

## RIFLES FOR BIG GAME

By Horace Kephart

THE choice of a rifle for target shooting is comparatively a simple matter, because the requirements are few and simple. But with a hunting arm it is different. As soon as one takes a rifle into the field to hunt he learns that he can not carry a heavy gun on an all-day tramp without excessive fatigue. He finds that game will not always stand, still to be shot at, that the canny wild things are expert in hiding, that it is one thing to shoot on a dead level and another to shoot into tall trees or down a steep hill, that his bullet has a curved flight and allowance must be made for distance, that it is impossible to aim truly with target sights into dark thickets or towards the sun, and in many other ways he finds how different field shooting is from such target practice as is conducted on our ranges. He learns, too, that there are specialties even in big game shooting, and that the best-rifle for one class of hunting may not be best for another.

Suppose you have jumped a deer at close quarters in thick woods or underbrush. The deer is bounding. Trees are in the way. In a few seconds the animal may be out of sight. You must pick out an opening, and shoot quickly, or not at all. There is no scattering charge of shot in your gun—only a single bullet. But the animal is large and within stone's throw. A bullet striking anywhere within six inches of a certain spot back of the shoulder will bag your game. You shoot with a gunner's aim, leveling the rifle as you would point your finger, and shooting with somewhat the same instinct that you would discharge an arrow or throw a baseball. In this case you want a light rifle that "comes up" like a shotgun, with coarse sights that can be caught quickly. It should strike a knock-down blow. There should be a shot or two in reserve that can be delivered in a second. Accuracy, as marksmen understand that term, is of minor consequence. Any rifle will hit such a mark if well held. Not coarse sights, nor

heavy recoil, nor hard trigger-pull handicap the shooter in such work, for he may wobble some, and flinch a little, but still hit a deer at fifty paces.

But now suppose another case. You are stalking on a mountain side fairly clear of underbrush, or on a plain where cover is scarce, or along the shore of a lake or river—anywhere, in short, where your vision is unobstructed. Probably when the animal is seen it is a long way off. You approach it until there is no longer any cover, or until the beast shows signs of uneasiness. The distance is still considerable—so great, indeed, that a wobble of one-twentieth of an inch of the rifle's muzzle at the instant of discharge will score a clean miss. The success of a hard day's stalk, perhaps of an expensive and long-planned expedition, may hang upon this one shot. If you do not align the sights deliberately and accurately upon the mark, if you do not press off the trigger with the utmost nicety at precisely the right instant, you will go back to camp empty-handed and sore at heart. Here is where marksman's aim comes into play. Here is where the skill of the nail-driver counts. Your rifle must not only be accurate in itself when tested from rest; it must be so built, sighted, and triggered that you can shoot it accurately offhand—which is another matter. For deliberate shooting at standing or slowly moving objects a fairly heavy rifle with "crowbar balance," rather fine sights, light trigger-pull, shooting very accurately, with flat trajectory and great smashing power, is the ideal arm.

Gunning in a jungle is one thing; stalking in the open is another. Snap-shooting and nail-driving with the rifle are different arts. Now here is the rub. A sportsman going after American big game is likely to get into both of the above-mentioned situations on the same trip. He cannot carry what our British friends call a "battery," for he hunts in a canoe, or on a pony, or depends upon his own legs. There is no attendant to

hand him the right gun at a critical moment. Consequently, American sportsmen are not so solicitous about the best rifle for this or that specialty as they are about the best all-round rifle. Is it possible to procure a weapon that can be shot with great accuracy in the field and at targets, but can be handled deftly in snap-shooting, and will smash bone or tissue as effectively as a .45 express? Can this same rifle be used with lighter charges that will not mangle small game, and will shoot accurately with such trajectory that you need make no allowance in sighting when you shift from the full-power load to the light one?

Ten years ago this discussion might have been as brief as the famous chapter on the snakes of Ireland. There was no all-round rifle. But times have changed. The advance of chemical and mechanical science has given us a new type of weapon, the small-bore, high-power military rifle, using smokeless powder and jacketed bullets. There are many varieties of this type, but all are characterized by high velocity, flat trajectory, great penetration, accuracy up to 1100 or 1200 yards, absence of smoke, lightness of ammunition, and light recoil. These are advantages so important from a military standpoint that all nations have adopted the new arms. Hunters of big game were naturally interested in this change of armament. They appreciated the good points of the small-bores. They have always been inclined to favor weapons taking government ammunition, because it can be bought at frontier posts where none other may be procurable.

