one entry. Smallbore target C-5:

200 yards; slow fire, prone; 2 sighters and 20 shots.

Other Conditions.—Any .22-calibre rimfire rifle not weighing over 12 pounds, any sights, any trigger pull.

These conditions are tentative. The National Rifle Association will make official announcement of all conditions in ample time in advance. A generous prize list will be provided.

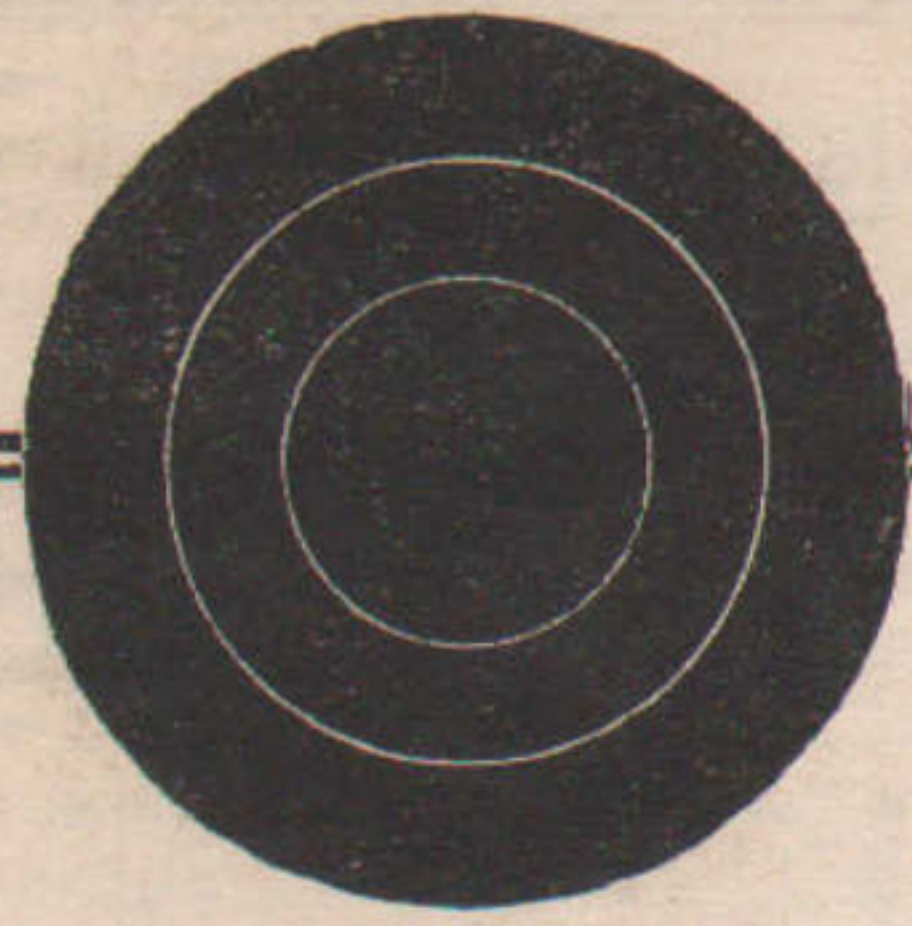
Targets may be obtained from either the Remington Arms Union Metallic Cartridge Co., Woolworth Building, New York City, or the Winchester Repeating Arms Co., New Haven, Conn.

Now is the time to get ready.

You must get your rifle range ready. Any vacant lot, fairly level, 200 yards long and about 50 yards wide, will do. The more accessible its location the better. Your town should provide a lot, just as they provide tennis courts, etc. The equipment of the range will cost you practically nothing except the willing hands of a few members for a few afternoons. Detailed plans for equipping ranges will be published in *ARMS AND THE MAN*.

Get your rifles ready. Many of you already have fine smallbore rifles. The Savage Arms Company has just placed on the market a very satisfactory bolt-action, .22-calibre smallbore rifle. The new Winchester bolt-action, .22-calibre smallbore rifle will be ready for delivery about the middle of March. Get in your orders for these and for the ammunition you need with your local dealer.

