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SHOOTING TIMES

MARCH 2024



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Made for Americans

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Champion Wheelybird 3.0 Trap

This updated auto-feed trap now holds 60 clay pigeons, has a faster 1.5-second cycle time, throws clays to 75 yards, and has many more great features.

By Joel J. Hutchcroft

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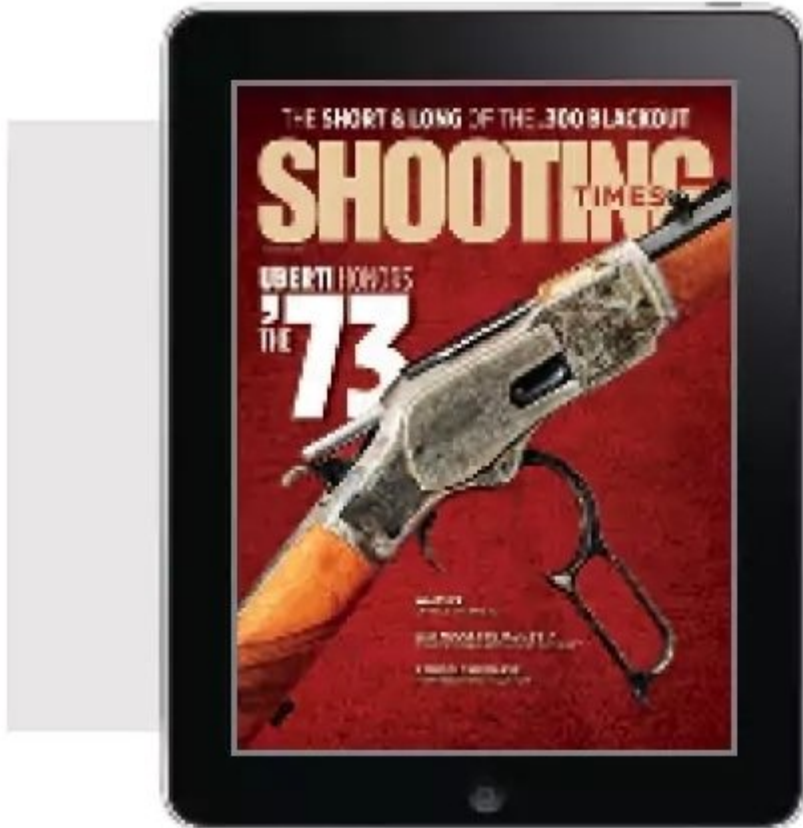


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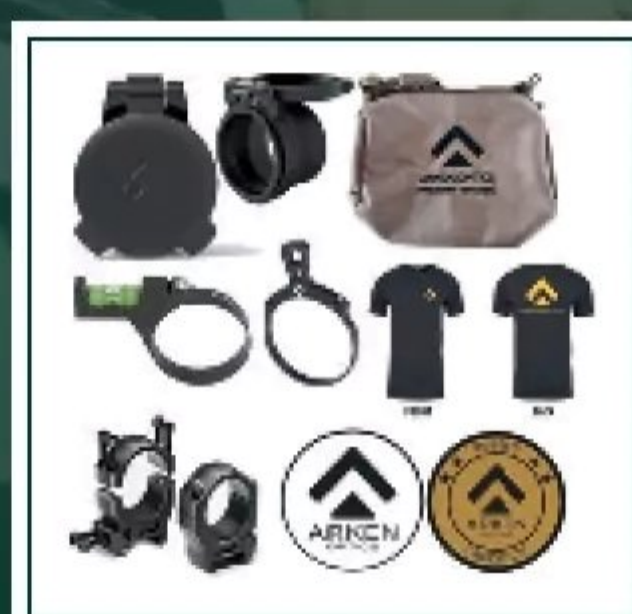


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The Bullet Creep Article Was Great!

IN THE "BULLET CREEP" ARTICLE IN THE JULY 2023 ISSUE, THE PICTURE of three rounds with progressive creep looks like Speer 110-grain JHP bullets. I load these bullets for my Colt Detective Special, and after hearing some odd reports, I checked the roll crimp, which was in the middle of the cannelure, and I thought it was substantial. The COL is 1.455 inches. I didn't want to bulge the cases, so I ran them through a taper crimp die for a very firm crimp and slender appearance.

The ft-lbs info on the 158-grain .357 Magnum in that article was handy, and it speaks to a friend of mine who was not happy with the recoil of his magnum J-Frame. It was a great article.

Joseph Solimando

Via email

Cut Dead Center

My name is Jim Taylor. I was born in 1938 and raised in San Antonio. I am retired from Texaco and now live in Houston. My great-granddad designed the Taylor "machine gun" (1878), and Remington manufactured it. It didn't amount to much, but it is in the Smithsonian. I'm writing to *Shooting Times* because I read the article on the .300 H&H by Steve Gash in the July '23 issue. Since about 1972, that has been my hunting gun. Growing up in San Antonio, I got to know the area south and west as well as the Hill Country.

My sister was married to a rancher in Batesville, and his hunting gun was a .300 H&H. He knew more where the deer were than they did themselves, and he taught me to "rattle." At the time I owned (and still have) my first deer rifle. It's a .257 Roberts Model 722. My dad gave it to me for my 16th birthday. It's hard to find brass and bullets for that cartridge, but I have taken a number of deer with it. I do a lot of reloading and also shoot muzzleloaders. Anyway, I found my .300 H&H Model 70 through Toepperwein's in San Antonio and bought it. I've probably taken 60 to 80 whitetails and a mule deer with it. The Sierra 165 grain GameKing over 53.5 grains of 4064 produces about 2,900 fps, and it is the load that works for my rifle. I sight-in at 200 yards and try to cut dead center, as Sgt. Alvin C. York would say. My sister had a .300 H&H rifle, too, but hers was a Sako. She gave it away, and I really wish I had it.

Anyway Gash is right on with his article. I own upwards of 50 rifles and about 25 handguns (no combat guns). I learned to shoot the M1 at Fort Jackson. One of my handguns is a 7mm Super Bower Contender. Don Bower developed a group of Super Bowers (written up in the June '96 issue of *American Rifleman*). I just had to have one. I don't do as much shooting and reloading anymore, but I still try to get a deer or two every season.

That's it for now. Keep up the great work and cut dead center.

Jim Taylor Jr.

Via email

.300 H&H Is One of My Favorites

Steve Gash's article on the .300 H&H was great. It's one of my favorite cartridges. I had a semi-custom Mauser 98 in .300 H&H, but (stupidly) I traded it. Currently, I have a Baikal over-under double rifle that originally was chambered to .30-06. I had my gunsmith rechamber it to .300 H&H. My handload for it is the Sierra 220-grain RNSP at a velocity of 2,400 fps. It's great in the Eastern deer woods, and it has tremendous penetration. Keep the good articles coming!

Clete Davis

Elmhurst, IL

An Ammo Storage Experience

In reference to the Q&A about ammo storage in the July 2023 issue, I would like to share an experience.

I had just retired from the Navy and had been hired by Sandia National Laboratories. The battleship USS Iowa (BB-61) had suffered an in-bore explosion in one of its 16-inch/50 rifles in April 1989, killing the entire crew of the turret. The FBI started the investigation but were inept, and Sandia was forced to take over. I was briefly involved in the investigation.

The guns' powder charges were six 110-pound silk bags. All the powder bags on board the ship had been produced during the Korean War and had been stored in climate-controlled conditions on barges. These bags were tested and found to meet the standards applicable at the time. In other words, like-new performance.

You might be interested in what caused the explosion. Each bag of powder had a "trim" layer where the large powder grains were used to bring the entire bag up to its full weight. Investigators found that gunner's mates in the turret were cutting the trim layer and giving the near-finger-sized grains to friends as trinkets. Sandia engineers used the Naval Weapons Station's shore-based 16-inch/50 to try to determine what went wrong. The only way to get a reaction was to ram a powder bag that had been tampered with.

As the burn happened with the interrupted thread breechplug out, the powder charges blasted back into the turret, with the large powder grains acting like a mammoth shotgun. I don't remember the precise numbers, but temperatures were on the order of 2,000 degrees Fahrenheit. All the crew was literally melted.

Don Dietz

Via email

Shooting Times Is My Favorite

There are several reasons why *Shooting Times* is my favorite gun magazine, and the November 2023 issue is another one of those reasons. I must agree with the "J.C. Higgins Model 20 Can't Be Beat" letter from Greg Churach because I still have the one my father bought back in 1953. It was with that Model 20 that I took my first deer (at the age of 15). I cannot even guess how many squirrels and ducks it took down.

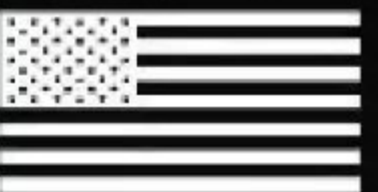
Then, on page 36, the article about the Dumoulin Mauser action started. While I was searching the country over for a .338-06 barrel to put on a Mauser 98 action, I found a rifle in that caliber. The receiver turned out to be a Dumoulin that is labeled "Safari M98 Global Trading Italy, L.S.I., Alexandria, VA," a firearm company that I now understand is Legacy Sports International. It was some time later that I learned about the Dumoulin receivers, and this one is an excellent example. It has the square-bridge receiver rings on which is mounted what appear to be Weaver bases built to firmly fit the dual slotted bridges. The only improper action with this receiver was that the safety was not perfect. Just a bit of Dremel work made that problem go away, and now the safety is perfect. I am a longtime fan of the Mauser 98s, but the Dumoulin action is probably the best that I have ever seen.

I have really enjoyed this issue of the magazine and will be waiting for the next one to have a great article about another of my favorite firearms—pistol, shotgun, or rifle.

Butch Greene

Via email

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READERS SPEAK OUT

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MSRP: \$49.95

butlercreek.com



Bushnell Bone Collector Laser Rangefinders

Bushnell, which is celebrating its 75th anniversary this year, is offering the new Bone Collector 1000 and Bone Collector 1800 laser rangefinders. Designed in collaboration with Bone Collector's Michael Waddell, Nick Mundt, and Travis "T-Bone" Turner, these new rangefinders feature fully multicoated, all-glass optical systems, ARC technology, and new ergonomic housings. The Bone Collector 1000 ranges to 1,000 yards with +/- 1-yard accuracy, while the Bone Collector 1800 ranges to 1,800 yards with +/- 1-yard accuracy. The 1800 model also has a built-in Applied Ballistics Ultralight engine that provides shooting solutions out to 800 yards.

MSRP: \$149.99 (Bone Collector 1000)

and \$199.99 (Bone Collector 1800)

bushnell.com



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MSRP: \$99.99

vortexoptics.com



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MSRP: \$99.99

gosafenow.com

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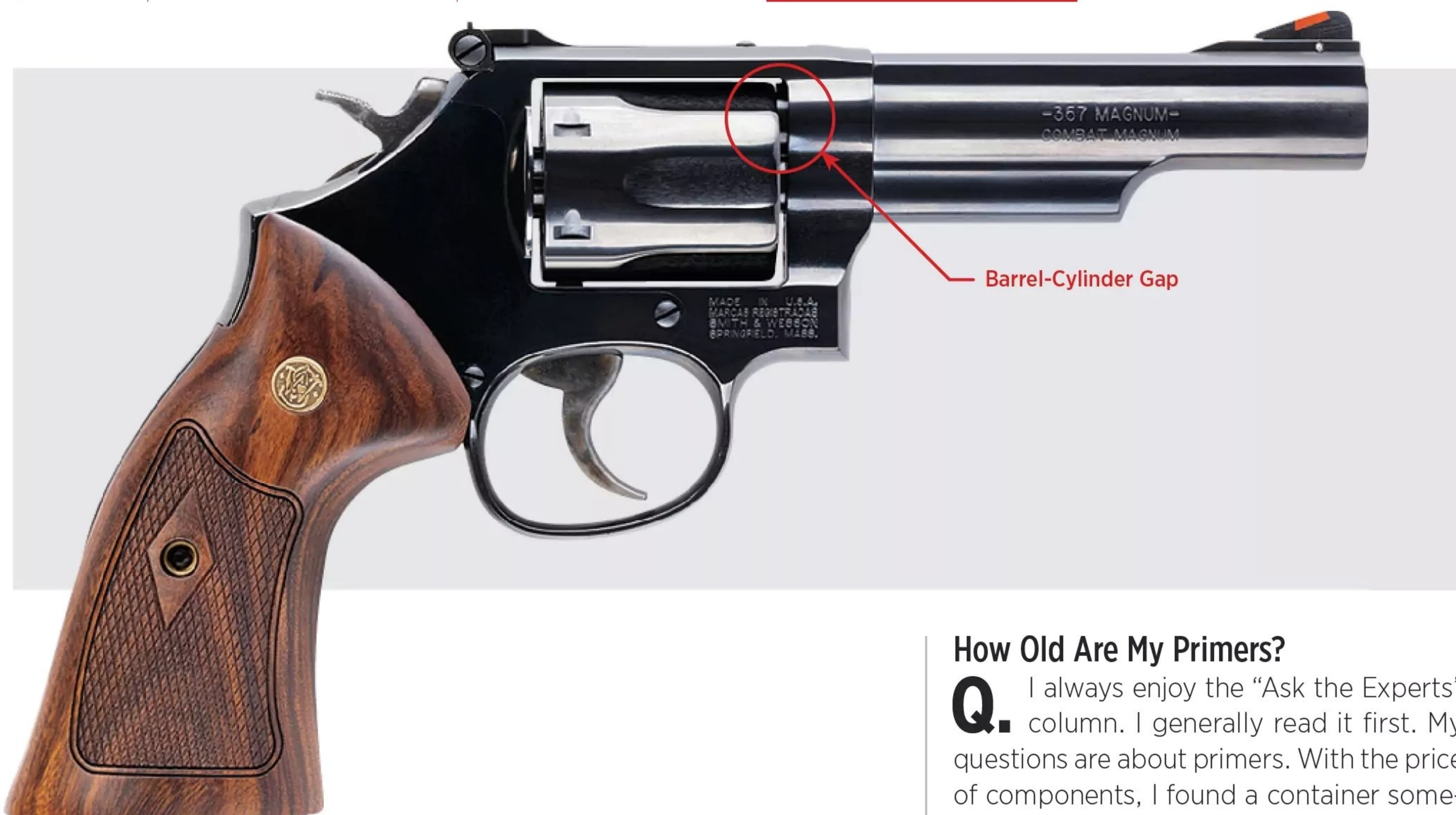


SHOOTER'S UPDATE

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Barrel-Cylinder Gap and Endshake?

Q. I READ BRAD MILLER'S REPORT ON THE SMITH & WESSON 3-5-7 "7X7" Model 686 Plus in the February issue with great interest. I'm sort of new to handguns, so I took note that he mentioned some terms that I am not familiar with. They are "barrel-cylinder gap" and "endshake." What do those terms mean?

Tanya Kelly

Via email

A. Barrel-cylinder gap is the space between the end of a revolver's cylinder and the front of the forcing cone of the barrel. It can range from 0.004 inch to 0.007 inch. Typically for Smith & Wesson revolvers, this gap measures 0.006 inch, but it can vary. Most experts believe barrel-cylinder gap does not have any effect on accuracy; however, it does affect the amount of gas being vented, and that can have an effect on a bullet's velocity. The rule of thumb is that velocity of a load fired in a revolver with a barrel-cylinder gap of 0.006 inch will be reduced by about 9 to 10 percent.

Endshake occurs when a revolver's cylinder can move forward and backward in the frame with the cylinder latched shut. (It can also occur with the crane/yoke.) Some movement is acceptable (with 0.002 inch to 0.005 inch being the commonly accepted range), but if the amount of movement is excessive, misfires can occur. In many cases, endshake can be corrected with bushings.

Joel J. Hutchcroft

How Old Are My Primers?

Q. I always enjoy the "Ask the Experts" column. I generally read it first. My questions are about primers. With the price of components, I found a container someone had given me years ago. The container and primers seem to be in decent condition. The tray that holds the primers is wood. The container is marked "250 primers for cart. cal. 30, [F.A. no. 70], Frankford Arsenal." How old would these primers be? Could they be corrosive?

Adam W. Mackow

A. Yes, FA-70 primers are absolutely corrosive military primers. They are likely at least 70 years old, and I recommend that you do not use them in any application. Appearance does not tell their story.

In addition to the FA-70 leaving corrosive residue in the firearm that is the equivalent of pouring table salt down the barrel, all very old primers have another nasty habit—those old primer cups get brittle after decades of storage. On firing, small cracks can appear in the sidewalls of the primer cups. Those allow hot, high-pressure gas to leak by the primer and will act as a plasma cutter on your firearm's boltface.

Please don't let economics ruin a fine rifle. My column in this issue reviews the evolution of primer chemistry and discusses what is and isn't corrosive or mercuric. I encourage you to give it a read.

Allan Jones

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THE RELOADER



Custom Mauser .458 Win. Mag.

This Argentinian thumper was purpose-built for hunting the world's largest hooved game. **BY JOSEPH VON BENEDIKT**

The Mauser 1909 action is a preferred platform for custom riflemakers building dangerous-game rifles like this .458 Win. Mag. It was built by an Italian rifle builder living in Argentina at the time.

MORE THAN A CENTURY AGO, BEFORE THE Mauser turnbolt action was designed, Asiatic water buffalo were introduced to the Amazon River basin. Although these buffalo can be domesticated, they are among the world's largest hooved game and can be profoundly ill-natured. Argentinians hunting them quickly cottoned on to the fact that your average sporting rifle cartridge wasn't sufficient.

About the time rinderpest swept Africa in the 1890s and killed 90 percent or more of the Cape buffalo, Asiatic buffalo really took hold in South America. Currently, there are an estimated 1.6 million or

more—which is double or more the number of Cape buffalo alive today. Live body weight of a mature bull can top 2,200 pounds, which is 10 to 30 percent more than a Cape buffalo.

Then, and some would argue now, the best choice available for Argentinian hunters to build a dangerous-game rifle on was the 1909 Mauser. The Mauser 98-type action is extraordinarily strong and beautifully built. Some aficionados consider the 1909 Argentinian Mauser the best ever built, and it's a prized action among modern custom rifle builders who specialize in big bores designed for hunting dangerous game.

MODEL 1909 ARGENTINE MAUSER	
MANUFACTURER	Deutsche Waffen und Munitionsfabriken
TYPE	Bolt-action repeater
CALIBER	.458 Win. Mag.
MAGAZINE CAPACITY	3 rounds
BARREL	24 in.
OVERALL LENGTH	45 in.
WEIGHT, EMPTY	8.38 lbs.
STOCK	Walnut
LENGTH OF PULL	13 in.
FINISH	Blued metal, oil-finished stock
SIGHTS	Standing-leaf square-notch rear with 1 folding leaf, ramped post front
TRIGGER	2.0-lb. pull (as tested)
SAFETY	Three-position wing type on bolt shroud



Mechanics

Fundamentally, the *Mauser Modelo Argentino 1909* is an M98-type action. It features dual, opposing locking lugs; a full-length, nonrotating claw extractor renowned for strength; an excessively reliable fixed ejector; a three-position safety that blocks the firing pin—not just the trigger; and the controlled-round feeding mechanism that made it legendary among warriors and preferred among dangerous-game hunters.

How Mauser 98-type military rifles work is widely understood, so I won't go into detail on that. What I'd like to address here are the special features custom-built into this fine big-bore rifle.

The action top is machined to a radius and drilled and tapped for scope mounts. The overly large, top-mounted Mauser safety lever was removed and replaced by a very sleek, well-machined side-mounted safety lever to enable clearance for a scope and to improve accessibility.

Interestingly, the right rear flat of the action was drilled and tapped for a side-mounted aperture sight, and the stock is cut out to enable a sight base to fit snug.

At the left rear of the action, the bolt removal lever has been replaced or modified with the addition of a serrated flange that makes it very easy to operate.

Subtle but important features abound on the rifle; all apparently designed to make it easier and surer to operate under stress. The bolt knob is stippled top and bottom. An express-type rear sight island holds a robust standing leaf with a square notch and one folding leaf. The front sight is a clean-cut, square-topped post on a ramp.