But it was feared that, such small-caliber bullets would not be effective on large or dangerous game. The service cartridge of the .30 U. S. A. rifle will pierce a half-inch plate of boiler-iron or a three-foot elm-tree; but penetration alone does not suffice in hunting. Although a shot through brain or spine will cause almost instant death regardless of the size of the bullet, yet one can not always count on hitting a vital spot. If the game is running, or partially hidden, or the light is bad, or the wind high, or the distance uncertain, we must take some chances. What is needed is a smashing, knock-out blow, that will

make the beast wilt, even though struck in ham or paunch. Now the service .30 bullet has a so-called "explosive" effect at moderate range when striking an organ distended by fluid; but through flesh or empty viscera it merely drills a small, round hole, which immediately contracts and lets out scarcely any blood, while the bullet, piercing with ease, expends most of its momentum upon trees or rocks in the distance. Such a wound imparts no more shock than a carter's whip, and it soon heals.

The same trouble had been experienced, though in less degree, with ordinary large-caliber bullets, and a way had been found to overcome it. By casting the point of a bullet hollow, the missile will expand on impact, making a hole in flesh much larger than the bullet's normal diameter. A similar expedient was at once tried with the small-bore military bullets, and is still used to some extent abroad. But when a bullet is lightened, and its center of gravity shifted in this manner, its accuracy is not so good, the wind affects it more, and its trajectory is altered, obliging one to shift his sights according as he is using solid or hollow bullets. These objections are removed, and better penetration, with sufficient expansion obtained by using a solid soft-point bullet—that is to say, one on which the steel mantle covers only the base and bearing-surface of the projectile, leaving naked lead exposed at its point. The high velocity imparted by nitro powder suffices to upset or mushroom such a soft point when it strikes, and the long, solid core ensures penetration.

Experience has proven that soft-point bullets of .30 caliber, when driven at a muzzle-velocity of 2000 feet a second, are powerful enough for any game found on this continent—provided the bullets are relatively long and heavy, their mantles are thick and hard, and enough lead is exposed at the point. These provisos will bear study. For example, a standard soft-point bullet for the .30 U. S. A. cartridge, weighs 220 grains, and its rather thick mantle of cupro-nickel-steel has a long bearing on the core. On the contrary, a .30-30 soft-point bullet, though of nearly the same diameter, is shorter,

weighs only 170 grains, and its jacket of tinned copper is thin and soft. Now, if both these projectiles issue from the muzzle with the same speed, that of the .30-30 will of course have less momentum, and will fly to pieces more readily on impact, while, at ranges beyond 200 yards, it will lose speed more quickly, and consequently will have a higher trajectory and shorter range. It follows that close attention should be given to weight of bullet and thickness of mantle, in selecting a cartridge to be used on game larger than deer.

Hasty inferences should not be drawn from the curious fact that soft-point bullets penetrate as deeply into steel plate as full-manteled ones do, though making larger holes. It is astonishing but true that the 117 grain soft-point bullet from a .25-35 will pierce as far in steel plate as the full-manteled bullet from a .30 U. S. A. (at very short range). But in wood or other material of mild resistance soft-points do not pierce a third as far as full-manteled bullets. The penetration of a soft-point .30 U. S. A. in white pine is the same as that of a 300 grain solid lead bullet from a .45-90 black powder cartridge; but in harder material it is greater; and the smashing effect of the .30 is greater in any case.

Personally, I consider that the .30-30 cartridge, or even the .25-35, is powerful enough for such game as Virginia deer. Many successful hunters use them on elk or moose. But for all-round work I prefer the .30 U. S. A. cartridge. Here are some of the things you can do with it, if you are a marksman:

1. You can outclass a Springfield in long-range sharpshooting, or in any sharpshooting at unknown distances.

2. With soft-point bullets of proper make you can smash bone or tissue as effectively as with a .45 or .50 caliber express.