Captain E. C. Crossman, U. S. Army, a



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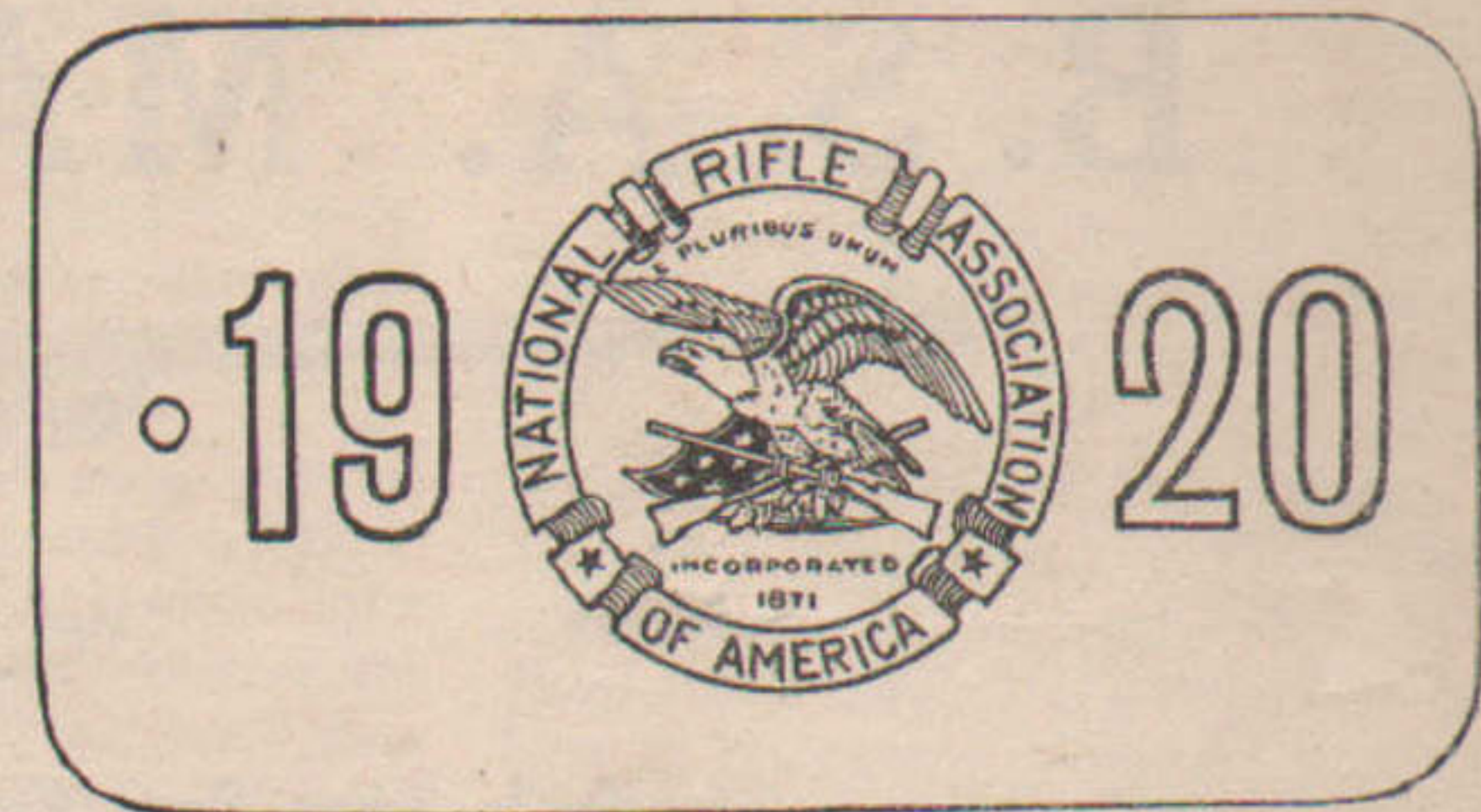
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THIS size and cut of membership card, seal and year tinted in rifle green, makes an attractive and valuable credential for club members when black print is used over the tint. Many rifle clubs used cards of this pattern in 1919. More should take advantage of their possibilities in 1920.

The cards are sold to rifle clubs at the low price of \$1.00 the hundred.

ARMS AND THE MAN

WASHINGTON, D. C.

member of the N. R. A. Smallbore Committee, is hard at work on a "Smallbore Handbook," which will be issued by the National Rifle Association. This book will give every bit of dope—rifles, equipment, ranges, range construction, ballistics, how to shoot, how to organize and finance a club, competitions, rules, etc. The handbook will probably be out by May 1.

There are certain things I want to do for the promotion of rifle practice and, therefore, for your country. I want:

Each of you to get every member of your club interested in this movement and actively participating.

Each of you to get new members for your rifle club.

Each of you to try to form a new rifle club in your neighboring town, and then get up local matches with them.

Each of you to send me the names and addresses of all men you think would be interested in smallbore shooting. I want a big mailing list. I am going to send out a lot of interesting dope.

Each of you, after you have read this letter, to post it to some place where a lot of riflemen will see it.

JOHN LYNN whose story in the November 1 issue provoked comment from Walter Winans, has this reply to make to the critic of his methods:

EDITOR ARMS AND THE MAN:

You are to be congratulated in having drawn a reply from Mr. Walter Winans on the question of moving target shooting.

I personally would appreciate the opportunity of thanking Mr. Winans for giving me in this letter what is perhaps a more vivid picture of English deer-hunting conditions and restrictions than I have ever secured

elsewhere. He didn't intend his material to serve in that capacity, yet what he says actually does explain more than many an article intended primarily to explain.

Mr. Winans' letter brings up several features of hunting and rifle shooting that are so vital just now and in general that they deserve more prominence than they have received.

There is the matter of where to hit a deer. The average hunter in this country, judging by observation, is well satisfied to hit his deer anywhere he can make the hair fly—flank or low gut-shot not excepted. In explanation, it may be said that the average hunter never gets a whole lot of experience, while his chances for any shooting come so seldom that he must make the most of every one of them. Yet our hunters should acquire the idea, and get it more firmly planted in their minds before they enter the woods, that they must place their bullets carefully in chest cavity or other fatal spot. That dollar fine on the running target hit that is located "in the hinder part," which Mr. Winans mentions, ought to accomplish a lot of good. Every big-game hunter should take this matter to heart and study it more.

Mr. Winans mentions various ways of getting moving target practice, including wooden balls rolling down a switchback shallow trough, and clay pigeons, and condemns suggestions of the writer's. I would simply point out that all his suggestions are sound, except that they require a lot of money and labor to put them into practice. In the world I live in a rifle shooter has to wait on himself largely, and earn his living. He does not have energy, either present or stored in money form, to spend extravagantly in target practice. The swinging pendulum suggested, the stones rolling down hill, the inexpensive

running deer on an overhead wire—all these contrivances for providing a target that moves are quickly put into operation and cost little or no money. Ricocheting bullets must be much less of a problem here than in England, for although I have been in practically every State of the Union and in much of Canada, I never yet have arrived at a community where one could not find space somewhere within a few miles in which to shoot in entire liberty without danger of hitting persons or animals. Elaborate equipment provides better moving targets, and several "attendants" help to make things pleasant for the shooter. Yet when we cannot quite see them financially, that is no reason why we should not avail ourselves of the next best arrangements.

Further, Mr. Winans points out refinements and restrictions on the English running-deer target-shooting practice, which, I take it, apply to competitions only. My suggestions were meant to apply to individual or club shooting to acquire skill, and not for competition except as might be agreed upon. Objects of Winans' running-deer shooting (see his third paragraph) is to "win" by striking the bull's-eye located about the "heart" of his running-deer target. We are not on common ground in this comparison. I speak of hunting.

