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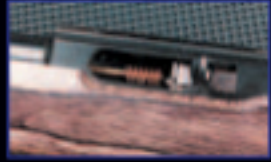


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MAGAZINE

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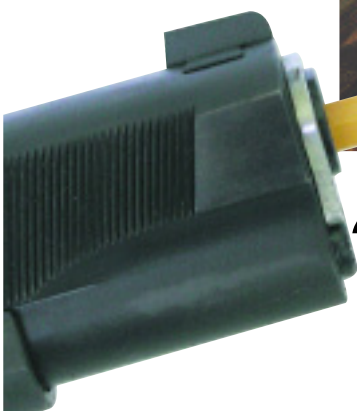
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Love Those Leverguns!

In the January issue, It was my pleasure to tell you of Winchester's redesign of the Model 94 to remove the egregious crossbolt safety and replace it with a tang mounted thumb safety. I also hinted of another pending announcement from Winchester. Here are a few details...

U.S. Repeating Arms Company, the manufacturer of Winchester firearms, will chamber the splendid Model 9422 for the extremely popular new .17 Hornady Magnum Rimfire cartridge. The resulting rifle is to be designated the Model 9417.

I've had an opportunity to shoot an early sample, and it's a dandy. Externally, there's no significant difference in appearance between the 9417 and the earlier 9422 and 9422M rifles.

As we've come to expect from current Winchester rifles, the stock is of good, straight-grained walnut, and the metal finish is extremely nice. The wrist and forend are nicely checkered, and the receiver is grooved for 3/8-inch rimfire

scope mounts. The test rifle mounted a compact Pentax "Lightseeker" variable, which was a good mate to this lightweight carbine.

Accuracy was good, the report was very modest, and frankly, the 9417 was a lot of fun to hike around with. On jackrabbits, the .17 HMR cartridge was very effective. Well-known outdoor writer Ron Spomer called in a beautiful red fox and proved the .17 was up to this challenge as well.

Look for the Winchester 9417 on your dealer's shelves by mid 2003.

Classic Model 1894

It was also my good fortune to chase white-tails with a prototype of the new Model 94 with top tang safety. Tramping around the harsh, yet beautiful southwest Texas sagebrush, it was easy to picture other generations of hunters, each rightly proud of their Winchester repeaters.

The rifle I carried was different in many small ways from those that have served outdoorsmen for more than a century, but a homesteader or rancher from 1894 would have had no difficulty recognizing or using this 21st century Winchester.

The time worn .30-30 cartridge did just what it always does if used with careful placement, and a beautiful 10-point buck ran only a short distance after the shot. The Winchester Model 94 and the .30-30 W.C.F. cartridge continues to offer a combination of tradition and performance that's easy to appreciate.

Now, without being ungrateful for the positive new developments, how about a proper Model 94 rifle? A 26-inch tapered octagonal barrel, combined with crescent butt and correct rifle-type forend cap should be a winner. Even if the current angle-eject action is retained, this should find a ready market in these days of rampant nostalgia.

A Legend Is Lost

Val Forgett, Sr. — founder of Service Armament Co. and Navy Arms Co. — passed away November 25th, 2001, at the age of 72, after a long battle with the blood disorder MDS.

Forgett, a passionate historian and collector of Civil War arms, pioneered the production of replica firearms. This was a long-held dream, and in fact, Forgett inscribed this as his "goal in life" in his high school yearbook.

He received little support in his endeavor, with most firearm industry principals ridiculing his idea as crazy. Forgett refused to take "no" as an answer, and

eventually found a willing reception in Italy, where Luciano Amadi introduced him to Aldo Uberti.

The rest is history, and today, we have available to us excellent recreations of historic arms from the British Brown Bess musket to the rifles of Christian Sharps and later Winchester repeaters, as well as historic handguns from the Colt Patterson to the SAA. Navy Arms, in the capable hands of Val Forgett III, continues to offer a diverse line of replica arms and accessories.

If you enjoy the use of a replica historic firearm, be it a front stuffer, revolver or levergun, you owe a debt of gratitude to Val Forgett, Sr. He truly changed the landscape of the firearms world.



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Special Forces operators are using SureFire WeaponLights in Afghanistan to clear the caves and bunkers that Al Qaeda terrorists use to hide. No other flashlight has the rugged construction, shock-isolated lamps and dazzling bright fighting light. All SureFire WeaponLight systems are NVG compatible with IR filters to give the operator total dominance of the darkness.

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The M900 Vertical Grip along with an M871C tactical light both attach to a Picatinny rail forend like this S.I.R. System from ARMS. A SureFire L12 visible laser in a front sight mount is the best tactical laser for any M16-family weapon.



The Millennium Universal System is a modular, upgradeable tactical light system that can be configured for mission-specific requirements. Shown here is a TurboRed version with a Dovetail click-on tailcap switch.



GUNS MAGAZINE
FEBRUARY 2003

CROSSFIRE LETTERS TO GUNS

GUNS MAGAZINE™ welcomes letters to the editor for "Crossfire." Send your letters to:
CROSSFIRE, GUNS Magazine, 591 Camino de la Reina, Suite 200, San Diego, CA 92108. Email: ed@gunsmagazine.com

Letter Of The Month

John Taffin's columns just get better and better. At supper tonight, I was reading his piece on Audie Murphy and it nearly made my eyes wet. That's the second time he's done that to me recently — his column about not judging people by appearances was splendid.

Don't let this man get away.

John Rains
Via e-mail

Reinventing The Wheel?

I read the article "Keckler & Koch's Cutting Edge Compacts," (*GUNS*, February '03) with interest and some amusement. The amusement came from author Cutshaw's contention that the PDW concept is somehow new and high tech.

I submit to you that the M1 Carbine, which dates from 1941, very closely fits the PDW mission requirements and functioning description as set forth in the article.

Gene Gangarosa, Jr.
Palmetto, Fla.

Charles Cutshaw responds:

While it is true that the M1 Carbine was originally intended for rear echelon types, drivers, etc, and fits the role of a PDW, it was not termed as such and was a conventional design.

Please note that I did not state that the concept was new or hi-tech — only the MP7. I am well aware of the intended role of the carbine, which never lived up to its expectations in combat.

Sympathy For J.T.

Poor Mr. Taffin is again behind the times. Reloading for an old lever gun. I love it. While I don't get the chance currently to reload my own cartridges, I do own several old lever-guns. I'll stand up and be counted with the likes of John Taffin any day of the week.

I realize that something must be dreadfully wrong with me because I don't own any of the new wonder magnums, but I believe I'll survive. Keep up the good work and thanks for a great magazine that reports on all aspects of the shooting sports.

Nicholas Smathers
Waynesville, N.C.

Glenn Barnes' praise of the Ruger Bisley (An American Classic — The Ruger Bisley, *GUNS* January '03) is right on the mark. Mine, in .45 Colt, improved with tuned action, a Belt Mountain cylinder pin and an Austin Behlert rear sight, is everything a revolver should be — strong, reliable and accurate.

Barnes is correct that Ruger makes the small-frame Bisley only in .22LR, but that was not always so. My next best Bisley is a .32 Magnum, which was offered for a few years in the '90s. The .32 Mag. cartridge fits the Bisley to a "T", making it the ultimate in small-bore single actions. Used .32 Bisleys are definitely worth looking for in the used gun market.

Glen B. Ruh
Falls Church, Va.

More Praise For The "Thutty-Thutty"

This is in response to John Taffin's article in the January issue of *GUNS* magazine. Throughout my family's ranching history here in Nevada, it was always the .30-30 Winchester that went on the saddle or was hung over the door in the ranch house. But times change I guess.

I just purchased a Winchester 94 about a year and a half ago, and I love the little gun. I reload my rounds with standard Nosler 170-grain Partition bullets, which work really well. But for me, the versatility of this gun comes from the addition of E. Arthur Brown Company sabots, in which I load a Nosler 55-grain Ballistic Tip.

These, of course, cannot be loaded into

the magazine, but this gives me the ability to shoot a very accurate, low cost, moderate-range varmint round. Many people underestimate the .30-30 Winchester or won't admit to owning one, I will... and with pride.

Frank Pettit
Via e-mail

Lest We Forget

Thanks to John Taffin. Indeed, Audie Murphy's war record should never be forgotten. What a pity that it is — among our other heroes — so little noted. I have read that a people who rejects their traditions and heroes is doomed. I hope we only suffer from temporary amnesia.

On a lighter note, Cameron Hopkins' observations regarding flour tortillas and light beer are well spoken!

Ron Habegger
Via e-mail

Sneak Attack

You rascals fooled me! I received my February issue, and noting the camouflaged "operator" on the front cover, I threw it into the magazine rack in disgust. You see, I simply have no interest in all of this "tactical" nonsense. I can understand others may feel differently, but I cannot share their enthusiasm for black plastic.

Later, in a bored funk, I picked up the magazine and thumbed through it. Boy was I wrong! The photos of the Custom Gunsmith's Guild gun were delicious, the excellent review (and great photos) of the Tikka Varminter were right in line with my particular inclinations, and the story on the very rare Pedersen device was a special treat.

Great job of appealing to many different interests, and I hereby swear never again to judge *GUNS* by its cover.

J.R. Roberts
Manhattan, Kan.