Provenance

Outfitter and guide German Brandazza of GBH Safaris Argentina owns this fine rifle, and according to him, the rifle was built in Argentina by an Italian gunmaker with the last name of Razza. Everything on this rifle was done right. The walnut stock has lovely figure in straight, strong grain through the wrist and other stress points. The checkering is beautifully cut. The wood-to-metal fit is superb, and the lines of the stock are such that the rifle feels alive in the hands.

The nicely swept cheekpiece features a shadow line, and there's a traditional leathery red rubber butt pad. The front sling-swivel stud is incorporated into a barrel band. The muzzle has been threaded for a brake.

Rangetime

Being the vintage firearm nut that I am—and particularly for classic big-bore rifles—I salivated when Brandazza broke out the .458 Mauser to go buffalo hunting with my friend Tim Joseph, vice president of marketing at Benelli. Chuckling at my enthusiasm, Brandazza offered to let me shoot the rifle the next day (I suspect just to get his rifle back from me so they could go hunting). I wasn't able to conduct my usual thorough range evaluation with this rifle, but I shot enough to get a feel for it. The rifle's trigger is light, and at 8 pounds, 6 ounces, the rifle itself is light for a big bore. The whip-crack of the report was accompanied by recoil that was lively, to put it politely.

This gun is exactly what I love most in a classic rifle: beautifully built, elegantly understated, and a real walloper. If it were possible, I'd buy this fine old big-bore Mauser in a heartbeat. But I know that's not even remotely possible.

ST



SHOOTER'S GALLERY

THE SHOOTIST

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THE RELOADER



A Brief History of Percussion Priming Chemistry

The evolution of priming technology was a “prime” driver in the mechanical evolution of firearms. **BY ALLAN JONES**

FIREARMS HAVE ALWAYS BEEN TUBES FROM which an energetic material—propellant—ejects some form of projectile. How that propellant was activated forced the evolution in firearm and ammo designs that we use today.

All percussion priming relies on physical shock to force a violent chemical reaction, creating extreme heat and gas. Its forebear, flint-on-iron ignition (“flintlocks”), relied solely on mechanical friction and sparking to light off the charge. Flintlocks required an intermediate step to ensure proper ignition: fine-grained propellant in a shallow pan next to the barrel. Were the pan charge lost due to wind or leakage, there was no “boom” from your boomstick.

In ignition history, percussion-sensitive chemical materials were lumped together as fulminates or fulminating compounds, from a late Latin word for “lightning.” Although many metals can be converted to fulminates, mercury fulminate, $\text{Hg}(\text{CNO})_2$, became the preferred percussion priming compound.

Obviously, mercury’s toxicity was little known 200 years ago. First described in scientific literature in 1800, mercury fulminate pellets became the heart of Rev. Forsythe’s “scent-bottle” priming system in 1807. By 1822 fulminate was held inside soft metal caps to eliminate flintlock pans. Caps slipped on a conical “nipple” on the breech that vented to the powder charge in the barrel. These arms were “caplocks.”

Chemical ignition of propellant is more than 200 years old but continues to evolve.

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Mercuric priming persisted well into the cartridge era—the U.S. military used it until 1898—but it was not perfect. The power of mercuric primers degraded with time, causing misfires and hangfires. Mercury residues do not affect steel but easily combine with copper alloys, making fired brass cases brittle.

The replacement nonmercuric mix was based on potassium chlorate, KClO_3 , and lead thiocyanate, $\text{Pb}(\text{SCN})_2$. These are the “chlorate” primers cited in many reloading texts. These were reliable and stable, but one of the combustion byproducts of KClO_3 is potassium chloride, KCl , commonly used as a sodium-free substitute for table salt. It will rust steel quickly if not removed from gun barrels using water-based methods. These were corrosive but nonmercuric.

U.S. arsenals did not finally abandon chlorate priming for service ammo until the early 1950s. However, because it had performed so well for so long, the U.S. FA-70 chlorate primer was retained for use in .30-06 military match ammo well past the primer changes to service ammo. However, one cartridge featured noncorrosive, nonmercuric priming years before other U.S. service cartridges were converted.

The U.S. .30 Carbine cartridge was developed around 1940 and always had noncorrosive priming. Why? Gen. Julian Hatcher explains that .30 Carbine ammo was always intended to be loaded by commercial ammomakers to military specifications (*Hatcher's Notebook*, 3rd Ed., p. 487). While preparing those specs, Ordnance staffer Col. E.H. Harrison examined the captive-piston design at the heart of the M1 Carbine's gas system and thought it was highly vulnerable to corrosion.

Harrison's final specifications stated primers loaded for .30 Carbine must be noncorrosive. Although he did not specify a particular formula, by then all commercial U.S. primers featured noncorrosive compounds virtually identical to what we use today.

Yes, all military-issue .30 Carbine ammo loaded in the U.S. has noncorrosive primers. That does not mean .30 Carbine ammo loaded in other countries is noncorrosive. Some is highly corrosive. Been there, done that, got the rust-stained T-shirt.

Commercial ammomakers had established nonmercuric, noncorrosive priming as the new standard in the 1920s. The usual initiator was lead styphnate, $\text{C}_6\text{H}_5\text{N}_3\text{O}_8\text{Pb}$, explored as early as 1874. The corrosive chlorate had to go. Efforts toward better primers took different paths in different countries, but most conventional styphnate primers, then and now, share the same suite of ingredients.

The core components in most modern noncorrosive, nonmercuric primers are an initiator, lead styphnate; an oxidizer, barium nitrate; and a fuel, antimony sulfide. Any variation in the ratio of these among primer brands is usually to maximize each company's “house blend” to be tuned to the metal-parts configuration—cup and anvil characteristics—of their primers.

Refinements led to adding smaller amounts of other things to help that trio work better. Atomized aluminum powder may be added as a secondary fuel that projects incandescent particles into the propellant charge. Another percussion-sensitive material, tetracene, is common as a “sensitizer.” Although it's much weaker than styphnate, its activation energy under impact is somewhat lower. It serves as a “booster charge” to ensure styphnate's activation under a wide range of conditions.

Rimfire priming mixes may contain finely ground glass. This is a frictionator, intended to make ignition more reliable in weak “pinch-rim” systems, and adds incandescence.

This was de rigueur until the 1980s when air quality concerns—specifically airborne lead—arose in indoor shooting facilities. By combining bullets having clad or protected bases with primers having nonlead initiators, the level of lead at the firing point could be reduced to what one published law enforcement study described as “residual amounts left in the firearm from prior leaded-ammo use.”

The nonlead initiator used for the first modern lead-free priming was not a new compound, but it was a mouthful. Diazodinitrophenol (DDNP) was described by the German chemist Griess as early as 1858 and further studied in the 1930s. In the mid-1980s, it became the preferred reduced-toxicity initiator of the day.

Early DDNP primers were slightly less sensitive than styphnate primers. They could also be picky about the kinds of propellants they had to ignite; many did not light off spherical-type propellants very well. With the lead gone, researchers focused on the barium and antimony as well. Oxides of “lighter” metals like zinc replaced barium nitrate. Some efforts substituted finely ground smokeless propellant instead of antimony sulfide as a fuel.

Work continues to make such primers as ballistically flexible as styphnate, but my “old retired guy” status does not give me the access to today's proprietary research I once enjoyed. Still, it's apparent that the need for reduced-toxicity priming is not going away. **ST**



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Reloading the .458 SOCOM & .375 SOCOM

Shooting Times readers asked, so Lane provided the answers on the unique .458 SOCOM and .375 SOCOM cartridges. **BY LANE PEARCE**

The .458 SOCOM was developed in 2000 and is based on a necked-down .50 AE case. The .375 SOCOM came along in 2013, and it is further necked down to accommodate 0.375-inch-diameter bullets.

RECENTLY, READER PETE SWANSON ASKED ME about the .458 SOCOM cartridge. Coincidentally, reader Ed Stafford asked about the .375 SOCOM. I first encountered the .458 SOCOM cartridge several years ago on a visit to the PolyCase munitions firm then in Savannah, Georgia. The company made an injection-molded bullet that consisted of a mixture of copper powder metal and a polymer binder. Named the ARX, these unique projectiles significantly enhance the ballistic performance of conventional ammo because the much-lighter-for-caliber bullets are launched at faster velocities than lead, jacketed, or all-copper bullets. Kinetic energy is

directly proportional to the bullet's velocity squared, so the ARXs fly flatter and strike harder.

While we were test-firing different ammo loaded with these fascinating copper/polymer bullets, Buddy Singleton, president of Southern Ballistic Research, joined us, and he had an AR-15 chambered in .458 SOCOM and some SBR ammunition loaded with PolyCase's 140-grain ARX bullet. We were shooting at various reactive targets, and the extreme velocities and proprietary tip design dramatically exploded the melons and water bottles. Soon after the PolyCase event, I ordered an SBR upper chambered for the stubby, bottleneck round.



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Marty ter Weeme (Teppo Jutsu LLC) and Tony Rumore (Tromix) developed the .458 SOCOM in 2000. Based on creating a smaller-caliber, bottleneck cartridge from the .50 Action Express parent case, the .458 SOCOM is adapted to a typical AR-15 platform by simply replacing the bolt assembly and the barrel. Typical performance listed is a 300-grain jacketed bullet at about 1,900 fps in a 20-inch barrel.

Rumore followed up in 2013 with the .375 SOCOM. As its moniker suggests, the .375 SOCOM is simply the .458 round necked down to accommodate 0.375-inch diameter bullets. The lighter 200-grain bullets typically achieve 2,400 fps in a 20-inch barrel.

SBR offers upper assemblies and complete rifles for both SOCOM rounds, and it is the primary source for factory-loaded ammo. I have an SBR AR-15 upper in .458 SOCOM and a Tromix upper for the .375 SOCOM.

Reloading Tips

Reloading the SOCOMs is readily accomplished with only a couple of special considerations. Along with the upper assemblies, I received a generous supply of once-fired Starline brass from SBR. Singleton recommended Redding dies and included an SBR cartridge case gauge with instructions that I carefully adjust the full-length sizer to ensure every reformed case passed muster.

Although they are rifle cartridges, the typical operating pressures (30,000 psi to 34,000 psi) are similar to magnum pistol levels. The Starline brass primer pockets are sized for Large Pistol and Large Pistol Magnum primers, so a Large Rifle primer will protrude. I've never tried it, but this would surely cause a headspace problem and possibly a slam-fire if you attempted to chamber the round.

SOCOM ACCURACY & VELOCITY

BULLET	POWDER		CASE	PRIMER	COL (IN.)	VEL. (F.P.S.)	E.S. (F.P.S.)	S.D. (F.P.S.)	ENERGY (FT-LBS)	100-YD.
	(TYPE)	(GRS.)								ACC. (IN.)
.458 SOCOM SBR AR-15 Upper, 16-in. Barrel										
Barnes 300-gr. TTSX	Lil'Gun	26.6	Starline	WLP	2.240	1701	22	9	1928	1.56
Barnes 300-gr. TTSX	Norma 200	36.5	Starline	WLP	2.240	1587	18	7	1678	1.12
Barnes 300-gr. TTSX	Reloder 7	36.0	Starline	WLP	2.240	1594	12	4	1693	1.15
Barnes 300-gr. TTSX	Reloder 10	36.0	Starline	WLP	2.240	1614	26	9	1736	1.38
Hornady 300-gr. JHP	Norma 200	42.0	Starline	WLP	2.025	1773	22	10	2095	1.45
Hornady 300-gr. JHP	Reloder 7	38.0	Starline	WLP	2.025	1593	21	8	1691	1.97
Hornady 300-gr. JHP	X-Terminator	42.0	Starline	WLP	2.025	1587	20	8	1678	1.68
Hornady 325-gr. FTX	Accurate 1680	34.0	Starline	WLP	2.135	1544	27	9	1721	1.58
Hornady 325-gr. FTX	H110	30.0	Starline	WLP	2.135	1623	35	16	1902	1.80
Hornady 325-gr. FTX	Reloder 7	36.0	Starline	WLP	2.135	1518	51	20	1664	1.50
Hornady 325-gr. FTX	W296	30.0	Starline	WLP	2.135	1565	57	24	1768	1.85
SBR 140-gr. ARX		Factory load			2.030	2601	97	38	2104	2.60
SBR 300-gr. Solid Brass		Factory load			2.235	1712	39	15	1953	2.75
SBR 350-gr. FMJ		Factory load			2.230	1584	40	15	1951	1.50
.375 SOCOM Tromix AR-15 Upper, 18-in. Barrel										
Speer 235-gr. Hot-Cor SP	Accurate 2520	45.6	SBR	WLP	2.235	2054	27	9	2202	1.56
Speer 235-gr. Hot-Cor SP	AR Comp	42.1	SBR	WLP	2.235	2081	31	10	2261	1.57
Speer 235-gr. Hot-Cor SP	H322	42.0	SBR	WLP	2.235	2052	51	17	2198	1.51
Speer 235-gr. Hot-Cor SP	IMR 3031	42.0	SBR	WLP	2.235	2074	27	10	2245	1.32
SBR 250-gr. Plated FMJ	AR Comp	38.6	SBR	CCI 350	2.250	1864	62	17	1929	0.98
SBR 250-gr. Plated FMJ	SBR-SOCOM	31.0	SBR	CCI 350	2.250	1823	38	15	1845	1.29
SBR 250-gr. Plated FMJ	VV N135	40.0	SBR	CCI 350	2.250	1904	52	17	2013	1.09
Sierra 250-gr. SBT	Accurate 2520	41.5	SBR	WLP	2.250	1866	22	7	1934	1.29
Sierra 250-gr. SBT	IMR 3031	39.4	SBR	CCI 350	2.250	1960	28	10	2133	0.90
SBR 200-gr. JHP		Factory load			2.250	1921	26	8	1639	1.26
SBR 250-gr. SBT		Factory load			2.250	1837	21	9	1874	1.29

NOTES: Accuracy is the average of three, five-shot groups fired from a sandbag benchrest. Velocity is the average of 10 rounds measured eight feet from the guns' muzzles.

All load data should be used with caution. Always start with reduced loads first and make sure they are safe in each of your guns before proceeding to the high test loads listed. Since *Shooting Times* has no control over your choice of components, guns, or actual loadings, neither *Shooting Times* nor the various firearms and components manufacturers assumes any responsibility for the use of this data.

I always trim my brass after resizing so that I can apply a uniform but moderate crimp, ensuring the bullet is securely retained in place after seating. Depending on the bullet design, you may need to apply a cannelure to assure an effective crimp. The Redding seater die is easily adjusted to provide a roll crimp, and Lee Precision makes a factory crimp die for the .458 SOCOM. Since I prefer to apply the crimp in a separate step after seating the bullet, I usually use the Lee die.

The SOCOMs have been adapted to many diverse applications, including close quarter battle and suppressed fire. It's also suitable for hunting deer and hogs, so I loaded and test-fired several different bullet weights. The details are shown in the accompanying chart. Note that the Hornady JHP bullet was designed for modern .45-70 handloads, but Barnes developed the TTSX (TAC-TX) specifically for the .458 SOCOM. SBR provided 250-grain plated bullets, and I included a Sierra Spitzer boattail from my component inventory for reloading the .375 SOCOM.

Sources for load data include an earlier edition of the *Lyman AR Reloading Handbook* and ter Weeme's website. The website provided Quick Load-generated propellant recipes for several

bullets and also referenced two previous articles written years ago by *Shooting Times* contributors. Barnes published a data sheet for the 300-grain TTSX bullet.

Range Results

After sighting-in, I fired five-shot groups with the factory loads at 100 yards, and accuracy averaged about 2 MOA. Then I built and fired almost 250 handloads. But since reliable load data is scarce, not all of my handloads generated muzzle energies similar to the factory loads I tested. One must start at lower charges and work up cautiously!

Norma 200 propellant worked well with the Hornady 300-grain bullet in the .458 SOCOM, and Lil'Gun performed best with the Barnes TTSX bullet. In the .375 SOCOM, old standby IMR 3031 and Vihtavouri N135 yielded admirable results.

I shot a couple of three-shot groups at 200 yards with the best Barnes .458 SOCOM handload, and it measured roughly 2 MOA. However, compared to the 100-yard target, the bullets dropped another foot. That's just like lobbing a modern .45-70 slug, so don't assume any downrange points of impact. You must fire your best loads at various distances to fully understand the trajectories.

ST

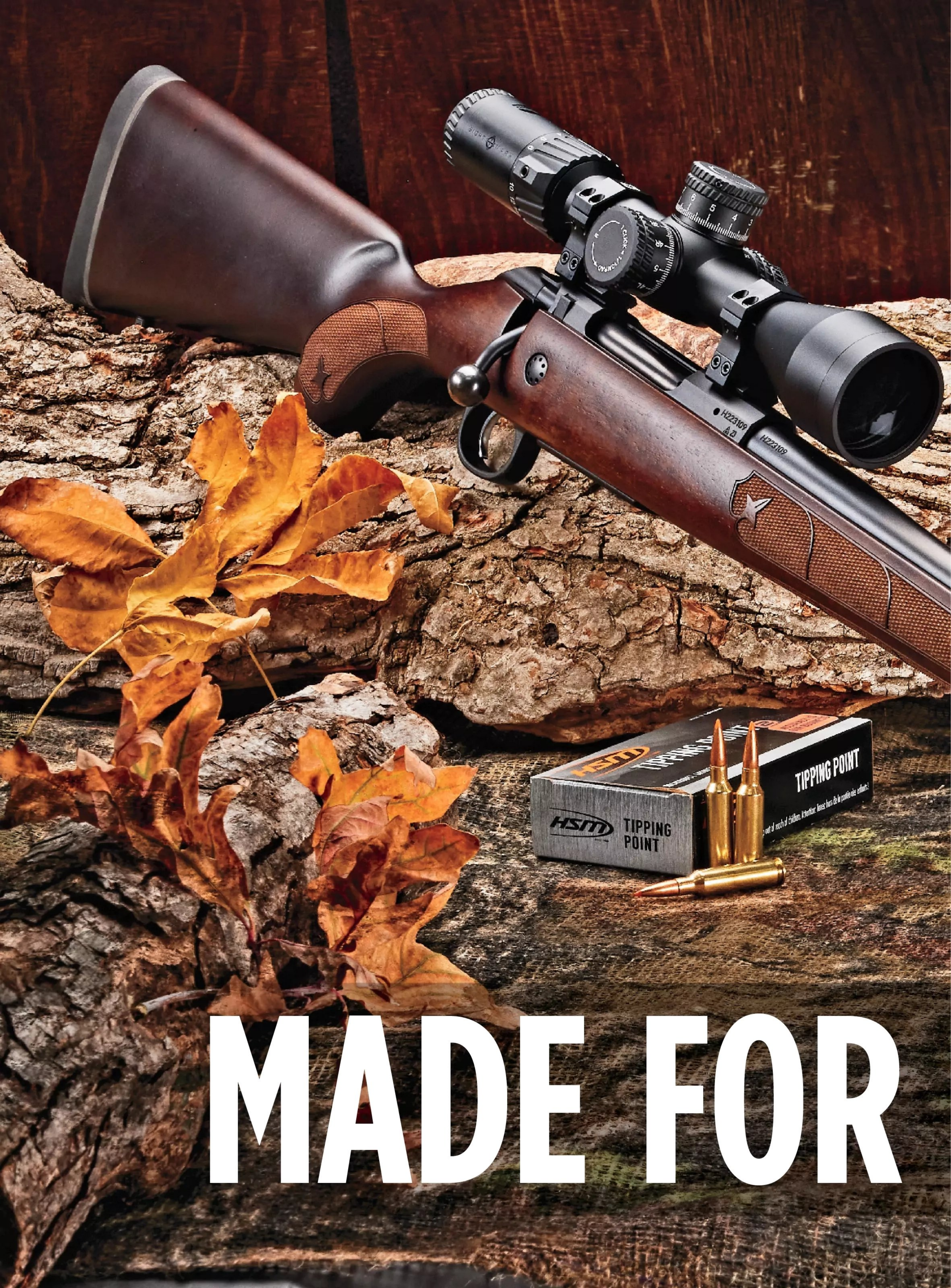
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BY JOEL J. HUTCHCROFT

WHEN *SHOOTING TIMES* REPORTED FOR THE FIRST time on CZ's new Model 600 bolt-action rifle in 2022, the writer (Joseph von Benedikt) said the Alpha version was "exquisitely engineered," "fascinating," "compelling," and "savvy." When he reviewed the Trail version in 2023, he said it offers "discrete capability." Well, now CZ has introduced a brand-new version of the Model 600 called the American. Based on Joseph's glowing evaluations of those other versions, I decided to take a good look at the new American myself. I'm glad I did because it turned out to be one of the most accurate rifles I have ever fired. In fact, CZ offers a sub-MOA accuracy guarantee for three-shot groups using match-grade ammunition with the new American.