Real American hunters will not miss in Mr. Winans' letter the references to various restrictions. "In the shoots I have rented," "lease of the shoot canceled," "would not be allowed to shoot in any deer forest in this country (England) or in any continental or African preserve," are examples.

This tells its own story of "kept" shooting conditions, in which one man in a thousand gets to hunt, while of the other 999, a couple of dozen are required to act as attendants and

servants. We have little room in this country for the rich "sport" who uses his money to nose out of the woods the rank and file of those who like to hunt but are not financially as strong.

American deer hunting is better than it was ten and twenty years ago. The improvement is due to universal application of buck law and low bag limits, with a short open season contributing a little. American deer hunting will continue to improve if these fundamentals are maintained and dogs kept out of the woods. Let us do those things, while dropping a maze of miscellaneous laws that help little—and by all that is holy to an American big-game hunter, let us keep away from the artificial conditions of private preserves and the barnyard shooting of Europe. Wise and extensive application of State forest principles now in effect in several States will insure perpetual deer hunting and perpetual freedom from the sort of customs, regulations, oversight, restriction, costliness and general smothering that seems to be limiting the otherwise very clear vision of Mr. Winans, for whose experience and intelligence I have the greatest respect.

Take his attitude on long shots at deer as an example of what devitalizing his European customs and conditions may accomplish. Shooting at over 200 yards is practically prohibited in England and in continental or African preserves, he says.

"It is only a man who is *no hunter* who fires long shots," he adds.

That is very plain talk. Let us see a little about it.

Is Stewart Edward White a hunter? He is to be quoted as follows: "I have fired just 395 cartridges out of this weapon. Of these I have made 307 hits, killed 185 animals, and of those shot at missed 49. * * * The last ten animals were killed with thirteen shots, all hits, at 160 (running), 270, 268, 348, 151, 210, 196, 230, 391 and 256 yards." Evidently Mr. White is "no hunter."

Is Colonel Townsend Whelen a hunter? Last fall he saw a buck deer in New Brunswick and killed it beyond the "respectable and propah" distance. In his "The American Rifle" he speaks hundreds of times of long shooting. For instance, in the chapter on killing power, pages 370, 371, he gives his idea of the killing power on game of many different rifles, in two columns, *one for distances shorter than 200 yards; the other for longer distances.* Did Colonel Whelen intend one column of figures for use of hunters and the other for the unmentionable "no hunters"? Again, on page 276, Colonel Whelen is talking of the .405 Winchester cartridge: "Where one is to do very much long-range shooting," "the .30 (calibre) Model of 1906 * * * is advisable," "it (.405) is not a very suitable load for ranges over 200 yards." Judging from these extracts, we have here another man who does not hesitate to shoot farther than 200 yards, or 150 yards, as Mr. Winans farther along suggests.

No, Mr. Winans, you can't tie us down to 150 or 200 yards' shooting in our woods. If you were hunting with me, and game started, and you would pass up a standing shot at 150 yards in favor of an effort to crawl closer, as you mention, you and I would cease to hunt together. That is, if you were using a real rifle. You would be justified only if you were trying to accomplish that Charlie-Barker-.22-rimfire business described in the December 15 issue of ARMS AND THE MAN.

In my observation, the escape of wounded deer (and other big game) is caused 90 per cent of the time by two faults: First, carelessness in aiming at the whole deer instead of at a fatal spot on its body; second, *use of*

insufficiently powerful rifle or poorly suited bullets. If any man is to be called "no hunter," it is the one who pecks away at deer and bear with an ordinary .30-30, .38-40, .32-40, or who uses buckshot. Every man who goes after deer ought to be compelled to carry a rifle of adequate power to kill them, such as a .45-70, .30-40, or something bigger.

If you search out the source of all the wounder deer "produced" by a dozen or fifty men, you will find ten times as many of them were wounded (and escaped) by shooting done under 150 yards as over that range. Short-range shooting is surer, other things being equal, and in brushy or timbered country is the only thing practicable. But in open country, I am almost tempted to suggest, the man who insists on having all shots within 150 yards is the fellow who would shoot clay pigeons only if the traps were located within three yards of his feet.

JOHN LYNN.

"AMERICAN riflemen," says Henry Walter Fry, "may be interested in the following formula for a rifle-cleaning oil taken from *The Service Rifle*, by L. R. Tippins, the well-known English rifle shot, expert, and writer on shooting matters:

"In a large wineglass full of methylated spirit, make a saturated solution of caustic soda or caustic potash. Pour this solution into a pint of good Rangoon oil and shake thoroughly.

"Now, methylated spirits does not seem to be readily procurable in this country, but wood alcohol should serve the same purpose. Rangoon oil, which all English gunsmiths use, is not on sale here, either, but any good vegetable oil should serve the purpose just as well. At any rate, the experiment might be worth trying by someone."

WHEN a native of some foreign country becomes a citizen of the United States, he is entitled to his share of our game, but until he has fulfilled all necessary requirements, he should not be allowed to even possess firearms, much less roam the fields with all the privileges granted by law. Our laws and conditions here are very different from those in the countries from which these men come, and many of these aliens are entirely out of sympathy with our system of game protection and especially so as applied to our song and insectivorous birds. They are the source of never-ending grief to those enforcing the game laws. As a rule, they shoot anything that takes their fancy. Everything that flies is considered fit for food. A domestic hen belonging to some farmer takes preference over a chickadee only because it is larger, while often a turkey buzzard or an owl is prized as highly as a quail.

