

RIFLE  
AND  
THE MAN  
OF AMERICA  
TACTIC TACTIC

EXPERIMENTAL WORK IN AIR RESISTANCE  
WAR SECRETARY'S REPORT SHOWS VAST  
PRODUCTION

OILING THE GUN

LITTLE LESSONS IN RELOADING  
No. 8—Powders for Reduced Loads

EDITORIALS and  
THE LATEST NEWS OF RIFLE, REVOLVER AND  
SHOTGUN; THE ARMY, NAVY AND  
THE NATIONAL GUARD

VOL. LXV, NO. 11



DECEMBER 7, 1918



Fig. 1 Full open sight; correct aim  
 Fig. 2 Fine sight Low shot  
 Fig. 3 Too full High shot  
 Fig. 4 Not c'nt'r'd Left shot  
 Fig. 5 Not c'nt'r'd Too full High right shot  
 Fig. 6 Sight inclined; low left shot  
 Fig. 7 Sight inclined; low right shot

## How to draw a bead on a mark

IF you don't know the best way to sight a gun and plug the target square in the bull's-eye, it will pay you to study the diagrams on this page, taken from the book of instructions furnished to members of the Winchester Junior Rifle Corps.

### How to align your sight

Figure 1 shows how a correct aim looks through an open sight. The top of the front sight should be on a level with the shoulders of the back sight. Always aim just below the center of your target.

Figure 2 shows how your aim looks when the front sight appears too low through the notch of the back sight.

Figure 3 shows the result of holding the front sight too high. Figures 4 and 5 show the result of not having the front sight centered.

Figures 6 and 7 illustrate a common fault with beginners, that of "canting" the rifle.

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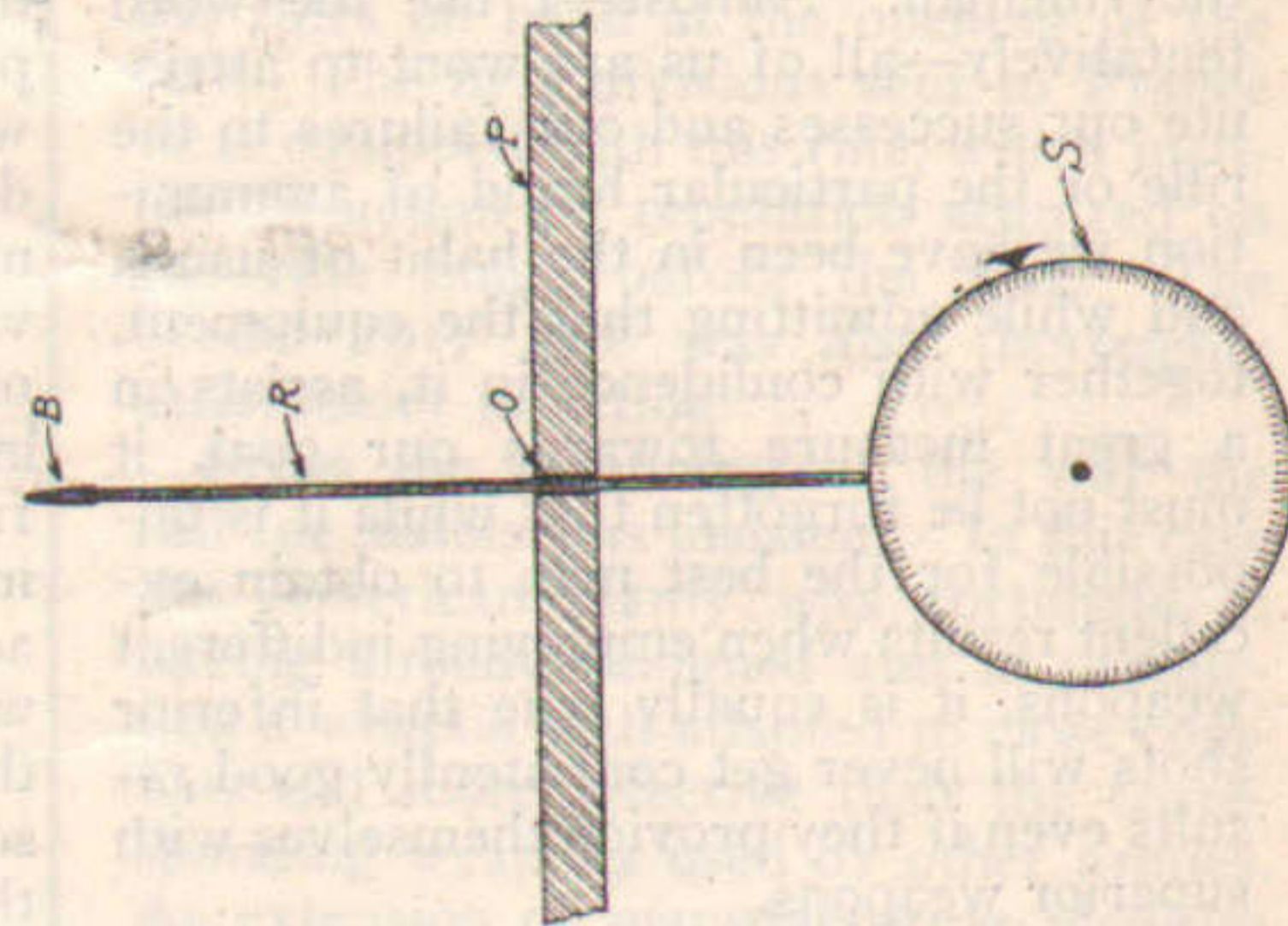
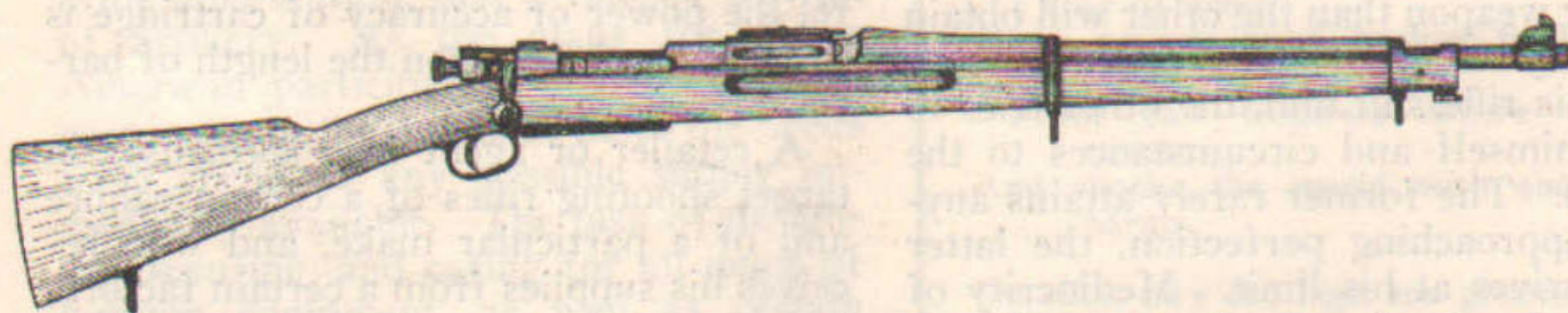
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## Experimental Work in Air Resistance

By J. R. BEVIS, Ph.D.



IN the issue of June 1, 1918, of ARMS AND THE MAN, my good friend Mr. Charles Askins—now, by the way, a lieutenant in the Ordnance Department—dared to imply without my permission, understand, that in my laboratory I used a gentle current of air to determine the air resistance offered by projectiles having heads of different shapes. In doing so Mr. Askins, evidently an old coon hunter, had method in his madness, for he guessed and guessed aright that I would come forth for his bait and give in brief a detail of my working laboratory.

The Bevis Resistograph herein illustrated is not a patent nor is it a secret, and I gladly give its description here that others who have more time and money than I have may do experimental and research work along the same line. So accurately did experiment tally with mathematical computation (and for myself I will trust the latter every time if I have solved or reviewed the problem, in preference to experiment) that there is no question concerning the verity of the mathematical deduction or of the method of experiment. Experiment may give a leading clue, but mathematics will solve it and finally experiment will verify the deduction.

The Resistograph, designed by myself, consists of a recording scale "S," the dial of which is divided into 1/500ths of a pound. It is operated by the bar "R," on the end of which is screwed the metal case of the bullet. "P" is a steel plate protecting the recording scale from the blast of the gun.

The rifle is clamped rigidly so that the axis of the bore is in direct alignment with the rod "R"; the blast of the powder gases upon the head of the bullet is automatically recorded by the scale.

Before loading the shells, I had to find a substance which would hold the powder in its place with sufficient resistance as to increase the pressure and consequently increase the velocity of the powder gases, and which would not emerge from the muzzle in a compact form. For this substance I used a highly

inflammable grade of celluloid. Then after having determined the maximum charge of powder I was able to load the shells with extreme exactness and secured blasts of an exceptionally high degree of uniformity, as will be seen by the records herein given.

Before testing the resistance offered by the bullets I used a metal disc 2 inches in diameter instead, and being able to set the disc at various angles on the rod "R," I secured results which lead to me to the conclusion that the values of resistance as determined by Mayevski and Zaboudski are not accurate.

When more time and money present themselves I shall continue my research along this line and believe I shall be able to give more accurate values than those now given for "A" and "n" in the resistance tables, and I believe far-reaching results will be obtained.

For the bullet heads I use brass 3/10 of an inch in diameter and turned as accurately as possible to the correct calculated shape. The resistance offered by the ogival and the para-ogival, the head of each being the same length, are as follows:

	O	PO
Maximum pressure .....	.521 lbs.	.472 lbs.
Minimum pressure .....	.495 "	.445 "
Average of ten experiments.....	.508 "	.458 "

which results are in favor of the para-ogival, and for this length of head the resistance is about 1/10 less. A decrease in the resistance means a corresponding increase in the ballistic coefficient.

Solving for V in the formula

$$R_s \text{ (in pounds)} = \frac{A \times c \times d^2}{g} \times V^n \text{ we get } V^n = \frac{g \times R}{A \times c \times d^2} \text{ in}$$

which R was the record on the scale and g is 32.10. For trial I assumed the velocity (Concluded on page 211)

## Consistent Accuracy in the .22

By "CARTON"

In *The Rifleman*, London

THE great desideratum of all riflemen is extreme accuracy, whether they fire over long ranges at our national rifle meetings or have no other outlet for their enthusiasm than to obtain cartons on a 15-yard indoor miniature rifle range. In the path of progress to-day are many obstacles; the keen sportsman has a very limited choice, as just his particular pattern rifle or particular ammunition may be unobtainable. Shooting is unlike most sports. Equipment is of greater importance to success than it is in ordinary games. In football, for instance, the ball counts for little, the play everything, but in rifle shooting almost as much depends upon the rifle and ammunition as upon the rifleman. Almost—I use the word tentatively—all of us are wont to attribute our successes and our failures to the rifle or the particular brand of ammunition we have been in the habit of using, and while admitting that the equipment, together with confidence in it, assists in a great measure towards our goal, it must not be forgotten that while it is impossible for the best man to obtain excellent results when employing indifferent weapons, it is equally true that inferior shots will never get consistently good results even if they provide themselves with superior weapons.

Is technical knowledge of any advantage to the rifleman shooting over miniature rifle ranges? That is the point I have raised in these series of articles. By technical knowledge is meant a fully comprehended acquaintance with the weapon, its uses, and the means by which the end is attained, or intended to be attained. Briefly, whether or not it is worth while to study simple ballistics, rifle mechanism, and ammunition. Many contend that it is superfluous, and that it should suffice if the rifleman can see, hold, and shoot through. Others advocate that he should know the gun and ammunition and their possibilities. Some even recommend a study of competition conditions and regulations rather than interesting oneself with the varieties of guns, projectiles, and methods of shooting.

Expert marksmen of to-day and even of the past decade have been men thoroughly acquainted with the rifle and its possibilities, and they seem at least in part to have been expert in shooting because of the knowledge they possessed. Exceptions merely prove the rule to hold good generally. We have now a large number of highly intelligent men in the Army, many of whom have qualified as sharpshooters or snipers, but the results of their work at close range are inferior to those which were expected of "fully-trained men." Why? These soldiers do not yet know their rifles thoroughly. If

the average British sniper knew exactly what he was doing why he was holding and letting off in one particular way, his accuracy would be more consistent. At present it is all deduction from insufficient information. He has accepted some dictum from an individual expert who had a procedure which suited himself, so the would-be sharpshooter assumed that that procedure must be adopted in all cases, notwithstanding that the instruction was imparted in an environment totally different from that in which he was to be employed.