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It's rare, indeed, to have an opportunity to own one of these three top choices of the Shooting Industry Academy of Excellence. Judged by their peers, Rugers 77/17RM HMR rifle and Gold Label Side-By-Side shotgun and the Kimber Eclipse Series .45 ACP pistol represents the epitome of design and quality in their fields. The fact they were chosen by industry insiders makes the selection even more prestigious.

The new Hornady .17 Magnum Rimfire has swept the shooting world. The ultra-high velocity of this newest magnum translates into flat-shooting fun in the field and on the target range. The .17 HMR takes up where the .22 Magnum leaves off and the field-proven Ruger 77 series is a perfect platform, offering the accuracy and reliability Rugers are famous for.

The aura of the double barrel shotgun is reduced to its essential elements with the Ruger Gold Label Side-By-Side. Virtually an instant classic, this classically styled, distinctly American shotgun kindles visions of pheasant fields and eager pointers. Experts are already calling it "affordable old-world craftsmanship" that you can buy over the counter.

Kimber re-wrote the book on 1911 design. When introduced, Kimber's 1911 pistols rapidly made their name known on the competition circuit and in the self-defense arena. Kimber's manufacturing tolerances account for the performance of their 1911 pistols and the newest — the Eclipse — takes it a step higher with eye-catching features that embrace the technology behind the design.

All in all, this trio would put a final period on anyone's collection.

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SHOTGUNNER BY HOLT BODINSON

The Romance of Lead Shot

Often taken for granted, lead shot is really an intriguing projectile. Lead is a very ancient metal, known as early as 3000 B.C. It's mentioned in the book of Exodus. In my high school chemistry book (texts were more practical in those days), I recall that lead water pipes bearing the insignia of various Emperors were still in use in Rome.

In fact, the chemical symbol for lead, Pb, is derived from the Latin word, *plumbum*. Apparently, the Romans were exceedingly fond of the metal, even crafting eating dishes and drinking vessels from of the malleable element.

There is a theory that the Empire slid down hill as the aristocracy gradually succumbed to lead poisoning, and so to this day we are warned about not handling food or drink after working with lead shot or bullets until we've had a chance to wash up.

Lead is an ideal metal for shot. Given its high density, it delivers maximum striking energy with the least surface area and air resistance.

The informed shooter will match lead shot hardness to the nature of the target.



Thanks To A Plumber

The modern method of using shot towers to form shot is reported to have occurred in a dream in 1782. The dreamer was a plumber in Bristol, England by the name of William Watts, who, in his dream, visualized rain as perfectly round little spheres. Being a hunter and a plumber who knew his lead, Watts conducted an experiment of pouring molten lead through a sieve from the tower of the St. Mary Redcliffe church. The experiment was a success. Watts sold his invention and reportedly retired a wealthy man.

The first shot tower in America was built in 1808 in Philadelphia. Ranging in height about 100 to 190 feet, shot towers are still an excellent method of making shot up to the size of BBs, but are being replaced by more modern methods.

On the top floors, molten lead is poured continuously through a pan with calibrated holes in the bottom. A mechanical rapper taps the pan so that the molten lead is discharged. As it falls, surface tension forms the droplets into practically perfect spheres, and during the fall, it cools sufficiently so that it is not deformed when it hits the water.

Cooled thoroughly when it does hit the water below, the rough shot is then dried, sorted for roundness, polished and tumbled in graphite to provide lubricity and to prevent oxidation, and finally sorted by size.

A more modern method, called the Bliemeister method, does away with the expensive-to-build shot tower. In this method, droplets of molten lead actually fall only about an inch into a tank of hot water, roll across an incline plane and then continue falling through hot water for another 3 feet or so. Water temperature is used to control the rate of cooling, and surface tension brings the lead droplets into a spherical form.

Larger shot, like buckshot, is made by the cold heading or swaging process in which calibrated segments of lead wire are fed into a die and then sized into spheres by two hemispherical punches.

Harder Is Better, But...

Not all shot is created equal — equal in hardness that is. The hardness of shot is controlled by the amount of antimony added at the time of manufacture and by plating the shot with nickel or copper. But how do we know how hard the shot in our shotshells is, or how hard it has to be to deliver usable patterns?

I posed those questions to Mike Jordan, recently retired from Winchester Ammunition, where he worked on the development of many of the ammunition types we enjoy today.

Jordan's first observation was that hard shot patterns better than soft shot. Given that fact, here is an approximation of the amount of antimony contained in several of Winchester's shotshell lines:

*Dove and Quail loads: 0 to 1 percent

*Super-X Game and Turkey loads: 2 to 4 percent (bigger shot needs less antimony than small)

*All Target loads: 6 percent (except for 12 and 20 gauge skeet loads that contain 3 percent)

*Buck Shot: 0 percent (except for law enforcement #4 buck loads that are harder)

Basically, what Winchester has concluded is that softer, cheaper shot is perfectly adequate for close-in bird shooting like dove and quail. Also for 12 and 20 gauge skeet competition where soft shot delivers more open patterns with larger fringe areas. When it comes to longer trap shooting ranges, and to 28 and .410 gauge skeet loads, extra hard 6 percent antimony shot is loaded.

Added Importance

In fact, while we're addressing the smaller gauges, if you hunt with a 28 or .410 gauge, by all means try the extra hard shot target loads if No. 8s or No. 9s will do, or handload extra hard shot.

It's an old rule-of-thumb that larger gauges will pattern better than smaller gauges with the same payloads because of less shot deformation. Shot deformation can be minimized in the 28 and .410 gauges by using extra hard and plated shot.

Yes, there's a lot of history and technology behind those little lead pellets.



WINCHESTER

A M M U N I T I O N

Winchester Short Magnum Now Goes Super Short!

Introducing the New Winchester Super Short Magnum (WSSM)!

The new Winchester Super Short Magnum (WSSM) - it's the flatter, faster, longer range, harder hitting varmint and thin-skinned game cartridge you've been dreaming about!

The new WSSM is based on a short, fat cartridge geometry with an even shorter action than existing WSM cartridge offerings - approximately 1/2" shorter than the 300 Winchester Short Magnum!

Even better, the new WSSM cartridge design offers

true magnum performance in both 223 and 243 caliber offerings. The 223 WSSM achieves velocity levels that exceed the 22-250 Rem by approximately 200 fps - and the 243 WSSM achieves velocity levels that surpass the 243 Win by approximately 200 fps! Plus, by headspacing off the shoulder, the new WSSM cartridge design promotes exceptional "bench-rest" accuracy.

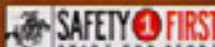
Go Super Short with the New Winchester WSSM - because great hunts deserve great ammunition!



300 WSM vs. 223 WSSM



WHAT AMERICA SHOOTS



WINCHESTER
AMMUNITION

QUARTERMASTER

BY JIM GARDNER

Alpen Binoculars

Binoculars and spotting scopes generally come in two flavors — very fine quality (read extremely expensive), and bargain priced. Bargain optics can be appealing due to their low sticker price, but usually perform so poorly as to be a very foolish investment. Sometimes though, you find a sleeper.

When Vicky Gardner (no relation), of Alpen Outdoor Corp. offered to loan me a pair of their Model 267, Pro Series, 8x25 compact binoculars, I was skeptical. You see, these retail for less than \$100, and I've found few such bargain binoculars worth using.

The short report is these 8x25s are pretty nice.

Optically, you won't confuse these with Zeiss, but the price tag reflects this. Indeed, these glasses show considerable "pin cushion" distortion at the edges of the field of view. But in the center of the field, where we normally work, these Alpen glasses are surprisingly bright and clear.

The diopter and focus adjustments function smoothly and reliably, and the black housing with dark-green armor panels is just what the hunter ordered. Binoculars see hard use, and I noted the objective lenses are set rather deeply into the housing, offering a good deal of protection. Fold-down rubber eyecups accommodate eyeglass wearers.

At 11.1 ounces, these are just the right weight for stalking. They are furnished with a nice, padded nylon case, and a rather wimpy neck strap.



These may be ordered direct from Alpen's Website, and are currently priced at \$89.95.

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QUARTERMASTER

BY JIM GARDNER

Walters' Wads

If you shoot black powder cartridge rifles — as an increasing number of shooters seem to be doing these days — you know a card wad is normally used between bullet and powder. It prevents damage to the base of the bullet, and seems to tighten groups in most loadings.

For years, I've cut my own wads from tablet backing, milk cartons, etc, with a hammer and an assortment of store-bought and shop-made punches. My product was satisfactory, but required a lot of time, and I was not able to cut wads as thick as I would have liked.

My particular bulb glows only dimly, but eventually, I see the light. I was placing an order with Buffalo Arms for other supplies, and at the last moment, ordered 1,000 Walters' Wads.

Eureka! When my package arrived, it contained a tidy zip-lock bag filled to the brim with perfectly uniform, .060-inch thick fiber wads. My wad punches have gathered dust ever since.

John Walters offers these wads in a variety of thicknesses, but the most common choice is .060 inch. The wads are available in an incredible array of diameters to suit everything from .25 caliber rifles to 10-bore shotguns. They're cheap too — 1,000 perfect little wads costs only \$20, plus \$1 per thousand for shipping.

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QUARTERMASTER

BY JIM GARDNER

Blue Wonder Gun Cleaner

To be honest, I really don't like to review cleaning products. Not only do most of them work fairly well, once you've reported that: "Boy, I cleaned my rifle with this stuff and it was a lot cleaner than before I started," you're pretty much done.