Men of this type are confined largely to the class performing unskilled labor. The exception among them is occasionally found in the man who likes to hunt and has fair ideas as to sportsmanship and obeying the game laws. The percentage, however, is so small that all should be ruled out until they are qualified to call themselves Americans. Then and then only should a license to hunt be issued to them. After five years' residence in this country, they become fairly well versed in our laws and are not so likely to break them. Naturally, as they become better acquainted with conditions in this country, they come around to our way of thinking and realize the value of game laws. Pennsylvania has the best "alien law" of any of the States. It forbids an alien to have firearms of any description. This law has been tested and held constitutional by the United States Supreme Court. Many States have

tried to copy this law, and some have succeeded, but generally it is either modified or fails to pass the legislature. The East and the West know more about the depredations of this class of gunner than does the central part of our nation. They are rapidly spreading, and wherever mines are located or construction work is being done on railroads you will meet with the gunner from the south of Europe. Ask any game warden what game he will find when he stops this man afield. He can never be certain, as many startling disclosures are often revealed when these fellows are searched; but he is pretty sure to find a nice assortment of non-game birds, including some of our best-loved and most valuable species.

All courtesies should be extended to sportsmen from foreign countries visiting our shores. We believe discretionary powers should be vested in the State commissions to care for visitors, but you cannot begin too soon to work for the passage of a law in every State to prohibit resident aliens from running wild and killing everything before them. Granting that it is true that a law exists against killing non-game and insectivorous birds, to give these birds proper protection it would be necessary to have a warden for every alien gunner. The best way is to keep him out until he is one of us.

IT IS seldom that game conservation works directly for the preservation of human life. However, reports being received daily from the Adirondacks prove conclusively that when New York removed the buck law from her statute books, a toll in dead and wounded was exacted from the gunners that would have been avoided had it been necessary for the hunter to see the horns before he shot. At the present writing, November 15, nine men have been killed and several wounded. All of these were strictly cases where it is definitely known that the accident occurred through one hunter mistaking another for a deer.

Men who have made a life study of the workings of the buck law are undivided in their opinion that it is the logical and proper method of maintaining the deer supply. In the face of much evidence and the opinion of experts, the New York legislature passed a law at their last session permitting the shooting of does. Aside from the damage to the deer resulting from the killing of the females, from which it will take the stock of white-tail deer in the Adirondacks many years to recover, this toll of human lives has been sacrificed.

A returned soldier reports that he prefers Belleau Wood or the Argonne to the Adirondacks during the open season on deer.

Regardless of the precautions the deer hunter may take, he is in danger of receiving a soft-nosed bullet, and should he take out his handkerchief to wipe his face, he is practically doomed.

THE sportsmen of Minnesota have made up their minds that no more valuable ducking water shall be drained under the pretext of more land for the farmer. We hope they will win the fight and establish a precedent that may be followed by the sportsmen of States who are suffering from the activities of ditching companies. It is only natural that such concerns should wish to drain the last available water, and greedy individuals are always to be found ready to lend aid with the hope of securing a little cheap land from the State.

Of what earthly use is it to protect waterfowl from over shooting and then take away their nesting grounds, their feeding waters and the places where they rest on migrations?

It is of the utmost importance that public waters be preserved, if we are to maintain duck shooting.

It is said that there is a project afoot to drain Big Rice Lake, Minnesota.

Big Rice Lake is an ideal ducking water that produces many young birds each season, and its natural feed supply is such that it is a favorite stopping place for the migrating birds that pass twice each year. At that, it is no better than many similar bodies of water that have suffered the fate planned for Big Rice. While Minnesota has suffered in the past from drainage projects, she is not alone; Iowa, Illinois, Indiana, Missouri, Kansas and, in fact, most States, can look back to famous lakes and marshes that are now but a memory. Not only does the gunner suffer in such cases, but the fisherman, the camper, the picnicker, in fact, the entire outdoor fraternity, pay the price. Why should the pleasure of these people be sacrificed to benefit a few individuals? Why should the recreational value of such places be sacrificed to benefit the very limited number of men who will acquire the property?

Contemporary Sources

(Concluded from page 16)

quickly deprives them of any attractive qualities they might have previously possessed for passing fowl. The number of decoys to be used depends, of course, upon the size of water surface; although, speaking generally, it is best to err on the side of numbers. In shooting canvas-back ducks on the estuaries and tidal waters of the Pacific Coast, a hundred wooden decoys is no unusual number to have in use; in fact, the more decoys set out under such conditions, the better, whereas on ponds and small lakes from a dozen to twenty-five make an attractive appearance.

Setting Out.—As I take it, the use of a decoy duck ceases the instant the victimized bird has been lured within shot. I had used to arrange mine about 40 yards from the "blind," as ducks swinging in to decoys are just as likely, unless previously much shot at, to pass inside decoys as outside. I had used to endeavor to so group my own that at a distance they looked to the eye of the fowler lifelike and desirous of acquaintance. On ponds they look well arranged so that a dozen to fifteen cover a rough circle of 15 to 20 feet. In setting out the larger number mentioned above we had used to string them in a long line leading up to the main body within reach of the gun or guns in "blind," and the setting out and picking up of such a stool from a boat on a cold winter's day—with some of the anchor lines from 10 to 15 feet long, with weights attached (to hold decoys against the strong currents) weighing a pound or more apiece—was not the most enjoyable feature of the day's performance. Of course, in decoying, it might seem that the fowler should always cater to the particular kind of "caller" desired. But it is an open question with me yet whether a wild duck is capable of distinguishing its own particular species by sight alone. In other words, I believe that a company of wigeon, for instance, on a given piece of water, to be just as alluring to a flock of passing canvas-backs as would be the latter's own counterparts. I do know that the canvas-back (superb

and much-sought-after fowl though he be) is the biggest fool bird to "decoy" that swims. No fowl comes in to the decoys with the surging rush and abandon that he does. And wildfowl, like fish, are not always responsive to lure. Of course, any kind of decoy must have some sort of anchorage to hold them where "put." A length of water-cord attached to a pear-shaped weight weighing two or three ounces, that will fairly reach bottom, is all that is required for shallow, inland waters. Decoys should never be left on the water when not being shot over, as they are liable to drift together, collect flotsam and jetsam, and quickly to acquire a stale, bedraggled-looking appearance, far from attractive. They should also not sit too high out of water, and to bring a too-buoyant bird down to his "Plimsoll" level we had used to tack a narrow strip of bar lead as ballast to its keel. In picking up decoys, cleanse from all mud and dirt, rinse line and sinker, then wind weight cord crosswise, neck and tail, tucking the lead underneath, and "sack the lot."—J. G. Bliss, in *The Shooting Times and British Sportsman*.