We must certainly admit without reserve that knowledge is a help and not a hindrance. Surely it is established that the machine, especially an instrument of precision like a gun, will give best results when used by a man who thoroughly understands its capabilities, and not when merely actuated mechanically by an individual functioning as a machine. The one will get better results from an inferior weapon than the other will obtain from any weapon. One endeavours to make his rifle suit him, the other tries to adapt himself and circumstances to the weapon. The former rarely attains anything approaching perfection, the latter soon arrives at his limit. Mediocrity of those belonging to the first class is far beyond the possibilities of any of the other class.

It must not be assumed that the foregoing remarks apply exclusively to the riflemen who chase the elusive possible at distant ranges, because the devotee to the small-bore is equally affected by the factors which produce rifle accuracy. I think we are all convinced that the long rifle is the most utilitarian cartridge for us; its accuracy is remarkably good, taking into consideration its moderate cost even to-day, when the demand for it by far exceeds the quantity available for supply.

But so much depends upon the rifle barrel—its length and its condition. Now a rifle is said to be a weapon of precision which belongs to the gun group. The interior of its barrel is grooved for the purpose of imparting a spin to the bullet, not to give it greater velocity, but to keep it travelling point first, which enables it to maintain an accurate flight throughout the whole of the range. It is on account of these particular grooves that the rifle is so named, and they vary both in shape and number in various makes of weapons. To obtain a successful spin of a bullet upon its long axis it is not only necessary that the grooves should have some kind of a twist. The number of turns which the rifling takes in the whole length of the barrel, the shape and depth of the grooves have all been the subject of careful study and

calculation by keen and experienced scientists. Rifling is said to be progressive when the grooves are cut deeper at the breech than at the muzzle. Again, it is often increased, *i. e.*, takes a turn in a shorter space at the muzzle than it does at the breech, and it may be right-handed or left-handed. There are other variations; for example, the Metford barrel, from which the .22-in. calibre aiming tube was adapted, is known as being segmentally grooved, while the grooves in the British service rifle, from which the present issue of the Government pattern .22-in. weapon has been adapted, are concentric, the former, by the way, having seven grooves and the latter five in the barrel.

Although it is often assumed that all good weapons are equal in accuracy, experts will not confirm it. Apparently a well-made rifle ought to be as accurate as any other of the same species, but evidently it is not so. Some time back the point was raised regarding the accuracy of .22-in. calibre rifle, and a well-known authority stated "there is no substantial difference in the shooting qualities of the different .22-in. long rifle calibre rifles of standard makes. With a well-made barrel the power or accuracy of cartridge is dependent wholly upon the length of barrel."

A retailer or agent who specialises in target shooting rifles of a certain calibre and of a particular make, and who receives his supplies from a certain factory, makes a point of accepting only those that have a standard of accuracy of target work, returning the discarded weapons. Now if such be the case with one make of rifle, does it not follow that there will be greater variations where supplies are taken from different manufacturers? In pre-war days a well-known firm issued a model which enjoyed a wide range of popularity in the United Kingdom. Each issue was guaranteed perfection, yet I have witnessed some very indifferent shooting by experts—who were accustomed to that particular character of rifle—when putting a new weapon through a test shoot. However, its percentage of failures was exceedingly small, hence the "model's" popularity; moreover, the firm has a reputation, so the weapon was replaced without loss of time.

Regarding other factors beyond ammunition and length of barrel, accuracy also depends upon the material from which the barrels are made, while differences in shooting are often noticeable if the cone connecting the cartridge chamber and the rifled portion of the barrel has a sharp angle—or short lead—or a less acute angle—or long lead—and as the major portion of our .22 rifles have barrels over 50 calibres in length, very few fail through lack of capacity to develop all the power there is in the long rifle cartridge. A correctly-tooled .22-in.

(Continued on page 210)

# War Secretary's Report Shows Vast War Mmunition Production

FROM the report of the Secretary of War for 1918 may in some measure be gained for the first time a comprehensive idea of the vast achievements of the United States in producing rifles, pistols and revolvers, machine guns, small-arms ammunition, artillery propellants and explosives, for our troops overseas.

The report shows an increase in the production of Model 1917 rifles of from 2,000 accepted in August, 1917, to 207,247 accepted in October, 1918, and a correspondingly unprecedented quantity production of other small arms.

Upon the matter of small arms and munitions production, the report says:

The opening of the war found the United States with essentially a peacetime equipment of fighting material. There was, to be sure, a considerable reserve stock of rifles, some of small-arms ammunition, and a limited amount of artillery. As the plans for active American participation developed, however, even in these special cases the needs were ahead of any possible supply immediately available. The task of designing, securing, and caring for all items of fighting equipment, as well as certain types of motor equipment and personal equipment, falls to the Ordnance Department, and upon the success of that department largely depends the success of the actual fighting.

In order to meet the enormously increased burden imposed by the war the Ordnance Department was compelled to enlarge its working force and its office space in Washington. The matter of office space was provided for early in 1918 by the construction of new buildings at Sixth and B Streets, Washington. The enlargement of the working force was a matter of considerable difficulty, especially in the case of officers, because the technical problems of design and manufacture involved are in many cases peculiar to ordnance. Candidates were selected with great care and then were trained for their particular work as rapidly and completely as possible in view of the great demands on the time and attention of the few trained ordnance officers available. At the close of the fiscal year 1917-18, the number of ordnance officers had increased to 4,618 as compared with 225 at the beginning of the year, but was not yet up to the full authorized number (7,013). Corresponding increases were made in the numbers of enlisted men and civilian employees. As far as was consistent with the best interest of the service the office work in Washington and the routine work of inspection were performed by civilians,

leaving the officers and enlisted men free for service in France, or at camps and cantonments.

The work of the Ordnance Department can best be considered in connection with the items whose production it directed, and therefore merges into the somewhat more general subject—the fighting equipment of the Army.

At the beginning of the war the standard Army rifle was the Springfield rifle, known as the Model 1903. Of these there were nearly 600,000 on hand and

Model 1917 Rifles Accepted Prior to November 1, 1918

	1917	By months	Cumulative
August	.....	2,000	2,000
September	.....	12,000	14,000
October	.....	63,000	77,000
November	.....	87,000	164,000
December	.....	123,203	287,203
1918			
January	.....	130,319	417,522
February	.....	161,448	578,970
March	.....	197,756	776,726
April	.....	151,616	928,342
May	.....	202,376	1,130,718
June	.....	184,379	1,315,097
July	.....	196,831	1,511,928
August	.....	235,900	1,747,828
September	.....	181,950	1,929,778
October	.....	207,247	2,137,025

At the same time the production of Model 1903 rifles was continued at an increased rate. It was necessary to devote much of the capacity at times to the supply of spare parts, which were required in large quantities to maintain the rifles on hand at the opening of the war. The first divisions sent to France were equipped with this rifle, which justified in action its reputation acquired on the rifle range before the war. The Model 1917 rifle was also thoroughly satisfactory in action.

From the beginning of the war the call for pistols was insistent. In this case the American Army was fortunate in having already designed and in production a weapon well adapted to close combat, and more effective than the corresponding weapons used by other armies. As extension of manufacturing facilities promptly enough to meet the demand was impossible, a revolver was designed to use the same ammunition and production of a considerable quantity secured, beginning in October, 1917. Plans for increased production of pistols were also carried through; at the time of the signing of the armistice, one new plant had begun production and several others were being erected. As a result of these efforts, those troops in France who were likely to require them for close combat were supplied with one or the other of these valuable weapons.

At the beginning of the war no machine gun or machine rifle had been accepted as a permanent standard for the American Army. Besides a number of Benet Mercier, Colt, Maxim, and Gatling guns on hand, orders were placed early in the war for 2,500 Colt and 2,500 Lewis guns. These guns were delivered promptly and used for training purposes. These measures, however, did not meet adequately the need for ground guns, nor the need for airplane machine guns. The latter requirement was taken care of by devoting to that purpose the Marlin guns and the available production of Lewis guns, after the completion of the 2,500 previously mentioned. Provision for active guns for immediate ground use was made by securing from the French a sufficient supply of Hotchkiss machine guns and Chauchat machine rifles. A

## I Sing of Arms

By THOS. J. MURRAY

I sing of arms, a splendid theme  
 In this red age of wild alarms  
 That tears the fabric of our dreams—  
 I sing of arms.  
 News crowds from broken fields and farms;  
 From far frontiers where terror streams,  
 And shocks the world with shameful harms.  
  
 On rifles now the high sun gleams,  
 Weapons to thwart the foe that swarms—  
 They flood our eyes with victory's beams;  
 I sing of arms.

in arsenals, in the hands of the Navy and Marine Corps, Regular Army, National Guard, and schools and colleges. There were also several hundred thousand of Krag-Jorgensen rifles (Model 1898) stored for an emergency. The Springfield and Rock Island Arsenals had a productive capacity of 700 a day, on a single eight-hour shift. Manufacturing difficulties made it impossible to extend Model 1903 production sufficiently. Fortunately, there were available several plants which had just completed large orders for the Enfield rifle for the British Government. A new rifle, the Model 1917, was accordingly designed. This rifle resembled the British Enfield sufficiently so that the plants equipped for Enfield production could be rapidly converted and utilized, but the rifle was constructed to use the same ammunition as is used in the Model 1903 and in machine guns and machine rifles of American manufacture. Production of the Model 1917 was pushed and completed rifles were secured before September 1, two months before the date specified in the contract. The following table shows by months and cumulatively to the end of each month the production of this rifle:

considerable number of Vickers guns was secured and used in part for ground use and in part for equipping airplanes. It was seen at the beginning of the war, however, that a standard gun was needed, which could be produced in quantity and would be superior in some respects to the older types. Accordingly, in co-operation with the Ordnance Department, Mr. John M. Browning, of Utah, the inventor of several earlier successful machine guns, designed three new weapons—the Heavy Browning machine gun, the Light Browning machine rifle, and the Aircraft Browning. By zeal on the part of all concerned, the first two were brought into production as promptly as possible, and quantities secured as shown in the following:

*Monthly and Cumulative Acceptances*

1918	Heavy Browning	
	By months	Cumulative to end of month
March .....	.....	.....
April .....	12	12
May .....	922	934
June .....	2,620	3,554
July .....	4,225	7,779
August .....	9,182	16,961
September .....	8,838	25,799
October .....	13,747	39,546

1918	Light Browning	
	By months	Cumulative to end of month
March .....	558	558
April .....	368	926
May .....	1,822	2,748
June .....	3,876	6,624
July .....	8,196	14,820
August .....	12,517	27,337
September .....	6,896	34,233
October .....	12,786	47,019

These guns when issued to troops met with immediate success and approval from foreign officers as well as our own. A recent cable from the American Expeditionary Force discusses their use in action as follows:

"Experience of Seventy-ninth Division in offensive operations September 25 to October 21, Browning machine guns. Thirteen machine-gun companies engaged, weather conditions continuous rain and mud. \* \* \* There was not one instance where the guns failed to operate due to muddy and wet belts. \* \* \* On the whole it may be said that the performance of the Browning machine gun and automatic rifle in active operation has been so satisfactory as to create an insistent demand for these weapons from machine-gun units and from division commanders."

In the case of the light Browning, in fact, an increase in the allotment per company is desired; such an increase may easily be provided for by a continuance of the present production, if required by the military plans finally adopted.

At the signing of the armistice the country possesses a stock of heavy Brownings sufficient to equip the American Expeditionary Force twice over, with a considerable margin, and a stock

of light Brownings sufficient to equip the American Expeditionary Force on the original scale.

A sufficient supply of small-arms ammunition has always been available to provide for troops in service. The complication due to the use of machine guns and machine rifles of French caliber has been successfully met. Temporary difficulties early in the war as to quality have been overcome, in spite of the large increase in production. To meet the special needs of the Air Service and of anti-aircraft defense, new types of ammunition have been designed and produced, whose purpose is indicated by their names—armor-piercing, tracer, and incendiary. A table shows the increase of production of ball cartridges, caliber .30 (for rifles, machine guns, and machine rifles), and of ball cartridges, caliber .45 (for pistols and revolvers).

*Monthly Production*

[In millions of rounds]

	Ball cartridges	
	Cal. .30	Cal. .45
September, 1917 .....	12	6
Average, last quarter, 1917....	83	9
Average, first quarter, 1918....	182	15
Average, second quarter, 1918..	213	27
Average, third quarter, 1918..	240	31
October, 1918 .....	254	35

The decision made in June, 1917, that for vital military reasons the artillery equipment of our forces in France should in general conform to French or British standard calibers prevented the employment of most of the small pre-war stock of artillery in the United States. It further necessitated the alteration of existing plants and the creation of new facilities for producing the French models of guns and ammunition. The handicaps thus imposed upon the supply of munitions from the United States were outweighed by the simplification of equipment and supply in the field, and by the co-operation with foreign munition production which was rendered possible. This cooperation enabled French and British plants to use American materials in the manufacture of artillery and ammunition for the American Army and resulted in more rapid equipment of the Expeditionary Force than could otherwise have been accomplished.