Sometimes it's the small differences that do cause us to prefer one product over another. For example, each time I apply a liquid bore cleaner to a brush and then race to get it into the chamber before it all drips off, I wish there was a more efficient solution. And there is.

Blue Wonder is a gel, not a liquid. Its consistency is about like dish-washing soap, and once applied to a bore brush or patch, it stays there. This can be really handy. The package is also just about ideal for dropping into your range bag. No more broken bottles of solvent.

There is, they say, no such thing as a free lunch. My first use of Blue Wonder came while cleaning a rather filthy 1911. Blue Wonder did a fine job of cleaning the bore, but I found it slightly less effective than a liquid cleaner for washing off carbon and burned lube. Not that it failed to do the job, it just took a bit more scrubbing than I'm used to.

As another test, I pulled a Steyr SSG, one of my favorite rifles, out of the safe. This is one rifle I scrupulously clean after each use. I used one dry patch to push any oil out of the bore, and then cleaned it with Blue Wonder following the instructions on the package.

To my surprise, the patches emerging from the muzzle were — if not black as sin — considerably stained, showing Blue Wonder had removed copper fouling my previous cleaning had not.

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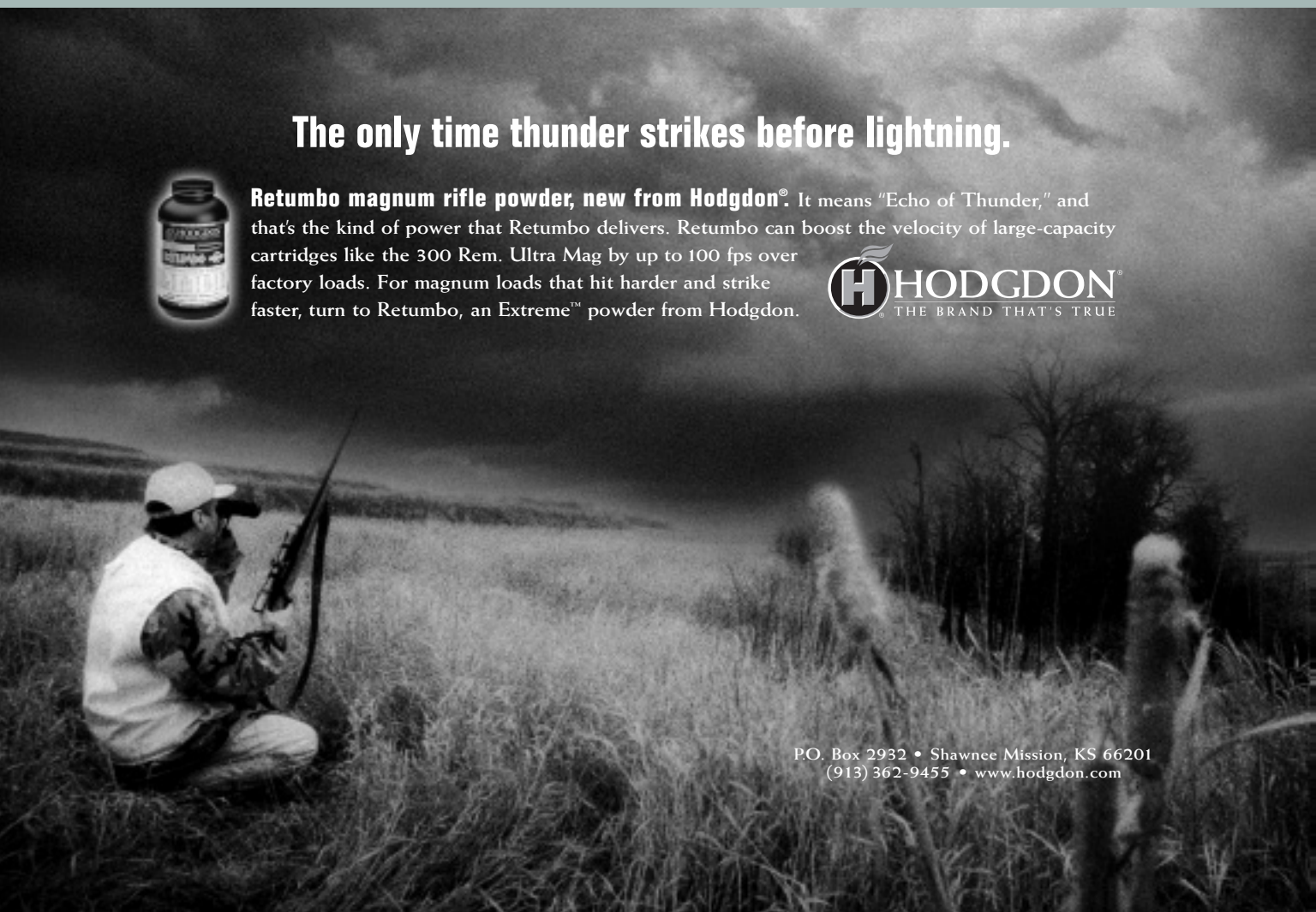
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BH02

Organizing Your Loading Setup

This is going to be one of those, “do as I say, not as I do” stories, because my loading bench is a disaster area. It is 2½ feet wide and a shade under 6 feet long. Most of the time you’d have to move something to see the wood bench top. But there is a semblance of order and I can almost always find what I want.

Since space is a limiting factor for me, the only things permanently bolted to the bench are two loading tools — currently one progressive press and one turret-style single-stage — and a good light that can be positioned over any part of the bench.

Powder measures and case trimmers are mounted on pieces of plywood and clamped to the bench as needed. One corner has an RCBS base plate that will hold a variety of tools — usually the primer seater.

The digital scale and powder dispenser have proven themselves to be so useful they almost always stay put. There’s a small parts cabinet with tools and spare parts and a rack for shell holders. Everything else is stored out of the way until needed.

Have A Plan

How we organize the actual loading area is important too, because good organization helps avoid mistakes. I’m sure everyone’s loading needs vary, but I load a wide variety of both rifle and handgun ammunition. This is divided into ammo I load for recreational shooting and ammunition I prepare for my work.

The recreational ammo is usually limited to: .32-20, .38 Special, .38-40, .44 Special, .44-40 and .45 Colt. For those I have pretty standard loads and simply

crank out a bunch on the progressive when the inventory gets low. My other relatively high volume loading is for varmint or benchrest rifles such as the .221 Fireball, .22 BR, .223 Remington and 6mm PPC. These are done on the single-stage in quantities that rarely reach 100 rounds.

Loading for work involves both rifle and handgun ammo but usually in small quantities... three or five round batches for initial rifle work-ups, and five to ten round batches for handgun stuff. Very often, I’ll just make up a quantity of sized and primed cases using the progressive press, and complete the loading on the single-stage as needed.

Powder measuring for the handgun, benchrest or varmint ammo is done straight from the powder measure, but almost every other rifle charge is thrown to a set weight by the PACT automatic powder dispenser.

Give Some Thought To This

One of the problems in loading is how to handle brass. We are told that brass should be kept together by lot and I guess for the most particular rifle uses this is good, but as a practical matter — especially with handgun cases — they almost always get mixed up anyhow. For the most part this is really harmless unless you’re going for the hottest loads in magnum cartridges.

In that situation it’s wise to keep brass together at least by maker and the number of firings. During its life the cartridge case gets pretty badly beaten up. Repeated stretching and sizing fatigues the brass to the point where it will eventually split, but I restrict things a little more. If we’re really talking about flat-out magnum loads, not only do I keep the cases segregated, I’ll only load them two or three times with the hot stuff and then relegate the surviving cases to moderate loads.

There is another good reason to keep revolver brass in groups that have the same number of firings. It is rarely necessary to trim *any* handgun case, but the length does change. For pistols this is hardly ever a concern but for revolver cartridges that depend upon a good roll crimp for proper performance it can be an issue.

We adjust a seat/crimp die with one case and as long as the others are close to the same length everything is okay, but a variation of five or ten thousandths in length can have a noticeable effect on the crimp.

With cowboy-class loads this probably doesn’t matter much, but it can become an issue for magnum level loads. One of the factors that determines how a powder burns is called bullet pull. Especially with magnum loads there needs to be resistance to the bullet’s initial movement to allow pressure to build enough to ensure complete burning.

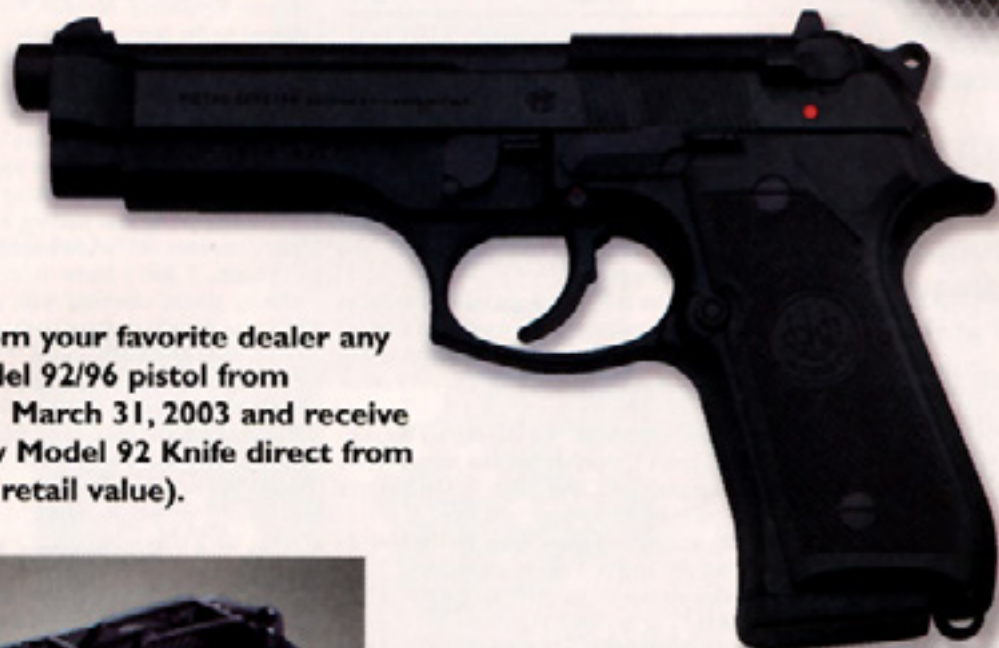
If we keep the brass together in groups that have the same amount of use, the effect on crimp is minimized. For me, that’s a whole lot easier than trimming cases.