New Ordnance Under Way

Designs for much new ordnance material are being prepared in the office of the Army chief of ordnance, the greater part of it being to carry out recommendations of a board of which Brig. Gen. William I. Westervelt, now lieutenant colonel ordnance department, was the head, which made a report a few months ago on types of artillery, etc., that should be provided for field armies. Among the pieces under design are corps and divisional guns and howitzers. The corps artillery will include a 4.7-inch or 5-inch gun and a 155-mm. howitzer, both of which will be of considerably longer range than those of similar sizes used during the war. The divisional artillery will include a 75-mm. gun of a range of about 15,000 yards in place of a range of 12,000 yards pertaining to such pieces during the war, and a 105-mm. howitzer of a considerably longer range than the guns of corresponding size used by the Germans during the war. A single carriage will be arranged to mount either the 75-mm. gun or the 105-mm. howitzer. Self-propelled mounts of improved construction are being designed for guns and howitzers of calibres up to 240 mm. Improved railway artillery is contemplated by plans now being laid down, including calibres up to 14-inch, with ranges up to 40,000 yards, and among which is an 8-inch gun of a range of 35,000 yards. As a contribution to attainment of longer ranges both with old and new artillery, improvements are being made in the shape of projectiles, and in this connection the ordnance department has highly developed personnel and facilities for conducting experiments to determine the most advantageous shapes. Designs also are being prepared in the ordnance office for a medium-size tank, which will represent a compromise between the heavy tank of some 45 tons and the light two-man tanks. In determining principles and details concerning design and other matters pertaining to ordnance, the ordnance committee of the technical staff of the ordnance department is proving of great advantage.



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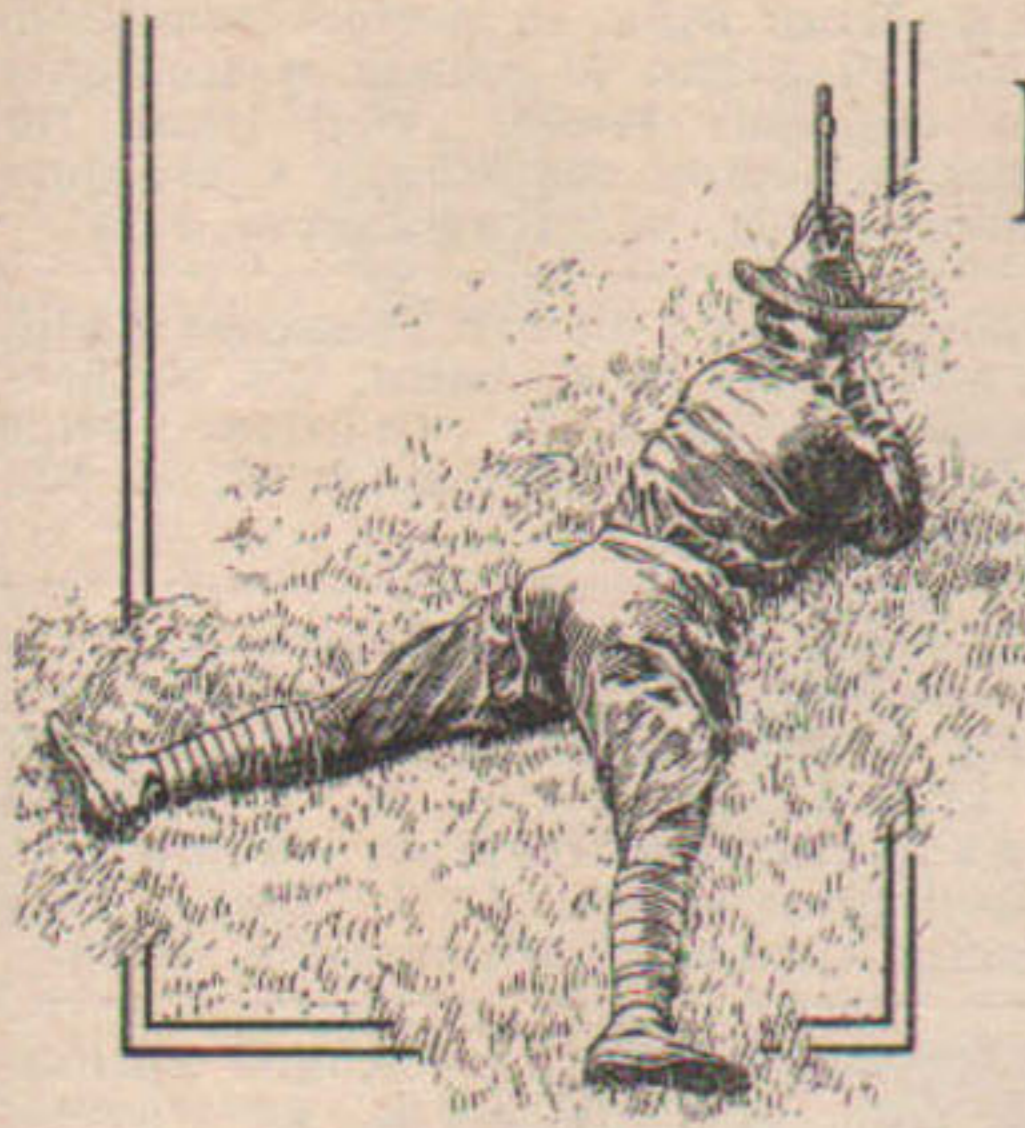
THE AMERICAN RIFLE

By Lt.-Col. Townsend Whelen

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Arms and The Man

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Loads And Re-loads

In this column, conducted by Lt. Col. 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 a 1903 model Springfield gallery rifle, and would like to know if it would be possible to have it rechambered to take the regular service cartridge case necked down to fit a .22-calibre bullet, say one of the Ideal bullets weighing about 50 grains? Would it be possible to neck down the regular service case to .22 calibre? Would such a combination work through the magazine? The reason I ask these questions is I would like to do away with having to use the cartridge holders as I do at present. I have never had a rifle that suits me as well as this one, with the exception of the bother of loading and removing the fired cases from the holders. If rechambering could not be done, have you some other plan to offer?—J. C. S., Louisville, Ky.