3. Procure a lot of full-manteled .30-30-160 Winchester bullets. Their actual diameter is .305 inch, whereas that of the .30 U. S. A. is .308. Get a good mechanic to make you a swage with which to upset these light bullets to .308 caliber. You can swage several hundred of them in an evening. Take a batch of new shells (those which have once been

fired with standard charge are brittle) and load them with 15 grains weight of smokeless powder, with above bullets, using no wad, but leaving the powder loose in shell. Use 7/8 U. M. C. or 2/4 W. primers. This reduced load shoots steadily into a 6-inch circle at 200 yards. You can shoot through a grouse lengthwise without spoiling an ounce of meat. The shells can be reloaded many times, at a cost of about one dollar a hundred. The rifle cannot lead, even though it be a little rusty. There is no difference in "line" or drift between this reduced charge and the regular full-power cartridge up to 200 yards. Now sight your rifle to strike center of a 6-inch bull's-eye at 125 yards with standard charge, when aiming with bead just touching bottom of bull's-eye. You will find that, with the gun so sighted, both the full-power and the reduced charges will shoot into the same hole up to 50 yards. By holding "dead on" (aiming at center of bull's-eye instead of at the lower edge) the reduced charge will strike center at 100 yards, and the full-power cartridge is good for 200 yards. In other words, no matter which cartridge you are using your rifle is correctly sighted for any game, from squirrels to moose, and you are always ready for anything that may turn up.

4. By using a bullet weighing 125 grains, and a few grains of a low-pressure smokeless powder you can practice in the basement of a city house, shooting as accurately as with a .22 and your next-door neighbor will not be disturbed. Hundreds of shots may be fired without cleaning, and there will be no trace of lead in the rifle barrel. The same bullet, with 8 to 15 grains of powder, shoots accurately up to 100 yards.

I give these details because I know that nearly every owner of a high-power rifle seeks a light load for small game and target practice, and that few succeed in getting satisfactory results. Lead bullets of ordinary pattern are unsuitable for such guns, and black powder cannot be used. The short-range cartridges for the .30 U. S. A. that are supplied by ammunition makers are worthless. They are inaccurate, they lead the gun, and their trajectory is too high for practical hunting.

For snap-shooting, a rifle should be fairly light. Every one who, by toting a 10 or 12 pound gun on an all-day tramp, has worn out first his arms, then his shoulders, and finally has jumped a deer when the gun was astraddle the back of his neck allows all about this. But a rifle may be too light. Many of the new crop of high-power repeaters have this fault. Their makers, following military precedent (usually bad), have turned out very light rifles by taking weight out of the barrel. As the violent pressure of smokeless powder is chiefly expended in the chamber of the gun and a few inches forward, the rest of the barrel need not be thick, so far as safety is concerned. Consequently a rifle barrel is now shaped somewhat like a cannon, with thick breech and long, thin barrel. Now here comes trouble; for this makes a sort of tuning-fork of the barrel, causing it to vibrate excessively on explosion. The result is that many of these rifles are inaccurate, and all of them are liable to flip. "Flip" means that when the rifle is shot with a heavy charge its barrel first buckles up in the middle, then flips contrariwise, and finally (after the bullet has sped) settles again to a straight line. The direction of this flip can only be learned by testing. It depends upon length of barrel, tension of the metal, character of breech mechanism, and bend of stock. Flip may be fairly constant in a given rifle, so that the gun shoots accurately with a given charge when its sights are adjusted to allow for flip. But if a light charge is then used, there will be no flip, and the rifle shoots true to its normal line of fire. Consequently only one kind of ammunition can be used in that gun. I have seen a rifle that was correctly sighted for the standard high-pressure load shoot 6 inches to the right at 50 yards with a reduced charge. Yet this same reduced charge showed no difference in drift from the full-power cartridge at 200 yards when shot from a thick, stiff barrel.