Sometimes it’s best to seek professional help. The Website of the National Reloading Manufacturers Association (www.reload-nrma.com) features plans for the best loading bench ever and lots of other helpful material.



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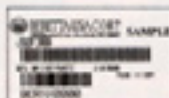
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RIFLEMAN BY DAVE ANDERSON

Reloading Safety

"We always start at the maximum load and work up from there."

Last fall I was browsing the reloading section of my favorite gun store and fell into conversation with a young fellow who was looking at a Redding Pro-Pak kit. He wanted to know if Redding made good equipment, and if the RCBS .25-'06 Rem. dies he already had would work with the kit. I assured him Redding equipment was outstanding in quality, and that his RCBS dies and shellholder were compatible.

I was curious about the fact he already owned dies but no other loading equipment. He explained that for a couple of years he'd been using a friend's reloading tools, but his friend was moving to another city. I asked how he liked his .25-'06.

"Great caliber!" he replied. "I use it mainly for coyotes. It really flattens them. My pal has one too. We worked up a special load that goes 4,200 feet per second."

I'd been idly examining some items on the shelves as he talked, but this snapped me to attention.

"Are you sure you don't mean 3,200 fps?"

"Nope, 4,200."

"With what weight bullet, 30 grains?" I asked half jokingly.

"No, 75 grains."

Now I don't memorize all the loading manuals, but I've used the .25-'06 for many years and have a pretty good idea what it will do. I also realize most people

have more faith in the written word than in testimonial evidence. Fortunately, there was a stack of the new *Barnes Reloading Manual No. 3* on the shelves. I flipped to the appropriate page.

"See here? The highest velocity Barnes shows with 75-grain bullets is 3,667 fps. Most of their maximum loads are right around 3,600 fps."

"Oh, those manuals. They're always way below maximum so they won't get sued. We always start at the maximum load and work up from there."

I could see he was starting to regard me as a hopelessly cautious old fud so I tried to speak calmly.

"Look, I don't know if it's possible to get the velocity you're claiming with any powder. But your pressures have to be through the roof. You're lucky you haven't already blown a case."

By now he was getting impatient. "Well sure, it's a hot load. After each shot we have to pound the bolt open, and usually the primer falls out when the case is ejected. So we only use new cases and throw them away after one shot."

Handloading Myths

I wouldn't blame you for thinking I made this all up, but I swear the conversation was about as described and the velocity figures accurate. My advice to the fellow was to buy a loading manual (or several), ignore the load data for now and study the wealth of information on safe loading practices.

Myth No. 1: Manuals show maximum loads well below the "real" maximum: Not at all. They simply report the results achieved with a specific combination of components in their test rifles, within accepted industry pressure standards. On more than one occasion, I've found that the maximum load for my rifle is lower than the maximum shown in manuals.

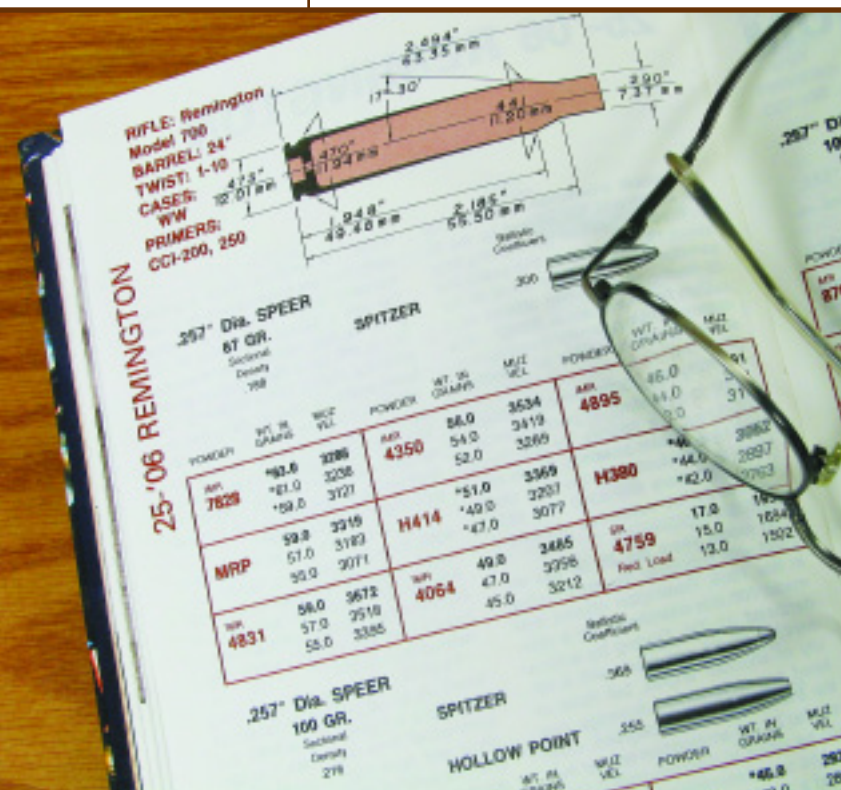
It's true that some loads are lower than in manuals of 30 years ago, but that is a result of much more sophisticated and accurate pressure testing equipment currently available.

Myth No. 2: Modern rifles are so strong you can't blow them up: We've had adequately strong rifles for over a century. Modern cartridge brass is superb in quality but obviously is less strong than the steel of the action. Rifles seldom actually "blow up" in the sense that the locking system or materials fail. Instead, the case fails and the rifle has to control and vent escaping high pressure gases away from the shooter.

With good luck the shooter will survive with only a wrecked rifle and wet pants. With bad luck the shooter or a bystander can be blinded or killed.

Myth No. 3: I need that last 100 fps muzzle velocity: What you need for hunting is ammunition that feeds and chambers smoothly, provides safe pressures over a wide temperature range, and extracts and ejects effortlessly.

No game animal in the world will know the difference between 3,000 and 3,100 fps. If you really must have a bit more velocity, go to a bigger case or a longer barrel.



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MORE BANG FOR YOUR BUCK

SURVIVAL TIPS FOR BUYING USED GUNS

BY GLENN BARNES

Shopping for a used firearm can be compared to looking for a pre-owned vehicle. There are good ones waiting for the knowledgeable consumer, and bad ones destined for the unwary. The secret to being satisfied with your purchase is learning the difference between the good, the bad, and yes, the ugly.

In the first of this three-part series on buying used guns we'll learn what to look for when considering the purchase of a pre-owned semiautomatic handgun. Part two will deal with the intricacies and special needs of the revolver shopper, and part three will cover the many aspects pertinent to buying a long gun.

Why Buy Used?

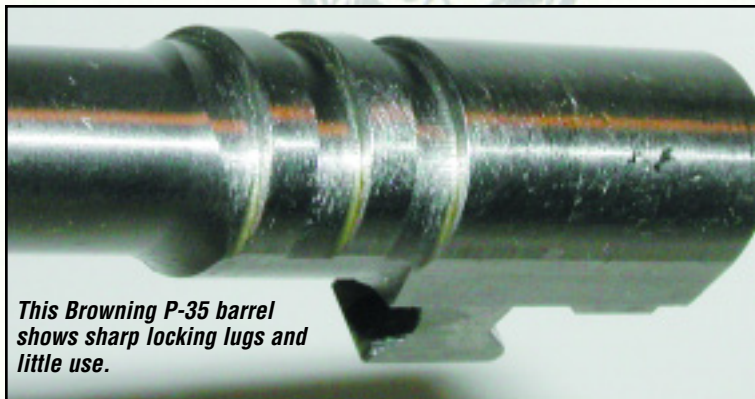
There are many reasons to choose a used auto versus a new one. The most popular is of course the money we save. Over-stretched budgets and non-understanding spouses will also appreciate this bit of wise logic.

Maybe your interest lies in handguns no longer manufactured. Many of us love those classy old pocket autos produced by Colt, Remington, and Savage. These handguns are still around in large numbers and may often be had at a reasonable price, but the only place to find them is on the used gun market.