Answer.—I am of the opinion that the chambering of this rifle for a large cartridge necked down to .22 calibre would be impracticable for the following reasons: The rifle is cut with a twist only sufficient for the .22 short cartridge. This twist is not quick enough to handle successfully a longer bullet. In order to chamber the rifle for a large cartridge, it would be necessary to cut off at least 2 inches from the breech so as to permit the barrel to be rechambered through clear metal. This would involve a considerable change in sight mounting and in the stock of the rifle, and would increase the expense. The expense at any rate would be very high, as the gunmaker who did the job would have to make new chambering tools, remers, dies for reducing the neck of the shells, etc. A large shell would have to be used. Probably to work through the magazine correctly, it would be necessary to neck down the .30 model 1906 shell. In order to get proper ignition of the powder in this large shell, a relatively large charge of powder would have to be used. This would give such heat and such velocity that a lead alloy bullet would be out of the question, and you would have to have metal-jacketed bullets made by hand, another very expensive job. Altogether I think that the alteration is impracticable, and that you would not be satisfied with the results.

I notice that several gunsmiths are advertising in the sporting magazines that they will bore out old barrels and reline them with a tube, rifling the tube for .22 calibre. It might be possible to have one of these men bore out your barrel, bush the chamber, and reline it with a tube rifled for the .22-calibre long-rifle cartridge, but not chamber it. I have heard that these relined barrels are very well done, and give excellent accuracy. You could then send this unchambered barrel to A. O. Neidner, 18 Beacon street, Malden, Mass., together with the action, stock, etc. Mr. Neidner can chamber this barrel for the .22-calibre long-rifle cartridge in such a way that you will get very superior accuracy. He can also alter your action so that it will handle the .22-calibre long-rifle cartridge, inserting a magazine for this cartridge in the old

magazine, and altering the bolt to handle the small cartridge. You will find an illustration of a Springfield rifle altered in this way on page 188 of my book, "The American Rifle." This will make a most excellent and accurate rifle for smallbore shooting. It will be a little expensive, but much cheaper than any other alteration you contemplate, and is the only alteration that I can suggest for such a rifle.

I KNOW you have considerable experience in the testing out of both the .280 Ross and the Springfield. Would like to know how you think these two cartridges compare in the point of accuracy and killing power. I have never had any opportunity to test out the Springfield, but when properly loaded, I consider the .280 Ross the best cartridge ever devised for target use and big-game hunting. Could you tell me where I could obtain bullets for use in the .280 Ross? I would prefer a solid bullet weighing 160 to 165 grains.—W. E. F., Richibucto, N. B.

Answer.—I have had considerable experience with each of these rifles during the past ten years. I used a Ross in Montana in 1911, and have used a Springfield exclusively since then.

The .280 Ross I consider the best game-killing cartridge we have when loaded with the Ross copper-tube bullet. It is quite a little superior to the Springfield with any load. But I do not like the rifle at all. I have given the Ross a most thorough test in an endeavor to make it perform well, because the cartridge, both in killing power and flat trajectory, is so good. I tried my best to make it shoot well, but it was impossible. The tolerances are too large. The bullet is about .002 inch larger than the bore. The chamber is cut with about twice the tolerances that our Springfield is cut with. As a consequence, the cartridge must lie at the bottom of this large chamber before discharge. The bullet then has to straighten up and enter the throat of the barrel, and in doing so it is deformed. Gas rushes past the bullet greatly on account of the large chamber, causing much breech erosion, decreasing the life of the barrel, and still further deforming the bullet. The bullet has to expand to full diameter of the barrel, and in doing so it is still further deformed. As a consequence of all this the .280 Ross sporting rifle gives groups averaging from 12 to 15 inches in diameter at 200 yards, whereas I can hold for a 4-inch group at this range, and the Springfield will give me a 5-inch group right along.

Also I have had a lot of trouble with the fired shells sticking in the Ross. About one in twenty will stick so tight that I have to place the butt of the rifle on the ground and press the action open with my foot on the bolt handle. About two cartridges in ten stick enough to throw me all off on rapid fire.

This is not one rifle. I have tested five, and they all had the same faults. Captain E. C.

Crossman had one .280 Ross that for a time averaged 8-inch groups at 200 yards. This is the best shooting Ross of which I have any record.

Please note that these tests were all made with regular Ross ammunition and 142-grain copper-tube bullet. I have gotten fine accuracy from the .280 Ross long-range match rifle and 180-grain match ammunition. I think that you will find that with some makes of ammunition and with some rifles you do not have this trouble with sticking shells. If you can get such a combination together, it should do finely for big-game shooting in New Brunswick, because the ranges there are comparatively short, and the rather poor accuracy does not matter so much. Therefore, I would class the Ross as a rifle for short range only on account of its accuracy. I have had considerable experience in shooting in New Brunswick, and I think that you will find the Ross very satisfactory under these conditions.

I do not know where you can get 160 or 165 grain solid bullets for the Ross. As a matter of fact, the only bullet which I know you can procure is the 150-grain expanding, pointed bullet made by the Winchester Repeating Arms Company.

CAN you tell me where Japan wax can be obtained? Also who can supply good hand-reamed shells for the Springfield?—C. P. Z., Fullerton, Cal.