Development of manufacturing capacity in the United States involved the creation of new tools, new processes, and new plants. Even the arsenals were not equipped for the manufacture of the calibers and models of guns adopted, and certain existing private plants were working on allied contracts which could not be interrupted. Of the enormous amount of additional equipment made necessary by expansion of the Army from its peace strength to a contemplated force of 5,000,000 men, the artillery and artillery ammunition could be improvised with least facility because the

necessary processes of their manufacture involved irreducible periods of time.

The expansion which has been planned and effected since the entry of the United States into the war can be summarized as shown in this table:

*Expansion in Artillery Equipment*

Artillery (complete units)	Total contracted for	On hand	On hand
		Apr. 6, 1917	Nov. 1, 1918 <sup>1</sup>
Trench .....	11,700	....	5,000
Light .....	10,113	779	3,850
Medium .....	5,385	114	1,070
Heavy .....	3,472	....	695
Railway .....	211	....	19
Total.....	30,881	893	10,634

<sup>1</sup>Approximate.

The production of artillery ammunition has increased to a point where the total weekly output of machined shells is nearly equal to that of Great Britain, and the delivery of complete rounds is 40 per cent of the British rate. The increase in production during the past half year is seen in this table:

*Artillery Ammunition of American Manufacture*

	Produced in April, 1918.	Produced in October, 1918.	Complete or in process of manufacture Nov. 1, 1918.
	Light .....	888,000	2,470,000
Medium .....	129	136,000	7,926,000
Heavy .....	.....	108,000	3,741,000
Railway .....	245	4,000	341,000
Trench .....	11,789	1,026,000	9,455,000
Total.....	900,163	3,744,000	63,884,000

Prior to the entry of the United States into the war, a considerable part of the needs of the allies for smokeless powder and T.N.T. was being supplied from American plant capacity, which had been enlarged by the efforts of the allies. It was essential that American plans should result in no interference with this supply. In order, therefore, to cover the prospective needs of the artillery ammunition program of the United States Army, extensions and additions to existing capacity had to be undertaken, and plans developed for using ammonium nitrate as well as T.N.T. in loading high-explosive shells. As a result of the measures taken the supply to the allies from American sources was maintained and the loading of American ammunition was not delayed because of shortage of either powder or high explosives. Another result of these plans was the more rapid development of the extensive plants for the fixation of atmospheric nitrogen which were initiated by act of Congress in June, 1916. The war has brought much nearer the day when the country will no longer be altogether dependent on the Chilean deposits of sodium nitrate for commercial and agricultural, as well as for military, purposes.

## Oiling the Gun

By L. E. EUBANKS

I HAVE known persons who gave up regular physical exercise because of its "temporary" results. Having found through some change of circumstances that a few months' idleness caused a partial loss of what had taken a long period to build up, they reasoned that superior muscles must be unnatural and argued that exercise was little better than useless.

The same kind of person is found among shooters. A gun is so exacting in its demands for care that a lazy or lukewarm sportsman soon begins to ask himself if it pays. When he finds that one or two cases of neglect show bad results—that *does* settle it; he vows that he isn't going to be a slave and "work all night cleaning just for a day's shooting."

Generally, it's the man who loves his gun and enjoys caring for it who gets ahead in the shooting game. He doesn't expect the attention bestowed on his treasure last week to obviate necessity for care this week, any more than an intelligent athlete depends on the training of last season to start him out in top form today.

That sportsmen soon learn the importance of regularity and correct methods in caring for firearms is evidenced by the thirst for information on this subject.

At the risk of dampening enthusiasm, it must be confessed that the clean gun is largely a relative quantity. Practically, "perfectly clean" just means that you have conscientiously done your best on it, and that results in shooting show it to be clean *enough*. In strict reality, no gun is ever clean after having been shot. It has been said that a few gallons of oil used in 200 brand-new guns showed a pint of rust.

There are so many, many things to consider in fighting rust with oil! Guns have been wholly immersed in oil and then sealed up air tight—and then rusted! Why? Because the oil itself contained some water and oxygen. Of course, this introduces the objection from some people that oil does not absorb water. But most oils *do* that very thing—and I'd hate to bet that there are any "air and water proof" oils. Again, it is a matter of comparison; the heavier oils are slower to take in moisture, but even they do it—to a greater or less extent.

Assuming that an air-free oil has been used, we may yet find rust, as a result of acid in the oil. This is not so very rare, especially in the case of very old oils that are undergoing chemical decomposition.

I remember reading a theory which premised the absorption of water by steel directly from the air—"just as sponges do, but of course to a far less extent," said the writer. He pointed out that

everything is more or less spongy, that steel is not *absolutely* solid, and reminds us that 300 pounds pressure to the square inch will force water right into steel. To quote Chauncey Thomas on this interesting point, "Some metals are closer knit, to use an incorrect term just for clearness, than other metals, and thus it would take more pressure to send water, air, oils and other fluids into and through them. If a man plugs the barrel of any small-bore rifle, such as from .22 calibre up to .32 calibre, puts in water, then a tight plug or cleaning rod, he can with his hands force water into the metal of the barrel. With a .22 calibre a pressure of about twenty pounds on the plug would roughly equal over 300 pounds to the square inch, and this is usually enough to force water into steel and iron. So it is not surprising that our hot powder gases, under about 50,000 pounds to the square inch, drive the gas right into the steel of the barrel. If we had the eyes to see it, a rifle barrel when fired would probably look like a leaky hose, with gas coming out of every pore of the metal like smoke. But our eyes are far too slow and dull to see anything like that."

Naturally, temperature has a great deal to do with rust. Wise gun owners are chary about bringing a cold gun into a warm house. Many prefer to leave it in a shed rather than risk the over-heat and radical changes of the average dwelling. To get satisfactory service from a gun in extremely cold weather is often a matter of well-chosen oil. Under such conditions any gun is likely to jam unless zero oil is used. An oil must neither freeze nor gum, if the gun's action is to be smooth.

Rust is astonishingly persistent. Once well seated in a barrel, it will defy your every effort. Of course, when a rust spot is favorably located and small, it pays to have it bored out, but generally speaking the only cure for a badly rusted barrel is a new barrel. But it is true that some rusty weapons do good work. The rifle with a rusty breech often does as well as ever if there is still a half-foot or so of clean rifling at the muzzle.

Rust is cumulative; the more there is the more rapidly it will come, because the patch of rust is like a sponge, gathering water to itself very readily. This of course is the means of holding moisture nearer the surrounding surface.

No small problem—this matter of keeping a gun in good condition! Just as surely as metal-cased bullets pass through a barrel they will glaze it. This burnished surface offers too much resistance for any weak, thin oil. The men who use automobile lubricants, cup grease and gear grease will get better

results than he who goes to the other extreme and uses an oil that will run away from a part of the barrel as soon as the gun's position is changed.

It should be understood that kerosene alone is not a good gun oil. Many men have relied on this, to their ultimate sorrow. True, it does take off an easily accessible rust spot, when one uses sufficient elbow grease; but it is a disappointment when left in the gun, because it will not "stay put." I suppose the main reason for coal oil's popularity is the fact that it is part of the well-known Hudson nitro-solvent. Also, it is frequently more easily secured than some other oils. Neither one of these is a valid reason for its use; the ingredients of a compound naturally lose their individuality. Coal oil is of value for guns only in connection with some heavier oils. For its particular purpose there probably is no better solvent than Hudson's, and I herewith give it for the benefit of the few who may not be familiar with its composition:

Kerosene oil free from acid, 2 fluid ounces.

Sperm oil, 1 fluid ounce.

Spirits of turpentine, 1 fluid ounce.

Acetone, 1 fluid ounce.

What we can "make out on" is not always best for a gun. Water carrying all the washing soda that can be stirred into it will do as a nitro-solvent in a pinch, but I doubt its worth as a "steady diet." Similarly, strong ammonia will serve, but one must be careful not to get it in the works. Some gun-owners think that there is nothing better for the bore than tallow packing, but if they ever neglect to boil their grease long enough to rid the tallow of water, they will soon find rusty barrels. We should prefer the best thing for any given purpose, and use substitutes only when we have to.

As a lubricant for the friction parts of a gun, I guess that at one time or another every known oil has been tried—from the mineral, vegetable and animal worlds. And even yet it isn't settled. As a general rule, we know that a gun lubricant should be a thin oil—as thin as it may be and yet adhere to the metal. But while important, this is only one point. Will it gum easily, freeze too easily, or is it expensive?—these are important considerations.

Usually, the practice of mixing lubricants, in the hope of combining their virtues, is not advisable—at least, for the novice. Particularly unsatisfactory is the effort to blend castor oil with mineral oils. And mixing is unnecessary, if we study the respective characteristics of oils a little, so as to fit our choice to existing conditions. Castor oil is a splendid lubricant for many purposes, but it is too heavy for some of the uses of gunners.

(Continued on page 210)

# ARMS AND THE MAN

1111 WOODWARD BUILDING, WASHINGTON, D. C.

EVERY SATURDAY

Editor

BRIG. GEN. FRED H. PHILLIPS, Jr., Secretary N. R. A.

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KENDRICK SCOFIELD

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That the 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.

## WHO—OR WHAT—WON THE FIGHT AT CHATEAU THIERRY?

**N**OW that there is a lull in the fighting overseas—a lull which means the permanent silence of the guns—there are those who are seeking to foster petty bitterness between two splendid branches of the service by raising a question as to which of them was most instrumental in winning the battle of Chateau Thierry.

The truth of the matter is that both the United States Infantry and the United States Marines have just cause to be proud of their records in this fight. It was an Infantry General who informed an Ally officer when a retreat was ordered that "our boys would not understand it," and followed his remarks with the counter-attack which grew into a rout for the Huns. And it was the Marines who chanced to be in the van of that unexpected advance, and who, sifting through the companies of retiring Ally troops gave an exhibition of fighting which will never be forgotten. But it was the Infantry soldiers of the United States forces who so heroically stood behind the comparatively small number of Marines, backing-up their victorious tactics and making a material advance possible. And finally it was the Associated Armies who swung in behind the American forces to a complete victory for us and unconditional surrender for Germany. So, at Chateau Thierry, there was glory enough for all, and that glory should not be marred or detracted from by discounting the value of the part played by any of the participants.

**I**F THERE is a lesson to be learned in the Chateau Thierry fighting and that which immediately followed at Bois Belleau, other than that by unexcelled bravery and courage American fighting men turned the tide of a four years' war, it is to be found not in the question: "Who won the battle of Chateau Thierry?" but in the question: "What was the deciding factor in the fighting?" and this question may be

answered without in the slightest degree attempting unduly to glorify one branch of the service over another, for the deciding factor was neither "Leatherneck" nor "Doughboy," but accurate and scientific rifle fire.

ARMS AND THE MAN has devoted much comment to the quality of American marksmanship in the great decisive battle of the world war. It is something which should be told and retold until every man and boy in the country is convinced that any effort to relegate the rifle to the junk-pile of the obsolete is the proven and discredited spawn of German propaganda. Therefore it is particularly encouraging to find the number of army officers who, in spite of the trend of things before the battle of Chateau Thierry, are now staunch adherents not only of the value of rifle fire, but of the importance and suitability of our present form of rifle instruction, which seeks to develop the individual shot.

**A**MONG the many army men who are now championing the cause of the weapon which in the hands of Marines and trained Infantrymen proved the deciding factor in bringing the great war to a close, are two officers of the General Staff United States Army. These men were in the thick of the fighting in France. They saw the rifle in the hands of the American fighting man, and were skilled enough as military observers to realize the value of the Springfield and the Model 1917. Their testimony is clear, and should be made a matter of record for the doubters of the future who in years to come may attempt to detract from the rifle as a war weapon.

From one of these General Staff officers came this expression of opinion:

"In my opinion, and in that of many other officers, the effect of our accurate and well aimed rifle fire was a surprise and a shock to the Boche, as exemplified in our advances against his lines, in meeting his counter-attacks, and particularly in overcoming machine gun nests. This is something on which the Boche evidently miscalculated.

"In encountering a machine-gun nest, the tactics were, instead of running directly against it, for the group or unit in front of it to work around one or both flanks and to its rear and pinch it out, 'stalking' the machine-gun squad; the rest of the organization to continue its advance. Where hitherto auto-rifles, bombs and hand grenades were employed against machine guns, necessitating approach to within throwing distance of these nests for bombs and hand grenades and the limited range of rifle grenades, our accurate rifle fire made the out-flanking of these nests much easier, as the riflemen did not have to approach the site of the machine guns so closely.