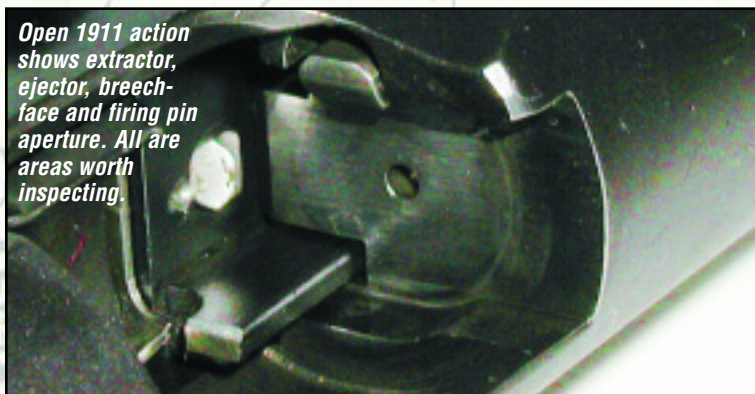
Do you collect or shoot say, German military handguns? Newly manufactured Lugers and P-38s are a thing of the past. Still want one? You can find them by haunting the used handgun counter at your local gun shop, or most any decent gun show.

Twenty some years standing behind the gun shop counter will teach you a thing or two about what to look for when buying used handguns. Mistakes directly affected my profits, so I tried hard to avoid them. For the most part, I did. Armed with the simple tips we will discuss, you too can be assured of avoiding costly mistakes, and in the process, wind up with a bargain instead of a burden.

You've decided you're in the market for a used semiautomatic pistol. You waltz into your favorite gun shop to look around. In the last handgun counter, partially hidden



This Browning P-35 barrel shows sharp locking lugs and little use.



Open 1911 action shows extractor, ejector, breech-face and firing pin aperture. All are areas worth inspecting.



Use of a dummy cartridge can prove proper feeding, extraction and ejection right in the store.



Sure, it's priced right, but is it really a bargain? A few minutes inspection will tell you if it's treasure or trash.

under an array of accessories, lies what you have in mind — a commercial Colt 1911. You ask the clerk to hand it to you for inspection. The observations you make now, and the questions you ask, will determine the success or failure of your venture.

First Impressions

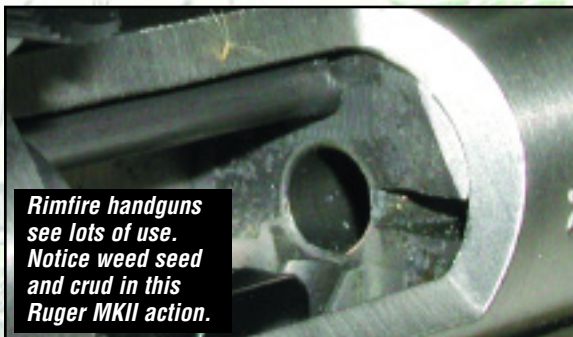
Just like people, that first impression means a lot, and is usually a lasting one. Holding the pistol in your hand, turn it over several times. How does the exterior look? Are there any serious dings or scratches in the metal? Has it been re-finished? Check for the tell-tale effects of corrosion and pitting.

Does it show signs of holster wear? Are the stocks damaged or cracked? What about the sights? Are they bent and out of shape? Do the screws show evidence of abuse through the use of ill-fitting screwdrivers? Keep these things in mind when you first examine the handgun. It will tell you quite a bit about the gun and its former keeper.

At first impression, this one looks pretty good on the outside. One small ding on the slide, a couple of minor scratches and a pretty bad dent on the rear sight, along with minor holster wear. The front sight is straight. The grip screws are in rough shape, which is not uncommon on these guns. The clerk said it has not been refinished. He's a nice guy; you've dealt with him before and trust him.



Ejector of Browning P-35. See that line? Is it a crack or only a surface flaw? Be sure before you buy.



Rimfire handguns see lots of use. Notice weed seed and crud in this Ruger MKII action.



Fieldstripping is essential when inspecting a used autopistol. (Inset): The old pencil trick will proof out the ignition system.



A bore light is a good tool to take when shopping.

Reading Bumps And Bruises

Let's delve a little deeper into your first impression and translate what you see into basic bottom line English. Dings can only mean one of two things. Either the handgun was dropped, or something was dropped on it.

Handguns are capable of withstanding a certain amount of abuse and still function properly. You shouldn't be too concerned with a few minor dings unless, of course, they interfere with the function of the handgun. We want a shooter, not a collector's piece. A few minor scratches doesn't hurt anything either.

We are not concerned with the minor holster wear. Holster wear adds character and does not affect the functionality of the handgun. Don't worry about those bugged grip screws; they can be replaced for next to nothing.

Your salesman said this has not been refinished. If you

can't tell yourself, trust him. He really does want you to be happy with your purchase. Refinishing a handgun does not hurt anything other than its value. It does make you wonder if something is being covered up. Keep this in mind as you inspect further.

Often you'll encounter used autos that sport little or no factory finish. The effects of holster wear have taken their toll. The price is often low enough to entice you to purchase it and maybe have it professionally refinished. This move seldom pays off. The cost of refinishing a handgun usually starts around \$150, and adds nothing to the value of your handgun. In fact, it will ruin any potential collectors' value the pistol may possess.

This 1911 appears to be just what you had in mind. You can live with the few cosmetic defects. But before you reach for your wallet, let's check out a few more important details.

The Old Pencil Trick

Will the handgun actually fire? Short of a trip to the range to see for yourself, you don't know. Most gun shops will guarantee the handgun's functionality, but if it doesn't work, you still have to carry it back, which costs you time, not to mention the aggravation. A quick and easy way to check the firing pin and mainspring (with the store-keeper's permission) is to drop a pencil down the barrel, cock the hammer and pull the trigger.

This is also a great time to check the safety functions. If you're not sure where they are located, by all means have the clerk show you. If all is in order, when you pull the trigger, the pencil should sail from the barrel. If not, you know there is a potential problem. Maybe there's no firing pin, maybe it's broken, or perhaps the mainspring is weak.

Will your handgun extract cartridges from the chamber? There's only one way to find out. Most shops have a few snap caps, dummy rounds or fired cases lying around; insert one into the chamber. Pull the slide back briskly, and the dummy round should extract easily, the ejector sending the round flying. Repeat this process several times to insure everything is in order.

Getting Below The Skin

We've given this candidate a good external inspection, but there's more to check. Ask the clerk if it's all right to field strip the pistol. If you are not sure how to do this yourself, kindly ask the salesman to perform this chore for you. Usually they will be happy to comply.

Glance down the barrel to check for bulges or pitting. A bulge is easy to spot even by the most inexperienced eye. It reveals itself as a ring on the inside, and if it's a bad one, you can actually feel it as you run your fingers along the exterior of the barrel. Don't over look this important inspection.

While you're looking down the barrel, make sure it has a nice clean bore. By clean, I mean not worn out. The lands and grooves should be in good shape; the inside should not be gray or murky; it should be nice and bright. That's what you want.

The muzzle crown is a particularly crucial area. Make absolutely certain it has no dings, dents, or heavy scratches. If every thing else on the pistol looks good, and the crown is damaged in any way, pass on the weapon and find something else, or figure in the cost to have a gunsmith re-cut it. A nice smooth crown is a must for good accuracy.

Tell-Tale Wear

Let's look at the inside of the slide. What you're checking for now is excessive wear and cracks. A small pocket magnifying glass might come in handy for this. I use one regularly. Expect to see some normal wear and tear, after all, it is a used pistol. Excessive wear generally means the gun has been shot a whole lot, probably thousands and thousands of rounds.

It could also mean it has digested countless rounds of ammunition loaded to extreme pressures. If you're interested in a shooter, you should avoid a handgun that shows excessive wear. Cracks in the slide are obviously something to avoid so examine carefully.

Using your magnifying glass, look at the breech-face and the firing pin hole. The surface of the breech-face should be nice and smooth. I've examined some that exhibited roughness and tool-marks, which is a sure sign of sub-standard workmanship. The firing pin hole should be round and free from burrs. So far, this pistol is shaping up to be a keeper.

Let's turn our attention to the frame. There is no two ways about it; frames take a beating. Modern steels and alloys help alleviate the wear to some degree, but it still pays to examine closely. A proper slide to frame fit helps enormously to reduce excessive wear. Examine the frame rails. They should be free of marks or gouges, exhibit minimal wear, and the slide should ride smoothly across the rails with no resistance.

Don't Sweat The Small Stuff

Should you check out the springs? This may sound a little crazy to you, but springs in a used handgun are not that important to me. Why? The first thing I do is replace them with a new set. Springs wear and should be changed every 3,000 rounds to insure proper functioning. You have no way of knowing if they have ever been changed, so it makes sense to start out with a fresh set.

After assembling the pistol, cycle the action a few times to make sure everything is correct. Check the safety functions making sure they work properly. Examine the magazine carefully. There should be no dents in the body and the feed lips should show no cracks or damage. If any of these are evident, discard the magazine and buy a new one.

Your "new to you," pistol, checked out fine. One last thing you need to ask the salesman about before you lay down your hard-earned cash is the warranty. As mentioned earlier, most shops will guarantee the firearm's functionality, but what happens if any hidden problems arise? How is he going to take care of you and the problem? Obtain clear and precise answers and if they satisfy you, buy the pistol.

Later, at the range, this pistol shot and functioned perfectly. It proved to be a real keeper. You're happy and you should be. You're homework and knowledge of what to

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look for in a used handgun paid off, and you saved enough money to buy a new holster and several boxes of ammunition. Good deal!

Well-Used Rimfires

Our used pistol example was based loosely on a 1911. The same principles of examination apply to virtually any centerfire semi-automatic handgun, and using them properly and wisely will result in a used pistol you can be proud of.