Answer.—I think that about the only place that you can get Japan wax on the Pacific Coast is from the largest wholesale druggists in San Francisco or Los Angeles. They usually carry it in stock, or they can always order it for you. The small druggist usually does not know what it is.

Relative to reamed shells in the Springfield: You will get no advantage whatever from reamed shells in the regular Springfield. In fact, they will probably not shoot quite so well because on account of being reamed they are smaller at the neck, and this has exactly the same effect as though you had a chamber cut with a large tolerance. Reamed shells are intended for the barrels cut by Neidner with the Mann-Neidner type of chamber, which is chambered so closely and accurately at the neck that it requires shells accurately reamed to fit it. When Neidner furnishes you a barrel, he also furnishes you any number of reamed shells that you may wish, or you can send new shells to him, and he will ream them for you.

ARE rifle barrels of the so-called "smokeless steel" more resistant to the effects of acid primer fouling than barrels of ordinary steel? Is there any reason against using jacketed bullets in ordinary barrels? Outside of the big ammunition concerns, is there any possible way of getting jacketed bullets. I find the spitzer bullet of the .250 Savage works so well in the .25-20 I am loathe to return to the blunt bullets.—L. E. R., New York City.

Answer.—It has been my experience that nickel-steel barrels are about twice as resistant to the corrosive effects of the smokeless primer combustion product as are barrels of ordinary steel usually seen in black-powder rifles. Whether this pertains also to smokeless high-power barrels made of carbon steel, I am unable to say, as I have never had any comparative tests made with such barrels. The Winchester Repeating Arms Company employs nickel steel in all their smokeless high-power barrels. The Government and practically all other private makers employ high-power carbon steel.

There are two types of jacketed bullets made in the United States. First, those with jackets made of gilding metal, practically copper. These are usually tin plated, although the Savage Arms Company and the Newton

Arms Company are now putting them out without plating them. Second, those jacketed with cupro nickel. Practically all our bullets are made with the gilding metal jacket, except some of those for the .30-40 cartridge, and almost all of those for the .30-1906 cartridge, these last being jacketed with cupro nickel. The gilding metal jackets will do practically no injury to ordinary barrels. It is doubtful if they cause much more wear than ordinary lead and tin alloy bullets. The cupro-nickel jacketed bullets will cause considerable wear in ordinary barrels, although it is doubtful if it will be noticed, except by an expert, until several thousand rounds have been fired. You can always tell a gilding metal jacket by polishing it with brass polish. If it is gilding metal, it will turn copper color.

I was under the impression that the 250-3000 Savage bullets could readily be procured from the Savage Company. They work well in the .20-25 rifle, but when used in larger rifles with high velocity and high breech pressure, the sharp soft point flows back at once, and the bullet departs from the barrel with a very blunt point. You speak of the .25-20 and of barrels of regular black-powder steel. This leads me to believe that you have such a rifle. May I suggest that I have found that the No. 1½ primer made by the United States Cartridge Company has not nearly as corrosive an effect on barrels as some others I have used.

I AM converting a Springfield into a sporter, and am uncertain as to how the forearm should be fastened to the barrel. Will it do any harm to slot the barrel and put in a stud, the one used on Winchester rifles, model '95, or should the stud be brazed to the barrel? Could I use a band around the barrel, drilled and tapped for the forearm screw, and, if so, where could I obtain it?

I have a Winchester 5A telescope which I would like to use for woodchuck shooting. Should the mount bases go on the barrel, as the company mounts them on its own make of rifles, on the receiver ring and bridge, or one on bridge and one on barrel?

I would also like to know where I can obtain 150-grain full-patched spitzer bullets for this arm, jacketed with copper. All that I have been able to find were cupro nickel.—T. S., Greenwood, Wis.

Answer.—One reason why the Springfield is the most accurate machine-made rifle in the world is that it is particularly free from various variations in vibration. If you cut a slot in the barrel to fit a stud for the forearm screw, you will probably destroy all this and considerably injure the accuracy of the rifle.

By far the best method of securing the forearm to the barrel in a sporting Springfield is to use a band which will completely encircle both forearm and barrel, like a carbine band. The lower band and swivel of the Krag rifle is just about the right size and shape for this. I think that Bannerman, the second-hand dealer in New York, can supply you with one of these bands, or similar ones. A band encircling the barrel and having a lug on the under side into which the forearm screw can be fitted would also be satisfactory, and any good mechanic should be able to fit this for you; or a first-class gunsmith could solder a lug on the under side of the barrel, to which the forearm could be screwed.

I would advise that the Winchester 5A telescope be mounted with both mounts on the barrel. It will fit better that way. The bases are less in the way when you wish to use the metallic sights. It is a very difficult job to fit the mount bases correctly on the receiver on account of the extreme hardness of the casehardening. For the barrel you will have to get bases of a special height, and in

ordering them be sure to describe to the Winchester Company exactly how you wish to mount them, so that they can send you bases of the correct height.

I am sorry to have to tell you that as far as I know there are no full-jacketed, .30-calibre, 150-grain spitzer bullets made jacketed with copper. All have cupro-nickel jackets.

These clubs have been admitted to membership in the National Rifle Association of America:

SCHOOL CLUBS.

California.

Claremont School for Boys Rifle Club of Claremont: F. M. Pottenger, Jr., secretary; Henry R. Levo, president; Sidney H. Beauchamp, vice-president; Hutton Miller, treasurer; Robert T. Pottenger, executive officer. 17 members.

Two Hundred and Sixth California High School Cadet Rifle Club of Taft: Lorin Vander Horck, secretary; M. C. Harris, president; H. Dull, vice-president; Wallace McCray, treasurer; Homer Gill, executive officer. 52 members.

Texas.

San Antonio Brakenridge Rifle Club of San Antonio: Jack W. Bain, secretary, 4115 South Presa Street, San Antonio, Texas; J. H. Heller, president; James Forgeson, vice-president; Jack Moore, treasurer; Harry Hamilton, executive officer. 143 members.