"Frequently machine gunners and other members of the squad were found shot through the head and other vital parts of the body as the result of our aimed rifle fire, which must have had considerable effect upon the enemy morale.

"The bayonet was also used with valuable effect in personal encounter when machine gun squads were run into unexpectedly.

"While the auto-rifle, bombs and hand grenades have been used to good advantage in attacks against machine gun nests, the importance of accurate rifle fire in overcoming them cannot be overestimated."

From the second officer, this testimony comes:

"I think that it would be well to impress on all connected with training in the United States the importance of thorough training in marksmanship. Skill with the rifle has lost none



of its old time importance, and good straight shooting such as we taught in the days before the war is badly needed.

"All the old soldiers in France realize the importance of straight shooting, and their experience has proved that our pre-war ideas on the subject were sound. We invariably find the old soldiers paying close attention to elevation and windage, and to the use of the sling in the good old way. This theory that occasionally crops out that the sling cannot be used in

battle is all bosh. All our old men are using it, and the young soldiers are quickly coming to it. It steadies the man in the excitement of action, and makes close shooting possible. There is almost always time to get into the sling, and almost always time to get out of it if one is called upon to use the bayonet in a hurry. Put every man through as much slow and rapid fire up to 600 yards as possible—teach him to use the sling and to shoot close."

## Little Lessons in Reloading

BY JOHN LYNN

### No. 8—Powders for Reduced Loads in Rifles

**T**HOUGH all the powders named below are well known to most shooters, there is a good deal of misunderstanding throughout the land about their real value, and especially their relation to one another, and their best use.

For all charges lighter than standard in rifle ammunition, only smokeless powder can be used. Even those rifles designed for black powder, such as the .32-40 and .44-40 for instance, can not burn black powder properly except in full charges. The most important fact to understand about the kind of smokeless powder to use is that no one kind can be used successfully in all calibres and under all conditions. The next important fact is that reduced charges require a different kind than full power charges.

The powders on the market that can be used are mainly these: Du Pont Nos. 18, 80, 75, 1, 3, Bullseye, Lightning, Sharpshooter, and various bulk shotgun powders.

Du Pont No. 75 used to be called Marksman, and was the standard reduced charge powder for .30-40, .30-06, .30-30 and also similar cartridges for many years. Where adapted it gives accuracy never yet surpassed. Its only faults are a limit to the amount that can be used per charge while retaining uniformity of burning and safe pressures, and liability to absorb moisture from the air.

Sharpshooter and Lightning are not limited by these considerations when used as reduced-charge powders, yet their use brings up the old question of excessive erosion from hot gases. They are nitroglycerin products, consequently burn hotter than nitrocellulose powders. The truth about the erosive properties of the nitroglycerin powders likely is that they do their chief damage when in full loads that burn under high pressure, and do far less in light loads. In the humble opinion of the writer, however, their "far less" is more than enough, and a good deal more than is done by equivalent charges of proper nitrocellulose pow-

ders. It must be noted that Sharpshooter and Lightning do more damage in .22, .25, .28, .30 and .32 calibres than in .38, .40 and .45.

Du Pont No. 80 powder is comparatively new and belongs to the nitrocellulose type, hence is cool-burning and non-erosive. Its granulation and character is such that it burns at about the same rate as No. 75, or perhaps a little slower. It has a wide range of usefulness, since it can be used wherever No. 75 is used as well as in charges considerably heavier. About one-fifth more of it (by weight) is required to develop similar velocities. In high-power rifles it can be loaded to give all the velocity that can be secured with cast bullets in front of Lightning powder. In "black powder" rifles it can be used for any charges up to full power. It does not absorb moisture nearly so quick as No. 75, though it is not free from this fault to the extent that Lightning or No. 18. A characteristic that should be understood is that in considerable charges it sets up high pressure in the shell without developing very much in the barrel. Thus in a .32-40 or .38-55 shell not a very heavy charge is required to flatten the primers and to swell and make tight the shell close to the head.

No. 18 was not designed with any idea that it might be used in reduced charges, but experience shows that it can be used with much satisfaction wherever Lightning is used. In the .30-40 and .30-06 cartridges, for instance, it perhaps is the best powder, for bullets of 175 to 200 grains are to be used at velocities between 1,200 and 1,800 or 2,000 feet. It also is useful in case the ultra-high velocity cartridges, such as the .22 High Power, .250-3000, .30-06, the Mauser series, the Newton series and others are to be loaded to give the "reduced" velocities of 1,800 to 2,200 feet with metal-cased bullets. In charges as light as 15 grains in .30-calibre rifles it burns complete enough for all practical purposes. Du Pont No. 21 will give great accuracy in similar light loads, but burns so poorly that many hard grains are left in the

barrel and chamber, interfering with the seating of subsequent shells. No. 18 has the immense advantage of being a nitrocellulose explosive, and is easy on the barrel.

Du Pont No. 1 powder can be considered obsolete for reduced-charge purposes. Even though it mainly gives excellent results, it takes up moisture so quickly as to become unreliable under damp conditions, and the purposes it serves are accomplished by other powders that do not have this fault.

It will be seen, therefore, that du Pont No. 75, No. 80, and No. 18 serve almost every purpose of reduced charges better than any other powders. They do the least possible damage to the rifle barrel. Their accuracy is unsurpassed. Each one has its distinct place, which does not overlap the places of the others. No. 18 is suited for mid-range loading. No. 80 is suited for all short-range loading, and is at its best in charges typified by the 154-grain plain base cast bullet in .30-1906 cartridge, with about 15 grains. No. 75 is suited for use in the strictly high-power, bottle-necked cartridges, and its particular application lies where required charges are between 6 and 15 grains, where shells are clean and cartridges are not to be exposed much to dampness or kept many months after loading, and where the small saving in powder used due to smaller charge required becomes an appreciable item because the number of cartridges loaded is large.

The only addition to these three powders that is of any advantage is in the case of extremely short-range shooting, as for gallery work or shooting at objects in the air when an extremely light bullet is used. For such loads du Pont pistol powder No. 3, a nitrocellulose explosive, or Hercules Bullseye, a nitroglycerin explosive, can be used with much satisfaction. They are very dense, hence exceedingly small charges are required, which makes their cost per thousand cartridges next to nothing. The shotgun powders invariably are more expensive to use than the correct rifle powders named, and never have been known to deliver equal accuracy. Their only standing for reduced-charge rifle loading is based on the fact that they give fair results under proper conditions, and sometimes can be found in stocks of dealers when rifle powder can not be.

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- 1918—Zettler Championship Match, Arthur Hubalek, 2476 ex possible 2500
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#### OILING THE GUN

(Concluded from page 207)

Almond oil is among the best, especially as regards immunity to cold, but like olive oil, it is expensive. Olive oil, the watch-maker's favorite, is too sensitive to the elements, and a bit too thin.

Neat's-foot is about the best gun lubricant, all considered; unless the weather is very cold. It cannot be denied that this oil is sensitive to low temperature.

A brother sportsman, Charles Wilson, of Edgewood, Ill., recently gave a recipe for "possum oil" which should be of especial interest to trappers and others who live where they can carry out instructions. Like Mr. Wilson, many of us are now hemmed in by "civilization" and unable always to get "what we want when we want it." The opossum should be fat. Dress it as if for eating and bake in an oven without salt or any kind of seasoning, till the fat is all rendered off. Pour off into bottles and you have a preparation that answers well for inside or outside of your gun. I have heard it claimed that this "dope" equaled vaseline in many ways. Mr. Wilson swears by it absolutely, claiming that it "will

not rub, freeze nor rain off." Well, if it's as good as vaseline, it's O. K.; for we know that if limited to one article of this kind most gunners would take vaseline.

The only reliable rust preventive is never-failing, proper care. Note this, your methods must not only be correct but they must be *used*—there must be no neglect. A gun cabinet, practically airtight, is a great help, and wrapping the weapon often is advisable. The bore grease ought to be changed frequently, particularly if you doubt its adhesiveness. The temperature of the gun's "home" should be as nearly equable as is practicable, and a pail of salt to help maintain dryness of the atmosphere is a good idea.

American Indians, serving with the Marines in France, have their own ideas about catching Germans, according to Lieutenant Eugene Blalock, U. S. M. C., who arrived in Pittsburgh recently from France.

"The Redskins rigged up several bear traps and set them out in No Man's Land," the officer explained. "The next day two of them held Germans in their steel jaws. It was difficult to restrain the Indians from shooting the wriggling Boche as soon as they espied them."

#### ACCURACY IN THE .22

(Continued from page 204)

calibre rifle will be found to have all the grooves of the same width and depth throughout the length of the barrel. This is just as important as the test by barrel gauge, and is usually detected in the performance of the rifle at target practice. Accuracy is also affected by the shape and size of the chamber, and the lead is an equally determining factor. Moreover, it is at this particular juncture where the accuracy of good, reliable ammunition is invariably decided, as it is often noticed that a rifle may shoot accurately with one make, but indifferently with another, because the former has a good chamber and lead fit. Therefore it is possible that those cartridges which do not provide consistent accuracy in your particular rifle may give the utmost satisfaction to your club comrade, even though he may be using a rifle of the same "model" as your own.

Good ignition of the cartridge is another and very important item to be taken into consideration when we seek to eradicate the first error in rifle shooting. Especially does it seem that with rim-fire ammunition the striker must be of the

correct shape—pass through the gauge of a S. M. L. E. implement action is an excellent standard—and indent at the right place, and hit just hard enough at the exact portion of the rim where the best results are obtained. The metal jacket or case differs considerably in the various makes of ammunition. Some of them are soft, while others offer more resistance to the point of the striker. Some are thicker or perhaps thinner or are primed with a more or less sensitive detonating compound. All these points affect accuracy unless the striker is gauged suitably.

To obtain absolute accuracy it is advisable to divide your shooting up and place it under three headings, or errors if you prefer to call them so. We will make the first "Error of Rifle and Ammunition," the second "Error of the Day—Atmosphere, Light and Wind," and the third "Error, Personal—Trigger Pressing and Holding." The first may be eradicated by a study of simple ballistics and close attention to the suitability of rifle and ammunition; the second overcome by experience and thought; the latter by careful practice and determination to secure a smooth let-off combined with control of one's nerves and regulation of breathing. However, at this moment we are concerned principally with the rifle and the ammunition; the other remedies may follow later. Probably the most accurate rifle ever made needs to be humoured, but we may be quite certain that each and every rifle issued in the ordinary way has some peculiarity, which an expert would discover without an exhaustive trial and so postpone its relegation to the scrapheap, thus avoiding considerable annoyance and perhaps unnecessary expense.

**EXPERIMENTS IN RESISTANCE**

(Concluded from page 203)

of the powder gases to lie between 1370 f. s. and 1800 f. s.

log R (508)	=	1.70608	
log g (32.16)	=	1.50732	
		1.21340	1.21340
2 log d <sup>2</sup> (.304)	=	2.96574	
log c (.600)	=	1.77815	
log A	=	4.11926	6.86315
2 log V	=		6.35025
log V	=	3.17512	
and V	=	1496 f. s.	

the velocity of the powder gases with a possible variation in velocity of 5 or 6 f. s. for the maximum and minimum results.

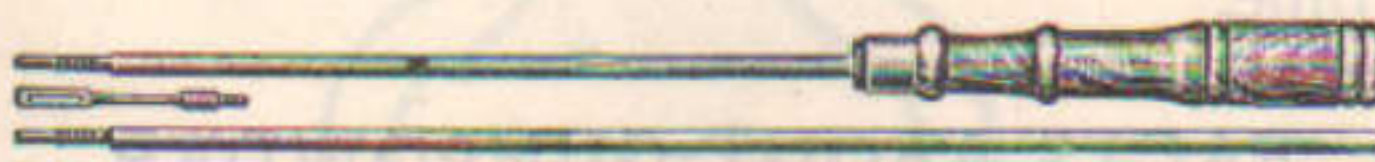
Higher velocities of the powder gases may be obtained by using a longer barrel, a quicker powder, or by using both.



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**HORSES MAY FIGURE IN FUTURE HUNTS**

Many of the most enthusiastic field sportsmen may return from overseas so badly wounded that their favorite recreation may be denied them because of difficulties in getting about. Field shots who have been so handicapped by injuries may find some measure of comfort in the experiences of an English shot, as told in one of the British sporting papers. The field shot declares that it is perfectly feasible to go after birds on horseback and says:

"Owing to some misunderstanding between the German nation and our own, I had occasion to visit France in the year 1916. I enjoyed a few weeks of interesting 'big game' shooting; but in the July of that year, whilst making a pilgrimage towards Lille, I met with considerable opposition from the 'fauna' then occupying the country. 'To cut the cackle and come to the 'osses,' I had my left leg blown off.