First-Rate Features

Let's take a quick review of the Model 600 rifles in general, and I'll detail the new American version along the way.

Depending on the version, the Model 600 action is machined of steel or aluminum. The bolt features a controlled-feed extractor, and the bolt head has six locking lugs (two in tandem, in a three-lug pattern). The bolt head locks directly into the rear of the barrel.

The bolt body is steel, and the bolt knob is metal, wood, or polymer, depending on the variation. The American's bolt knob is steel. The bolt shroud is polymer, and when the rifle is cocked, a cocking indicator protrudes from beneath the rear of the shroud. The bolt throw is 60 degrees.

AMERICANS

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600 AMERICAN

MANUFACTURER	CZ USA cz-usa.com
TYPE	Bolt-action repeater
CALIBER	6.5 Creedmoor
MAGAZINE CAPACITY	5 rounds
BARREL	24 in.
OVERALL LENGTH	44.4 in.
WEIGHT, EMPTY	8.3 lbs.
STOCK	Turkish walnut
LENGTH OF PULL	13.9 in.
FINISH	Nitride action and barrel, varnished stock
SIGHTS	None, receiver is drilled and tapped for scope mounts
TRIGGER	1.75-lb. pull (as tested)
SAFETY	Two position vertical
MSRP	\$849

The vertical two-position safety, located on top of the grip in the rear action tang area and the rear trigger guard tang area, locks the bolt closed. Press the top end, or “button,” of the safety straight down to disengage the safety and use the tip of your finger to press up just behind the trigger guard to engage the safety.

A small squarish spring-loaded button on the right side of the action, just forward of the bolt handle, is pressed to unlock the bolt and to allow it to be cycled with the safety engaged. That same button serves as the bolt release for removing the bolt from the rifle.

The Model 600 American has a carbon-steel action, and it is profiled and drilled and

The new Model 600 American’s carbon-steel receiver is profiled and drilled and tapped for Remington 700-type scope bases.

tapped for Remington 700-type scope bases. There are three action sizes for the American rifle, and they depend on the chambering. Our rifle is chambered for 6.5 Creedmoor, and it has the medium-size ST2 action. It is the action length for .243 Winchester and .308 Winchester chamberings. The ST1 short action is for .223 Remington and 7.62x39 chamberings. The ST3 long action is for .270 Winchester, .30-06, and .300 Winchester Magnum chamberings.

The detachable box magazine is polymer, and it is a double-stack design that holds five cartridges. The magazine release button is located under the receiver ahead of the magazine. It slides forward about an eighth of an inch to lock the magazine in place.

The single-stage trigger is crisp and light, and it has minimal overtravel. It is



Located on top of the grip in the rear action tang area and the rear trigger guard tang area, the vertical two-position safety is unique. Pressing up from under the trigger guard tang engages the safety, and pressing down from the top disengages the safety. Note the cocking indicator under the polymer bolt shroud.

user-adjustable without removing the barreled action from the stock. The hex adjustment screw is located on the underside of the receiver just ahead of the trigger, and it has a broad head. Four adjustment positions are marked with the corresponding number of dots. The review sample rifle came with the trigger set on two dots, which is the second-from-the-lightest setting. Measured with my RCBS trigger pull gauge, it had less than 2 ounces of variation over a series of 10 tests, and it averaged 1 pound, 12 ounces. That's a little light for hunting purposes, in my opinion, but it was great for evaluating the rifle's accuracy from the shooting bench. According to CZ, the trigger can be adjusted from 1.35 pounds to 3.04 pounds of pull.

The stocks on the various CZ 600 rifles vary, depending on the version. On the American version, the stock is straight-grain Turkish walnut, and it has a varnish finish. It has checkering on the wrist and on the fore-end, in a classic fleur-de-lis pattern, and it has a contoured, 1-inch-thick recoil pad and sling-swivel studs in the usual locations. The buttstock has an American-style straight comb.

Depending on the chambering, the American comes with an 18-inch, 20-inch, or 24-inch barrel. All are cold-hammer-forged and free-floated in the stock's fore-end. The 6.5 Creedmoor rifle has a 24-inch barrel, and I would describe it as a semi-heavy contour. CZ says it's a light contour, but in my opinion, it is not a lightweight tube. The diameter right before where the muzzle threads begin measures 0.66 inch. The threads start 0.6 inch from the end of the muzzle, and they are American pitch. The twist rate for the 6.5 Creedmoor barrel is one turn in eight inches (1:8).

The Model 600 American feels rather hefty in my hands. And in fact, it weighs 8 pounds, 5 ounces, according to my digital scale. With the new Sightmark Presidio 3-18X 50mm scope I used for the shooting portion of this evaluation and a set of Steiner 30mm scope rings, the rig weighs 10 pounds, 5.8 ounces.

Speaking of the Presidio scope, the one I used features the company's MR2 reticle. The MR2 etched-glass reticle is illuminated (red in color), it's located in the first focal plane, and it consists of four solid posts with thin crosshairs and numbered holdover marks graduated in MRADs and a center dot. It is powered by a CR2032 battery, and it has six brightness settings. The scope measures 13 inches long and weighs 30.8 ounces. This rugged scope is intended for close-range to mid-range shooting, and it has fully multicoated lenses, knurled turrets, built-in zero stops, a handy magnification throw lever, and a 30mm tube. Constructed of aircraft-grade aluminum and hard anodized finished, the Presidio is nitrogen filled and IP67 waterproof, dustproof, fogproof, and shockproof. Parallax is adjustable from 15 yards to infinity. It is covered with Sightmark's lifetime warranty, and the MSRP is \$479.99.

A-1 Accuracy

For my shooting session, I chose a selection of hunting and match ammunition with bullet weights ranging from 120 grains to 143 grains. In all, I fired 16 different factory loads, and they



The polymer double-stack magazine holds five rounds. The magazine release is located under the receiver, and it slides forward to lock the magazine in place.



The single-stage trigger is user-adjustable, and it has four adjustment positions. The review sample's trigger was factory set so that the trigger pull measured 1.75 pounds.



As its name implies, the Model 600 American has an American-style straight-comb buttstock. It features a contoured 1-inch-thick rubber recoil pad.

MADE FOR AMERICANS



Barrel length and action size depend on the chambering. The review sample Model 600 American is chambered for 6.5 Creedmoor, so it has a 24-inch barrel and the medium ST2 action.

are listed in the accompanying accuracy and velocity chart. The loads were chronographed with a Competition Electronics ProChrono Digital chronograph placed 12 feet from the gun’s muzzle. All velocity data shown are averages of five rounds. The accuracy results are averages of three, five-shot groups for each loading fired from a benchrest at a distance of 100 yards.

The rifle’s best average accuracy came with the Winchester 142-grain AccuBond Long Range load. That load averaged 0.55 inch at 100 yards. Except for four loadings, each of the other 15 factory loads I fired averaged 1.00 inch or less, and the overall average accuracy at 100 yards for all 16 loads was 0.95 inch. That’s awfully good accuracy in my book.

The 6.5 Creedmoor ammunition doesn’t produce a lot of recoil (the average 140-grain hunting load generally produces somewhere around 14 ft-lbs of recoil), and in the relatively heavy Model 600 American rifle, recoil was hardly noticeable.

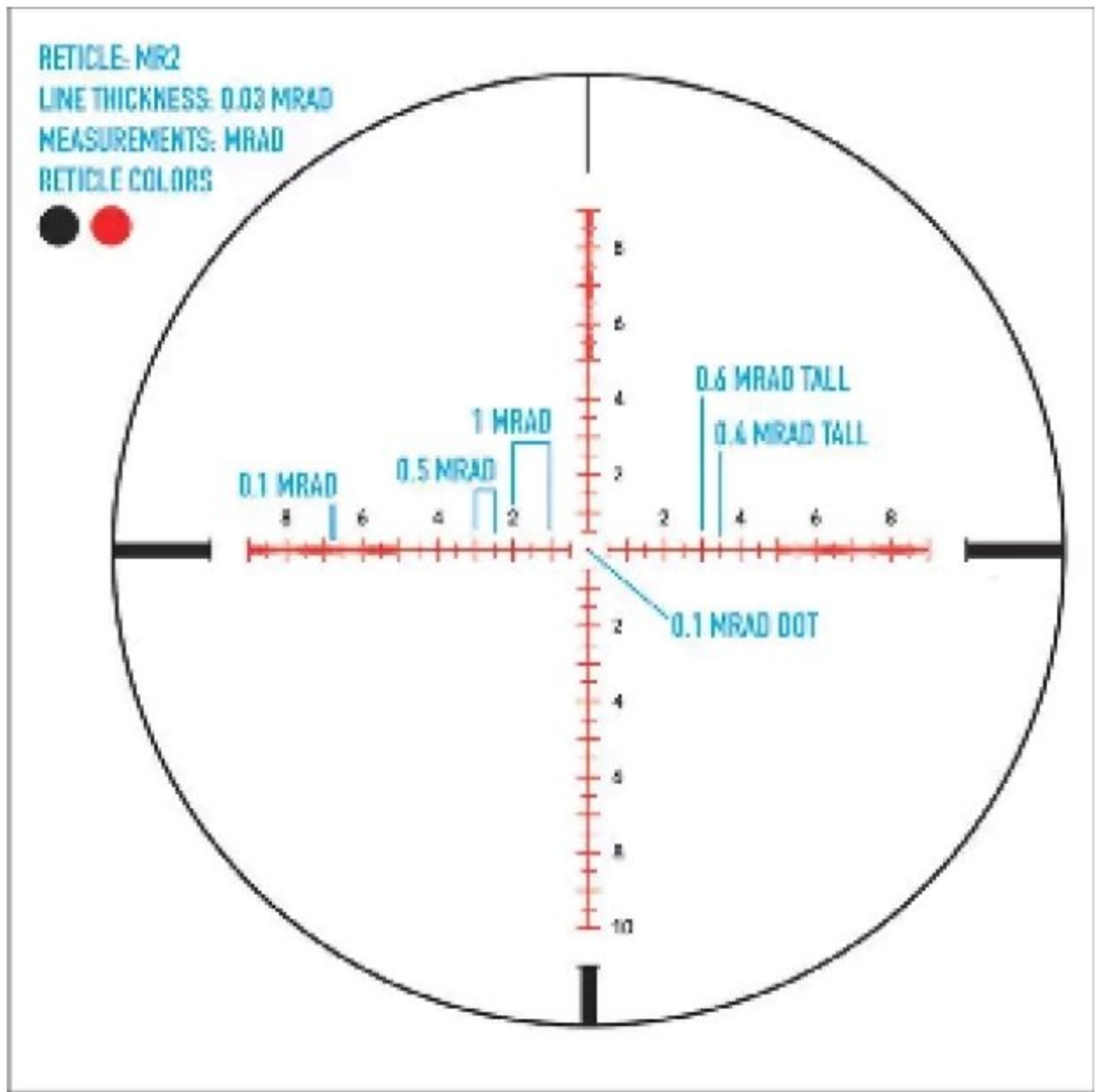
I just have to call out a couple loads from HSM. They were the second and third most accurate loads I tried, and they had the lowest velocity extreme spreads (E.S.) and standard deviations (S.D.). The Tipping Point2 loading is HSM’s newest 6.5 Creedmoor offering, and it is loaded with Hornady’s 140-grain SST bullet. It produced an accuracy average of 0.65 inch, an E.S. of 18, and an S.D. of 9. The HSM Trophy Gold ammo is loaded with a 140-grain Berger VLD Hunting bullet. This loading had an even better E.S. (12) and

S.D. (6), and its accuracy averaged a nice and tight 0.70 inch. I think both loads and Winchester’s AccuBond Long Range would be great for hunting deer.

Well, there you have a look at CZ’s new American version of the Model 600. The previous versions of this well-thought-out, delightfully designed, and excellently executed bolt-action rifle have been very well received by hunters and shooters, and I predict the American version will be too.

ST

CZ USA 600 AMERICAN ACCURACY & VELOCITY				
AMMUNITION	VEL. (F.P.S.)	E.S. (F.P.S.)	S.D. (F.P.S.)	100-YD. ACC. (IN.)
6.5 Creedmoor, 24-in. Barrel				
Barnes VOR-TX 120-gr. TTSX	2688	41	20	1.00
Browning 120-gr. BXS	2711	61	23	1.15
Winchester Deer Season 125-gr. Extreme Point	2686	44	21	0.95
Browning 129-gr. BXR	2847	36	11	0.75
Federal Gold Medal 130-gr. Berger OTM	2812	41	17	0.85
Federal 140-gr. Fusion SP	2664	42	15	0.80
Federal American Eagle 140-gr. OTM	2624	67	26	1.25
Hornady American Gunner 140-gr. BTHP	2608	30	10	1.10
Hornady Match 140-gr. ELD Match	2723	67	24	1.00
HSM Low Recoil 140-gr. Sierra Tipped	2269	31	13	1.00
HSM Tipping Point2 140-gr. SST	2501	18	9	0.65
HSM Trophy Gold 140-gr. Berger VLD Hunting	2766	12	6	0.70
SIG SAUER 140-gr. OTM	2490	36	14	0.99
Winchester 140-gr. Match BTHP	2633	57	22	1.50
Winchester 142-gr. AccuBond Long Range	2625	47	18	0.55
Hornady Precision Hunter 143-gr. ELD-X	2604	38	11	0.88
NOTES: Accuracy is the average of three, five-shot groups fired from a sandbag benchrest. Velocity is the average of five rounds measured 12 feet from the gun’s muzzle.				



Joel used a Sightmark Presidio 3-18X 50mm MR2 scope on the new Model 600 American. It features an illuminated reticle located in the first focal plane.

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Browning A-Bolt Mountain Ti in .300 WSM

FAVORITE MOUNTAIN RIFLES

HERE'S A QUICK
LOOK AT 10 GREAT
LIGHTWEIGHT
MOUNTAIN RIFLES
LAYNE HAS USED ON
SOME VERY MEMORABLE
BIG-GAME HUNTS.

BY LAYNE SIMPSON

HOW MUCH A MOUNTAIN RIFLE SHOULD WEIGH HAS YET TO be carved in stone, but eight pounds or less with scope is a goal to shoot for. In my mind, the Austrian-built Model 1903 Mannlicher-Schoenauer carbine in 6.5x54mm will always be the all-time classic, and mine weighs 6.6 pounds. The Model 1920 introduced during that year by Savage was America's first mountain rifle, and the one in .250-3000 Savage given to me by my wife Phyllis on a long-ago birthday weighs 6.25 pounds. I've taken deer and feral hogs with both rifles.

Most lightweight rifles built today have synthetic stocks, but back in 1984 good friend Jim Hill, owner of Alpha Arms, proved that a rifle with a nicely figured walnut stock could be built light, with the Custom grade in .284 Winchester I have used to take a variety of game tipping the postal scale at 6.8 pounds, including a lightweight 3-9X scope in a Conetrol mount. A gorgeous little rifle, it is a joy to carry up the steepest of mountains and quite accurate when it gets there. I also have the Grand Slam model in .25-284 with a laminated wood stock, and it weighs a half-pound more than the Custom. Quite accurate as well, it shoots flat and is one of my lucky mule deer and pronghorn antelope rifles. Here are brief looks at a few of the other great mountain rifles I have hunted with. Most are still with me, and the weights shown for each include a scope and mounts.

Weatherby Mark V VarmintMaster **7mm-.308 Improved, 7.1 Pounds**

There were no factory-built featherweight big-game rifles in 1975, so I decided to transform a Weatherby Mark V VarmintMaster. For those who are not familiar with that beautiful little rifle of yesteryear, its action is a drastically scaled-down version of the standard Mark V action, and it was available in .22-250 and .224 Weatherby Magnum. I had mine in .22-250 converted for a wildcat made by necking down the .308 Winchester case to 7mm and fire-forming to the improved shape. In addition to doing all of the required action work, gunsmith Wally Strutz of Eagle River, Wisconsin, ground the chamber reamer to my specifications and installed a Douglas 24-inch barrel that duplicated the contour of the factory barrel for a perfect fit in the trim Weatherby stock. Maximum velocities with bullets weighing 130, 140, and 160 grains were 3,180, 3,045, and 2,780 fps, respectively. This was five years prior to the introduction of the 7mm-08 cartridge by Remington.

Soon after the rifle was completed, many years of applying for a nonresident Shiras moose tag in Wyoming finally paid off, and I took a very good bull while hunting the Wind River area with outfitter Bud Callahan. During that same year Phyllis and I used the rifle to take excellent pronghorn antelopes on a Wyoming cattle ranch owned by longtime family friends. Months later, I headed to Rhodesia with a rifle in .375 H&H Magnum for buffalo and the little Weatherby for various antelopes up to the size of sables and greater kudus. A mature kudu bull can weigh as much as 600 pounds, and of all the antelopes of Africa, it is my favorite to hunt. A Nosler 140-grain Partition accounted for the moose, and the Wyoming antelopes were taken with the Speer 130-grain SPHC. In Africa, I mostly used the then-new Speer 160-grain Grand Slam. Most of the animals taken with the rifle through the years have given up the ghost with one shot.

Browning A-Bolt Mountain Ti **.300 WSM, 7.5 Pounds**

The A-Bolt was introduced by Browning in 1985, with the Mountain Ti version added in 1999. It has a stainless-steel barrel, a titanium receiver, and a very nice synthetic stock. Mine weighs 5.4 pounds, with a lightweight nylon sling, three .300 WSM cartridges in the magazine, and a Zeiss 3-9X scope attached with a Talley lightweight mount increasing it to 7.5 pounds. Available cartridge options ranged from .243 Winchester to .325 WSM. I have used mine on two hunts (in Alaska for moose, caribou, and black bear and in New Mexico for elk). It's a great rifle, but it was priced well over twice as much as other A-Bolt models, and that may be why it was offered for only a few years.

Prairie Gun Works Model 15Ti **.243 Winchester, 6.5 Pounds**

Ross Spagrud, who founded Prairie Gun Works in 1992 (now known as PGW Defense Technologies), built the very first rifle in 6.5 Shooting Times Westerner (STW) in 1999. While that rifle has taken a variety of game ranging in size from mule deer to elk, another PGW rifle in .243 Winchester built by Ross has traveled to more distant places. It has a Jewell trigger and a 22-inch Gaillard barrel.

Like the Model 18Ti in 6.5 STW, the Model 15Ti in .243 Winchester has a titanium receiver and a Kevlar stock. Despite a skinny barrel measuring only 0.625 inch at the muzzle, it consistently shoots three bullets inside a half-inch at 100 yards with various handloads, and it does as well with Hornady Precision Hunter factory-loaded ammo with the 90-grain ELD-X and Federal Premium ammo loaded with the Swift 90-grain Scirocco II. And the barrel does not have to be cooled between groups!

As hunts go, its crowning achievement thus far was for chamois and Himalayan thar in the beautiful yet extremely rugged Southern Alps of New Zealand. We were at 8,000 feet when I shot the chamois buck at 265 long paces, and it dropped where it stood. At a bit lower elevation on the final day, we spotted a good bull thar standing on a ledge at 327 yards. When the .243 rifle spoke, the thar dropped and tumbled a good distance down the mountain. Fortunately, there was no significant damage to its horns and magnificent mane.



This Prairie Gun Works Model 15Ti in .243 Winchester weighs 6.5 pounds with a scope, and Layne used it to take this chamois buck at high elevation in the Southern Alps of New Zealand.