A 6½ or 7 pound rifle for the .30 U. S. A. cartridge is a monstrosity. It is probably inaccurate, it is sure to flip, and—it needs a mule behind it to kick back when it goes off. Undoubtedly one does

not feel recoil in the field as he does in target practice; but it is by target practice that you get acquainted with your gun. How can you adjust your sights correctly, save by firing many series of shots from muzzle-and-elbow rest? If you flinch then, what do you learn? No city man can become a good field shot unless he first works faithfully at targets, gets learns to hit them. He can not hit them if he flinches.

There is another objection to a rifle barrel that tapers rapidly from breech to muzzle. It must have an abnormally high front sight, that sticks up like a sore thumb, and makes you very prone to overshoot in quick firing.

My own opinion is that a .30-40 rifle for all-round shooting should weigh not less than 8 pounds, nor over 9, and that as much as practicable of this weight should be in the barrel, where a gun's shooting qualities lie. This would also improve the balance of the arm, for a rifle should not balance immediately in front of the trigger-guard, but at a point 3 or 4 inches in front of it. This is partly to aid steady holding, and partly for convenience in carrying. The latter point is especially noticed in rifles with protruding box-magazines, which, as now made, are a nuisance to carry, because they balance just where you cannot grip them.

The all-round rifle should have a thin shotgun butt, because the prongs of a crescent butt interfere with quick shooting. It should also have a sling, especially for mountaineering, where both hands should be free, and for long tramps to and from the hunting ground.

The conventional patterns of American rifles are radically defective in two things of vital consequence in accurate marksmanship. These are sights and trigger-pull. The first thing an experienced rifleman does with a new rifle is to knock off the factory sights, replace them with others more practical, and smoothen or lighten the trigger-pull. Nobody can shoot straight with a plain nickle front sight and buckhorn rear save under selected conditions. Try it on a bright day, by shooting successively towards the four points of the compass. Then try it in dark woods, or over the snow, or

towards dawn or, twilight. The front sight should have an ivory bead. The rear sight should be a large aperture with thin rim, either on the receiver or tang, and adjustable for elevation. A buckhorn, or plain bar, on the barrel is sure to blur, and it cuts off half of the object aimed at and all the ground in its neighborhood.

Triggers should be made so that they will not creep, but will pull off sharply and positively. There should be a set-screw on the hammer, or other means of adjusting the trigger-pull to suit individual preferences.

Finally, the breech mechanism of a rifle should be tight, to exclude sand and snow; and it should be so simple and get-at-able that a hunter can dismount and reassemble it with no tool but an extemporized screw-driver. If ever you get hung up 90 miles from a blacksmith's shop you will appreciate this. The feed and extraction should be powerful and true. A jammed magazine or a stuck

shell bring anathema upon sun, moon, stars, and all your ancestors.

On looking back over this article, I find it consists only of a few desultory remarks on a subject that deserves volumes. Some of my views may be unpopular. Well, riflemen are of many minds as to arms and ammunition. But on one thing they all agree. The rifle is a noble weapon. It brings us pleasures that no scatter-gunner can ever know. A shotgun takes you into cultivated fields, or into those narrow wastes within sight and sound of civilization. But the rifle entices its bearer far into primeval forests, into mountains and deserts untenanted by man. To him in whom the primitive virtues of courage, energy, and love of adventure have not been sapped there is scarce a joy comparable to that of roaming at will through wild regions, viewing the glories of the unspoiled earth, and feeling the inexpressible thrill of manliness sore tested by privation and hazard, but armed and undismayed.

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## UNANSWERED

By Arthur Macdonald Dole

A SYCAMORE beckoned as I hastened by to-day,  
A bay-tree called me softly, murm'ring gently in its play,  
But with a fitful shiver ceased; for I went on my way.

A live-oak then half challenged, with a signal whispered low,  
And waved imploringly for me to linger, yea, I trow  
It even caught my careless hand; yet withal would I go.

A jaunty flower nestling midst the fragrant wayside sage,  
Gave gladsome nod in greeting, vainly striving to engage  
My thoughts so hopelessly intent on scenes of worldly stage.

A singing bird winged near me to a bush with happy song  
The lilted notes swelled daringly in sweet cadential throng,  
Still did I give no welcome as I quickly sped along.

Ah! lost the moment, lost the hour, and lost this day one bond  
That links man's sordid selfishness with purer things beyond,  
For Nature called me to her soul and I did not respond.