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The **Rifle**
Magazine

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**Voice From Past
—Sharps .50-70**

**Full Spectrum
Loading**

**New Products
From Big 2**

SPIW—Army's Undelivered Super Rifle

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Cover

Christian Sharps' basic rifle design played a major role, sometimes heroic, sometimes tragic, in American history. The Sharps .50-70 New Model 1859 on the cover was restored to active duty by Norm Lammers, as related in this issue.



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LOADING for BEAR
...and other Critters
by John Wootters

IN 1966 I HAD the pleasure of spending nine days in the high plateau country of Colorado's Uncompahgre National Forest, on a backpacking hunt which demanded that my companions and I cut our gear to the bare minimum. We were seeking mule deer, elk, and black bear. Shooting was likely to be from the muzzle on out to whatever range we were willing to try. We took only one rifle each, of course, and I chose to limit myself to only one load.

I was shooting a battered, disreputable old Remington Model 700 ADL chambered for the 7mm Magnum. Chamber and throating are custom, however, and the rifle is murderously accurate at all ranges. The load I settled on was one featuring the Hornady 175-grain spitzer bullet moving at about 3,000 feet per second in front of an appropriate charge of Norma 205 powder.

My first shot of the trip was at a big mule buck, in the clear and broadside at

about 125 yards. The big Hornady struck precisely where I wanted it, demolished heart and lungs, and kept going. The buck stayed on his feet for 20 yards, and then piled up. No doubt about it, I was overgunned, overloaded, and over-bulleted for such an animal... but he was cleanly killed.

Three days later, just at dusk, I had my chance at a big spike bull elk, and the shot was a tough one. Range was only about 100 yards, but the animal was partially concealed and moving away. My only hope was a root-of-the-tail shot, which is very deadly but also rather hard to make. In this case, I almost -- but not quite -- made it. The bullet struck a few inches to the right and took out the right ham, chopped a three-inch section out of the big femur, went on through the entrails (including a full paunch), penetrated the diaphragm, wrecked the heart, lungs, and aorta, and finally came to rest embedded in the inside of the heavy chest-wall muscle. I got my elk.

The moral to this tale is that it is usually a pious idea to plan hunting loads for the heaviest game available, if more than one species is on the docket, or for the most demanding shot likely to be encountered. It is better, in other words, to be overgunned for the easier chances than to be helpless in the face of the hard ones.

In the above adventures, I had three types of game on my licenses -- two of which were unlikely to weigh more than 200 pounds, and one that might possibly go as heavy as 800 to 1,000 pounds, with massive bones and heavy musculature. I planned my hunting reloads for the toughest shot at the biggest animal -- the rear-end raking shot of a bull elk -- and that's exactly what I had to take when my one and only chance arrived. Yet it did not prevent me from knocking over my mulie, although I did manage to ruin a shoulder of good venison in the process.

If only one species of game is sought, it pays to give some thought to shooting

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If Wootters had not loaded his hunting cartridges for the toughest shot likely to be presented -- in this case, a raking rear end shot on a bull elk -- he could not have posed for this picture.

conditions and ranges. In hunting whitetail deer, the toughest shot may mean busting through brush on a running animal. You may choose a heavy, round-nosed bullet at modest velocities for such work, knowing that if you get lucky and have a standing shot in the open, the load will still do the job.

On pronghorn antelope, the problem is usually long ranges, so you select a cartridge and bullet giving usable trajectories over 250 yards or more. A middle-weight, sharp-pointed bullet that opens up well at reduced velocities is indicated. Then, if the chance happens to come at 100 yards, you may get a bit too much destruction of meat, but you'll get your antelope.

If you're out for a big brown bear, grizzly, polar bear, or jaguar -- one of the critters that become unfriendly when disturbed by mere humans -- the most demanding shot is likely to be the head-on opportunity at close range, and a single bullet may have to do the whole job.

Under these circumstances you're not concerned much with minute-of-angle accuracy or hyperflat trajectory. You are concerned with deep penetration and plenty of stopping power. You load the ammunition to stop a charge, and then, when the chance comes at a bruin feeding peacefully at 60 yards, broadside, you

knock him down with confidence.