FAVORITE MOUNTAIN RIFLES

Brown Precision 600 Super Light 7mm-.308 Improved, 5.8 Pounds

Chet Brown of Brown Precision is often credited with pioneering the development of fiberglass stocks during the early 1960s, and he eventually offered hunting rifles built around lightened Remington Model 600 and Model 700 actions. The 600 Super Light Chet put together for me in 1978 has one of the first Kevlar stocks he made, and the stock weighs 20 ounces. Among other modifications to the action, the dog-leg bolt handle was replaced by a Model 700 handle, and an external bolt release was installed. Gunsmith Wally Strutz had chamber reamers for the 7mm-.308 Improved, so he installed an extremely thin 19-inch barrel with a muzzle diameter of 0.494 inch. Despite the soda straw-thin tube, the rifle consistently shoots three bullets inside an inch at 100 yards but only if the barrel is allowed to cool completely between groups. Its favorite handload, the Speer 130-grain SPHC pushed to 2,950 fps by a maximum charge of IMR 4350 accounted for one of my all-time best whitetails.

Winchester Model 70 Sporting Sharpshooter 7mm STW, 7.9 Pounds

Thirty years ago I was asked to meet with a couple of U.S. Repeating Arms Co. officials to discuss several projects under development in the company's custom shop. One was a heavy-barrel target rifle called the Winchester Model 70 Sharpshooter. When asked for my opinion, I stated that it sounded like a good idea and went on to suggest adding an equally accurate hunting-weight version called the Sporting Sharpshooter. High on my list of suggestions were half-MOA accuracy and a weight not exceeding eight pounds with a scope mounted.

Several months later, I received the very first Sporting Sharpshooter built, and its thin Schneider barrel is in 7mm STW. That made U.S. Repeating Arms the first major company to offer the 7mm STW chambering. I am not sure who made the Kevlar stock, but it is quite light. Also available was a heavier version weighing about 8.5 pounds. While hunting with outfitter Ron Dube, I used the rifle to take a good mule deer, and we were surprised to see it feeding with a herd of bighorn sheep. That rifle has always been fond of Bill Steigers's 160-grain Bitterroot Bonded Core bullet, and I keep a few stowed away in his memory.

Rifles Inc. Strata Stainless 7mm STW, 6 Pounds

The idea of building super-light hunting rifles around highly modified Remington 700 actions did not originate with Lex Webernick of Rifles Inc., but he may be best known for doing so, and his work leaves nothing to be desired. I have a trio of



One of Layne's most-used mountain rifles is the 6-pound Strata Stainless in 7mm STW he used to take this black bear on Vancouver Island. Built by Lex Webernick of Rifles Inc. around a lightened Remington 700 action, it produces half-minute accuracy.

rifles built by him in .257 STW, 6.5 STW, and 7mm STW. Lex makes his own Kevlar stocks, and while writing this I placed the one from my 7mm STW on a postal scale, and it weighs 15.8 ounces. That includes a thick recoil pad custom-made for him by Pachmayr, aluminum bedding pillars, and sling swivel posts. Due to the larger hole through its barrel, the 7mm STW is lighter than its two mates but not by enough to matter. My rifles have hinged magazine floorplates, and those made by Lex with blind magazines weigh a bit less. With their favorite loads, the three rifles average close to half-MOA when their barrels are cooled between each three-shot group. Among other achievements, the rifle in 7mm STW has accounted for a very good black bear while hunting on Vancouver Island with Jim Shockey. Crowning achievements for the other two are a Coues deer in Old Mexico for the .257 STW and my second-best mountain caribou for the 6.5 STW.

Remington Model 700 Titanium .280 Remington, 6.8 Pounds

The Model 700 Titanium was introduced by Remington in 2001 with weight ratings of 5.25 pounds for the short action and 5.5 pounds for the long action. In addition to the titanium receiver, it has a deeply fluted bolt, a hollowed bolt handle, an extremely thin 22-inch barrel, and a Kevlar stock with a jet-black finish. Soon after the announcement, I received rifles in .260 Remington and .280 Remington, and while accuracy of the .260 was not bad, the .280 drove tiny tacks. And it was almost as accurate with Remington factory ammo as with my handloads. I have



The Model 700 Titanium rifle was introduced by Remington in 2001, and Layne used one in .280 Remington to take this whitetail buck. The rifle weighed 6.8 pounds with a scope, and it was quite accurate with handloads and factory ammo.

carried the rifle on several successful hunts, with the most memorable being with Eddie Stevenson for whitetails in Wyoming. The first version was replaced in 2007 by the Model 700 Alaskan Ti, which weighed about a half-pound more.

Kimber Model 84M

.308 Winchester, 7 Pounds

Some of the lightest and most accurate mountain rifles have been built by Kimber, and that started prior to the company's use of synthetic stocks. The Model 84M introduced in 2002 had a trim walnut stock with excellent lines and good checkering coverage. The one I had on hand for a few weeks was in .308 Winchester, and it weighed an ounce over 7 pounds with scope. In March 2001, I used it on a hunt for free-ranging red stag, fallow deer, and sika deer while hunting with New Zealand outfitter Adrian Moody. One of only two experimental rifles in existence at the time, its serial number was XKA02428. The hunt for stag was not easy, so I was glad my rifle was light. Three cartridges were used to bag three very nice trophies, so the Model 84M was obviously accurate enough as well.

Remington Model Seven FS

7mm-08 Remington, 6.2 Pounds

When longtime friend Dick Dietz at Remington learned that I would soon be hunting Sitka blacktail deer on the Queen Charlotte Islands, he called to inform me that he was sending the perfect rifle for that adventure. Conditions there are best described as wet, brushy, and a bit steep, intermingled with open clearcuts due to decades of commercial logging operations. A fairly short, lightweight, weather-resistant rifle chambered



The Model 84M rifle with walnut stock in .308 Winchester introduced by Kimber in 2002 weighed 7 pounds with a scope. Layne used one to take this free-ranging red stag in the mountains of New Zealand.

for a flat-shooting cartridge was just the ticket, and the Model Seven FS in 7mm-08 Dick sent my way in mid-1986 proved to be perfect. It was also available in .243 Winchester and .308 Winchester, all with 18.5-inch barrels.

At the time, Remington was just getting into the synthetic stock business and had yet to begin stocking rifles in-house, so the barreled action of my rifle was sent by Remington to Chet Brown of Brown Precision for fitting one of his Kevlar stocks. The stock weighs 20 ounces, and it has a gray camo finish. The little rifle proved to be quite accurate with handloads and Remington ammo loaded with a 140-grain PSP bullet. It rained hard for most of the week, but at noon on the final day, a 140-grain bullet zipped about 275 yards across a muddy logging slash and dropped the best blacktail buck taken during my hunting career. Remington ceased production of the Model Seven FS in 1989.



The Weatherby Mark V Ultra Lightweight rifle in .280 Remington used by Layne to take this Dall sheep in the Wrangell Mountains of Alaska weighs 7.4 pounds. It endured two weeks of being carried in extremely difficult terrain and shot accurately when put into action.

Weatherby Mark V Ultra Lightweight

.280 Remington, 7.4 Pounds

Hunting Dall sheep in the Wrangell Mountains of Alaska is not for the faint-hearted, or for those who are in less than good physical condition. Traversing extremely steep mountainsides with loose shale slides always makes me nervous, and glacier crossings can be equally exciting. For many years I have averaged pedaling 5,000 to 6,000 miles annually on my mountain and road bikes, but I knew that alone would not be enough. Prior to my first hunt in the Wrangells, I spent six hard months jogging, climbing high while wearing a heavy backpack, increased-intensity strength training at the gym, and equally important, eating right and shedding as much unneeded body weight as possible. Our home is only 952 feet above sea level, but Mt. Mitchell is not far away, and weekends of huffing and puffing at over 6,000 feet surely helped.

Each ounce of gear at the bottom of a tall sheep mountain weighs a pound or more during long climbs, so everything—including the rifle—should be lightweight but also durable. The Weatherby Mark V Ultra Lightweight in .280 Remington I used weighed 6 pounds, and I managed to keep it at 7.4 pounds with a scope, a sling, and a magazine full of cartridges. During those 10 days in the high country, I glassed more grizzlies

than I have ever seen on a hunt, and while I had no tag, just seeing them was one of the highlights I will never forget. The ram I took at 245 yards on the seventh day was not a record-book specimen, but it was mature, and it had a beautiful head. It was also the best we had glassed. Coming off the mountain, the guide packed most of the meat, while I had the horns, the cape, and the rest of the steaks and chops. As I sit working at my desk each day, that majestic animal reminds me of an unforgettable hunt in some of the most difficult terrain on the planet.

There continues to be a big demand among hunters for lightweight big-game rifles, and several companies offer at least one model. Those that spring to mind are Kimber, H-S Precision, Ruger, Springfield Armory, Wilson Combat, Savage, Howa, Brown Precision, Browning, Sako, Tikka, Nosler, and Weatherby. Most mountain rifles have turnbolt actions, but some single shots are quite suitable for carrying to great heights. I have taken quite a bit of game with a pair of Ruger No. 1A rifles in .30-06 and 7mm Mauser, and both weigh an ounce over 8 pounds. A Dakota Arms Model 10 in .270 Winchester I hunted with weighed a pound less.

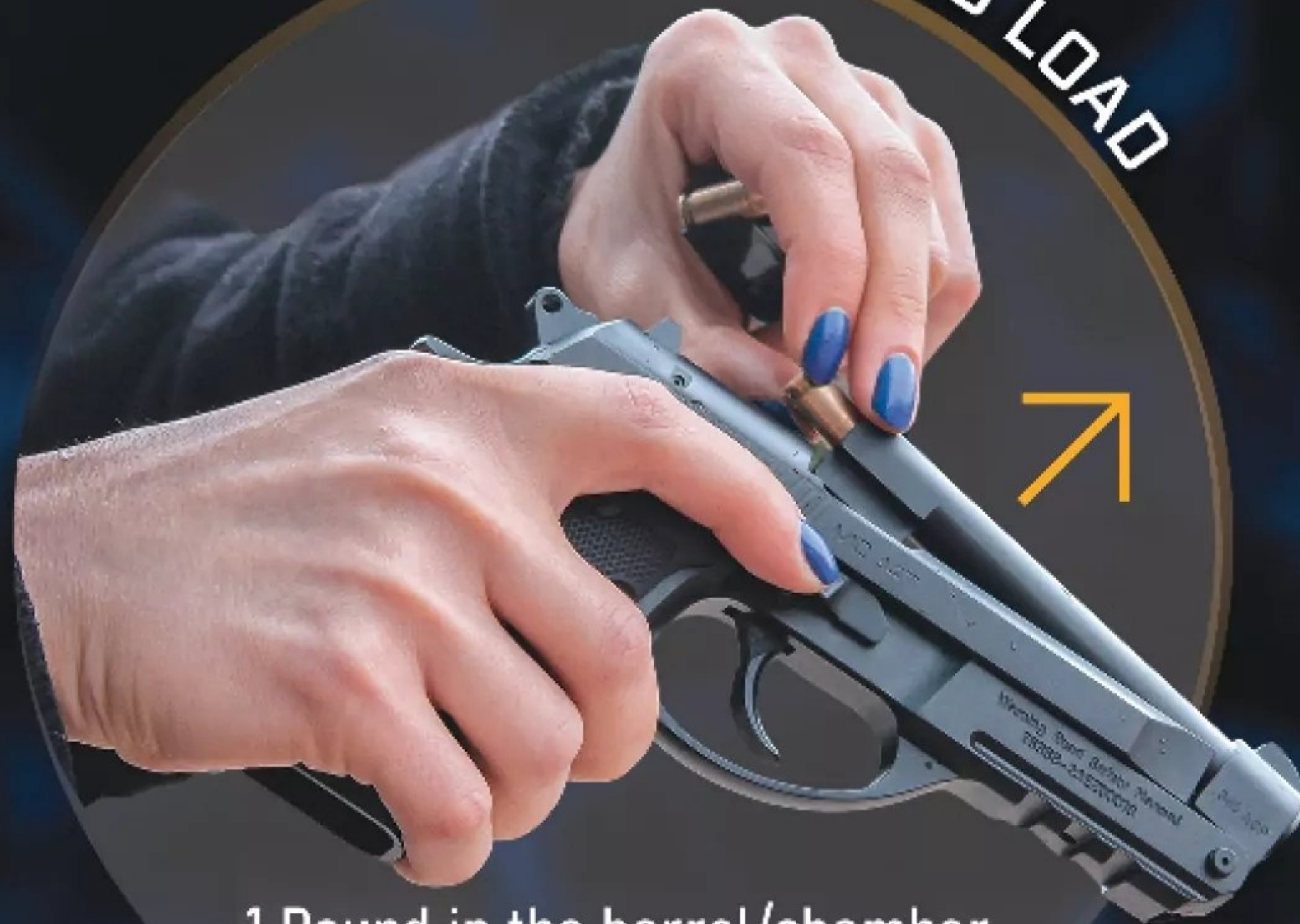
There you have it, a quick look at 10 of my all-time favorite mountain rifles that have been my companions on some very memorable hunts.

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STRAIGHT-PULL BENEFITS

SPEED AND SIGHT
PICTURE ARE THE TWO
MAIN ADVANTAGES
TO STRAIGHT-PULL
RIFLE ACTIONS.

BY CRAIG BODDINGTON

IT WASN'T THE KIND OF BUCK I HOPED HE WOULD TAKE. IN A week of unprecedented buck movement, Larry Tremaine was snake-bit. Didn't matter which stand, the bucks were somewhere else. Happens. Didn't help that he was handicapped by a special rifle he wanted to use. Don't blame him; if that rifle were mine, I'd use it.

After seven days of diligent effort, the 8-pointer we took to my barn wasn't a Kansas giant. Didn't matter. This buck was about the rifle, which all riflemen understand. Its original iron sights were a low-light handicap, but there was more. Nominally a 7mm, his cartridge, from a time when standardization was sissy, called for a COVID-unobtainable 0.287-inch bullet. So Larry was shooting 0.284-inch bullets rattling down the barrel. Modern bowhunters have greater range. Regardless of size, an awesome deer.

Based on vintage and bizarre bullet diameter, some have already guessed. Yep, Larry Tremaine was shooting an original .280 Ross sporter, made in Canada about 1909. The first 7mm "magnum," the .280 Ross approached 3,000 fps. Cartridge and rifle were proposed as alternatives to the British Lee-Enfield .303. A Canadian company had no chance against the British Empire, so the Ross cartridge and rifle are almost forgotten. The Ross rifle was not a turnbolt; it was a straight-pull action.



Speed

In the beginning there was Mauser, and it was good. Peter Paul Mauser rivals John Moses Browning as a firearms genius. Through the 1890s he continued to improve his turnbolt action. He got it so right in 1898 that we copied it closely with our 1903 Springfield. Maybe too close; Uncle Sam paid Mauser a royalty until we entered World War I.

By then, rotating bolt actions were used by the majority of the world's militaries. Variations of Mausers were adopted by the most countries, but there were others: Japan's Arisaka, Russia's Mosin Nagant, Italy's Carcano, and Great Britain's Lee-Enfield. Some, like the Mauser and our Springfield, cocked while opening the bolt. More, including the Lee-Enfield and our own 1917 U.S. Enfield, cocked the mainspring upon closing the bolt.

In the day, debate raged over the speed of Mauser's cock on opening versus cock on closing. Because of leverage, cock on closing is faster, but straight pull offers a different dimension...and is faster still. Larry's Canadian Ross rifle was just one of several early straight-pull designs. Austria's Mannlicher Models 1886, '88, '90, and 1895 were straight pull. In 1895 the U.S. Navy and Marines adopted the straight-pull Lee Navy 6mm rifle. Although its service life was short, it saw action in the Spanish American War, China's Boxer Rebellion, and the Philippine insurrection. Most lasting of the early straight pulls was Switzerland's Schmidt-Rubin, in service in from 1889 to 1958.

Clearly, Mauser's rotating bolt won. Only the Schmidt-Rubin survived into the 1920s. The next production straight-pull rifle was Browning's rimfire T-Bolt, introduced in 1965. Amazingly, there wasn't a centerfire straight pull in production until the Blaser R93 was introduced in 1993. Today, there are many new straight-pull bolt actions, but let's not get ahead of our story.

That straight-pull actions nearly faded away was never a matter of design failure. Rather, with late 19th/early 20th century manufacturing, straight-pull actions were difficult—and thus expensive—to make. The concept was always sound.

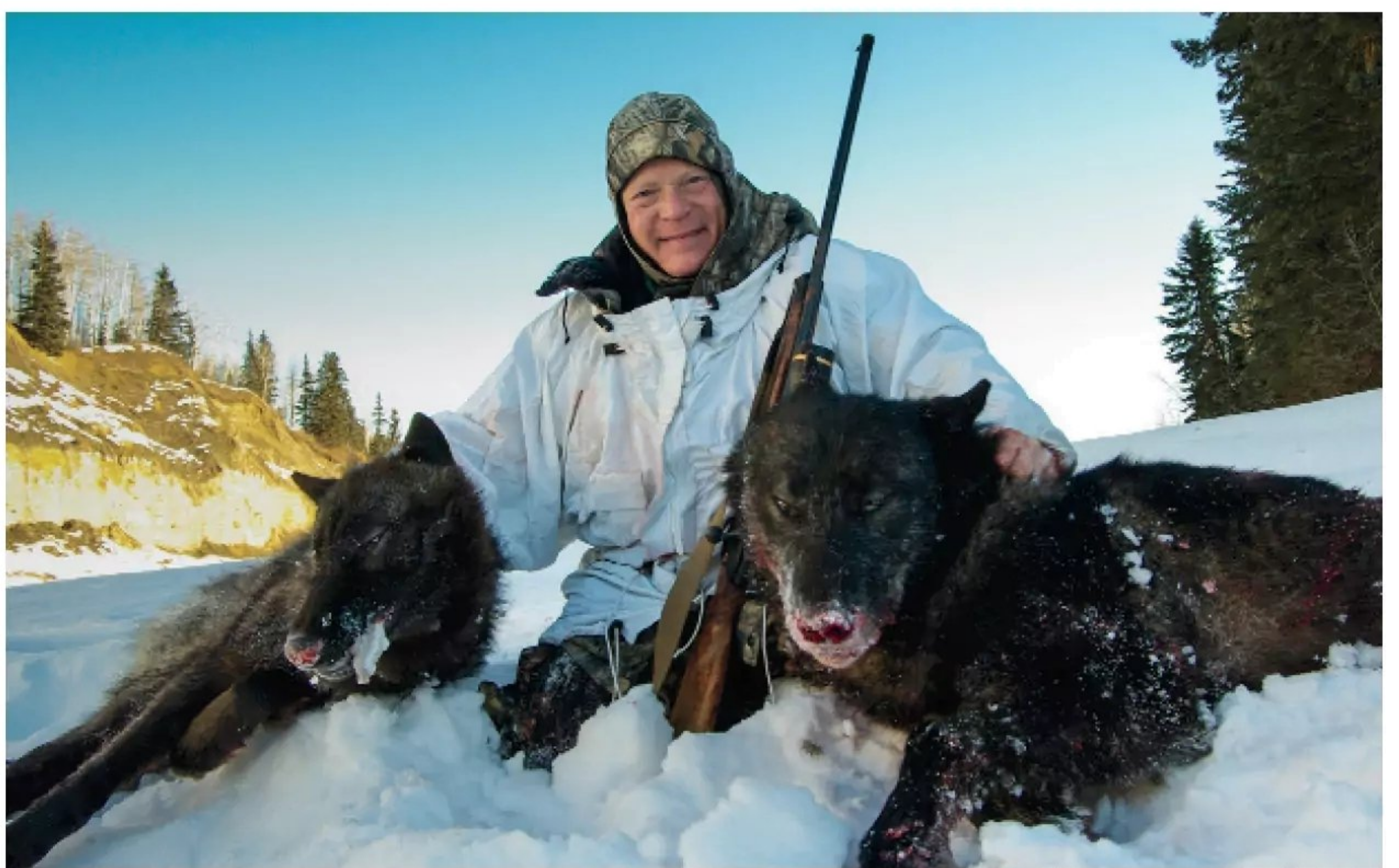
To operate a rotating bolt, it's necessary to push the bolt handle upward, pull the bolt all the way rearward, slam it forward to strip a cartridge from the magazine and into the chamber, then bring the bolt handle down to lock the



The Canadian Ross rifle was just one of several early straight pulls developed for military use. Canadian forces used it in World War I, but production ceased after the war.

action into battery. Using camming action, straight pull removes the up and down motion: Pull the bolt straight back, slam it forward, ready to fire. There is simply no question, the straight pull is faster.