Self-loading rimfire handguns are checked out much the same way as their bigger brothers. Keep in mind however, that the modest cost of .22 ammunition means most rimfire pistols have fired many, many, thousands of rounds.

Encountering used rim-fires that haven't been shot a great deal is a rare occurrence. That doesn't mean there's anything wrong with them, just make sure you examine them with extra care.

Finding used auto pistols in fine shape gets easier all the time. Police trade-ins are found regularly and are superb buys. You get a lot for your dollar. Usually they are perfect mechanically; they've just acquired that mature look.

Thinking Down The Road

One thing to bear in mind when shopping for a used semi-auto is to watch out for odd-ball foreign handguns. Many are priced low enough to entice you to buy them, but should you need service or parts, you're out of luck. Use the common sense approach and shop wisely.

Foreign made autos aren't the only handguns that can be difficult to repair. Older, discontinued examples of American made pistols are sometimes hard to find parts for. Keep this in mind as you shop.

If the handgun of your choice happens to be an obsolete model, don't let the scarcity of parts discourage you from buying it if you really want it. Quality gunsmiths abound in this country, and most are able to fabricate the necessary parts should the need arise.

One topic we should discuss is custom autos. Years ago, the only way to obtain an extremely accurate pistol was to have a gunsmith accurize it. Thankfully, this is no longer necessary, as most semi-autos leave the factory fully capable of target grade precision.

Custom work has never been inexpensive and it never will be, but you should not expect to pay a high tariff for someone else's project. Examine custom handguns closely. If you have never heard of the gunsmith you may consider choosing another gun, or if you really like it, check the gunsmith out. You might have a really nice shooter.

Whether your interest lies in finding a bargain, or in obtaining a handgun no longer in production, buying a used pistol is always a sound option. Look them over carefully, exercise good judgement, and not only will you save money, you'll probably enjoy the search as well.



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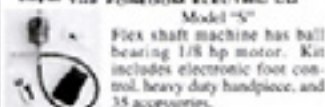


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SS495 Cheyenne Blade only \$18.75

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7 1/2" overall with 3" blade

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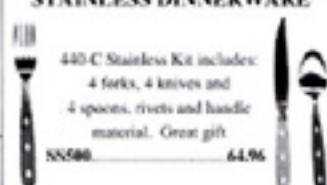
KODIAK

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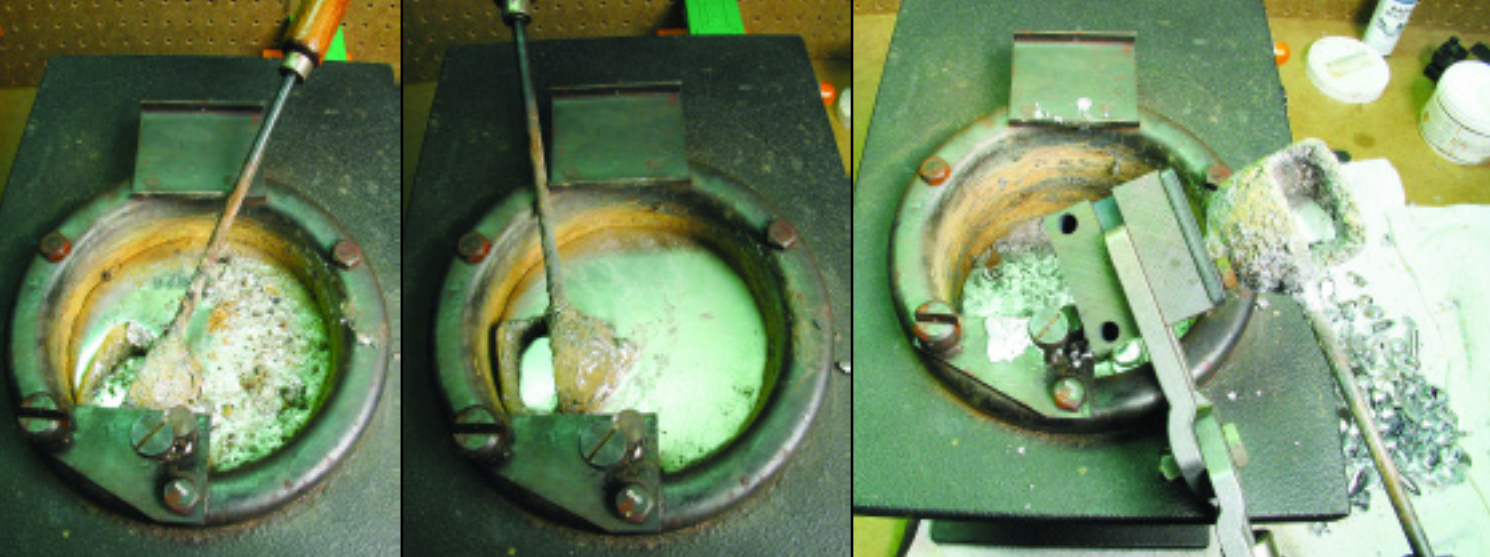
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Cast Bullet

A beginner's guide to pouring your own.

Slowly, the cold gray mass in the lead pot takes on a darker hue. First a bluish tone, and then a slight coppery blush before the last cold crust is swallowed up and the pot assumes the uniform brilliant shine of quicksilver. Give it a few minutes to come to full temperature, and then, after fluxing the metal, the first ladle full of lead is lifted to the pre-heated mold.

A moment for the lead to harden, then tap open the sprue plate, swing open the mold and drop the fresh bullet onto the waiting padded surface. That first good bullet, bright as a newly minted coin, has always been an item of fascination to me.

What will we do with it? Win a match? Lose one? Take a fine game animal? Teach some deserving lad to shoot?

Or will we simply crumble a dirt clod on the far side of the canyon?

Whatever the fate of this bullet, casting your own projectiles before loading your own ammunition results in the highest level of personal involvement and the greatest enjoyment in your shooting. Or at least, so it seems to me. But there are other reasons to cast your own bullets.

Three Good Reasons

Economy is certainly one. If you use scrap materials — wheel weights, salvaged bullets, lead pipe, etc. — your cost per bullet, and thus per eventual round of reloaded ammunition, can be astonishingly low. Yes, you must discount the value of your time, and there is equipment to be purchased, but still, you can shoot for pennies per round.

Accuracy is another reason. Cast bullets — skillfully molded, carefully selected and uniformly loaded — can deliver the best groups your handgun, and sometimes your rifle, is capable of producing.

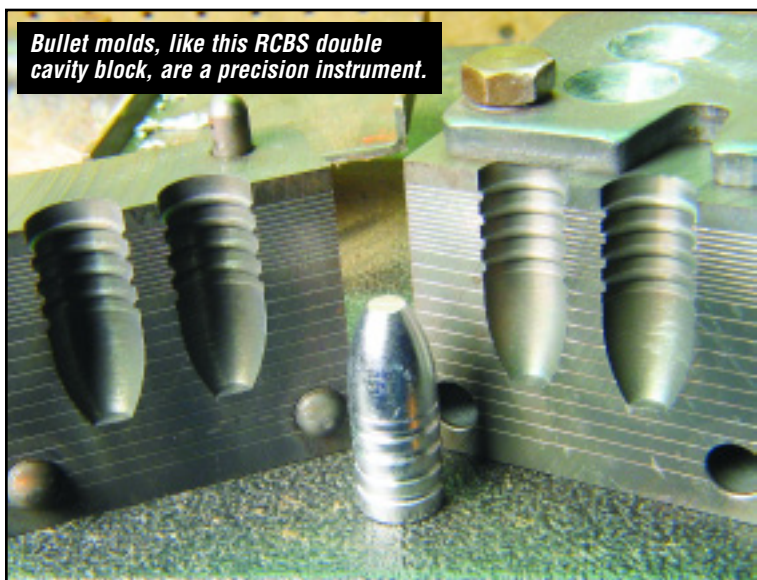
Yet another reason to pour your own exists for those who load obsolete or unusual calibers. Want to put granddad's old .44-90 Sharps back into action? You'll not find a suitable bullet from Speer, Sierra, Nosler, etc. You must cast your own, or order cast bullets from one of the very few suppliers of vintage components. Why not learn to do it yourself like Granddad did? He'd be proud of you.