"Many worse things happen to men who indulge in this sport, but it must be acknowledged that even the loss of a leg is apt to interfere with one's ordinary shooting activities. For this reason (there are some others) 'Bosch baiting' has its disadvantages, and, as a sport, may be considered inferior even to fly fishing! However, there are other sportsmen suffering from my complaint, which, by means of a pony, can be turned into an advantage. Nearly any pony will do if you go carefully about the training of it. Start with the pony at your side, and point your gun, whilst someone else, some 50 yds. away, fires. Mount, move on, and repeat the process at closer ranges until you yourself eventually fire from the pony's back.

"The secret is to move the pony after every shot, and not to carry out the training in one field. A dog or two and a few boys in the vicinity are an added advantage, as they prevent the pony's interests being entirely concentrated on the gun. If the pony does not like it, give it up for the day, and don't frighten him. But out of the three animals I have taught, two learnt their lesson in two hours.

"For the safety of oneself and one's friends, it is well to start by only having one barrel loaded, in case of trouble, because a one-legged jockey can very easily come off on the side where his wooden leg is; then, again, any pony objects to having his ear perforated! My shooting is a little slower, but, I believe, surer. In the case of driven birds, I tie 'Toby' up in the hedge, and am on an equal footing with the rest of 'em.

"The advantages I have over the common or two-footed sportsmen are that I can 'beat' a field in double-time. I can ride about and discuss operations with the keeper and the other 'guns.' I never get tired (but 'Toby' does!), and I never get my foot wet."

**NAVY BREAKS PASSENGER RECORD**

All records for the number of passengers carried in any type of airplane were broken on Wednesday, November 27, at the Naval Air Station, Rockaway, when the Navy's newest type seaplane, the giant NC-1, the largest seaplane in the world, made a flight with 50 men on board.

The pilot was Lieut. David H. McCullough, of the Naval Reserve Flying Corps, and the flight was made to demonstrate the enormous lifting power of the latest model of bomb-carrying seaplanes. No special modifications were made for this test flight, most of the 50 men being accommodated in the large boat body.

The design and the construction of the NC-1, with its triple motors, huge size, and other distinctive features, was carried out by the Navy in co-operation with the Curtiss Engineering Corporation. It is not specifically a flying boat nor is it of the pontoon variety of seaplane, but combines the most valuable advantages of both, its size and purpose being considered. While it is entirely new and original in type, the NC-1 incorporates proven essentials in aircraft construction and even before it was tested was regarded in naval circles as a pre-insured success rather than as an experiment.

This is the first American tri-motored seaplane, being propelled by three Liberty motors that develop a maximum of 1,200 horsepower, giving it a cruising speed of 80 miles an hour. The flying weight of the machine is 22,000 pounds, while the weight of the seaplane itself, unloaded and without a crew, is 13,000 pounds.

An idea of the size of the big seaplane is shown by the fact that the wing spread is 126 feet, the breadth of wing 12 feet, and the gap between wings 12 feet.

Recently the NC-1 made the trip from Rockaway to Washington, about 350 miles, in 5 hours and 20 minutes. The flight from Washington to Hampton Roads, 150 miles, was covered in 2 hours and 15 minutes, and the trip from Hampton Roads to New York, 300 miles, took 4 hours and 20 minutes.

### INDEXES OLD ARMS

Captain Hugh B. C. Pollard, the author of "The Book of the Pistol" is at present compiling a file index of early gunsmiths, according to notices in the sporting press. Concerning this work Captain Pollard says:

"For some time past I have been compiling a file index of gunsmiths, English and foreign, from 1400 to 1900, with particular reference to the seventeenth and eighteenth century makers and their marks. The result is encouraging, for out of a collection of 180 odd flintlock weapons I went through recently, I found that only fifteen names were new and undatable except by the type of arm. In the older pieces the maker's mark, such as initials under a crown or fleur de lys, is found between the usual 9, P and V proof marks. In silver-mounted arms the hallmark and date letter are invaluable aids to fixing the precise date at which a given maker was working.

"The importance of the armourer's mark is that it shows who was the real maker of the weapon, for many pieces bearing provincial names were actually made by large London or Birmingham makers. To give an instance. I have just acquired a heavy English rifle flintlock and breechloading, the mechanism being an unscrewable plug attached to the trigger guard. The rifle is by Wilmore, London, and bears the viewer's mark of the Gunmakers' Company, but no armourer's or other marks. The fore end, buttplate, escutcheon, and sideplate are all of pierced and heavily-decorated silver; the stock of dark knotted walnut. The period of the piece is pure Queen Anne. Besides the rifle, I have a cannon barrel sidehammer flintlock pistol by Wilmore. This piece is identical in workmanship, being of the same kind of walnut, and having the same silver decoration in the same style. The butt terminates in a silver grotesque mask, and the weapon is almost a pair with a similar pistol by another maker dated 1705. Unfortunately neither of the Wilmore pieces

bear a date letter on the silver, but the pistol has an armourer's mark F. between the proof marks. No record of the maker Wilmore exists, but the armourer's mark may be found on other dated pieces, and contributory evidence obtained. It is probably the earliest known English rifle and the earliest known breechloading English rifle at one and the same time."

### FACTS ABOUT GUNPOWDER

It is incorrect to speak of the discovery of gunpowder, for this compound of saltpetre, charcoal and sulphur has been developed—passed through many stages—and there is no evidence on which to pin down its invention to one man, says a writer in *All Outdoors*.

In England, Roger Bacon is considered the inventor, and while this is a disputed point, it is evident that Bacon makes the most important reference to gunpowder in a communication bearing the early date of 1242.

In this and other of his writings Bacon makes no mention of guns or the use of powder as a propellant, but merely as an explosive and destructive power.

The first mention of gunpowder as a propellant is in a document now in the National Library in Paris. This bears the date of 1338, and describes "an iron weapon called pot de fu, for propelling bolts, together with some saltpetre and sulphur to make powder for the same."

About the time of Elizabeth the manufacture of gunpowder was carried on as a crown monopoly, and regulations respecting gunpowder were made in the reign of James I, in 1623. Powder mills were in existence in England about the middle of the sixteenth century.

However, Roger Bacon in his anagram gives the first recipe for gunpowder as being composed of saltpetre, 41.2; charcoal, 29.4; sulphur, 29.4. The composition of gunpowders used in different countries varies considerably.

The composition of English powder is now—saltpetre, 75.0; charcoal, 15.0; sulphur, 10.0.

For making the brown or coco-powder used in the big guns of Germany the following recipe is used: Saltpetre, 78; charcoal, 19; sulphur, 3. In making this powder the charcoal is not burnt black, but roasted until brown, and is made from some variety of straw and not of wood.

Smokeless and even noiseless powders seem to have been sought for during the whole gunpowder period. In 1756 one was experimented with in France, but was abandoned. Modern smokeless powders are certainly less noisy than black powders, mainly because of the absence of metallic salts which while gaseous in the gun are ejected as solids when coming into contact with the air.

The adoption by the French Government of the comparatively smokeless nitrocellulose of Paul Vieille in 1887

practically put an end to the old forms of gunpowders. The first smokeless powder was made in 1865 by Colonel E. Schultze by nitrating wood meal and adding potassium and barium nitrates.

## BOOK REVIEWS

CAPT. E. DE W. S. COLVER, who is an officer in the Yorks Light Infantry, British army, is attached to the British Ministry of Munitions of War, and is also superintendent of research at a national shell-filling factory in England, as well as a member of several scientific societies, is the author of "High Explosives," which has recently appeared from the press of the D. Van Nostrand Co. In his preface he explains that in writing this book his aim has been to fill a marked gap in English technical literature, which is very deficient in recent information on the subject of high explosives, the subject having been much neglected until quite lately, and even now, he adds, very little collected information regarding the manufacture, properties and use of modern high explosives being obtainable, which is most remarkable, in his opinion, when it is considered that some of the compounds regarding which so little has been published in England have been not only known, but extensively used in Germany and other continental countries for more than twenty-five years. Captain Colver believes the search for more powerful and new explosives will in all probability be more vigorously prosecuted in the near future. Details of some explosives not yet manufactured on a commercial scale are included in his work, but he explains that naturally to prevent the transmission of certain information to the enemy it has been necessary to restrict the work in many important particulars. Even with these necessary omissions the work, which is voluminous, is most complete and technical, first treating of high explosives from a historical standpoint, then discussing the raw materials and later the various forms of high explosives, their origin, composition, manufacture, method of manipulation, properties, specifications, etc. The work, which is freely illustrated, will be of particular interest to ordnance and artillery officers.

Physical contests designed to put fighting men into fighting trim have become an important feature of cantonment training; therefore, "Group Contests for the Army, the Navy and the School," by William J. Cromie, published by the Macmillan Company, should be well received.

The book contains instructions for 325 contests, including File Relay Races, Hopping Relay Races, Rope Races, Hoop Races, Man Lifting Relays, Medicine Ball Passing, and Vaulting.

# From Club Room and Firing Line

## Marines Make Clean Sweep at Glen Burnie

TWO teams of "Leatherneck" riflemen from the Marine Corps training camp at Quantico, Va., showed up at the Navy Rifle Range, Glen Burnie, Md., and in the annual fall competitions staged there November 23 and 24, won most of the events.

The Glen Burnie matches this year drew a larger attendance than ever before. There were teams from several of the Navy Ranges including those at Caldwell, N. J., Peekskill, N. Y., and Virginia Beach, Va., in addition to delegations of civilian riflemen representing the rifle clubs of the District of Columbia.

While the weather conditions bothered neither the Marine Corps marksmen nor the boys from the different Navy Ranges, where all-winter shooting is the usual order of the day, the civilians were more or less handicapped by shooting conditions to which they were not accustomed.

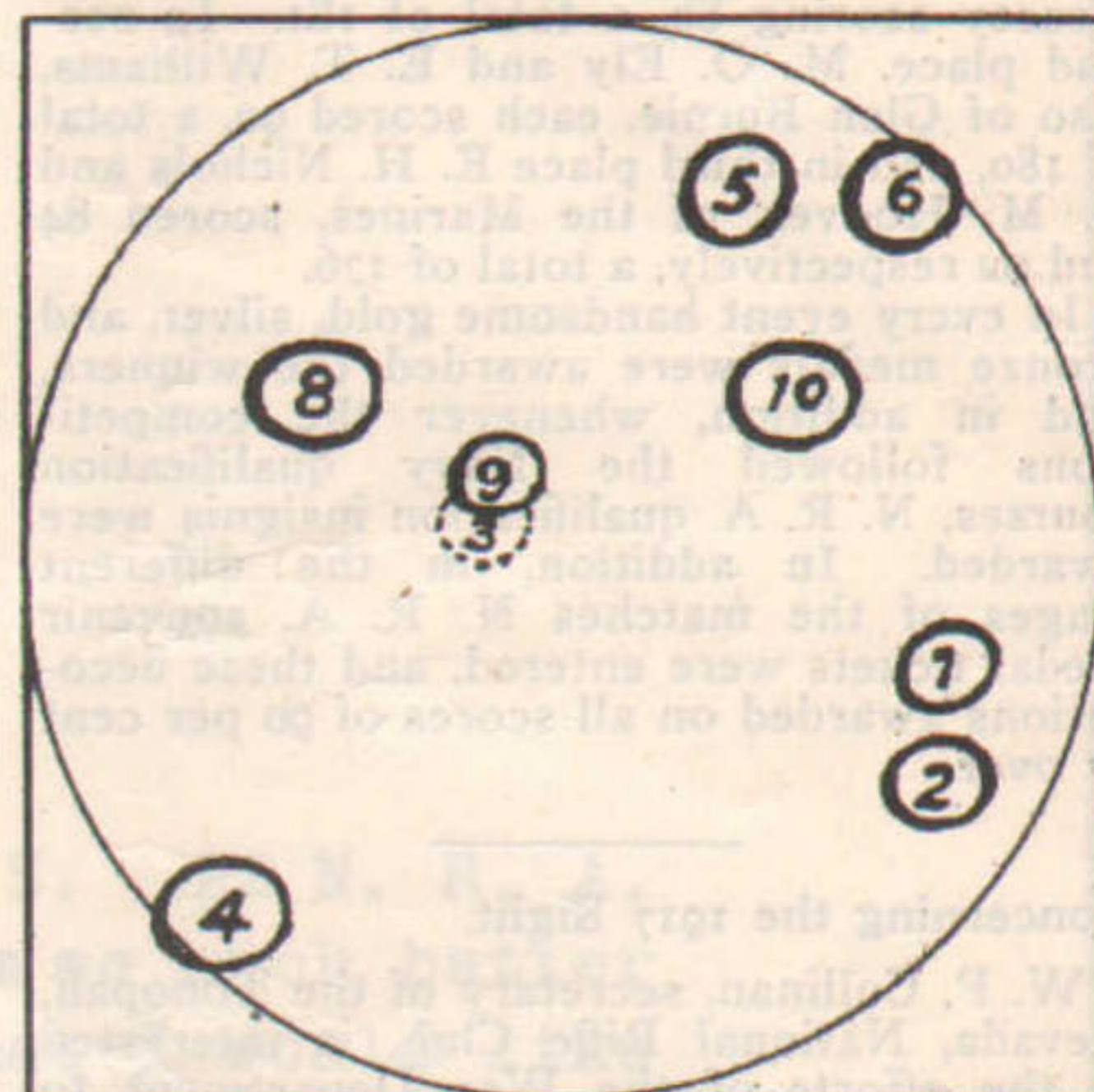
The Long Range Match calling for teams of eight men, 20 shots each at 600 and 1,000 yards, drew ten entries, and was won by the U. S. Marine Corps 1st team on a score of 1,313 out of a possible 2,000 points. The second Marine Corps team finished only 3 points behind the victors with the range team from Glen Burnie in third place with 1,249 points. The other teams in this event finished in this order: Fourth, Navy Rifle Range, Caldwell, N. J., 1,212; fifth, Navy Rifle Range, Peekskill N. Y., No. 1, 1,168; sixth, Naval Academy Rifle Range, Annapolis, Md., 1,138; seventh, Washington Rifle Club, team No. 1, 1,087; eighth, Navy Rifle Range, Virginia Beach, Va., 1,012; ninth, Navy Rifle Range, Peekskill, N. Y., team No. 2, 973; and tenth, Washington Rifle Club, team No. 2, 649.