Raw speed is always to the good for repeat shots, but not of critical importance in many hunting situations. Most new straight-pull designs are European, and for good reason—speed matters greatly to European hunters because of the popularity of driven hunts. Semiautos often are not legal over there, so the straight pull was developed as the next best thing, fast repeat shots with as little movement as possible. With practice, the speed of a straight-pull action is amazing.



Like many European straight-pull rifles, the Blaser R8 is a modular system. Uniquely, the trigger group is integral to the detachable magazine. The fast action combined with the ability to maintain sight picture allowed Craig to make a rare double on Alberta black wolves.

STRAIGHT-PULL BENEFITS

Sight Picture

But another benefit of the straight pull is, to me, even more important than speed.

Peter Paul Mauser intended his turnbolt to be operated from the shoulder, maintaining sight picture while working the bolt. A century ago, in a bolt-action world, this is how all armies trained their soldiers to operate their rifles.

I wonder how many of us who hunt with bolt actions train ourselves to keep the rifle on the shoulder and maintain sight picture while working the bolt? Recently, I had an Instagram

exchange with a young friend of mine. A pundit told him the “proper way” to operate a bolt action was to fire, bring the butt half-down, then roll the rifle a bit to the left (for a right-hander), offering the most leverage for operating the bolt. *No, no, and NO!*

The idea, with any manually operated repeating action, is to keep the rifle on the shoulder, maintaining sight picture while working the action. Smooth and simple with a slide action, a bit more difficult with a lever action, and most difficult of all with a turnbolt action. Okay, absolutely impossible for left-handed me when operating a right-handed bolt. Provided the bolt is on the proper side (left for lefties, right for the majority), learning to maintain sight alignment for repeat shots is the goal. It isn't easy...more difficult with a scope...still more difficult with today's almost universal cock-on-opening turnbolts, and complicated further by longer actions for larger cartridges. Few of us get it right every time. I switched to left-hand bolts 40 years ago, and I practice firing repeat shots while maintaining sight picture. In the field, I can pull it off most of the time, but I still find myself occasionally bringing the rifle half-down to gain more leverage to work the bolt.

Guess what? This is all so easy with a straight-pull action! It's sort of like the way a red-dot sight drives us to shooting with both eyes open. With greatly reduced movement, the straight pull drives us to flicking the bolt with the butt on the shoulder, cheek welded to the stock, eyes on the target, maintaining sight picture. Not quite as fast or movement-free as a semiauto, but almost.

Combining speed with the ability to maintain sight picture, straight-pull .22 target rifles own Biathlon (shooting and skiing), and straight-pull centerfires have become the most popular action among European hunters...almost all of whom do at least some driven hunting. I'm sure most of us have seen clips from *Wild Boar Fever*. It's a joy to watch skilled shooters work a straight-pull action on moving targets.

Europeans are better at this than we are. Again, because of their cherished driven hunt, they have more opportunity to practice. Most European ranges include running (boar, deer, even moose) targets. Less common, there also are live fire “shooting theaters,” shooting at projected images, great fun. The only way to get really good at hitting moving game with a rifle is to shoot at moving targets...with a rifle.



Craig used a straight-pull Merkel RX Helix on a roebuck hunt in England. Even though the bolt was on the “wrong” side, the rifle was extremely accurate and got the job done.



The Austrian-made Strasser RS 14 is an attractive straight-pull rifle with switch-barrel capability. Craig used one in 6.5 PRC to take this management 8-point whitetail in Texas.

Getting the Hang of It

Because the R93 was first, Blaser has been dominant in Europe. Although superseded by the R8 in 2008, the R93 remained in production until 2017. The Blaser is not an inexpensive rifle. Considering that, an astonishing 200,000 R93s were produced, with the R8 closing fast.

Honestly, American shooters have been slower to accept the straight-pull concept than our European counterparts. Various factors are at play. Little American hunting is as fast paced as the European driven hunt. When more speed is desired, in most jurisdictions, we can use semi-autos. And the fast all-American lever action, rarely seen in Europe, remains popular.

Unfortunately, cost creeps in. Most straight pulls are European, and most are costlier than very serviceable domestic bolt guns. Many are what we might consider “fine guns,” no pricier than a domestic semi-custom but far beyond “basic.” However, this is also a cultural issue. European hunters are often limited in the number of firearms they can own, so they are accustomed to paying more to get exactly what they want. Also, many of the European straight pulls are switch-barrel rifles. This is important to Europeans because an additional barrel is usually not on a permit as an additional firearm. We Americans just don’t worry about these things!

Finally, American shooters have often been slow to embrace new technology. Remington and Winchester had reliable semi-auto sporters in the first decade of the 20th century. They sold, didn’t burn up the world. After World War II, it was widely predicted that the self-loader would quickly become the dominant sporting rifle action. Didn’t happen. Although a phenomenon today, the AR-15 platform, developed in the 1950s, was in its 40s before it caught on.

To tell the truth, the first time I tried a straight pull, I didn’t care for it. It was in the late ’90s, when the R93 was just coming into the States. Biggest problem: I was the wrong writer to take it for a cruise! The test gun was, of course, right-handed. Right-handed shooters rarely get stuck with a left-handed bolt, but it happens to southpaws all the time.

Like most lefties, I grew up with right-handed bolts. I can still make them work, reaching over the top. Wow, with a straight pull, double-awkward. In fact, to properly operate a straight pull, let alone realize its benefits, the bolt simply must be on the proper side. Most European straight pulls are available with left-hand bolts. The Savage Impulse, uniquely, has a bolt handle



Made in France, the Chapuis ROLS combines traditional classic lines with an ultramodern straight-pull action. The bolt can be switched from right-hand operation to left-hand operation, which Craig greatly appreciates.

that can be switched from right to left in seconds. Clever. That right-handed R93 was a switch-barrel with .22-250 and .270 barrels. Both were wonderfully accurate, engineering fantastic. No wonder I wasn’t properly impressed. Again, with a straight pull, the bolt handle must be on the proper side!

Even then, there’s a learning curve involved. The back-and-forth bolt movement is entirely different from the rotating bolt we are used to. On many modern straight pulls, what looks like a tang safety often isn’t. Instead, it’s often a cocking lever. Pushing it forward cocks the mainspring; releasing it de-cocks the rifle. Wonderfully safe, but that, too, requires getting used to. It takes more thumb pressure than any safety. Most of us will flub the cocking lever...once.

In early 2010, when the R8 was introduced into the U.S., Blaser brought a group of writers to Texas, not to hunt, but to shoot the rifle on a variety of ranges, including a running boar. This time, they did something smart: They had left-handed bolts on hand. It didn’t take long to become confident, and not much longer to fall in love. I bought mine a few months later. It’s been a favorite ever since.

Early on, I took the Blaser for brown bear in Romania, with a .338 barrel. First night, not yet sundown, a good boar stepped out. This wasn’t my first try for a European brown bear, so I was in no mood to mess around. The first shot felt good, looked good, but I kept shooting. As big bears often do, he dropped to the shot, rolling, dark forest very close. I shot him twice more, flick, flick, so much quicker than would have been possible with any rotating bolt. I don’t use any make or action type all the time, but I was sold on the straight pull—and still am.

STRAIGHT-PULL BENEFITS



The U.S.-made Savage Impulse is the most economical straight-pull rifle, and uniquely, the bolt handle can be instantly switched from the right side to the left.

Choices

Because the demand is so much greater in Europe, various straight-pull rifles are not marketed in the U.S. I claim no familiarity with all, and there are several that I've never laid eyes on. I'm sure all are good, but I'm not about to suggest better or best.

After 13 years of hard use, I have the most familiarity with the Blaser system, so it wouldn't be a fair comparison anyway. Some years ago, I borrowed a Merkel RX Helix on a roebuck hunt in England. Impressive rifle...but it had a right-hand bolt. Very accurate, I shot three roebucks with it, but I'd be lying if I said I got a true feel for it. Some years back, I also used a Heym SR-30. In production since 1996, so one of the "older" straight pulls, it's a marvelous rifle...like all that bear the Heym name.

The first time I ever saw the Austrian-made Strasser RS 14 straight pull, a switch-barrel design, was last November in Mozambique. My friends Gordon Marsh and Bill Green shared one, with 6.5 PRC and .416 Ruger barrels. On the range, it was wonderfully accurate. Switching barrels back and forth, they used it for everything from small antelopes to buffaloes and hippos. Later, I received a test rifle with left-hand bolt and barrels in 6.5 PRC and .375 Ruger. Not much that setup couldn't do.

The Strasser is a wonderful piece of engineering, carrying its own tools for disassembly and changing barrels. The trigger assembly pops out, nesting an Allen wrench for removing the forearm. Remove the forearm, and it nests a wrench for barrel removal. I received the rifle at the tail end of deer season, still haven't used it as much as I'd like to, but I was able to help my son-in-law culling some management deer on his Texas ranch. The Strasser proved very accurate, the bolt operation pure straight pull.

At least in the configuration I've been shooting, it's a beefy, heavy rifle. That's not terrible because gun weight is always the

simplest way to reduce recoil. I like it, intend to shoot a buffalo with it later this year. With that in mind, the one thing that concerns me is that its flush-mounted in-line magazine is limited to just two rounds in the larger cartridges.

Perhaps the latest straight pull to reach our shores is the Chapuis ROLS, introduced in France in 2017, but is just now coming into the U.S. It is switch-barrel, but my ROLS test rifle is chambered to an archaic (though still wonderful) cartridge called .30-06. Famous in France, well-known in Europe, Chapuis is a small family gunmaking firm in southeast France, now under the Beretta umbrella. The marketing guy, my old friend Tom Leoni, saw fit to send both right- and left-hand bolts. Allowing me to appreciate how it feels right (left)...and how it feels wrong (right). The ROLS is an elegant rifle, in lines very traditional, in operation modern straight pull. The trim, flush-mounted magazine is rotary. So far, I've only had it to the range a couple times. Excellent accuracy, wonderful trigger, hoping to spend more time with it.

And then there's the Savage Impulse, the first domestic straight-pull centerfire since the Lee Navy and the Canadian Ross, both long gone a century. Interesting. Following the Savage credo, the Impulse is priced friendlier than European straight pulls. Not as fancy, but a fine basic rifle that, like all Savages, shoots well...just happens to be a straight pull. It has the only right-left-switchable bolt handle I've seen, endearing it to my southpaw self. The Impulse was introduced in 2021.

That's where we are right now, but that ain't all, folks. Also in 2021, Beretta introduced its switch-barrel, straight-pull BRX1. So far only in Europe, but I'm sure we'll see it here soon. What remains to be seen is whether I am some kind of freak or if the American market will embrace the straight-pull concept as I have. Surely, I'm not the only American hunter who appreciates speed and constant sight picture. **ST**

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Federal's Custom Shop loads precision hunting ammunition by hand, one step at a time, using carefully selected premium components.



CUSTOM-CRAFTED CARTRIDGES

FEDERAL PREMIUM HAS A CUSTOM SHOP, AND ACCORDING TO THE AUTHOR, IT PRODUCES THE FINEST HUNTING AMMO HUMAN HANDS CAN CREATE.

BY JOSEPH VON BENEDIKT

HISTORICALLY, SHOOTERS HAVE HAD TWO ammunition options: mass-produced factory loads and carefully crafted handloads. The former didn't require any precious time to obtain but were generally less accurate. The latter took time and attention to work up and create, but were usually very accurate. But now there's a relatively new dynamic at play. Barnes and Federal and perhaps one or two other ammo companies have introduced "custom shop" ammunition. I've test-fired and hunted with ammo from both sources, and it's great stuff.

Recently, I had the pleasure of touring Federal's custom-loading facility, and it was impressive, to say the least. I've been handloading for 35 years, and in the one morning I spent watching and interviewing the technicians at Federal, I learned several significant things about the art of crafting cartridges as perfect as human hands can make them.

As I entered the Custom Shop, escorted by Federal's Director of Media Brian Kelvington and Custom Shop Chief Engineer Paul Furrier, the first thing I was struck by is the fact that the expert loaders inside were wearing dust-free smocks or jumpsuits and lint-free, static-eliminating gloves. That's a bit overboard, I mused, but as I watched and learned, I realized it's an important part of the ethos of perfection the shop maintains. The specialized clothing has the added benefit of reducing potential toxic lead exposure.

Custom Shop Offerings

The Custom Shop has two primary areas—one for loading centerfire rifle ammunition and one for loading shotshells. I was interested to find that the shop loads a lot of specialty shot, such as tungsten and bismuth. I'm no shotshell expert, but I was fascinated by the boundaries Federal's specialists are pushing. "We have customers shooting 3.5-inch 10-gauge turkey loads and routinely dropping gobblers out to 100 yards," Quality Assurance Technician Trevor Alt told me.

On the rifle side, the Custom Shop not only creates an elevated level of quality, but it also loads obscure cartridges. If brass cases are available for a cartridge, they can load it. Whether it's an uncommon but cult-favorite modern precision cartridge like the 7mm RSAUM or a century-old classic big-bore metric thumper like the 9.3x62, the Custom Shop can load it. And within reason, you can have your choice of projectiles, too.

"Within reason" means a couple of things. First, any given projectile must meet the Custom Shop's rigorous quality and performance standards, or they won't use it. Second, the bullets have to be in stock or readily available.

Now, that latter stipulation is less challenging than you might think. Even—or perhaps I should say especially—during the COVID pandemic, Federal's Custom Shop had ready stock of most premium projectiles, from most top-shelf brands, on hand for all the common calibers.

Plus, thanks to Federal's excellent working relationships with nearly all the best bulletmakers—including Barnes, Berger, Hornady, Nosler, Swift, and so forth—the Custom Shop can generally requisition a box of component bullets from the main assembly line. Since Federal buys by the pallet, there are generally component bullets—even the ones scarce as hen's teeth—in the plant.

And let us not forget that Federal makes some of the best projectiles on the planet right there in-house. I refer particularly



A brick-and-mortar facility staffed with some of the best minds in the field, the Custom Shop generates rifle and shotgun ammunition of unbeatable quality.



Step one of the loading process is selecting perfect cartridge cases. An amazing number of cartridge cases are discarded during the inspection process.

to the Trophy Bonded Bear Claw family of bullets, including the Terminal Ascent and Trophy Bonded Tip.

As a result, if you need ammo for, say, your favorite custom 7mm STW and really want to shoot 155-grain Terminal Ascent bullets for an upcoming wild sheep hunt you finally drew after applying for 30 years, the Custom Shop can help you out—even if no other place in America has 7mm Terminal Ascent bullets in stock.

The ammo is expensive, but in addition to their "We can provide it when no one else can," advantage, its quality does justify the cost.

The Loading Processes

After my tour through the Custom Shop, I persuaded Alt to walk me through the step-by-step process it uses to load rifle cartridges. Here's a recap.

CUSTOM-CRAFTED CARTRIDGES

With a massive box of shiny nickel-plated cases at hand, Alt showed me the Custom Shop's brass selection process. Visual and instrumental inspections deem any case with any flaw—no matter how superfluous, tiny scratches, dings, burrs, anything—unfit. I was at first appalled, then impressed, at the high number of discards. Roughly estimated, 40 to 60 percent of those brand-new cases ended up in the recycle bin.

Once past initial selection, rigorous case mouth prep is performed on each case. After trimming to perfect, square-mouthed length, the outside rim of the case mouth is deburred gently, and the inside edge is deeply chamfered with a low-drag chamfer tool.

Surprised at how much material the technician removed during the chamfering process, I had to ask: "Is there a reason you cut so much off the inside?"

Eyes twinkling in a sideways glance, Alt responded, "That's one of the things we've found that's really important to accuracy. Most folks," he added, "don't chamfer nearly enough."

"Without enough chamfer, you introduce a lot of potential issues. Case mouths peel shavings off the bullet sides. Hard edges inside the mouth can ding or scratch the boattail as you begin seating the bullet." He shrugged. "And so on."

I watched his technique. Even though he was removing a lot of material, he used a very light touch against the cutter, and he kept each case in position for quite a long time. "You're cutting pretty slowly," I observed. "Why?"

"Yeah, that's important," Alt responded. "You can cause problems if you cut too fast." He didn't really elaborate, but my mind filled in the blanks—distorted case mouths, tooling scratches in the bevel, uneven depth.

After being primed with Federal Gold Medal primers—a relatively straightforward operation with simple attention to primer depth in the pocket and seating pressure—the cases were ready to be charged.

Custom Shop lead Paul Furrier is also Federal's primary specialist on gunpowders. This lends the shop an undeniable advantage: No one understands how to achieve optimal burn-rate compatibility, and best-possible consistency and velocity, better than Furrier.

A row of A&D FX-120i lab-grade scales with linked powder dribblers dispenses charges. The FX-120i is debatably the most accurate instrument of its type—generally more of a commercial-grade charge dispenser than a consumer product. Rhythm and a consistent motion were employed for each charge dumped into a machined-aluminum funnel with small flutes on the inner surface.

Bullet selection is dictated by the customer. Custom Shop techs can offer experience-based perspective on accuracy potential, and in some cases, if necessary, accuracy potential rightly takes a back seat to terminal performance—such as when loading big-bore cartridges for dangerous game.

Always curious about projectile performance—on every level (accuracy, aerodynamics, and terminal)—I inquired what hunting bullets the Custom Shop finds to be most consistently accurate.



Powder charging is accomplished using weighed charges thrown by some of the most sophisticated lab-grade scales on the market.

"Bergers, of course," chimed in Furrier. "They always shoot great. And we get really good results out of Hornady's ELD-X bullets. They're consistent and very easy to work up a good load with."

"Nosler AccuBonds...Barnes TTSXs...we get them to shoot great too. And of course, we've really got our Terminal Ascent bullet figured out. If you know how to load it, that's a fantastic-shooting bullet."

It's worth noting that although it certainly could craft target ammunition, Federal's Custom Shop rarely does. Nearly everything it builds is for hunting.

As I perused the iron shelves deeply laden with boxes of component bullets, I was impressed to see painstaking charts that recorded each lot's measurements and consistency, with particular emphasis on base-to-ogive dimensions. It was startling to see vast discrepancies in standard deviations in some of the most popular bullets on the market, and others, less known, with consistency that some match bullets would envy.

Bullets are seated into selected, prepped, primed, and charged cases using massive, incredibly rigid and stable RCBS Summit presses. "Watch," Alt advised as the white-smocked tech seated at the press slipped a charged case into the shellholder. Paying close attention, I noted that he gently started just the base of the bullet into the case mouth, then rotated the cartridge with the partially seated projectile a third of a turn, and bumped it a bit deeper. Once more he repeated the movement and finally seated the bullet to full depth.

"Why?" I had to inquire, turning to face my host.



Bulletseating is given an inordinate amount of attention. A cartridge discarded due to excessive bullet run-out at this stage is a costly loss in time and resources.



Final inspection includes testing each cartridge on a concentricity gauge. Very little run-out is tolerated.

“We’ve found that we just get better bullet concentricity with that method,” he explained, motioning me to another bench topped with a sophisticated concentricity gauge. “We hold to pretty rigorous standards.” Inserting a freshly loaded round, he demonstrated where he places the probe against the ogive of the newly seated bullet, and rotated the case slowly, scrutinizing the micro-sensitive dial for movement. The needle quivered

but didn’t move appreciably. “This is the worst step to have fail,” he said as he placed the cartridge in the pass rack. “After all the other work we’ve gone through, we’ll do whatever it takes to seat bullets straight.”