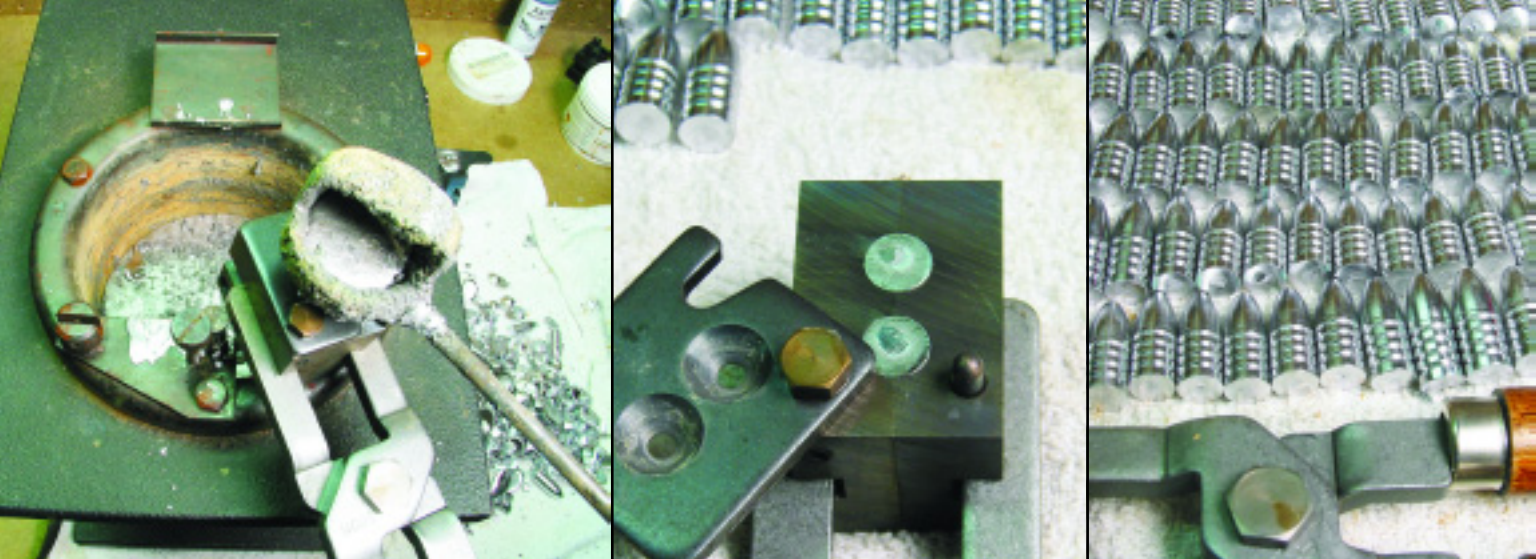
If learning to cast your own bullets offers all these advantages, why is it most shooters today don't do so?

The primary reason is that commercial suppliers of very good quality cast bullets exist in all parts of the country. Their offerings perform very well in handgun calibers. Some also produce rifle bullets, but these are limited in selection, and are really suitable only for smokeless loading.

Besides the ease of ordering pre-cast commercial bullets, some shooters shy away from casting because of a mistaken

Bullet molds, like this RCBS double cavity block, are a precision instrument.





Primer

By Zachary Foster

Above (l-r) 1: Lyman 20-pound pot full of alloy, see how dirty? 2: After fluxing and skimming dross. 3: Bring the mold horizontal to the ladle, and then... 4: Roll to vertical to fill the cavity. 5: Check bullet bases constantly as you work. These look okay. 6: Neat pile of bullets waiting inspection prior to lubing and loading.

belief the process is excessively difficult, or that working with lead is somehow unsafe.

Is bullet casting difficult? Good heavens, no. You'll produce fine, shootable bullets on your very first try.

Reasonable Precautions

As to safety, lead — especially molten lead — should always be treated with respect. Personally, I rigidly observe the following four safety rules...

- 1) When melting lead, provide good ventilation.
- 2) Wear safety glasses, gloves, and long-sleeves around molten lead.
- 3) Do not allow liquids of any kind to contact molten lead. Be careful of beverages, perspiration, etc.
- 4) Wash hands thoroughly after handling lead or ammunition, and especially before eating (or smoking).

With the requisite precautions out of the way, let's look at what equipment is required to produce good quality cast bullets.



Bullet molds come in amazing variety. Here are a few favorite designs, from an 87-grain .25-20 SS bullet to a massive .45 caliber, 550-grain paper patch bullet.

Lubrisizers, like this one from SAECO, are mighty handy.



SAECO's lead hardness tester.

Lead Pot And Ladle

Lead may be molten either in a simple cast-iron pot using a separate external heat source, or in an electric furnace. My earliest efforts involved no more equipment than a plumber's lead pot, a gasoline stove, the mold for my '51 Navy and an old iron spoon. Some still prefer the simple plumber's pot, but by far most bullets are cast using an electric furnace.

Here you have several choices. Fine electric furnaces are available from Lee, Lyman, RCBS, Rapine and others. Most of these will have a thermostat to vary lead temperature for ideal results. They'll vary in capacity and in the presence or absence of a bottom-pour spout.

Bullets may be cast using a bottom-pour spout, or alternately by the use of a lead ladle. This is a matter of individual preference, although it's generally agreed the most accurate bullets are produced with the use of ladle. Regardless, a bottom-pour spout is an asset when the time comes to empty the pot, whether for cleaning, to change alloys, or when pouring ingots for future use.

Bullet Molds

These come in fascinating variety, and are available from Lee, Lyman, SAECO, Rapine, NEI, RCBS, and others, as well as from a host of custom makers. Molds may be ordered with one, two or four cavities. Most

modern bullet molds are constructed of iron, but Lee and Rapine fabricate aluminum molds.

Some molds are furnished with handles, but more commonly, one detachable handle is used with many different mold blocks. Be certain to use only the handle the mold block is designed to accept.

Bullet molds are precision instruments, and must be used and stored carefully. Let a mold become rusty between uses, beat on it carelessly while trying to drop a reluctant bullet, or damage the mold with careless cleaning, and you may as well toss it into the rubbish.

By contrast, take good care of it, and it will last indefinitely, providing you with numberless quantities of great-shooting bullets.

This Pro-20 furnace from Lee holds 20 pounds of alloy and is priced right.

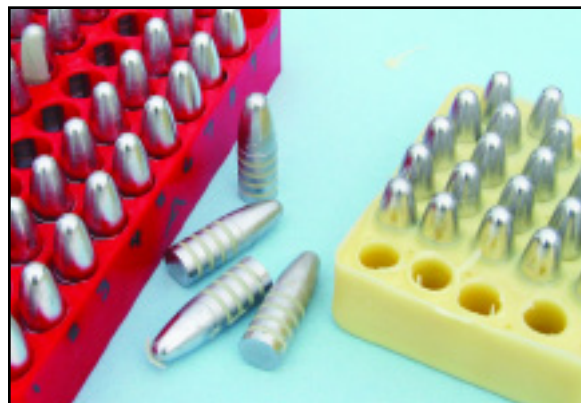


Sizing And Lubricating Equipment

With the exception of paper-patch bullets, cast bullets must be lubricated before use. In addition, during this process they may be run through a sizing die to bring them to a specific uniform diameter. Lyman, RCBS and SAECO manufacture lubrisizing machines. With such a device, the bullet is sized and the bullet lube is pumped into the lube grooves, all in one stroke. Lee offers a different, but economical and effective system.

For the utmost in rifle accuracy, a bullet that drops from the mold at the correct diameter should not be sized at all. An earlier and perfectly adequate system of lubricating bullets without sizing is called pan lubing.

In this method, the bullets are arranged neatly in an appropriate pan, which is then poured full of lubricant (melted in a double boiler) until the lube grooves of the bul-



Above: Pan lubing, done here with SPG (an excellent lube) is a simple process. Below: Lee offers many innovative molds, such as this one to cast a copy of the hollow-based, M1873 Government .45 bullet. Shown with original M1873 bullets from an Indian wars battle site.



lets are well covered. Allow the lube to solidify, but not to grow completely cold. Knock the resulting cake of lube from the pan, and you'll find you can easily press the bullets from the cake, leaving the lube grooves perfectly filled. My favorite bullet lube for pan lubing is SPG.

So where are you going to get all of this good equipment? Don't forget your local dealer. If he has what you need or can readily order it, all well and good. If you don't support your local businesses, they won't be there in the future.

That being said, it's not common these days to find a gunshop with a good selection of casting equipment or any knowledge of the subject. There are a number of excellent mail-order suppliers, and I've had great success with Buffalo Arms, Midway, and Cabelas. Midway puts out a dedicated bullet casting catalog that's a must have.

Step-By-Step

Now, let's fire up the pot and learn a few secrets about producing usable bullets.

Almost any type of lead can be used to cast satisfactory bullets. For handgun and plinking use, any alloy sufficiently hard to leave no leading in the bore will serve. Your loads play a role here. Mild loads may succeed with very soft bullets. Hot loads will require an alloy as hard as you can make it. By contrast, bullets for black powder cartridge loading are generally cast of very soft alloys.

Most bullet casters simply run a fingernail across a bullet to judge hardness, but better results can be obtained with the right equipment. Redding/SAECO makes a lead hardness tester that's easy and simple to use.

Rather than telling you the exact content of the test alloy, it gives you a relative hardness reading. Keep good records, and when suddenly that superb load ceases to perform, you may learn you've unwittingly altered the hardness of your bullets.

As your selectivity increases, you'll find yourself desiring to cast with specific alloys. You can produce them yourself, by alloying pure lead with tin, antimony, linotype, etc, or you may purchase carefully alloyed ingots from sources such as Midway and Buffalo Arms.

Scrap wheelweights are the most common source of bullet material, and if you cultivate a good relationship with your local tire and wheel store, you'll be in good shape.

Getting Started

As the lead pot slowly melts our chosen alloy, we'll be sure to place the mold or molds on top of the pot to preheat. I often work with two molds at a time to prevent overheating one, and to cast a second type of bullet. Regardless, your mold, bullet metal and ladle if used must all be brought up to temperature before use.