The same principle applies to some extent in shotgunning as well. The duck hunter who carefully balances his handloads for 40-yard point and pass-shooting will be at a very small disadvantage -- if any -- on those days when the mallards decoy like your Granddaddy told you they used to do.

The basic idea is that it is more profitable to err on the side of a bit too much power (brush-bucking capability, flatness, or whatever) than too little. Seasons are short these days, bag limits are small, and hunting is expensive. The day is gone when a man could have so many opportunities during a single season that he could carry a peashooter and simply wait until he got the chance he wanted for a sure kill.

Most of us have to take the chances we get, and when those chances are the toughest ones, it pays to be loaded for them. Any other policy is likely to lead to disappointment and, worse still, to fine game animals wounded and lost, an occurrence no man worthy of the title "sportsman" willingly risks, regardless of the stakes.

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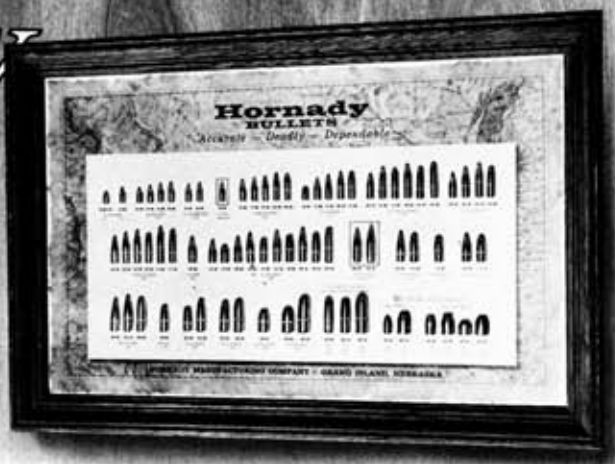
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Voice From The Past:

SHARPS .50-70

By Norm Lammers

THE PHRASE "Sharps Rifle" brings to mind myriad images associated with American heritage -- Berdan's riflemen in the Civil War, dust-covered cavalrymen patrolling the endless reaches of the Great Plains, buffalo hunters methodically decimating the great herds, and the international rifle matches were these rifles helped prove to the world that we were then, indeed, a "Nation of Riflemen."

With a few exceptions, the Sharps rifles which have survived are considered collectors' items or simply relics of an interesting period of American history. The only ones still seeing service are the relatively few guns used by North-South Skirmish Association members and a handful of late-model target versions being used by fans of single-shot rifles.

When I obtained the Sharps shown on this issue's cover, a .50-70 New Model 1859, I naturally wanted to learn

as much about it as possible -- including how to make it shoot, thus resurrecting a voice that perhaps had not been heard for the better part of a century.

Christian Sharps obtained his first patent for a sliding breech rifle on September 12, 1848. He soon became involved in a business arrangement with S. E. Robbins and Richard S. Lawrence of Windsor, Vermont, two men with the administrative abilities, mechanical talents and capital to manufacture rifles using mass production techniques. Organized as the Sharps Rifle Manufacturing Co., Hartford, Connecticut, Sharps was retained as a technical advisor and paid a royalty of \$1 per gun.

Apparently this arrangement did not work out well for Sharps, since he left the company in 1853 and founded a new organization known as C. Sharps & Co. in Philadelphia. From 1862 through

1866, Sharps was a partner of William Hankins. The "Sharps and Hankins" Civil War carbine is the best-known product of this union.

In spite of Sharps' inventive genius, his poor business sense resulted in his failing to realize any appreciable monetary results from his creations. When he died in 1874 at the age of 63 his total assets were slightly more than \$300.

The Sharps Rifle Manufacturing Co. continued under the guidance of Robbins and Lawrence until a business failure in 1856. Reorganized under the same name, the company went on to manufacture the percussion 1859 and 1863 models and the conversion model of 1866.

In 1874 all the assets of the Sharps Rifle Manufacturing Co. were sold to a new group known as the Sharps Rifle

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The author resurrected the Sharps .50-70 shown on this issue's cover, and found it capable of surprising accuracy. The leather Frazier's Patent Cartridge box below was issued to the New York National Guard.