It sure isn’t time-effective, I mulled to myself, as I watched the tech at the seating press methodically and slowly seat another bullet. But then, fast production isn’t what the Custom Shop is all about. All else takes a back seat to perfection.

In the Field

In recent years I used two different Federal Custom Shop loads for very significant hunts. The first was on a 2021 Rocky Mountain bighorn sheep hunt, the first and likely only of my life.

For the hunt, I borrowed my wife’s Gunwerks ClymR mountain rifle chambered in 6.5 PRC. I’m a huge fan of Federal’s Terminal Ascent bullet, and Senior Media Relations Manager J.J. Reich had just informed me that Federal was about to launch a 6.5 PRC load with the 130-grain Terminal Ascent. Production ammo was not available, so J.J. kindly expedited an order through the Custom Shop for me. Within a week I was shooting 0.60-inch groups on a 100-yard target.

Before departing for my hunt, I validated trajectory out to 600 yards. The load provided stellar ballistics and accuracy in the Gunwerks rifle. Just a few days later, I lay in the rocks at 12,200 feet elevation, aiming downward at a 35-degree angle, and shot a 14-year-old ram standing 591 yards distant. It was the oldest bighorn sheep taken on that mountain range in recorded history.

My other hunt with Federal Custom Shop ammo was more recent. In December 2022, I was fortunate enough to pursue desert mule deer deep in West Texas. This time, the Custom Shop loaded 155-grain Terminal Ascent bullets in 7mm RSAUM ammo. Before hunting, I validated the load’s trajectory out to 800 yards. I sure didn’t want to shoot that far on a deer, but it was fun knowing that the rifle and load were capable.

A day or two into the hunt, another hunter’s guide showed up with fresh footage of a truly unique buck. It had a tremendous 4-point main-frame right side with a long drop tine off the main beam and a broken-off brow. His left side was stunted, gnarly, and blessed with a heavy club-like drop tine off the antler base. It wrapped around in front of the buck’s left eye.

CUSTOM-CRAFTED CARTRIDGES

For whatever reason, that guide's hunter hadn't shot the buck. "I'm not even a mule deer fanatic, and this old buck had me shaking!" the guide told me.

"Let's try and find him tomorrow," I said without hesitation. My guide was already nodding in agreement.

Not long after dawn the next day, I got lucky and spotted two deer moving far away, just about to vanish over a distant ocotillo-covered desert ridge. We got the spotting scope on them just in time; it was the nontypical buck, tending what appeared to be a hot doe.

Moving fast, we closed the distance, prowling through cactus patches and attempting to maintain a visual on the area the buck had faded into. It proved impossible. I dialed my Leupold 3-18X 44mm VX-6HD scope down to minimum power as the brush and ocotillo closed in around us. So much for long-range shooting.

We were close, nearly too close, when we caught a glimpse of the buck. He passed through a gap in the cactus, skylined, striding with slow purposeful steps after his doe. I could only see his deep-forked 4-point side, with the long drop tine. Breath gone, heart racing, my brain registering that if he'd had two similar antlers, he'd be a solid 200-inch buck, I crept forward with my guide.

We must have made enough sound to distract the buck from the receptive doe. The next time I saw him he was standing 90 yards distant, glaring a hole in me, quartering away. I glued the crosshairs to the rear of his ribs and pressed the trigger.

One-hundred fifty-five grains of bonded lead and copper impacted with a welcome wallop. The buck kick-leaped and was gone. Seconds later, the tips of a gigantic yucca plant quivered and shook for several seconds, even though there was little wind.

I rightly figured the buck had fallen against the yucca cactus. We found him against it, his gnarled, stunted antler wedged deep into the rocks and dirt beneath. Later, the buck's age was estimated at nine years or more—a rarely old mule deer.

Since the Custom Shop ammo is built to order, not pulled from a shelf and shipped the same day, you can plan on a couple weeks' wait for the shop to create and ship your cartridges.

Federal's Custom Shop website lists popular loads by caliber, bullet style, and so forth. If you don't see the cartridge you want, call the shop at (800) 648-9624, and if cases are on



Joseph has successfully used Federal Custom Shop ammo on two memorable hunts. One was for Rocky Mountain bighorn sheep, and one was for desert mule deer in West Texas.

hand or can be found, the shop will load your ammo if possible. Such was the case with my 7mm RSAUM load, which isn't listed on the site.

Any time you need a special load but can't find the bullets you want, or need tuned handloads but don't have the time to create them yourself, or simply want the best professionally created ammunition available, turn your mind to Federal's Custom Shop. As the shop's saying goes, "Handcrafted ammunition, built just for you."

ST



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ONE FOR THE AGES

IF YOU'RE PROWLING THE USED-GUN RACKS FOR AN AMERICAN-MADE DOUBLE, YOU CAN'T GO WRONG WITH THE CLASSIC SAVAGE/FOX BST.

BY PAYTON MILLER

THERE WAS A TIME WHEN GOOD AMERICAN-MADE side-by-side shotguns were fairly common and could be had in a variety of price ranges. In fact, there was a time when “side-by-side” and “shotgun” were synonymous. When it comes to twin barrels these days, over-unders rule the roost, as far as sheer numbers—and competition mojo—go, although side-by-sides still hold a magical appeal to traditionalists, guys who aren’t put off by a “two-lane” sighting plane.

Of course, there’s always the side-by-side import option, which covers the financial span from Brazilian and Turkish imports on up to the Beretta 486 Parallelo and then *way* up to the Krieghoff Essencia and, of course, the high-end English guns requiring fitting and often a multi-year wait. But I’m talking American-made here. And the operative term, in most cases, is “out of print.”

Relatively recently—well, from 2002 to 2006—Ruger gave the side-by-side market a very respectable whack with its Gold Label, which, in the end, proved too costly to make. Winchester offered the Model 21 from 1931 to 1961, but it was a premier item and priced accordingly. Then there were such iconic names as Parker, L.C. Smith, Lefever, and Ithaca, all of which are revered by lovers of American side-by-sides.

But the great, high-end (read: obsolete) American side-by-sides can get a bit scary pricewise. So what about something a bit less, well, dear? Well, how about the Savage/Fox B series? There were several variants in the line, which was a fairly long-lived one (1940 to 1988, when the final BSE variant bit the dust).

Variations on the B-theme included 12, 16, 20, and .410 chamberings; 26- to 30-inch barrels; double and single triggers; pressed and cut checkering; extractors and auto ejectors; and casecolored and satin chromed frame finishes.

All featured beefy boxlock actions and two-position tang safeties. To be sure, they don't have the svelte appeal of a pricey English "game gun," but they're solid, well built, and last darn near forever. A good side-by-side is still a joy. (My dad used an old Ithaca NID in a leg-o'-mutton leather case that I wish I had today.)

The Fox specimen I was lucky enough to lay hands on is the BST in 20 gauge (3.0-inch chambers). It has 28-inch barrels, a vent rib with a mid-bead sight, and a very nice case-colored receiver with the old-timey smiling Fox logo on the underside of the breech forward of the trigger guard. It is in mint condition and has spent its life "cased and quiet" for the most part. Other pertinent features include a single nonselective trigger, extractors (no auto ejectors), a black walnut stock with a high-gloss finish, a somewhat beefy beavertail forearm, and a pistol grip buttstock with pressed checkering and a black plastic buttplate.

Since the BST was discontinued in 1965, choke tubes weren't an option, so this one is strictly old-school with fixed Modified and Full chokes. I measured the constriction of both barrels and found the left barrel (Full choke) miked 0.590 inch, while the right-hand tube came in at 0.604 inch. Strictly speaking, that puts the Modified choke pretty close to Improved Cylinder and the Full choke pretty close to Improved Modified, which is just fine and dandy as far as I'm concerned. Unless turkeys or geese are in the mix, I have little use for tightly choked shotguns.

A word about the barrel length. As stated earlier this gun has 28-inch tubes, and while that might seem a bit long for some shooters, consider that the overall length is about the same as a 26-inch-barreled pump or autoloader.

Having shot a couple rounds of skeet with the BST, I can report that the lack of a recoil pad is no problem, thanks to the gun's



The vintage 20-gauge Fox BST Payton profiled here has a single nonselective trigger, a beefy boxlock action, a casecolored receiver, 3.0-inch chambers, and the smiling Fox logo.

ONE FOR THE AGES



The BST reviewed here features a Full/Modified choke setup, but as detailed in the report, each tube measured a bit less tight.

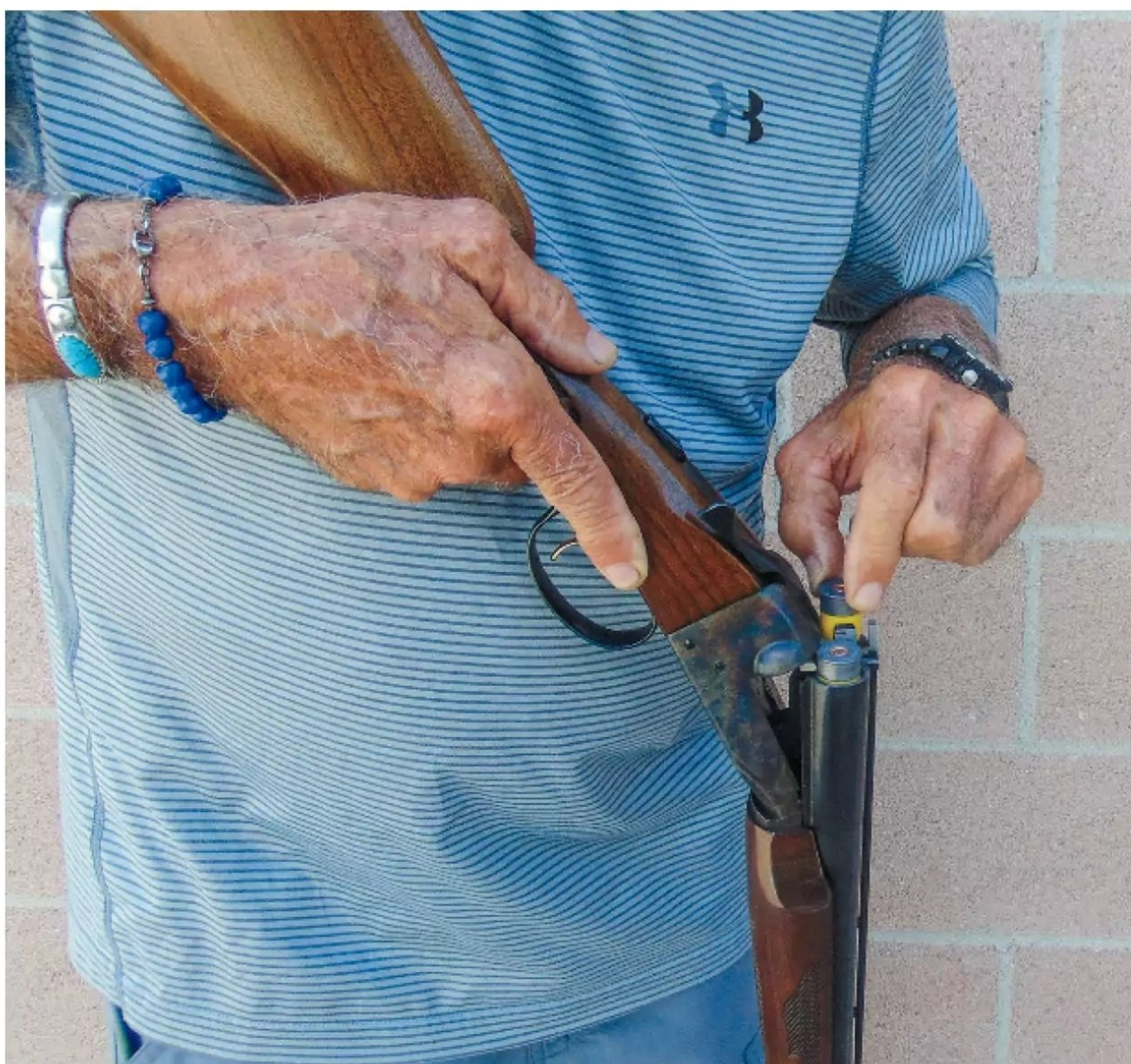
weight—which is a few ounces shy of 7.5 pounds. A couple of shooting buddies and I shot 7/8-ounce 2¾-inch Remington target loads, and all parties felt that recoil was less than negligible. Later, we tried a couple rounds of 3.0-inch Winchester Supreme Turkey Loads (1¼ ounces of No. 6 shot) and were still reasonably unfazed, as far as shoulder abuse goes.

Of course, while two triggers gives you instant choke selection, the BST's single nonselective trigger marries you to a "Modified then Full" sequence, so I found myself loading the Modified barrel for singles at skeet. When doubles came around on the menu, that Full barrel really smoked the second bird if I remembered to keep my head down and the gun moving. If I wanted a fixed-choke side-by-side as a dedicated skeet gun, I'd prefer an Improved Cylinder barrel in there somewhere. But by and large, if you're pointing the gun right, you're going to break clays. The only thing I had an issue with was remembering to flip off that automatic tang safety.

The gun was tight as a tick, requiring some muscle to pop it open at first. Things got better after a round or two, and I'm certain that a bit of hard use will smooth things out.

One of the nice things about this BST is the fact that it lacks ejectors. Unless you're in a situation where you're literally covered up with doves (or sand grouse if you're lucky enough to be in Africa), whatever time you save in reloading by having the hulls kicked all the way out just isn't worth having to hunt and stoop for empties, whether in the field or at the range.

By the final 1965 listing, the Fox BST side-by-side went for \$118.50. Taking inflation into account, that would translate to a few bucks under \$1,150, which is certainly on par with what you'd find a good one for in a mom-and-pop shop or at auction—provided you don't get into a bidding duel with a well-heeled Fox fanatic. In my opinion, the Savage/Fox BST is a good, solid side-by-side. It's one for the ages. **ST**



Payton says the lack of auto ejectors is a boon to handloaders and creaky types who aren't wild about repeatedly stooping for empties at the range.

Will This Strange Antarctic Squid Solve America's Memory Crisis?

New Deep Sea Discovery Proven to Be The #1 Natural Enhancer of Memory and Focus

Half a mile beneath the icy waters off the coast of Argentina lives one of the most remarkable creatures in the world.

Fully grown, they're less than 2 feet long and weigh under 10 pounds...

But despite their small size, this strange little squid can have a bigger positive impact on your brain health than any other species on the planet.

They are the single richest source of a vital "brain food" that 250 million Americans are starving for, according to a study published in the British Medical Journal.

It's a safe, natural compound called DHA – one of the building blocks of your brain. It helps children grow their brains significantly bigger during development. And in adults, it protects brain cells from dying as they get older.

Because DHA is so important, lacking enough of it is not only dangerous to your overall health but could be directly related to your brain shrinking with age.

With more than 16 million Americans suffering from age-associated cognitive impairment, it's clear to a top US doctor that's where the problem lies.

Regenerative medicine specialist Dr. Al Sears, says thankfully, "there's still hope for seniors. Getting more of this vital brain food can make a life changing difference for your mental clarity, focus, and memory."

Dr. Sears, a highly-acclaimed, board-certified doctor— who has published more than 500 studies and written 4 bestselling books — says we should be able to get enough DHA in our diets... but we don't anymore.

"For thousands of years, fish were a great natural source of DHA. But due to industrial fish farming practices, the fish we eat and the fish oils you see at the store are no longer as nutrient-dense as they once were," he explains.

DHA is backed by hundreds of studies for supporting razor sharp focus, extraordinary mental clarity, and a lightning quick memory... especially in seniors.

So, if you're struggling with focus, mental clarity, or memory as you get older...

Dr. Sears recommends a different approach.

THE SECRET TO A LASTING MEMORY

Research has shown that our paleo ancestors were able to grow bigger and smarter brains by eating foods rich in one ingredient — DHA.

"Our hippocampus thrives off DHA and grows because of it," explains Dr. Sears. "Without DHA, our brains would shrink, and our memories would quickly fade."

A groundbreaking study from the University of Alberta confirmed this. Animals given a diet rich in DHA saw a 29% boost in their hippocampus — the part of the brain responsible for learning and memory. As a result, these animals became smarter.

Another study on more than 1,500 seniors found that those whose brains were deficient in DHA had significantly smaller brains — a characteristic of accelerated aging and weakened memory.

PEOPLE'S BRAINS ARE SHRINKING AND THEY DON'T EVEN KNOW IT

Dr. Sears uncovered that sometime during the 1990s, fish farmers stopped giving their animals a natural, DHA-rich diet and began feeding them a diet that was 70% vegetarian.

"It became expensive for farmers to feed fish what they'd eat in the wild," explains Dr. Sears. "But in order to produce DHA, fish need to eat a natural, marine diet, like the one they'd eat in the wild."

"Since fish farmers are depriving these animals of their natural diet, DHA is almost nonexistent in the oils they produce."

"And since more than 80% of fish oil comes from farms, it's no wonder the country is experiencing a memory crisis. Most people's brains are shrinking and they don't even know it."

So, what can people do to improve their memory and brain



MEMORY-RESTORING SENSATION: The memory-saving oil in this Antarctic squid restores decades of lost brain power starting in just 24 hours.

function in the most effective way possible?

Dr. Sears says, "Find a quality DHA supplement that doesn't come from a farmed source. That will protect your brain cells and the functions they serve well into old age."

Dr. Sears and his team worked tirelessly for over 2 years developing a unique brain-boosting formula called **Omega Rejuvenol**.

It's made from the most powerful source of DHA in the ocean, squid and krill — two species that cannot be farmed.

According to Dr. Sears, these are the purest and most potent sources of DHA in the world, because they haven't been tampered with. "**Omega Rejuvenol** is sourced from the most sustainable fishery in Antarctica. You won't find this oil in any stores."

MORE IMPRESSIVE RESULTS

Already, the formula has sold more than 850,000 bottles. And for a good reason, too. Satisfied customers can't stop raving about the memory-boosting benefits of quality-sourced DHA oil.

"The first time I took it, I was amazed. The brain fog I struggled with for years was gone within 24 hours. The next day, I woke up with the energy and mental clarity of a new man," says Owen R.

"I remember what it was like before I started taking **Omega Rejuvenol**... the lack of focus... the dull moods... the slippery memory... but now my mind is as clear as it's ever been," says

Estelle H.

"My mood and focus are at an all-time high. I've always had trouble concentrating, and now I think I know why," raves Bernice J. "The difference that **Omega Rejuvenol** makes couldn't be more noticeable."

And 70-year-old Mark K. says, "My focus and memory are back to age-30 levels."

These are just a handful of the thousands of reviews Dr. Sears regularly receives thanks to his breakthrough memory formula, **Omega Rejuvenol**.

WHERE TO FIND OMEGA REJUVENOL

To secure bottles of this brain-booster, buyers should contact the Sears Health Hotline at **1-800-440-5857**. "It takes time to manufacture these bottles," says Dr. Sears. "The Hotline allows us to ship the product directly to customers who need it most."

Dr. Sears feels so strongly about this product, he is offering a 100%, money-back guarantee on every order. "Send back any used or unused bottles within 90 days and I'll rush you a refund," says Dr. Sears.

The Hotline is taking orders for the next 48 hours. After that, the phone number may be shut down to allow for inventory restocking.

Call **1-800-440-5857** to secure your limited supply of **Omega Rejuvenol**. Readers of this publication immediately qualify for a steep discount, but supplies are limited. To take advantage of this great offer use Promo Code **OMST124** when you call.

EDC

UPGRADE

THE TAURUS GX4 CARRY STRIKER-FIRED 9MM PISTOL HAS BEEN UPGRADED FOR EVERYDAY CARRY.

BY JOEL J. HUTCHCROFT

COUNT 15 VERSIONS OF THE TAURUS GX4 LISTED ON THE company's website at the time of this writing. There are basically three models that encompass all those versions. They are the GX4, the GX4XL, and the GX4 Carry. The newest version, which has just been released, is the GX4 Carry. *Shooting Times* got one of the first GX4 Carry pistols right off the production line and put it through a thorough evaluation. Here's how the new gun fared.

Features & Upgrades

Taurus classifies the GX4 as a microcompact pistol. It utilizes a striker-fired mechanism and a polymer frame. All versions are chambered for 9mm Luger, and all versions use double-stack magazines.