In the Ship's Team Match, the Marine Corps second team carried off first honors, running up a score in slow-fire, changing position fire, and skirmish run—possible 2,400—of 2,062 points, going well above the Marine Corps first team, whose total was 2,029, with the Glen Burnie team in third place on a score of 1,958. The other teams finished in this order: Navy Rifle Range, Virginia Beach, 1,911; Navy Rifle Range, Peekskill, N. Y., No. 1, 1,875; Navy Rifle Range, Glen Burnie, Md., No. 2, 1,875; Navy Rifle Range, Caldwell, N. J., 1,846; Washington Rifle Club, No. 1, 1,833; Naval Academy Rifle Range, Annapolis, 1,768; Second Team, Navy Rifle Range, Peekskill, N. Y., 1,474; Second Team, Washington Rifle Club, 1,168; Third Team Washington Rifle Club, 1,151, and Fourth Team Washington Rifle Club, 1,007.

The individual championship was won by Captain F. Leuters, of the Marine Corps, who scored 283 out of a possible 300 in the ship's team match, these scores being counted for the championship event. Second place for this honor went to Gunnery Sergeant T. L. Meek, U. S. M. C., on a total of 279, with R. M. Morris, of the District of Columbia third, with 278.

The club championship, decided in the same manner went to the eight high men in the Marine Corps contingent on an aggregate of 2,184, with the Naval Academy Rifle Range, Annapolis, second with 2,053 points, and the Peekskill Range third with 2,042 points.

The primary team match which started



Left, the group as it appeared on the D target; right, the group in a 2½ inch circle

## Here's a Good Group

NINE out of ten shots placed within a circle of 2-ins. diameter at 200 yds., timed sitting, is considered good shooting by members of the San Francisco Bay Area League. The tenth shot was pulled off 2½ inches from the center of the circle. This was the achievement of Paul Thelen, member of the California Railroad Commission Rifle and Pistol Club and executive officer of the Bay Area League, on November 17, at the State Range at Leona Heights, with a Krag rifle and 1907 free issue ammunition. The trigger pull of the rifle was 3½ to 4 pounds and the sling was adjusted in the same manner as that used by the California Civilian Rifle Team at Camp Perry. The weather was cold and windy.

The marking was done by Messrs. L. W. Claybaugh and W. S. Owensby, of the Western Union Rifle Club of San Francisco, and the firing was witnessed by a dozen or more members of the Pacific Service Rifle Club. Mr. Claybaugh, executive officer of his

club, furnished the commission club a sketch showing where the shots were placed in order to verify his statement that the nine shots could be covered by four "stickers."

The United States Government should feel justified in expending the money necessary to hold an annual course of instruction for civilian teams if it develops riflemen who can shoot with such accuracy. While Mr. Thelen didn't win any of the gold medals at Camp Perry National Matches, nevertheless, he feels that the experience and confidence gained there have made it much easier for him to make good score. Anybody who weathered the rain and mud and cold, and rejected ammunition of Camp Perry, finds it child's play to make good scores under California's ideal conditions.

A. N. JOHNS,  
Executive Officer.

with twelve entries, was fired by only five teams, and was won by the Glen Burnie Rifle Range marksmen with a 4-man team on a score of 383 slow fire, 373 changing position fire and an aggregate of 756 out of a possible 800. The other four teams finished in this order: First team, U. S. Marines, 752; second team, U. S. Marines, 750; second team, Navy Range, Glen Burnie, 729; Navy Range, Annapolis, 713, and U. S. Treasury Department Civilian Rifle Club, 715.

The 200-yard, slow fire, individual match was won by F. Chisholm of the Washington, D. C., Rifle Club. The match called for 20 shots slow fire, and Chisholm got off well, putting all of his bullets in the bull's-eye for a possible score. C. VerMeulen, of the Glen Burnie outfit, however, shot just as well, hanging up another possible score, while T. L. Ackerlie, of the Baltimore Rifle and Revolver Club; C. H. Mason, of Glen Burnie; A. Buckle, of Annapolis; E. A. Little, of Annapolis, and R. L. Fryer, of Caldwell, fought for second honors on a score of 99. In the shoot off Chisholm won.

In the 200-yard rapid fire match, R. M. Morris, of the Washington, D. C., Rifle Club, was victor with a score of 99, W. G. Davis, of Virginia Beach, finishing second on a score of 98, and E. Scrogin, of Glen Burnie, third, with a score of 97.

The 500-yard slow-fire match was won by R. L. Fryer, of Caldwell, on a score of 97, with E. F. Locke, of the U. S. Marines, second, on 94, and W. E. Dickerson, also of the Marines, third, on 92.

Captain Leuters, of the Marines, won the changing position match at 500 yards. He scored 93 out of a possible 100, with A. Staroska, of Peekskill, second, on 90, and T. S. Meek, of the Marines, third, with 89.

An old-time Navy skirmish run was the feature of Match No. 5, which was won by W. E. Dickerson, of the Marines, on a score of 97, with W. H. Blase and F. H. Waters, of the same outfit, in second and third places, on score of 96.

R. M. Morris again came to the front in the 300-yard slow fire match, carrying off first honors on a possible score, with E. A. Little, of the Annapolis Range, second, on 99, and J. VanDyke, of Glen Burnie, third, with the same total.

In the 600-yard slow fire match Staroska, of the Peekskill Rifle Range, forged to the front with a score of 96, forcing J. K. Morton, of the Marines, into second place, with 95, and Marine Gunner J. J. Andrews into third place with 94.

In the 1,000-yard slow fire match, E. E. Sarr, of the Marines, scored 88, thereby winning the event, M. O. Ely, of Glen Burnie, and E. A. Little, of Annapolis, finished

in second and third places on similar scores, standings being determined by Creedmoor count.

The closing event of the big shoot, match No. 11, was the two-man team match, calling for 20 shots slow fire at 600 yards. This event went to the Glen Burnie riflemen, C. V. White scoring 92 and E. W. Veasey scoring 89, a total of 181. In second place, M. O. Ely and E. T. Williams, also of Glen Burnie, each scored 90, a total of 180, and in third place E. H. Nichols and R. M. Hoover, of the Marines, scored 84 and 92 respectively, a total of 176.

In every event handsome gold, silver, and bronze medals were awarded the winners, and in addition, whenever the competitions followed the Navy qualification courses, N. R. A. qualification insignias were awarded. In addition, in the different stages of the matches N. R. A. souvenir medal tickets were entered, and these decorations awarded on all scores of 90 per cent or over.

**Concerning the 1917 Sight.**

W. P. Cullinan, secretary of the Tonopah, Nevada, National Rifle Club, is interested in the efforts of the War Department to find a better sight for the United States rifle, model of 1917. He says:

"Regarding the editorial in ARMS AND THE MAN, November 2, for corrections or improvements on the sight of the Model 1917, it certainly meets with my hearty support.

"I would suggest that the present notches on the side of the leaf, or sight-frame, be abolished; and a screw, extending from the top to the bottom, on the inside and close up to the side of the frame, for vertical adjustments. While, for the lateral adjustments, pivot the front end of the present sight guard and swing the rear end of guard by a screw, after the style of 1903 model. Also, that the gauge of the threads in this screw be made so each turn means a given change—that is to say—one degree for each turn of the screw. Likewise, one turn for each change of 50 yards for elevation.

"The head of each screw should have a distinctive mark by which it may be instinctively operated, if desirable."

**Hartman Wins Wood Trophy**

The fourth and final competition for the James J. Wood Trophy was held by the Fort Wayne, Ind., Rifle and Revolver Club November 24 on the Kreager Farm, two miles north of the city.

This competition was scheduled some weeks earlier, but owing to a number of unforeseen conditions, it could not be held until this later date. The weather was cold, and the grounds were wet, but in spite of this, the competition was keen.

Homer Hartman, who has won the cup twice before, won for the third time yesterday, and in accordance with the conditions, he retains the trophy permanently as his personal property. His score, which was exceptional good, was as follows:

- 300 yards, Target A, 44.
- 500 yards, Target B, 46
- 600 yards, Target B, 46.
- 200 yards, rapid fire, Target D, 50.
- 300 yards, rapid fire, Target D, 46.

His total score was 232, out of a possible 250. This it will be noted is twelve points higher than is required for expert qualification.

E. A. WAGNER.

**Hold Thanksgiving Shoot**

Members of the Brooklyn, N. Y., Rifle Club staged a Thanksgiving day shoot at their Cypress Hills Range, the competition being decided with .22 calibre rifles at 50

yards, any sights. The course of fire called for: Slow fire, 20 shots prone; rapid fire, 10 shots sitting (2 minutes), 10 shots kneeling (2 minutes), and 10 shots standing (2 minutes).

The results:

	Prone	Prone	Sitting	Kneeling	Standing	Total
Otto .....	96	95	86	86	77	440
Miller .....	90	96	92	80	71	429
Rutherford .	89	90	87	78	80	424
Corsa .....	94	94	82	76	77	423
King .....	95	95	80	78	60	408
Adkins .....	88	86	74	71	68	387
Squibb .....	86	88	61	67	67	369
Silver .....	88	91	69	75	46	369
Kort .....	91	91	82	66	33	363
Frederick ...	81	90	83	59	37	350

**Shotgun Clubs to Conserve Lead**

Conservation is an old theme.

It has been preached in these United States for many years, with few taking the subject in a serious vein.

It took the world war to teach us the true meaning of conservation.

We learned to conserve on many things—and in many ways—before the Huns were obliged to leave the soil of France and Belgium, and now that the knock-out punch has been put over it is just as necessary as ever to conserve our resources. There is no excuse now; we know how.

If we do not conserve, we waste. Wastefulness want. There is nothing new or original in this remark. It has been written and quoted many times, and of late has proven a most effective argument.

The war has taught us—possibly not so much as the people of other countries, however—that, no matter how inexhaustible may appear the supply of a certain commodity, and if we neglect to conserve we may arise some morning to find the barrel empty.

Therefore, conservation is the thing we should keep uppermost in our minds. Our thought at this time is to get the word before the trapshooting clubs of the United States and Canada. There is a lead mine at nearly every trapshooting club—and very little mining has been done. Lead is a scarce article. In the closing days of the war it was at a premium. Lead was one of the commodities which came into its own during the war. The market quotations attest this statement.

Never before was the demand for lead as great as at this time, and the thought we have in mind is that if the trapshooting clubs will mine the grounds they shoot over they will reclaim much lead and aid in the conservation of this all-important commodity. Where clay targets are trapped week after week for the years the ground is front of the traps is well worth mining.

After three years of shooting over the traps of the duPont Club in Wilmington, Del., the grounds were mined and 23 tons of lead were gathered. One year later the grounds were again mined, and again with good results. Several years ago the grounds of a gun club in Columbus, O., were mined and 26 tons of lead were taken out. On the Columbus operation each 60 pounds of earth gave up one pound of shot.

There are a number of clubs that mine their grounds yearly and enrich the club treasury thereby. This is something every trapshooting club should investigate, for the reclamation of lead is conservation.