Co. This organization further developed and manufactured the metallic guns that had been started by Lawrence. Ammunition was also produced, and a variety of new cartridges in .40, .44, .45 and .50 calibers were introduced. Firearms in these calibers helped harvest buffalo hides during the relatively short span of years in which the herds were slaughtered into near oblivion.

While many Sharps cartridge guns, both military and sporting, were made in smaller numbers and are more valuable to collectors, the stubby little .50-70 carbine has the greatest personal appeal to me. Picking it out of the rack, one has an immediate urge to mount it to the shoulder and snap a shot at that imaginary buffalo charging through the doorway.

The carbine illustrated was originally manufactured in .52 caliber for the linen cartridge and used either a disc primer or a musket cap for ignition. The barrel was marked near the breech "NEW MODEL 1859." After the Civil War (or The Late Unpleasantness Between the States, depending upon your ancestors) a contract was negotiated between the War Department and the Sharps Rifle Manufacturing Co. to convert these arms to accommodate metallic cartridges. The barrels were bored out, a smoothbore liner installed and then rifled to .50 caliber. The relining work was done at Springfield Armory, while the lock work was accomplished by Sharps for the princely sum of \$4.50 each. According to War Department records, 31,098 carbines were altered under the contract.

The carbine in my collection does not have a patch box, although the butt-plate was notched to fit. Obviously, as many metal parts as possible were re-used when the alterations were made. The Springfield Armory Sub-Inspector's initials "EF" appear on the left side of the butt stock above the swivel bar. This cryptic inscription could refer to either E. Farrar who was employed from 1860 through 1868 or Edward Flather who worked from 1862 through 1863. An additional mark on the left side of the butt stock midway between the swivel bar and the butt plate proclaims that



"DFC" (David F. Clark, Springfield Armory Sub-Inspector 1861-1886) also cast his critical eye upon it.

Factory serial numbers of the New Model 1859 carbines started at 29,001 and ranged to 80,000. Of course, not all these were converted to metallic cartridges, and they may still be found in their original "as issued" condition when the Gods of the Rifled Tube smile upon you.

A review of the various accoutrements issued to the trooper to store and carry .50-70 cartridges is a complete and fascinating study in itself. The "Catalog of the Rock Island Ordnance Museum," published in 1909, lists patent boxes originated by Hagner, Frazier, and McKeever as well as several varieties of woven webbing cartridge

belts, all of which had separate holes or loops for each cartridge.

The Indian-fighting horse soldier was probably better equipped, however, with the Dwyer Pouch, U.S. Pattern 1874, which held a number of cartridges loosely within a sheepskin-lined belt pouch. The militia or National Guard parade ground troops favored the dressier Frazier or McKeever boxes. The Frazier box shown in the photograph has a brass oval plate marked "NG" for the New York National Guard.

The .50-70 cartridge was officially in issue from 1866 to 1873, although it was manufactured and issued for some time after the latter date. For at least two decades this caliber was used to bring the "blessings of civilization" to our red brethren and simultaneously to



At left are two original .50-70 rounds, a U.M.C. and an unidentified balloon head Berdan-primed round. In loading the .50-70, the author first tried converting .348 Winchester brass, then switched to Old Reliable cases with 385-grain bullets. Loaded round is compared to slender .30-06.



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reduce their vital food supply, the buffalo.

The designation .50-70-450 referred to a nominal bullet diameter of one-half inch, a 70-grain charge of coarse-grained black powder, and a 450-grain bullet. The cartridge case was 1.75-inch in length. A short-cased (1.33-inch) version was also issued for the carbine as the ".50 Government Carbine." By the previous nomenclature, this was a .50-45-385 round and was probably much more pleasant to shoot in the carbine. The .50-70-450 load really rattles your bridgework in this stubby little iron!

Existing cartridges, both service issue and commercial, are now collectors' items and becoming somewhat scarce. The original cases were copper with various types of primers (Benet cup, Martin bar anvil and Martin folded) and were notorious for causing extraction troubles in hot guns. A considerable amount of experimentation was carried on with this cartridge as evidenced by the list of .50 centerfire metallic cartridges compiled in 1876 by Lt. Henry Metcalfe for the Frankford Arsenal collection — 47 varieties of bullet and lubricant, 22 types of disk and bar anvil primers, 20 versions of cap primed cases, and 20 different cup anvils.