The dimensions of the newest version, the GX4 Carry, are as follows: Overall length is 6.56 inches. The height with the factory-issued sights is 5.16 inches. The width at the widest point is 1.08 inches (the grip frame proper is just 1.0 inch thick). The grip's circumference is 5.5 inches. The pistol's unloaded weight is 21.5 ounces. And the barrel length is 3.7 inches. The barrel is stainless steel finished in black DLC, and the twist rate is one turn in 10 inches (1:10).

Despite the GX4 Carry's microcompact classification and compact dimensions, it has a large magazine capacity, which means it provides a lot of firepower. The magazines hold 15 rounds. Taurus says that's "class-leading capacity."

The magazines are made by Mec-Gar, and their bodies are polished metal, finished in a high-gloss black. They have removable polymer basepads and numbered witness holes on the backsides. And the followers are bright yellow polymer. The pistol comes with two magazines. It comes in a nice plastic carry case along with a padlock-style gun lock, the operator's manual, and a cute little keychain that has a miniature version of the pistol attached to it.





GX4 CARRY

MANUFACTURER	Taurus taurususa.com
TYPE	Striker-fired autoloader
CALIBER	9mm Luger
MAGAZINE CAPACITY	15 rounds
BARREL	3.7 in.
OVERALL LENGTH	6.56 in.
WIDTH	1.08 in.
HEIGHT	5.16 in.
WEIGHT, EMPTY	21.5 oz.
GRIPS	Integral to polymer frame
FINISH	Black nitride slide, black frame, black DLC barrel
SIGHTS	Drift-adjustable rear, post front, T.O.R.O. system
TRIGGER	6.25-lb. pull (as tested)
SAFETY	Safety blade trigger, striker block
MSRP	\$504.99

The pistol’s polymer frame has an integral accessories rail with three cross-slots and a stainless-steel chassis inside. It is textured on the outside where the shooter’s fingers are to be placed (Taurus calls them “indexing” pads) and all the way around the grip, including approximately 80 percent of the length of the removable backstrap.

The GX4 Carry comes with two extra backstraps (for a total of three), and they are easy to interchange. Just drive out the retaining pin at the base of the backstrap, pull up on the bottom of the backstrap, and lever it out at the top. Insert the new backstrap and replace the retaining pin.

The safety-blade trigger’s face is flat, and the trigger safety lever has vertical striations that are intended to guard against finger slippage. My sample’s trigger pull averaged 6 pounds, 4 ounces over the course of 10 measurements with my RCBS trigger pull scale. It had the expected amount of take-up, but it broke consistently. Reset was short.

In addition to the hinged trigger safety lever, the GX4 Carry has an internal striker block and a loaded-chamber view port in the top of the barrel’s chamber. There is no magazine disconnect safety, so the pistol will fire without the magazine inserted. There is no external manual thumb safety, either.

The steel slide is finished in matte black nitride, and it is contoured with beveled edges. It features wide grasping grooves at the rear and the front, and the slide’s nose is beveled to help make holstering easier.

The slim-profile slide stop is located on the left side of the frame, and it is worth noting

The pistol comes with a total of three interchangeable backstraps. Each backstrap is textured for approximately 80 percent of its length.

how unobtrusive it is. That said, it is still easy to operate. The magazine release button is also very unobtrusive, and it is reversible.

The sights consist of a front post with one white dot and a drift-adjustable, all-black rear. The rear sight has a square notch and horizontal striations. Both sights are steel, and the rear sight is dovetailed into the slide. The sight radius is 5.6 inches.

The GX4 Carry is also set up for installing a red-dot optic. Its slide has been given the Taurus Optics Ready Option (T.O.R.O.) in which the rear portion of the top of the slide is milled and ready for popular red-dot optics like Shield RMSc, Holosun HS507K X2, Sightmark Mini Shot



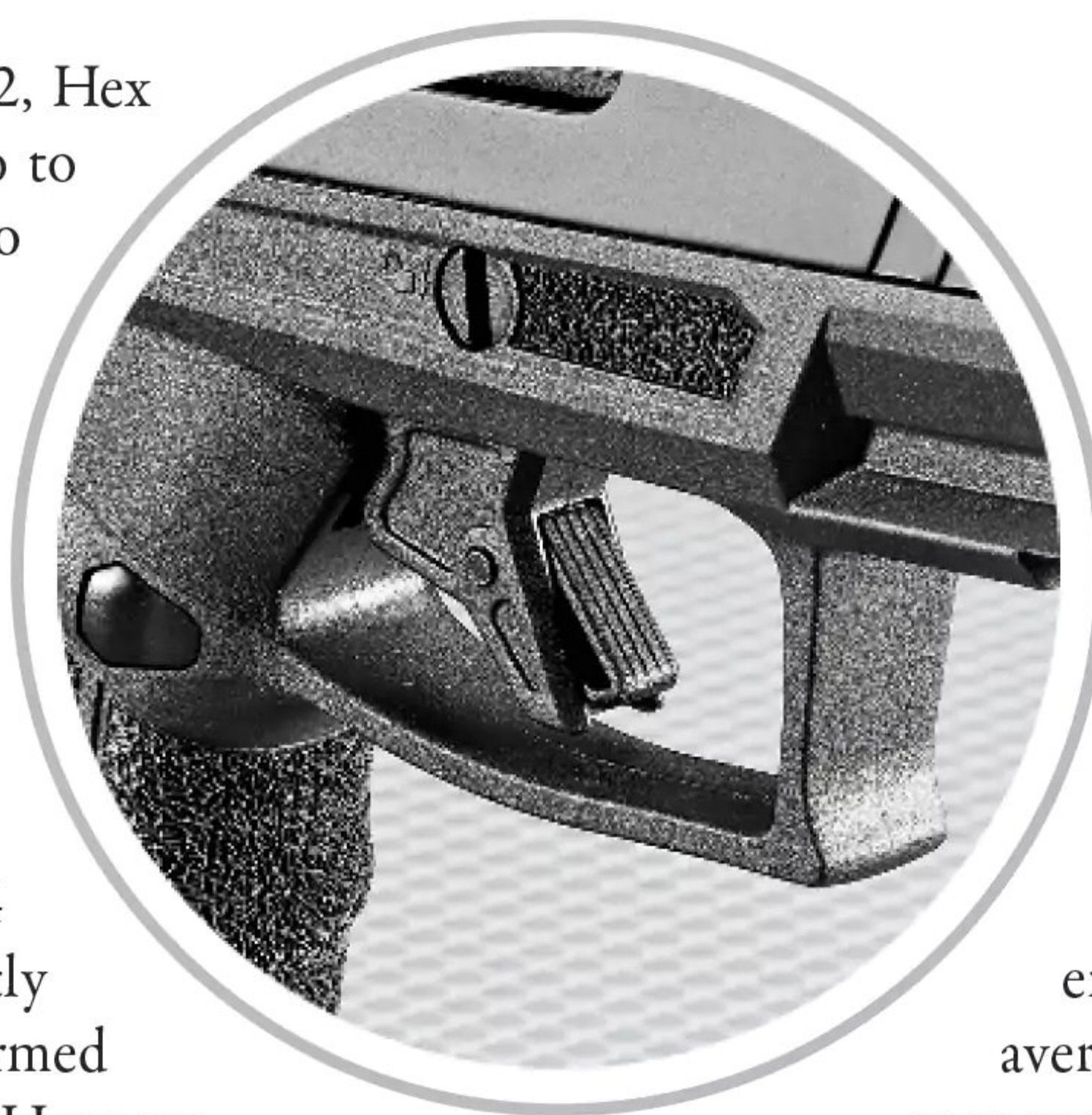
The GX4 Carry comes with two magazines that hold 15 rounds of 9mm Luger ammunition.

A-Spec M3, Riton 3 TACTIX MPRD2, Hex Wasp, and SIG SAUER ROMEOZero to be installed directly onto the slide, no adapter plate required. (Note: The Trijicon RMRcc can be installed by using an adapter plate.) The pistol comes with a cover plate that's held in place by two screws.

Shooting Performance

After shooting a dozen different 9mm factory loads through the new GX4 Carry, I can say it functioned perfectly and produced excellent accuracy. It performed exactly how it was intended to perform. Here are some of the details.

The ammunition included Federal 115-grain Syntech SJFN, SIG SAUER 115-grain JHP, Winchester Active Duty 115-grain FN FMJ, Federal Syntech 124-grain SJFN, Hornady American Gunner 124-grain XTP, Nosler Match-Grade 124-grain JHP, Black Hills HoneyBadger 125-grain Solid Copper, Hornady Critical Duty 135-grain FlexLock, Browning 147-grain BXP, Federal Syntech 147-grain SJFN, SIG SAUER 147-grain FMJ, and Winchester Defender 147-grain JHP. I fired three, five-shot groups with each load for accuracy from a sandbag benchrest at 25 yards and five rounds of each load for obtaining the velocities, with the chronograph positioned 12 feet from the muzzle. The results are listed in the accompanying chart.



The trigger has a flat face and a striated safety blade. Our sample's trigger pull averaged a clean 6.25 pounds.

The overall average accuracy for all 12 factory loads was 2.94 inches. None of the loads averaged more than 4.00 inches. The best shooting ammunition was the Federal Syntech 115-grain SJFN ammo, with an average of 2.25 inches. In second place accuracy-wise was the Federal Syntech 124-grain SJFN loading; it averaged 2.40 inches. Third place in the accuracy race went to the Federal Syntech 147-grain SJFN load, and it averaged 2.50 inches. I find it very interesting that Federal's Syntech ammunition came in first, second, and third places for accuracy, but the numbers tell the story.

After shooting for accuracy, I spent a good while shooting the GX4 Carry in some offhand tactical-type drills. Specifically, I shot the pistol at 5 yards using the Mozambique drill and at 10 yards using the El Presidente drill. For readers who aren't familiar with those drills, here's a quick, simple description of them.

The Mozambique involves drawing the sidearm, putting two shots center mass, and then making one shot to the head of a man-sized silhouette target. I usually use Birchwood Casey Eze-Scorer paper targets or Eze-Scorer "Bad Guy"

The GX4 Carry's slide is contoured for easy holstering, and it is finished in matte black nitride. Note the textured indexing pad above the trigger guard on the polymer frame.



The all-black rear sight is drift-adjustable for windage. The front sight has a single white dot. The pistol's slide is also milled for direct mounting of a red-dot optic.



Disassembly requires a flathead screwdriver to rotate the recessed takedown pin (located on the right side of the slide/frame), squeezing the trigger, and removing the slide.

TAURUS GX4 CARRY ACCURACY & VELOCITY				
AMMUNITION	VEL. (FPS)	E.S. (FPS)	S.D. (FPS)	25-YD. ACC. (IN.)
9mm, 3.7-in. Barrel				
Federal Syntech 115-gr. SJFN	1105	40	17	2.25
SIG SAUER 115-gr. JHP	1220	17	9	2.80
Winchester Active Duty 115-gr. FN FMJ	1300	30	12	3.50
Federal Syntech Range 124-gr. SJFN	1202	40	17	2.40
Hornady American Gunner 124-gr. XTP	1061	15	8	2.75
Nosler Match Grade 124-gr. JHP	1061	31	16	3.00
Black Hills HoneyBadger 125-gr. Solid Copper	949	19	10	2.70
Hornady Critical Duty 135-gr. FlexLock	1122	17	9	2.60
Browning 147-gr. BXP	965	41	19	3.60
Federal Syntech 147-gr. SJFN	1051	39	18	2.50
SIG SAUER 147-gr. FMJ	1011	27	14	3.30
Winchester Defender 147-gr. JHP	943	42	20	3.90
NOTES: Accuracy is the average of three, five-shot groups fired from a sandbag benchrest. Velocity is the average of five rounds measured 12 feet from the gun's muzzle.				

targets, but I'd love to try some of that company's 3-D face and torso targets that are made from recycled material. But I digress.

Defense experts, which I am not, say the Mozambique drill is good for practicing the speed from draw to first shot, making a pair of shots, and then transitioning from the larger center mass target area to the smaller head target area. They recommend concentrating on grip, sight, and trigger press. Balancing speed and accuracy is the goal. The experts say this drill should not be conducted on targets placed closer than 5 yards because shorter distances than that can induce sloppy shooting habits.

I've described a modified El Presidente drill that I have used in the past, but here's a quick recap. The El Presidente involves three targets. The experts suggest doing this drill at a distance of 10 yards. That distance helps hone your precision shooting skills. The three targets are placed side by side with 1 yard between each one. The shooter draws the sidearm and makes two center mass shots on each target, going from left to right, then makes a reload, and then puts two shots on each target going back right to left. There are many variations of this drill, but they all are intended to force the shooter to draw and shoot pairs quickly, transition from target to target quickly, and reload quickly, all while maintaining accuracy.

I'm not a speed-shooting competitor, but I like this drill. As the experts say, it requires the shooter to maintain the grip on the pistol while letting your eyes lead the movement from target to target. One key to this drill is to keep the pistol level during the transitions. Don't let it bob up and down.

The GX4 Carry performed quite well from the beginning, and after all the shooting subsided, I can report that the pistol balanced well, pointed naturally, and hit to point of aim. It was fast to put into action, and it was comfortable to shoot. It was accurate, and most importantly, it functioned perfectly. The new GX4 Carry offers everything anyone would want in an EDC handgun. **ST**

QUICKSHOT



Bianchi Old Tuscany Italian Leather Line

By Joel J. Hutchcroft

BIANCHI (ESTABLISHED IN 1958 BY JOHN BIANCHI AND NOW A BRAND OF the Safariland Group) has a new line of full-grain leather holsters. The new Old Tuscany Italian Leather line includes four holsters.

The Cortona is a refined inside-the-waistband design that offers durability. It is built for large semiautomatic pistols. Key features include red-dot sight compatibility, premium-grade leather, a rugged spring-steel belt clip, and sturdy single-piece construction. It's available for Caspian, Colt, Glock, Kimber, Ruger, S&W, Springfield, Staccato (STI), and Wilson pistols.

The Fucecchio is designed for outside the waistband, small-of-the-back concealment and provides a deep cant angle. This holster's open-top design allows for a fast time to target, and it features a flat rear profile, adjustable tension, premium-grade leather construction, and a 30-degree built-in cant. It's offered for Glock and S&W pistols.

The Lajatico is an outside-the-waistband holster that offers secure thumb-strap retention. Dual front belt loop options allow for a range of cant angles. Plus, the holster has a flat rear profile and premium-grade leather. It can be worn on the left side or the right side. It's available for Caspian, Colt, Glock, Kimber, Ruger, S&W, Springfield, Staccato (STI), and Wilson pistols.



The Vicopisano (shown here) has refined aesthetics that are highlighted by contrasting stitching accents. Of outside-the-waistband design, this holster has secure thumb-strap retention, dual front belt loop options, a flat rear profile, and premium-grade leather construction. It can be worn on the right side or the left side for crossdraw. It's available for Caspian, Colt, Glock, Kimber, Ruger, S&W, Springfield, Staccato (STI), and Wilson pistols.

MSRP: \$84 (Cortona), \$94 (Fucecchio), \$92 (Lajatico), \$144 (Vicopisano)
bianchileather.com

ST

QUICKSHOT

Champion Wheelybird 3.0 Trap

By Joel J. Hutchcroft

CHAMPION HAS DONE IT AGAIN. THE COMPANY HAS UPDATED ITS POPULAR Wheelybird auto-feed trap. The new Wheelybird 3.0 features a removable stack holder that holds 60 clay pigeons at a time, a more rapid 1.5-second cycle time, angle adjustments of 0 to 30 degrees, and a throwing range of 75 yards. It has a 25-foot-long foot pedal release and is compatible with the Wheelybird Wireless Remote (sold separately) that allows the shooter or a companion to launch clays with a click of a button. Convenient transporting is assisted by wide-base wheels, a molded handle, the battery storage cart, and a built-in cord wrap.

According to Product Manager Laurie Kokoruda, "The new Wheelybird 3.0 builds off the tried-and-true designs of previous Champion throwers and packs

plenty of features for both casual and dedicated shotgun shooters. Anyone looking for a durable yet lightweight automatic thrower will surely be impressed with the speed and convenience of the Wheelybird 3.0."

Approximate weight of the Wheelybird 3.0 Auto-Feed Trap is 50 pounds. It requires a 12-volt, 30 AH battery (a deep-cycle type is recommended).

MSRP: \$599.99

championtarget.com

ST





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REGULAR READERS OF *SHOOTING TIMES* ARE PROBABLY AWARE that MyOutdoorTV® (MOTV) has thousands of episodes from our most popular television shows, but perhaps you don't know that MOTV is the world's #1 subscription-based outdoor streaming service. With more than 20,000 episodes of premium hunting, fishing, and shooting content, MOTV provides authentic, expert, on-demand entertainment for today's outdoorsman.

With a variety of both short- and long-form content, MOTV offers original series, live streaming events, how-to videos, and wild game recipes. The service invites viewers to experience the heart-pounding action and the camaraderie in the field, at the range, and on the water.

With live-streaming events like Major League Fishing, destination hunting action from around the world on Hunters Video Channel, and

engaging magazine-style series that offer the latest news and product reviews, MOTV offers a full spectrum of outdoor lifestyle adventures.

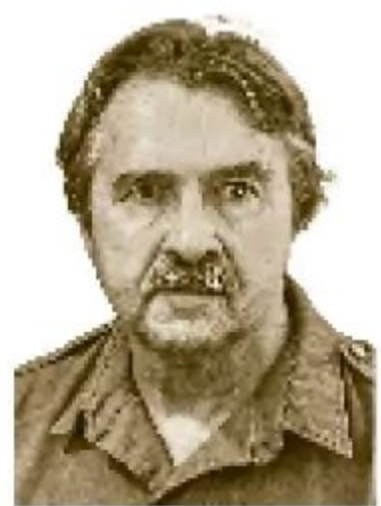
And MOTV's HuntStream is a new ad-free streaming channel that features the world's best hunting shows 24/7. Watch anytime to see favorite hosts like Jim Shockey and Michael Waddell and favorite shows like *MeatEater*, *Drury's 13*, *Crush*, and more. The HuntStream lineup changes regularly, with specially selected hunting content from MOTV's unmatched library.

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The Price of Magnums

Magnum handguns and shotguns are all well and good, but sometimes there is just too much of a good thing. **BY TERRY WIELAND**

The differences between the .44 Special Ruger Blackhawk (bottom) and the .44 Magnum Ruger Super Blackhawk (top) are not immediately apparent, but the grip is smaller, the gun is almost four ounces lighter (fully loaded), and the cylinder is slimmer—all of which become evident the minute you pick them up.

THERE IS A LOT TO BE SAID FOR MAGNUM HANDGUNS that allow you to shoot lower-power loads—the .357 Magnum/.38 Special combination being the obvious one.

But there is something to be said against it, too, and that is that dedicated guns, tailored to lower-powered cartridges, can cease to exist. In many situations, for example, a .44 Special in a lightweight, compact gun might be ideal. But where can you get one? There are one or two around—the Charter Arms Bulldog, for example—but that might not suit your purposes.

This situation exists in handguns and shotguns but not in rifles, unless you count those rifles chambered for handgun cartridges. It comes about when a cartridge is simply lengthened to give it more powder capacity, and hence, more power, and is dubbed a “magnum.”

When the .44 Magnum cartridge was introduced in 1955—simply the .44 Special case lengthened—production of .44 Special guns very shortly ceased. Manufacturers could produce one magnum model, promote it as dual purpose, and sell a ton. The problem is, a gun chambered to .44 Magnum is heavier and bulkier because it needs to withstand magnum pressures, and the extra weight helps dampen increased recoil.

The same is true of shotguns.

Twenty years ago, a gentleman considering a custom shotgun from Spain asked for my help. The gun was to be a side-by-side sidelock, and since it was to be his “only custom gun, ever,” he wanted it to be versatile. Accordingly—and against my advice—he ordered a 12 gauge with 3.0-inch chambers but with 26-inch barrels for hunting in thick brush.