In normal years it is estimated that 50,000,000 rounds of ammunition are shot at clay targets. Of course the war-time consumption of shells at gun clubs is a very

small proportion of the pre-war consumption. There are about 4,000 active gun clubs in the United States and Canada. The number of shots fired in normal times at the small clubs in a year would average about 40,000, while the larger clubs would average between 80,000 and 100,000 shots. There are a few clubs that throw as many as 250,000 targets in a year.

The number of pounds of lead sprinkled over the ground for every 1,000 shells fired is shown in the appended statistics:

Shots Fired	Ozs. of Shot	
	in Shell	Lbs. of Lead.
1,000	1 1/4	78.125
5,000	1 1/4	290.625
10,000	1 1/4	781.250
20,000	1 1/4	1562.50
30,000	1 1/4	2343.750
40,000	1 1/4	3125.00
50,000	1 1/4	3906.25
60,000	1 1/4	4687.50
70,000	1 1/4	5568.750
80,000	1 1/4	6250.00
90,000	1 1/4	7031.250
100,000	1 1/4	7812.50
250,000	1 1/4	19,531.25
500,000	1 1/4	39,062.50
50,000,000	1 1/4	3,906,250.00

P. P. C.

**New Bedford Guard Shoots**

Many of the "old timers" of the New Bedford, Massachusetts, Guards participated in the annual shoot held under the auspices of the honorary members of the old Fourth Company recently.

W. G. Wood, with a score of 44, won first honors. Major Joseph L. Gibbs won second prize, with a score of 43, while Captain William Stitt, with 42, was third. With the first prize went also the Honorary Members cup, which is held by the winner until the next shoot. During the past year this trophy had been held by Captain Stitt.

The event was the most successful, from every point of view, that has been held in many years. An unusually large number of members turned out, and the scores achieved were more than satisfactory.

One group of aspirants for honors arrived quite early in the morning and began firing. The sky was dull and a "seven o'clock fishtail" breeze was blowing across the range, and caused some little discomfort for those who were trying to find the middle of the bullseye. The 200-yard range was used and the men on the firing line used the two centre targets. There was no delay in the shooting and Captain T. W. Williams, who had fired early in the day and made a 42 score, assumed the duties of marking the scores on a big sheet. A fair sized gallery watched the shooting.

Captain Williams maintained the lead in the score until shortly before noontime, when Thomas M. Henderson, one of the oldest men on the range, and one of the most enthusiastic for target shooting, ran up a 42 score, tying the State Guard captain. Shortly afterward, Supply Sergeant W. G. Wood scored 44, and went into leading place. To Captain Williams was awarded the honors for spectacular shooting during the morning. Firing prone, he made six straight bull's-eyes, including a sight shot. He fell down, however, on the offhand firing, which preceded the prone. After making a series of fours, he dropped down to a two and a three, which brought his total for that style of shooting only up to 17. F. C. Brown, firing prone, scored 24, although his offhand only registered 14. That offhand is considered the most difficult firing was demonstrated by the scores.

Four cups were fought for this year, three in addition to the large cup shoot for each year by the honorary membership, and held by Captain William Stitt as the result of winning the match two years ago. Prior to that match,



United States Cartridge Company,  
New York, N. Y.

Gentlemen:

I have just tried out some of the new U. S. .22 N. R. A. Long Rifle Lesmok cartridges and I find them so much better than any other .22 long rifle cartridges that I would like to try some of your shot-gun shells--The Black Shells.

Yours truly,

(Signed) E. A. Wagner,  
Managing Engineer, Transformer Dept.,  
General Electric Company,  
Fort Wayne, Indiana.

the event has been held yearly back to 1890, just after the Spanish-American war. No match was held last year because of the lack of a range. This is the first year that the shoot has been held on the new city range, and all the details worked to perfection. The committee in charge this year comprised Captain Stitt, chairman; Captain T. W. Williams, Lieutenant H. C. French, Sergeant Thomas S. Hathaway and Rufus A. Soule, Jr. The scores were as follows:

Name	Offhand	Prone	Score
W. G. Wood.....	21	23	44
J. L. Gibbs.....	21	22	43
W. Stitt .....	21	21	42
T. M. Henderson.....	21	21	42
T. W. Williams.....	17	25	42
E. W. Poole.....	19	22	41
J. C. Fairclough.....	18	23	41
C. W. Kokerda.....	20	20	40
L. R. McBay.....	19	21	40
G. G. Southworth.....	19	21	40
H. C. French.....	19	21	40
E. P. Hirst.....	18	20	38
F. T. Brightman.....	16	22	38
L. T. Ames.....	15	23	38
F. C. Brown.....	14	24	38
F. W. Steele.....	18	19	37
C. L. McBay.....	18	19	37
E. T. Brown.....	17	20	37
L. E. Destremps.....	17	20	37

E. C. Taylor.....	16	21	37
J. H. Herring.....	17	17	34
D. M. Silvia.....	13	21	34
C. H. Simmons.....	17	16	33
E. H. Carter.....	14	19	33
S. Dudgeon .....	14	19	33
S. J. Besse.....	16	16	32
W. I. Brownell.....	16	16	32
T. F. Hathaway.....	14	18	32
A. Price, Jr.....	14	18	32
G. Gardiner .....	11	21	32
F. E. Ramsdell.....	12	19	31
G. Nault .....	11	20	31
F. H. Stone.....	11	18	29
P. LaFrance .....	13	15	28
O. Buffington .....	6	19	25
P. C. Kent.....	10	14	24
E. A. Wheaton.....	7	15	22
E. T. Blossom.....	3	18	21
E. B. Goldthwaite.....	6	13	19
C. R. O'Brien.....	5	13	18
A. P. Pope .....		Withdrawn	
A. D. Swift.....	25	Withdrawn	

**Urges Breeding of Quail and Grouse**

All naturalists and all sportsmen know that it is a very easy matter to introduce grouse and quail on protected areas and quickly to make these splendid foods so plentiful that they could be sold in the markets as cheaply as the European grouse and partridges are

sold in the foreign markets, says a writer in the *Game Breeder*.

The pheasants easily are reared in big numbers and since the laws were amended a few years ago permitting game breeders to produce pheasants without fear of arrest pheasants have become so abundant in many places that it will be no longer necessary to send money abroad to purchase them.

Why should American breeders be compelled to send thousands of dollars annually to Mexico for small quail when the larger Northern birds easily could be produced on American farms in sufficient numbers to supply the demands of all those who wish to purchase quail for breeding purposes for sport or for food?

It seems nonsensical for the laws to say that money only can be sent to Mexico for quail as it was sent a few years ago to other foreign countries in payment for pheasants.

Quail shooting has been ended, probably forever, in many States. Some quail survive in parts of these States, but they are of no value either for food or for sport and they are not of any appreciable value as insect destroyers since there are not enough of them.

A little spraying of the plants will do more good in a few minutes than the few quail which survive will do in a year. Granting that the quail are beneficial to agriculture, why should not the State permit and encourage the farmers to make and to keep them profitably plentiful? Why encourage the breeding of fish and prevent the production of quail?

Why should a State game department or a State Legislature persist in being nonsensical?

## What the Secretaries Say

EDITOR'S NOTE: The Secretary of the Boise Rifle Club and State Secretary for Idaho has started the ball rolling in the "Secretary's Column." Several other secretaries have voiced their approval of the plan; but the column will not succeed on approval alone. If it is to be a success every club secretary must take an active interest in keeping it going.

It is understood, however, that these communications do not necessarily reflect the editorial opinion of ARMS AND THE MAN.

Editor, ARMS AND THE MAN.

GENTLEMEN: Our Editor has given his word that if enough club secretaries get together and pass in some suggestions he will give us a column in which to give vent to our lugubrious wailing. The writer is and has been a club secretary for nearly five years as well as being State Secretary, either of which is enough to sour the disposition of Pan himself, so hereby elects himself a charter member of the "Growlers' Corner" and bespeaks for himself a nice warm place right behind the stove and right close to the cracker barrel and cheese box.

One of our mainest kicks is the matter of age. Not our own age, however, for we haven't six grey hairs in our scalp lock, and it is pretty well thatched too, but this time we are taking up the other fellow's cause, viz.: that rapidly increasing crowd of keen sportsmen who have gone beyond the confines of the "16 to 45" class. He is nine times out of ten a gentleman; a large percentage of him is a scholar; he has been through the mill and can command the respect of the beginner; and, barring physical disability, he is about eight times out of ten a darned good shot, but in spite of these qualifications we read in the book: "Target facilities will be made available only to physically fit males between the ages of 16 and 45, who are citizens of the United States." Now do you get what I am driving at?

We quote from Sec. 113 of the Act of Congress of June 22, 1916, known, I believe, as the National Defense Act: "And that all ranges so established and all ranges which may have already been constructed, in whole or in part, with funds provided by Congress shall be open for use by those in any branch of the military or naval service of the United States and by ALL ABLE-BODIED MALES CAPABLE OF BEARING ARMS, under reasonable regulations, etc. \* \* \* (The capitalized words are ours.)"

From this it will be seen that Congress gave the National Board plenty of lee-way in formulating regulations for civilian riflemen which would work to the very best advantage of all concerned, but let's take a look at the interpretation put on this clause by the National Board at its meeting in January, 1918 as published in ARMS & THE MAN of January 19th, 1918, page 333, par. 2, which reads:

"Target facilities will be made available only to physically fit males between the ages of 16 and 45, who are citizens of the United States."

It doesn't say that free issues of ammunition will be withheld from any male except between the ages of 16 and 45, which would be bad enough, but would be tolerable if these older men might be permitted the use of the range on which to use their own ammunition, but I take it they won't even be allowed to use the targets themselves, which on the face of it is a grave injustice to thousands of men who should be the ones to lead the younger generations and impart to them the knowledge gained through years of experience.

These older men have been the nucleus around which most of the clubs have been formed, and these men are the ones who have kept the game alive years before Congress lent a helping hand; these are the men who have been prominent shots and who have

coached International Rifle Teams, much to the credit of the United States, and these are the men who have been instrumental in bringing arms and ammunition to their present state of perfection through long and expensive experiments, and after taking full advantage of the fruits of their labors they are to be thrown into the scrap-pile because they have been unfortunate enough to have grown old while pursuing their hobby, and it is for these men we make our plea.

It is incomprehensible to us why a civilian rifleman should be worthless to the nation on reaching his 50th birthday any more than a regular army officer, yet the army profits from the experience of its older officers doesn't it? To be sure a man can't enlist after reaching a certain age, which is correct and just, for it is not feasible to teach an old man from the ground up in military work, but if this man enlisted when in his prime he is still held and this is just what should be done with the civilian riflemen. If a man of fifty can show that he has been a member of some live civilian rifle club for five or ten years and has made a certain qualification regularly, then by all means let's keep him in the game for his own good and for the incalculable value to new clubs as well as old.

In our own club we have several men ranging from 46 to 60 years of age, some of whom are former National Match men and all of whom are keen sportsmen, top-notch shots and men who command the respect of new members. Do you think for a moment that we are going to tell these men they can't use our range or our free issue of ammunition and that on account of their age they will be dropped from the membership rolls? Positively No! We'll disband the club first, and I earnestly believe this feeling is shared by thousands of civilian clubs throughout the country.

On reaching their 46th birthday shall we drop such men as S. W. Brookhart, Col. Winder, Major S. J. Fort, Major Goddard, Major Wise, Geo. Chesley, W. H. Richards, T. K. Lee, Frank Parmeley, H. J. Mueller, C. C. Crossman, Lt. Durchenwald, and hundreds of others of equal value to the game? To be sure some of these men are already past the age specified and some of them are already in the uniform of the country spreading the gospel as it was never spread before, but after the present emergency has past they will return again to civil life and let's hope they will not be forced into a condition of desuetude in their life's hobby.

One more reference to the recommendations of the Board as published in ARMS AND THE MAN above mentioned, which is contained in paragraph eleven, page 333 as follows:

"The Director of Civilian Marksmanship will prepare for the approval of the Secretary of War and put in operation plans for the training of civilians to act as instructors in marksmanship; for their appointment as such after proper evidence of qualification."

As a suggestion toward putting this into effect, why not use the instruction course given at Camp Perry this fall as a basis of appointing such men, based on the results of their examination papers and recommendations of the S. A. F. S. instructors of the several state teams, and issuing them a certificate or other credentials and some suitable insignia of office.

Let's get started on this game and quickly, else some of the rest of us will have reached the fatal age of 46, thus spelling the doom of our usefulness in the game.

Respectfully,  
R. E. HERRICK.