In addition to the U. S. service arms, rifles manufactured by Maynard, Peabody, Remington, Sharps, Winchester (Single Shot), and others were chambered for the .50-70. Of course, cartridges had to be made commercially to satisfy this demand. While the particular rifleman had quite a choice of bullet and powder combinations originally, one commercial load gradually became standard. This was the .50-70-425 which was advertised as leaving the muzzle at 1,275 feet per second and developing 1,535 foot-pounds of energy.

While past history and development was fascinating, I was really more interested in getting "Little Effy" roaring again and set out to seriously reload for her. A survey of my cartridge collection brought to light a conglomeration of various primer and cartridge case types. Since most of the early items were of the folded head construction, they were turned down for safety's sake. The cartridges using various diameters of Berdan primers presented a problem in finding their

modern counterparts. Since these cartridges are really collectors' items, it would have been a shame to use them anyway.

The search then narrowed to finding what was commercially available or reworking some modern case to fit. Being of a naturally perverse nature, I chose both approaches. A letter to the Connecticut Cartridge Company brought a prompt reply that they were unable to supply my needs since they were involved in military contract work. A careful perusal of gun literature brought to light the beautiful .50-70 unprimed cases distributed by the Old Reliable Cartridge Co., and an order to the Dixie Gun Works was rewarded with a box of these brass masterpieces.

Another tour through my cartridge collection with a micrometer caliper disclosed the fact that .348 Winchester cases were about the only items close to the .50-70's rim diameter. This ground has been plowed before by my old friend, George Nonte. Re-reading his book *Cartridge Conversions* for the umpteenth time provided the necessary information on neck expanding, trimming and fire forming.

After trying some short cuts and ending up with what is known locally as the "Lammers Accordion-Shouldered Split-Necked Improvement," I bowed to George's experience and "did it like the book." While the .348 case rim is only .602-inch in diameter instead of the desired .660, the re-worked cases have performed satisfactorily, although they do not have the powder capacity of the .50-70 case. This is a consideration only when using black powder since the smokeless loads rattle around like a handful of peanuts in a whiskey barrel!

Now that I had two solutions to the case problems, what about primers? Previous experience with the .45-70 cartridge indicated that standard Large Rifle primers ignited black powder reliably and Large Pistol primers were even better with some powder-bullet combinations. Because of the large air space left in the case with smokeless powder loads, Magnum Rifle primers seemed to do better. I finally settled on standard rifle primers with smokeless powder loads, using a two-inch square of Delsey's tissue (available from the corner supermarket in handy rolls) loosely crumpled and seated lightly on the powder to hold it in place against the primer.

Needing a loading tool, I searched the local gun shows at length without

any luck. Abandoning the idea of pursuing authenticity by loading with a fine old tong tool, I ordered a shell holder and set of dies for my bench tool from RCBS. Fred Huntington, the chief honcho for RCBS, apparently never gives up on a good caliber and quickly supplied the desired items.

Having on hand four moulds of .50 caliber persuasion, ranging from 285 grains to 515 grains, I cast a batch of bullets using a one-part-tin-to-20-parts-lead alloy and sized them to .515-inch diameter in an Ideal Lube Sizer. A 50-50 mixture of beeswax and Alox 2138F was used for lube. While I mixed my own (an extremely messy job frowned upon by the feminine side of the family), this lubricant is readily available from several suppliers, such as Javelina Products. A soft lube of this nature is very successful in these old rifles.

With cases, primers and bullets at hand, the long-awaited pleasure of loading began. A review of the few articles available on this caliber gave rather conflicting ideas, but judgement and compromise prevailed. Black powder charges of 60 and 70 grains (Fg or FFg granulation) seemed to predominate and gave the necessary slight compression, upon bullet seating, required for clean burning. Several duplex loads were tried using five grains of Du Pont 4759 or an equal amount of Du Pont Bulk Shotgun Smokeless directly against the primer. While both these powders have been discontinued, some dealers still have a can or two left on their shelves. Failing this, three grains of Du Pont PB shotgun powder will do as well. In the short-barreled carbine, the duplex loads did not appear to show any improvement and were abandoned after several trials.