Watsonville Union High School Rifle Club of Watsonville: Herman F. Hansen, secretary; Frank B. Lewis, president; Donald L. Rider, vice-president; Leroy B. Thomas, treasurer; Joe D. Woodward, executive officer. 86 members.

New Hampshire.

St. Paul's School Rifle Club, Concord, N. H.: Clifford V. Brokaw, secretary, Concord, N. H.; Christopher C. Shaw, president; Floyd M. Smith, vice-president; A. Treadwell, treasurer; G. Haslam, executive officer. 60 members.

New Mexico.

Las Cruces High School Rifle Club of Las Cruces, New Mexico: Coleman Martin, secretary, Las Cruces, N. M.; John Cooney, president; William Harlan, vice-president; Cleman Martin, treasurer; Robert McBride, executive officer. 86 members.

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FOR SALE—Krag Rifle, in perfect condition, with new Kerr sling and 50 rounds of ammunition. Price (packed) \$10.00. Will trade for Ballard Action in perfect condition. A. M. Morgan, 63 Lamont St. N. W., Washington, D. C.

FOR SALE—Stevens 5 Power Telescope Sight, 16½" long; adjustable cross hairs; No. 8; permanent mounts; in excellent condition. Price \$16.00. R. H. McGarity, 1332 Quincy St. N. W., Washington, D. C.

FOR SALE—One J. P. Sauer Double Express Rifle, chambered for .405 Winchester cartridge, Krupp barrel, scroll engraving, condition perfect; price \$125.00. One .44 S. & W. Russian Model Target Revolver, Circassian walnut grip, new condition; price \$30.00. H. D. Dodge, care of Gray Tractor Company, Minneapolis, Minn.

FOR SALE—Model 1903 Star-Gauged Springfield, pistol grip, sporting stock, government rear sight, tapped and stock grooved for Lyman No. 48, barrel perfect inside; last score 47 at 1,000 yards; beautiful gun; first check \$35.00. Also Newton .256, pistol-grip, peep sight on bolt, tapped and stock grooved for Lyman No. 48 sight; loading tools; about 150 shells; some bullets; in perfect condition out and in; worth \$80.00; sell for \$40.00.

WANTED—Winchester 5-A Scope and .22 L. R. barrel, by Pope or Neidner, or any make of match quality that I can use in Winchester musket action. Also want good 25-power Telescope. W. S. Belding, 759 Union St., Bangor, Maine.

FOR SALE—Stevens Rifle, 30-in. barrel, double set trigger cal. .25-21 peep sights, reloading tools, two stocks, all in perfect condition, \$35.00. Charles Vance Liggett, Box 65, West Middletown, Pa.

30-in. barrel, with Winchester blocks, special

FOR SALE—A very fine .22 L. R. Target Rifle, less action, new condition, guaranteed of make-beaver tail forearm, Sharps-Borchard hammering possible up to 250 yards; first check for \$40.00 gets the gun. Leon Dezert, 2024 South Normandie Ave., Los Angeles, Calif.

FOR SALE—Winchester, musket model, '95, cal. .30, 1913; fine condition; \$28.00. Lyman No. 1-A sight (new), fits Stevens Ideal, \$2.50. V. R. Olmstead, 33 Brookfield Road, Upper Montclair, N. J.

FOR SALE—Winchester, model 1895, .30, 1906; 24-inch; fine condition; \$30.00. Remington Trap Gun, 30-inch, excellent condition, \$50.00. Swiss .41 Repeater, good serviceable condition, with a few cartridges, \$4.00. Several bullet molds, \$1.25 each. Mills belt for Remington clips, never used, \$1.25. Web pocket and two magazines, .45 Colt, \$1.50. Dr. Lincoln Riley, Wisner, Neb.

WANTED—Bisley Model Colt, in .38-40 or .44-40 caliber, and in guncrank condition throughout. Will pay fancy price for one meeting above specifications. R. D. Talmage, East Hampton, N. Y.

FOR SALE—One absolutely brand-new 8-power Weiss Prism Binocular; not a scratch. This is a specially fine glass. Cost \$55.00. First postal money order of \$40.00 gets it. R. D. Talmage, East Hampton, N. Y.

FOR SALE—One U. S. Govt. Krag .22 Long Rifle in A-No.-1 condition. First P. O. money order for \$20.00 takes it. D. J. Withers, 315 E. Walnut St., Princeton, Indiana.

FOR SALE—Like new, Stevens 404 .22 cal. Long Rifle, mounted with Stevens No. 368 telescope; length 16-inch adjustable cross hairs focus; price \$40.00. C. C. Kennedy, Guthrie Center, Iowa.

WANTED—Model 1903 Springfield, as issued. Condition of bore immaterial. W. H. Colt, 33 Linwood Ave., Buffalo, N. Y.

WANTED—A Stevens .22 Long Rifle, Model 414; also a 6 or more power Stevens or other make Telescope, suitable for indoor match work. Owen L. Wood, Box 303, Santa Fe, New Mexico.

FOR SALE—.22 S. & W. Pistol, 10-inch barrel; perfect inside and out. Also Winchester 1892 .25-20 Carbine, 14-inch barrel; no forearm; perfect inside, slightly marred outside. Ideal reloading tool for carbine. E. D. Campbell, Jr., care of Bethlehem Steel Company, Boatmen's Bank Building, St. Louis, Mo.



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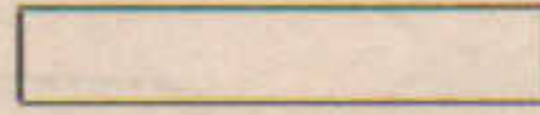
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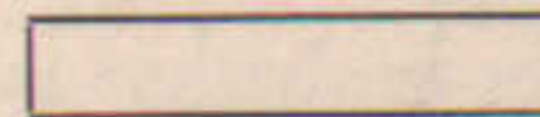


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