The result—\$6,000 later—was a great disappointment. Because it had to pass 3.0-inch proof, the frame was heftier, as were the barrels at the breech end, making the gun heavier and poorly balanced. In trying to get a gun that would do everything, my correspondent ended up with a gun that would do nothing very well.

When I advised against this, I spoke from experience. Twenty years earlier, I bought a Browning BS/S 20 gauge. It had 3.0-inch chambers, 26-inch barrels, a hefty beavertail forearm and pistol grip, and weighed 7.5 pounds. No 20 gauge needs to weigh that much—6.0 pounds is ideal—but anything much lighter and the 3.0-inch, 1¼-ounce magnum loads would have been killers, as Browning knew.

Today, almost all new 20 gauges, and most 12 gauges, have 3.0-inch chambers and are accordingly heavy. There has even been a move afoot to inflict the same burden on the sweet little 28 gauge—with, undoubtedly, eventually the same result.

Fifty years ago, proponents of the magnum 20 insisted it could become the equal of a 12 by using 1¼-ounce loads. Believe me, it cannot, and a patterning

board will prove it beyond all question. And anyway, if you want a 12, why not buy one?

And the reverse? This is not the place to discuss the relative merits of, say, a 1-ounce load in the 12 gauge or a 7/8-ounce load in the 20, but trust me, both are highly effective and a pleasure to shoot.

The only exception to this disturbing trend is the 3.0-inch .410, which is undoubtedly superior to the 2½-inch shell, but then, neither is anything to write home about.

In handguns, the trend to magnum chamberings only is most pronounced with the .44. Standard .38 Specials are still around (the S&W J-Frame, for example) and there are so few .32s available, of any description, it's hardly worth considering, although a regretful sob or two is certainly warranted.

Fortunately for us all, there is a healthy used-gun market in the U.S. Since any good gun that is properly looked after will outlast several owners, if a gun was ever made, anywhere, you can probably find one. It might cost you a few bucks, depending on its rarity and collector status, but on the other hand, it might well cost a lot less than something new. And I would bet you'll like it better.

ST



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New Blood Flow Breakthrough Helps Men Enjoy Strong, Long-Lasting Intimacy – At Any Age

Men across America are raving about a newly enhanced potency supplement that helps achieve healthy blood flow on demand

After age 40, it's common knowledge that performance begins to decline in many men. However, a new, performance empowering pill is showing that any relatively healthy man can now enjoy long-lasting, and frequent intimacy – at any age.

This doctor-designed formula, created by leading anti-aging expert Dr. Al Sears, has already helped men overcome low and sinking libido -- and has recently undergone a potency-enhancing update -- with remarkable new results.

When the first pill -- **Primal Max Black** -- was first released, it quickly became a top-selling men's performance helper, promoting intimacy across America.

It worked by supporting healthy testosterone levels. However, Dr. Sears soon realized that this isn't the only challenge men face with performance. That's when he turned his attention to blood flow.

And this became **Primal Max Red**.

THIS PROVEN SOLUTION IS MORE MECHANICAL THAN HORMONAL

Truth is, once blood flow slows down for men, no matter how exciting it is, it won't be enough without the necessary amount...

So enjoying intimacy without healthy blood flow becomes difficult for most men.

Luckily, a Nobel prize-winning scientist discovered the simple answer to help support performance strength and confidence -- by boosting vital blood flow --

and enhancing this essential performance function.

Using this landmark Nobel Prize as its basis, **Primal Max Red** enhanced healthy blood flow for untold millions of men around the world with the use of strong nitric oxide boosters.

While **Primal Max Black** helped maintain optimal testosterone, **Primal Max Red** tackles a lesser-known challenge.

Director, Al Sears MD, who has authored over 500 scientific papers and has appeared on more than 50 media outlets including ABC News, CNN, ESPN, Discovery, Lifetime, and many more say, *"Less than optimal blood flow can be part of a huge problem that affects a lot of men. And it needed to be addressed once and for all, so men would not dwell on it. Then, once we optimized it and had a great deal of success, we set out to see if we could do even better."*

The former formula had excellent results. However, new research showed that for even faster, anytime, anywhere results, increasing the dose of a key compound was needed.

So, one of the three nitric oxide boosters in the new **Primal Max Red**, L-Citrulline, was clinically boosted to 9000 mg, and the results were astounding. Which is no surprise considering that 5000 mg is considered a "normal amount" -- giving the new version nearly doubled the blood flow boosting power.

Men who had previously been unsure about their power and stamina were overjoyed to be back to their



A new discovery that increases nitric oxide availability was recently proven to boost blood flow 275% - resulting in improved performance.

old selves and to get and maintain a healthy bloodflow when they needed it.

BETTER BLOOD FLOW, STRONGER RESULTS

The best way to promote healthy blood flow throughout the body is with the use of **Primal Max Red**. By using it, when exciting signals leave the brain, blood flows much faster like it used to.

This critical action is how men across the country are enjoying full and satisfying performance at any age. No need to bother with testosterone-boosting shots, blue pills, or shady capsules that have no effect.

Primal Max Red can effectively promote healthy blood flow that most men can use for maximum intimacy. This is leading to more greater capacity and satisfaction, coupled with long-lasting performance.

"There was a time when men had little control when it came to boosting their blood flow," Dr. Sears said. "But science has come a long way in recent years. And now, with the creation of nitric oxide-boosting **Primal Max Red**,

men can perform better than ever, and enjoy intimacy at any age."

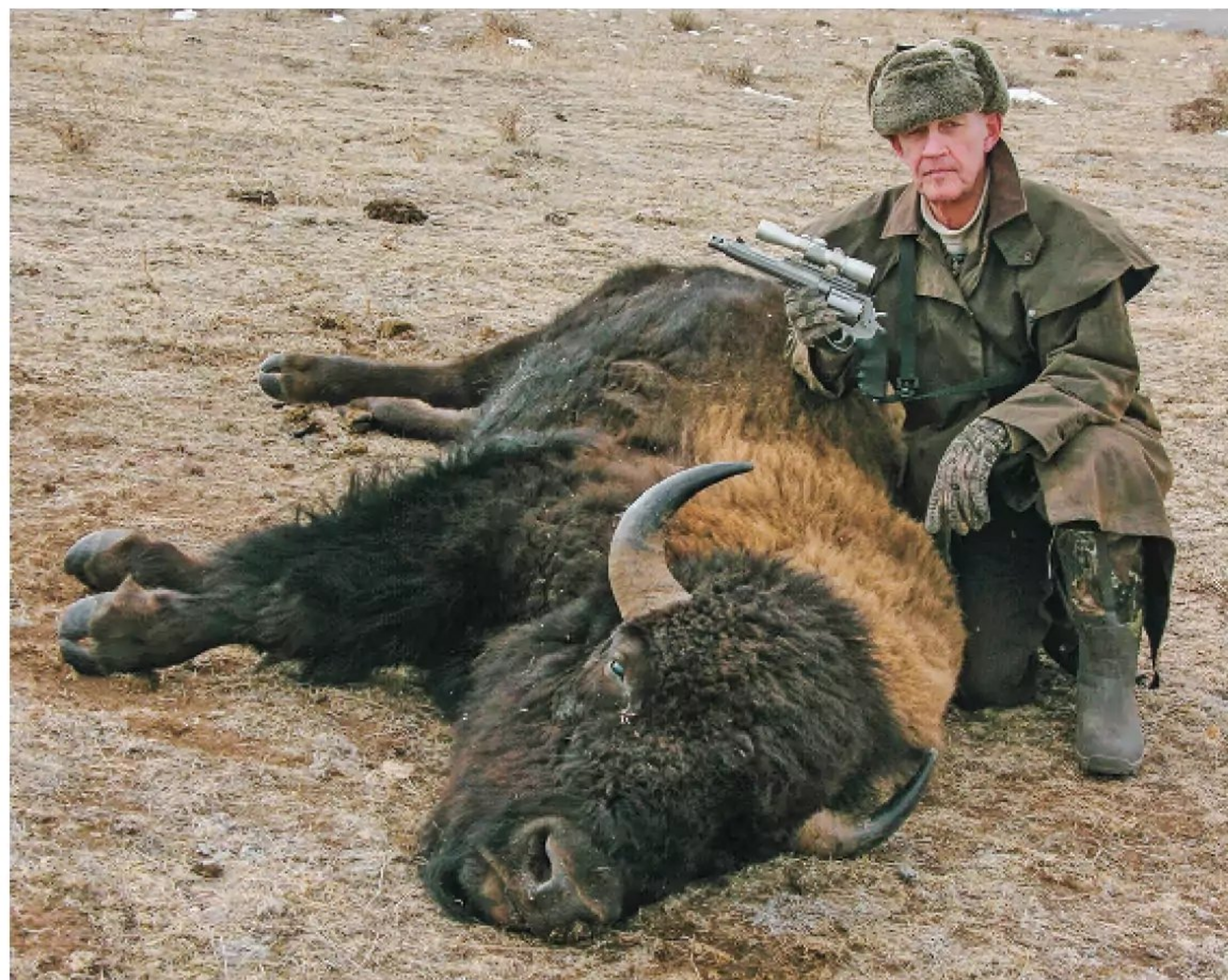
Now for men across America, it's much easier to stay at their performance peak as they get older.

HOW TO GET PRIMAL MAX RED (AND FREE PRIMAL MAX BLACK):

To secure free bottles of **Primal Max Black** and get the hot, new **Primal Max Red** formula, buyers should contact the Sears Health Hotline at **1-800-277-1850** TODAY. "It's not available in retail stores yet," says Dr. Sears. "The Hotline allows us to ship directly to the customer." Dr. Sears feels so strongly about **Primal Max**, all orders are backed by a 100% money-back guarantee. "Just send me back the bottle and any unused product within 90 days from purchase date, and I'll send you all your money back."

Call NOW at **1-800-277-1850** to secure your supply of **Primal Max Red** and free bottles of **Primal Max Black**. Use Promo Code **PMAXST124** when you call. Lines are frequently busy, but all calls will be answered!

readers, causing them to write to the editor. Early in his writing career, he also wrote a monthly column on firearm laws, and when our sister publication *Handgun Quarterly*, which later was renamed *HandGunning*,



was created, Dick wrote for it as well. He was prolific. For example, when I joined ST in 1992 and started working with Dick, he was writing up to five pieces per month for ST alone. His last regular feature articles for ST were in 2013. He also wrote for other magazines in our company's stable, including *Petersen's Hunting*, *North American Whitetail*, and *Guns & Ammo*. He also served as co-host for the award-winning *Guns & Ammo TV* television show for several seasons. During the 1980s, Dick helped develop and promote PASA Park (Pike Adams Sportsmen's Alliance), a world-class shooting facility in Barry, Illinois, that was home to The Masters shooting competition and other shooting events for many years. He was well-read and had a brilliant mind. He was a strong advocate of handgun hunting and a consultant to many firearms and related companies.

Dick is survived by his wife Kathy, son Christopher, and brother George.

In one of his books on frontier history, Dick wrote, "Death is hardest on the living..." He got that right. Our condolences to his family, friends, and others who mourn his loss.

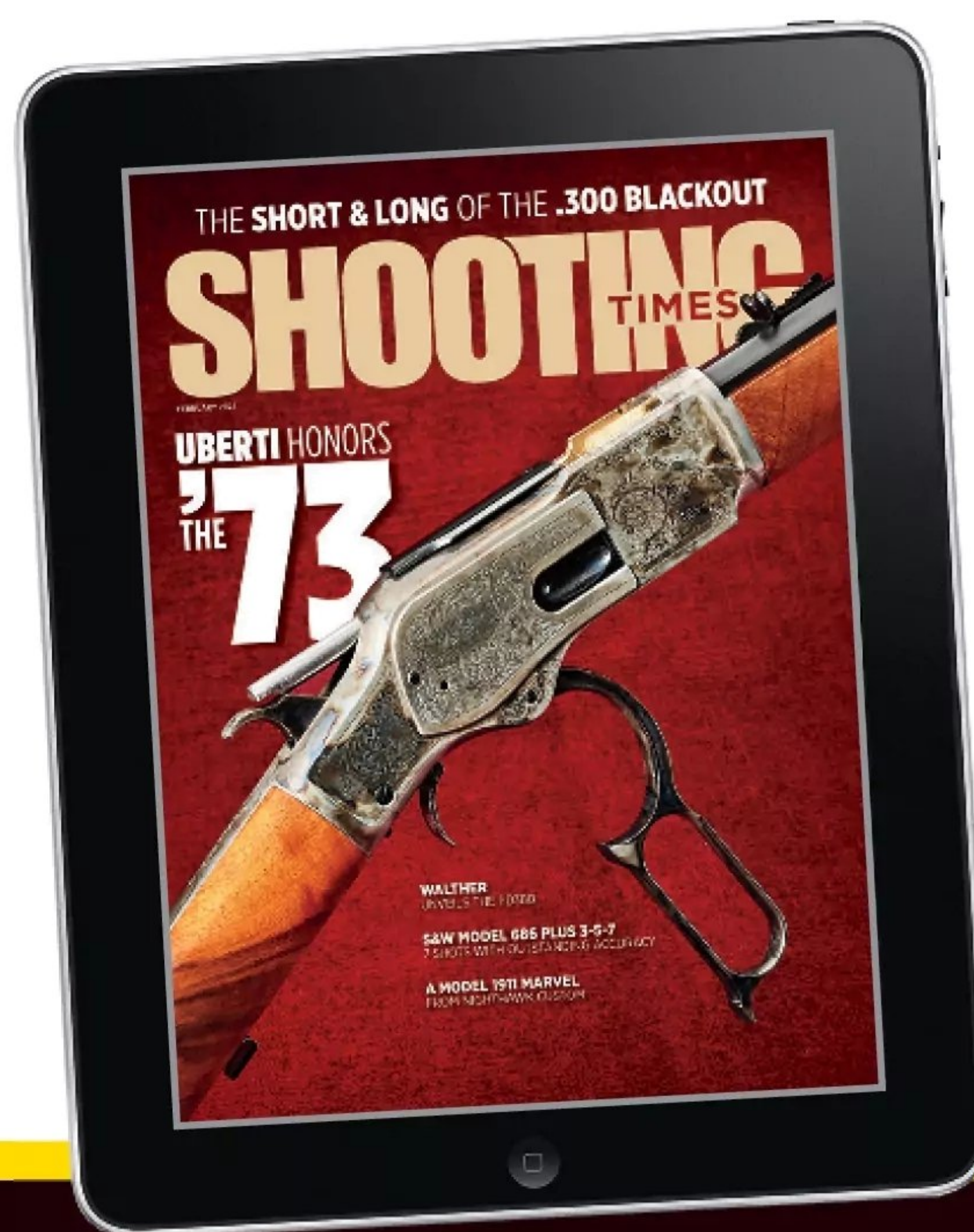
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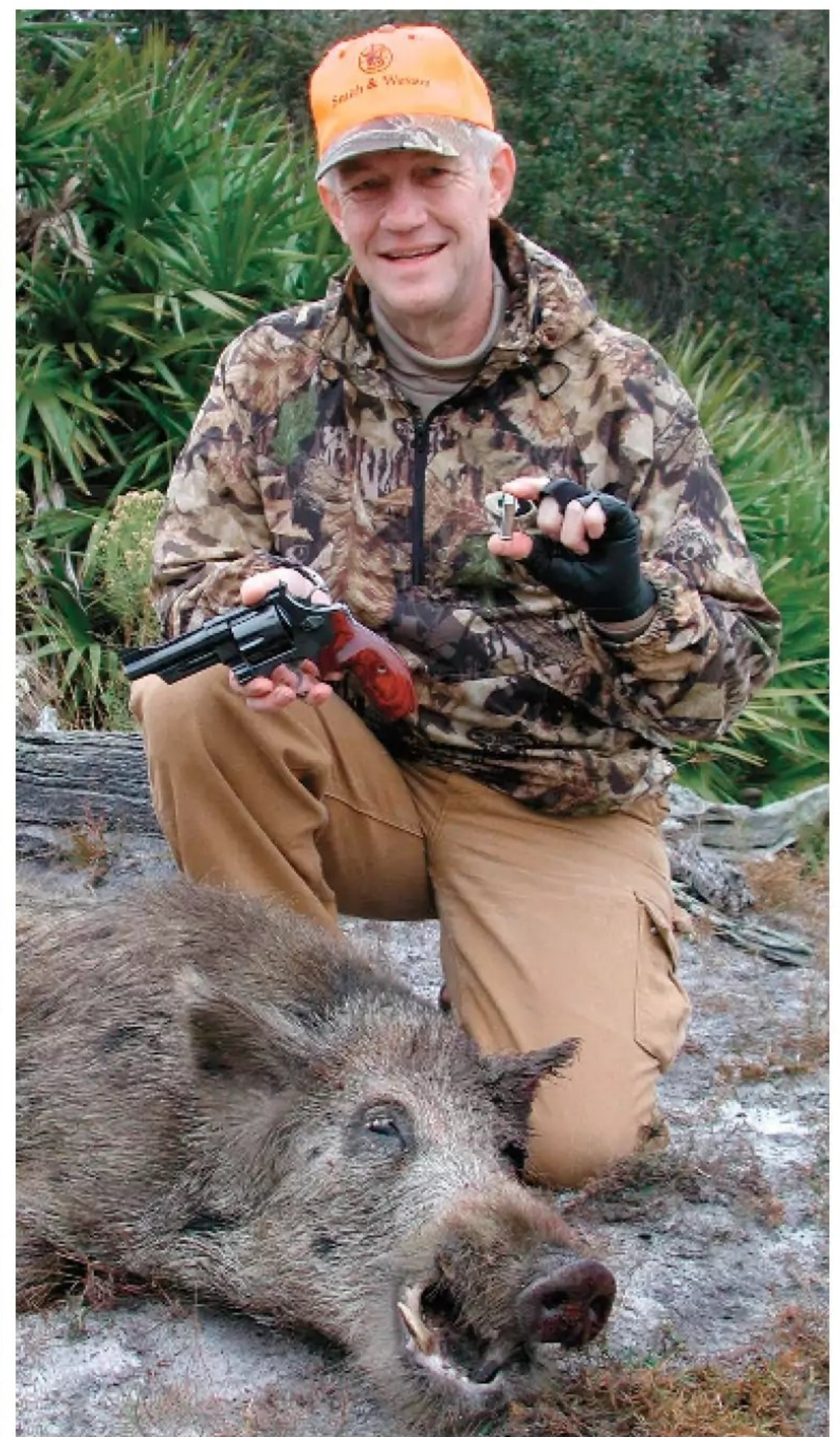


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In Memoriam

Firearms expert, writer, television host, and historian Dick Metcalf passed away on October 14, 2023. **BY JOEL J. HUTCHCROFT**

P. Richard "Dick" Metcalf (1946–2023) wrote for *Shooting Times* from 1977 until 2013. He was an expert on American history, handguns, and the history of firearms.

IT SADDENS ME TO REPORT THAT ANOTHER friend of *Shooting Times* has passed away. Longtime *Shooting Times* writer P. Richard "Dick" Metcalf died on October 14, 2023. He was 77 years old.

Dick was born in May of 1946, in Barry, Illinois, and was raised on the family farm there. After graduating from high school, he attended and graduated from Northwestern University in Evanston, Illinois, and after a stint in the United States Army, he went on to earn a PhD in history at Yale University, with the title of his dissertation being "Inside the Hoop: A Study of Native American Politics." He was an expert in American frontier history and Native American history, and he taught those subjects at Yale and later Cornell University. He once told me that he had testified as an

expert witness before the Indian Claims Commission because the topic of my own master's thesis was the decisions of the Indian Claims Commission for claims in Illinois by the Kaskaskia, Kickapoo, and Potawatomi Indians. Dick also consulted on more than one Hollywood film dealing with Native Americans. In 1977 he joined the writing staff at *Shooting Times* and moved back to his boyhood home in Barry two years later.

Dick was an expert on the history of firearms, especially handguns, and wrote thousands of articles and columns throughout his 36 years with ST. He had a real talent for describing the technical side of guns, optics, ammunition, and accessories that readers appreciated. He occasionally took a controversial approach to his writings, which resonated with

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