## Sighting Shots

FROM one of the members of the Olympic Rifle and Pistol Club of San Francisco, comes this comment:

"The O. C. R. & P. Club held its annual meeting and election of officers, etc., November 12. The annual report shows that the year has been very successful in many respects. Winning the League championship of the U. S. R. A. seemed to infuse new life in some of the dormant members, and after several new good shots have been added to the roll, the Club is now ready to challenge any organization to one or a series of team matches, shooting a five or ten man team. Matches to be shot with revolver or pistol, 20 yards indoors under U. S. R. A. rules and supervision.

Such matches as these would be of great help as a forerunner for the league matches besides the interest it would stir up, so—

Mr. Secretaries please get busy and communicate at once with George Armstrong, Executive Officer, Olympic Club R. & P. Club. Address Olympic Club, San Francisco, Cal."

Alfred A. Young, Jr., Tactical Officer, New York Military Academy, Cornwall-on-Hudson, has been named N. R. A. Judge for the school and will serve during the coming small-bore season. The academy boys are even now getting ready for the N. R. A. Gallery Match series.

The Marion, Iowa, High School Rifle Club members are taking military drill as well as practicing rifle shooting. The instruction is in charge of a regular with many years of active service on his record.

Members of the Ladysmith, Wisconsin, Rifle Club desires to arrange matches with other rifle clubs in the same State. E. L. A. Bruger is president of the organization, and to him all communications concerning interclub competitions should be addressed.

C. O. Lee has won the Members' Match of the Rushform, Minnesota, Rifle Club on a score of 138. The contest was staged on October 13, under adverse conditions. At times a strong 10 o'clock wind was blowing, in addition to a haze that hung over the range.

John J. Gandry, of the Savannah, Georgia, Rifle Association, has been declared winner of the Members' Match, shot on July 25, when he scored 128. The match was shot with Krag rifles, ten members participating.

In a recent qualification shoot, 3 members of the Atlanta, Georgia, Rifle Club qualified as expert riflemen, 4 as sharpshooters and 2 as marksmen. The shooting was done on the State Rifle Range. The men qualifying are:

Experts—F. G. Rolf, 233; C. A. Stone, 212, and W. D. Marshall, 227.

Sharpshooters—J. E. Oxford, 206; W. D. Hoffman, 205; W. C. Powell, 203, and H. L. Glenny, 191.

Marksmen—James Horacek, 182, and Paul F. Vose, 161.



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300-yard Targets, slow fire, per hundred	.40
500-yard Targets, slow fire, per hundred	.40
600-yard Targets, slow fire, pin wheel, five targets to sheet, per hundred targets	.40
600-yard Targets, slow fire, 5 targets to strip, per hundred	.40
800-yard Targets, slow fire, 5 targets to strip, per hundred	.40
1000-yard Targets, slow fire, 5 targets to strip, per hundred	.40
200-yard Targets, rapid fire, per hundred	.35
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F. W. Kachelries, of the Shamokin, Pennsylvania, Rifle Club, has qualified as an expert rifleman with a score of 227. These members of this club have qualified as marksmen: Fred Brown, 161; L. R. Bender, 173, and George Snyder, 166.

On a score of 132, S. O. Strickland has won the Members' Match of the Wilsall, Montana, Rifle Club. Krag rifles were used by the ten members competing.

The firing line at State Camp, which has been the scene of so many National Matches, was used by the Jacksonville, Florida, Rifle Club in staging its Members' Match for 1918. Using a Krag, C. H. Edwards won the competition on a score of 127.

The first American to put his foot on German soil (Alsace) since America entered the war was Sergeant Jim Maloney, secretary of the Soo Gun Club, of Sault Ste. Marie, Mich.

That trapshooting is an essential sport is proven in the ordering of two members of each of the companies of the Vermont Militia to participate in the Vermont State trapshooting tournament.

Trapshooting at night-time is being revived in Dayton, Ohio, by H. L. Monbeck. At a recent tournament four 1,000 candle-power lamps and white targets were used. According to experts the lighting system is the best yet devised.

### INQUIRIES OF GENERAL INTEREST

In this column will appear excerpts from requests for information and for official interpretations, made to the National Rifle Association, the replies to which may be of a generally informative nature.

Q. Will the Ordnance Department hold a rifle club responsible under its bond for rifles lost by fire, and is it advisable for a club to insure its property?

A. It is advisable for a club to indemnify itself against possible loss of property if club members have gone on the club bond since the government holds clubs responsible for any loss of property which cannot be properly expended. The best plan for rifle clubs to follow is to have a bonding company furnish the bond. In this way club members do not obligate themselves and the bonding companies take all the risk. Many companies furnish these bonds at very small cost.

Q. How good a target weapon is the B. S. A. War Office Miniature rifle? Where may one be obtained?

A. The B. S. A. Miniature bears the reputation of being an excellent small-bore weapon. It is not likely that one of these rifles can be obtained at the present time on account of the unsettled conditions abroad.

Q. Where can "The Soldiers Handbook of the Rifle and Score Book" be obtained? Does it deal with the Model 1917 rifle?

A. It is based upon the Model 1917 rifle. It was published by the government for use in the army, and has not been reprinted as yet commercially. By addressing the Superintendent of Documents, Government Printing Office, a copy might be obtained if any are available for private sale.

Q. I note in the issue of October 19, the article, "Small Game Rifles," by Col. Townsend Whelen, in which he refers to the cleaning of small-bore rifles with ammonia. What is Col. Whelen's method of cleaning with ammonia dope?

A. Col. Whelen cleans a small-bore rifle with ammonia in the same manner that the dope is applied to a military or hunting arm. For full particulars see Col. Whelen's book, "The American Rifle."

Q. Will the coming of peace result in an early resumption of the sale of Springfields and Krags to those who have qualified as sharpshooters and expert riflemen?

A. The National Board for the Promotion of Rifle Practice will undoubtedly consider the question of having the embargo on the sale of rifle practice materials raised at one of its meetings during the first of the year, unless the matter is adjusted before that time. There

can be no certainty, however, at this time at what date the suspension will be removed.

Q. Is it possible at this time to obtain specimens of all the rifles used by each nation in the great war? There should be huge quantities of captured arms on the market somewhere and so disposed of that they may be acquired by civilians.

A. We do not know of any source from which such specimens could be obtained at this time. In the near future, however, there will be undoubtedly many of these guns available.

Q. Is there any firm from which dummy cartridges for the Krag may be obtained?

A. We do not know of any at this time. However, it is not difficult to make dummy cartridges. All that is necessary is to obtain some empties and get in touch with some rifle club member who is reloading Krag ammunition. He can resize the shells and seat bullets in them. The shells should then be nickel-plated or given some other distinctive mark to differentiate them from charged ball cartridges.

Q. Last winter there were some large gray hawks in the woods near Dover, N. J., right in the middle of the winter, and it was quite evident they were not the kind we are accustomed to seeing in summer and which we call "hen hawks." These gray hawks were usually seen in pairs, and when hunting rabbits gunners frequently scared one up from the ground but could never find where he had been eating a rabbit. Can you say what kind of hawks these are and if they are enemies of our rabbits and partridges?

A. Undoubtedly the goshawk which is at home in Canada and migrates southward in severe winters. They are indeed great enemies of the ruffed grouse and the rabbits, both the varying hare and the cotton tail. The hawks put up from the ground were in all probability hunting on foot, which is a characteristic of this species. Shoot every such hawk you get a chance to.

Q. What is the lightest practical load for use in a 20-gauge gun? I have a little 5¼ pound double hammerless of English make which, although its barrels are only 26 inches long and not bored full choke, is a serviceable weapon. My wife for whom I bought it has graduated and now shoots a 12-gauge, and I would like to start my thirteen-year-old daughter shooting with the little gun, if I can get a load for her which will make it kick less than the standard loads do.

A. Try 2 drams of either E. C. or Schultz bulk smokeless and ¾ ounce of chilled shot, the latter to be 6's for rabbits, 7½'s for clay birds, and 8's for quail. The powders mentioned are the easiest on the shoulder that can be obtained, imparting about fifty feet per second less muzzle velocity to the shot than is given by DuPont smokeless or the dense powders, yet they hold their own with all makes, even in trap shooting.

Q. I have just this year discovered, by accident, that I have above average ability as a pistol shot, without any training, having a naturally very steady hand and in addition being a prescription clerk in a drug store, which gives me constant training in hand steadiness—pouring medicines into a measuring glass. Now I wish you would advise me whether it will be good or bad for me to practice with light loads, sometimes called reduced loads. I prefer to do this as it will keep down expense and save noise, and I find I can shoot the light loads with more accuracy; but the question is, will I be allowed to use them in competition, and if not will I then be at a disadvantage?

A. You will do best to use only the full

standard loads, as in all military matches you will have to use them, and in fact will seldom have any other choice. Practice with reduced loads and match shooting with full loads do not work out satisfactorily. If the proposition could be reversed it would be fine.

Q. What is the drop of bullet at 40, 60 and 80 yards with the .22 auto-loading rifle?

A. With the barrel in a horizontal position and measuring from the line of the axis of the bore, the drop at 40 yards is roughly 3 inches, at 60 yards 6 inches, and at 80 yards 12½ inches. Whatever error exists in these figures is on the side of safety, or in other words, precise figures will reveal the drop to be slightly less than as given.

English sportsmen nowadays are suffering from the pilferings of the "beaters" who are present at field shoots and many hundreds of rounds of hard-to-obtain shells are disappearing in consequence. A warning published to put all gunners on guard reads:

"A word of warning to watch your cartridges when out with the scratch pack of beaters with which one has to foregather with these days. Many of these men are more or less poachers, and it is amusing to watch the keen competition amongst them to carry cartridge bags. It is easy to pinch a few undetected, and these can afterwards without difficulty be disposed of at 3d. or 4d. each, or used on sly poaching forays, if the pilferer prefers sport to beer. We are only allowed 500 cartridges for a full game license, and we are not certain to get them even with a permit, so when one's cartridges are stolen it means a serious risk of losing sport as well as pecuniary loss. Some men we know have lost so many cartridges that they have provided fastenings and padlocks for their pouches."

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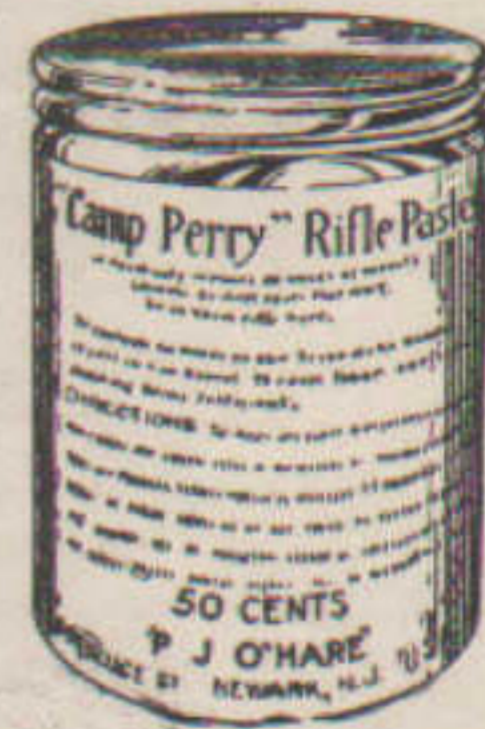
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1848

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1861

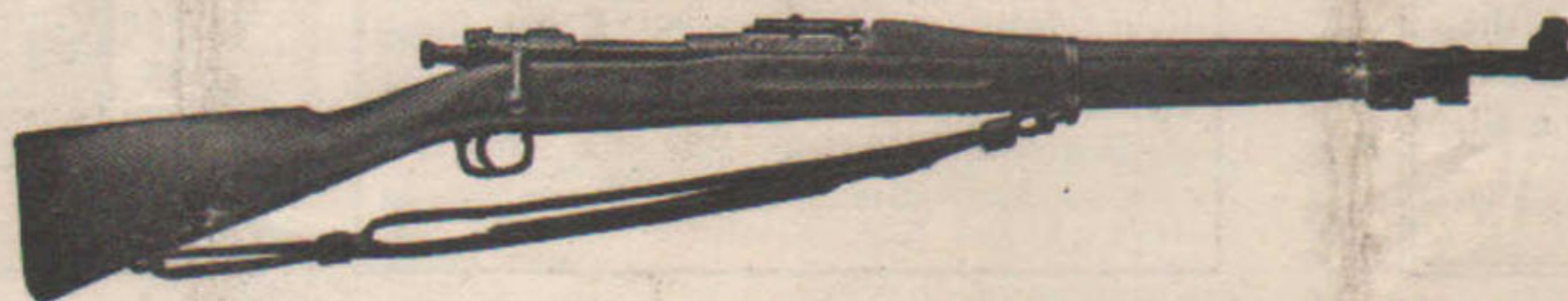


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