After shooting black powder loads, the cases should be promptly de-capped and boiled in a detergent solution. They will turn rather black after repeated loading, but will not corrode and can be re-used many times. The rifle should also be cleaned with a detergent solution, dried, and oiled carefully.

Having a generous supply of Du Pont 4759 powder on hand, I concentrated on this propellant for my smokeless loadings. If a different powder is to be used, it should be carefully selected to approximate 4759's burning rate and consequent pressure level. In the Answers Please section of the latest *Handloader* (January-February, 1969), George Nonte writes that he has March-April 1969

successfully used Hercules Reloder No. 7 as a replacement for the discontinued 4759, reducing charges about five percent in black powder cartridges. However, I haven't had a chance to try it.

The only real advantage of using smokeless powder is that you do not have the case and rifle cleaning task facing you at the end of a long day of shooting. Here are the loads which are the best in my carbine:

Lyman No.	Bullet Weight	Powder Weight	Powder Type
515141	450	60	FFg
515142HP	515	60	FFg
515141	450	22	4759
515144	285	20	4759
518145	350	21	4759

The .50-60-450 load was finally settled upon as "standard" and has provided many enjoyable shooting hours. In spite of the relatively crude military sights, these carbines are capable of remarkable accuracy at 100 and 200 yards. Beyond these ranges, there is a marked tendency toward "green apple" trajectory!

Using the black powder load, Effy roars loudly, recoils in a very substantial manner, and displays a terrible case of bad breath. Who could ask for anything more?



Muzzle Loading

(Continued from Page 33)

be changed, quite likely a new charge and possibly even a new ball size may be necessary before top accuracy is regained.

Embarrassing misfires and agonizing hangfires are usually the result of an improper course of fire from the percussion cap to the powder chamber. Naturally, the hammer should be in crisp working order and strike the nipple a solid, sharp blow. The nipple should be rigidly mounted and in perfect condition. Iron nipples become burned and battered about the mouth and this condition results in an irregular explosion of the cap. The base of the nipple should have only a tiny hole. This small hole constricts the blast of the cap to a long, thin jet of hot fire. The small hole also minimizes blow back. Cutting and corrosive action of the gas tends to enlarge the hole so the nipples should be replaced fairly often. An alternative is using the AMPCO

beryllium nipple. These tough nipples, while somewhat more expensive, resist the batter of the hammer and the heat of the cap much better than iron or steel nipples and last much longer.

The drum, which holds the nipple, should be inspected fairly often to clean out any residue which might clog the passage. Most current models have an inspection screw for easy access. You'll be surprised at how much crud can collect in the drum after only a few firings. It cakes so hard a wire pick is needed to break it out. A buildup of this residue can cause poor ignition or no ignition at all. Irregular ignition can significantly open up groups.

A trick that is finding more and more favor with target shooters is "venting" the drum. This is done by simply drilling a small hole into the drum, usually lengthwise through the inspection screw. The theory is that the air in an unvented drum becomes compressed by the force of the exploding cap and thus resists the movement of flame to the powder. The venting hole supposedly eliminates this compression and results in surer and quicker ignition.

This venting theory is nothing new, since it dates back to flintlock days when a vent hole was placed on the off side of the barrel, opposite the touch hole. Some contend that venting the drum improves ignition not because of reducing compression, but because firing the charge blows the crud out of the drum, keeping it cleaner. There is a disadvantage to venting target guns - it brings cuss words from the shooter on the right if you set his feathers afire.

Accuracy with a muzzle loading rifle is the result of all factors and components involved being properly adjusted and working in harmony. A break-down or mis-use of any single component will set about a chain reaction which results in poor performance from everything else. This, at times, is frustrating but is a major part of the fascination of shooting black powder arms. Just bear in mind that while failure is dismal, success may be delightful - give your rifle a chance and it may turn in a startling performance. Don't forget to wear shooting glasses!!