With the pot up to full temperature, we need to flux the metal. Old instructions recommended beeswax or paraffin for flux.

continued on page 60



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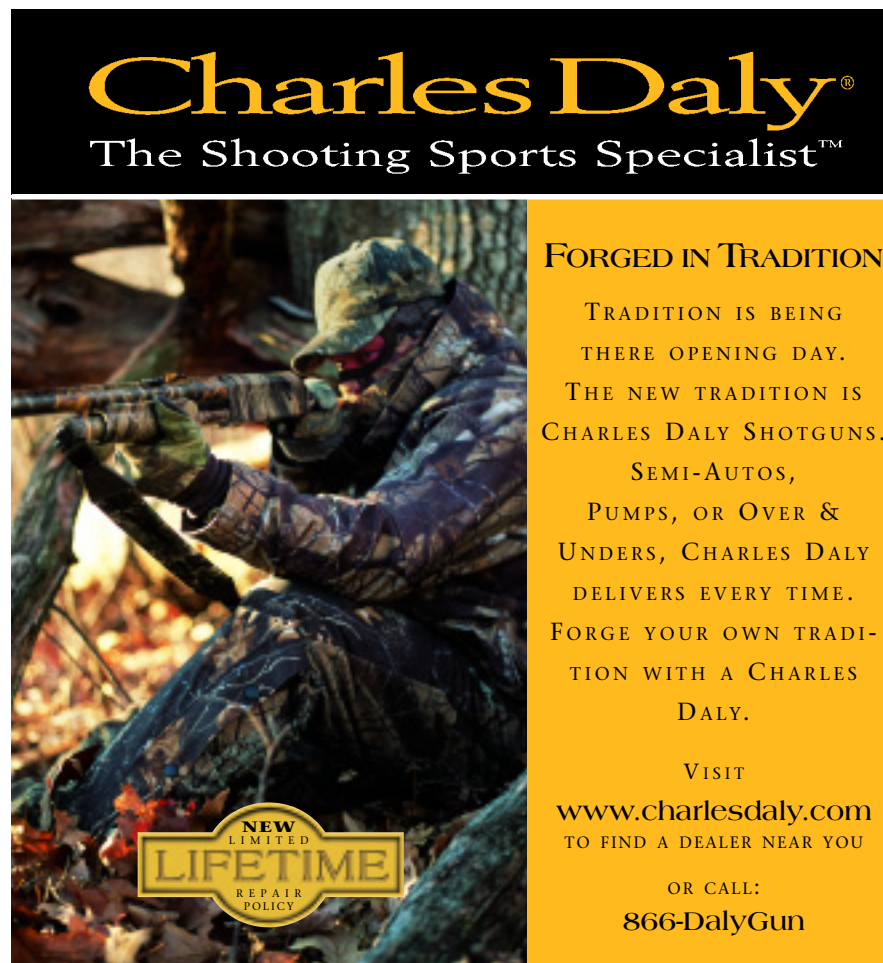
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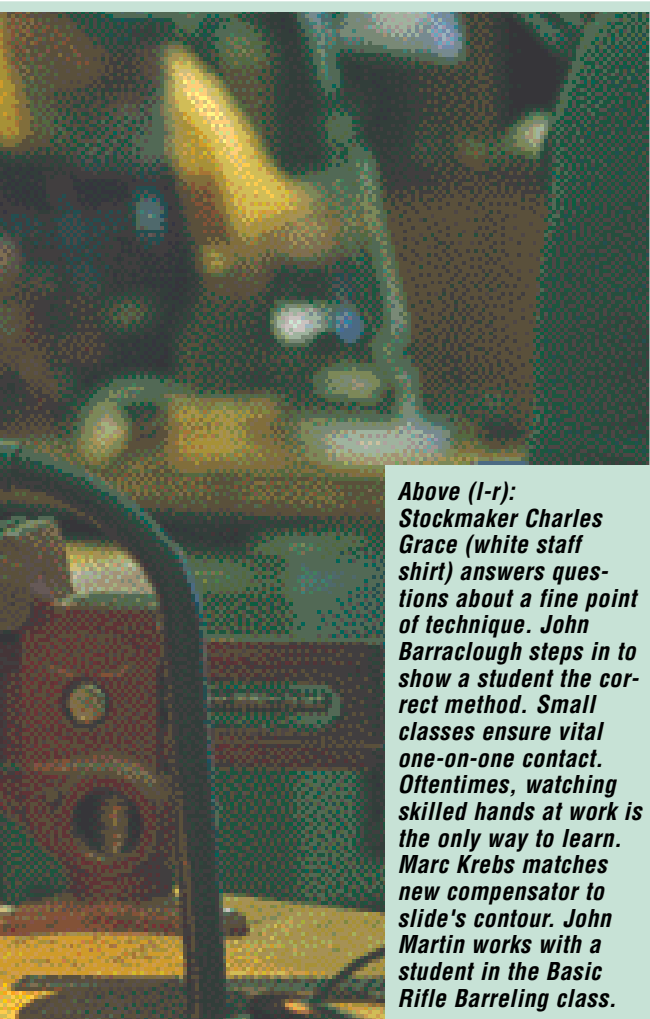
Lassen





College

STORY BY David M. Fortier



Above (l-r): Stockmaker Charles Grace (white staff shirt) answers questions about a fine point of technique. John Barraclough steps in to show a student the correct method. Small classes ensure vital one-on-one contact. Oftentimes, watching skilled hands at work is the only way to learn. Marc Krebs matches new compensator to slide's contour. John Martin works with a student in the Basic Rifle Barreling class.

Forging Gunsmiths Since 1945

Having been burnt a number of times, I'm not a real fan of custom gunsmithing. It's as simple as that. Why you ask? Well, it's amazing how quickly a hack can ruin a fine firearm. Something I learned the hard way when I was younger. Back then, I traveled around my state to some of the "better" smiths to have work done. What I got was the chance to pay to have a custom rifle wrecked, and a couple prize handguns violated. That really soured me.

I was lucky though. I have a good friend named Donny who's just naturally talented with metal and wood. After some hack had his sinful way with a rifle or pistol of mine it was invariably Donny who fixed it. Payment usually consisted of a pepperoni pizza, which he munched on in-between scolding me and fixing my piece. For someone with no actual training as a gunsmith, it was amazing what he could accomplish. I always wondered what would have happened if a skilled professional had taken Donny's natural talent and shaped and forged it into a trained gunsmith.

“Having experienced the frustration a poorly skilled gunsmith can cause, I wondered where proper gunsmithing skills could be learned.”

Where Would You Go?

I'm sure there are a lot of people like Donny out there, people that just naturally have the touch. People that if given the opportunity to sit under professional instruction, have the potential to become skilled gunsmiths. The question though, is where on earth does someone actually go to learn the fine art of gunsmithing?

This is where things become murky, and to be blunt, I didn't know. So I made numerous inquiries, and soon found myself on a roadtrip to find the answer to my question.

My quest took me far from the salty smell of the Atlantic on the rocky Maine coast, clear across our great and beautiful country. I eventually arrived in Northern California, my destination the small town of Susanville. It was here in the vast rural California countryside that I was to find my answer, Lassen Community College.

The 11th oldest community college in California, Lassen is notable for their accredited Vocational Gunsmithing Program. The school's history stretches all the way back to May 4, 1925. It was on this date the Junior College Department of Lassen Union High School was founded. By 1941 the school had grown large enough to require its own facility. As the years went by the school continued to grow, and in September of 1945 a gunsmithing program was added.

One Man Made It Happen

This program actually began due to the badgering of one student, Harlan Fritts. He approached C.W. Frost, at that time the Lassen Union High School industrial arts teacher, about obtaining a junior college course in gun-

smithing. Frost, who had been a custom gunsmith before the war, consented and although tools were lacking, a course was started on a trial basis.

Throughout the 1945-46 school year, Harlan Fritts was the only student. Although the course was not advertised, enrollment jumped to 13 the next year. The following year there were 21 students and the year after 32. By the 1949-50 school year, enrollment was up to 47 with 138 requests for admission turned down due to limited facilities.

Instructor Frost moved the program into a separate building which had new metal working tools needed for the course. These initial courses covered the conversion of surplus military rifles, which were plentiful after the war, into custom sporting rifles. After five years, Frost was superseded by Hugh O'Daniel, who taught through the spring of 1957. He was followed by John Wise, who was to teach at Lassen for some 25 years.


Growing To Serve

Under the leadership of John Wise, Lassen's gunsmithing program was greatly developed and expanded. The courses became fully accredited and the school moved to its present campus. Master gunsmith Bob Dunlap, who had attended Lassen as a student in 1959, returned to help teach in 1972.

As enrollment grew, a number of other teachers and teacher aids were added to the schools' staff. In 1984 the NRA's unique short-term summer gunsmithing classes were added. As the years went by, Lassen continued to grow and evolve to better meet the needs of its students.

Today Lassen's campus consists of 165 acres and 39 buildings. In addition to classrooms, laboratories and offices, it has a dormitory, library, college union, computer rooms, large gymnasium and outdoor recreation facilities.

continued on page 57



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MERKEL'S PETITE 16/20



A svelte double from the land of fine gunmaking.

By Holt Bodinson

One of the endearing qualities of the 16 gauge is that fine sixteen's can be crafted onto smaller 20-gauge frames. The result is a light, fast handling, upland game gun with real punch. Of course the Europeans have known this fact for a long time.

On the Continent, the 16 gauge reigned supreme for decades before the twelve began making inroads in the later half of the 20th century. Classic, pre-war 16-gauge doubles are jewels of the gunmaker's art, and are still sought out by sportsmen who enjoy hunting with something of beauty and individuality.

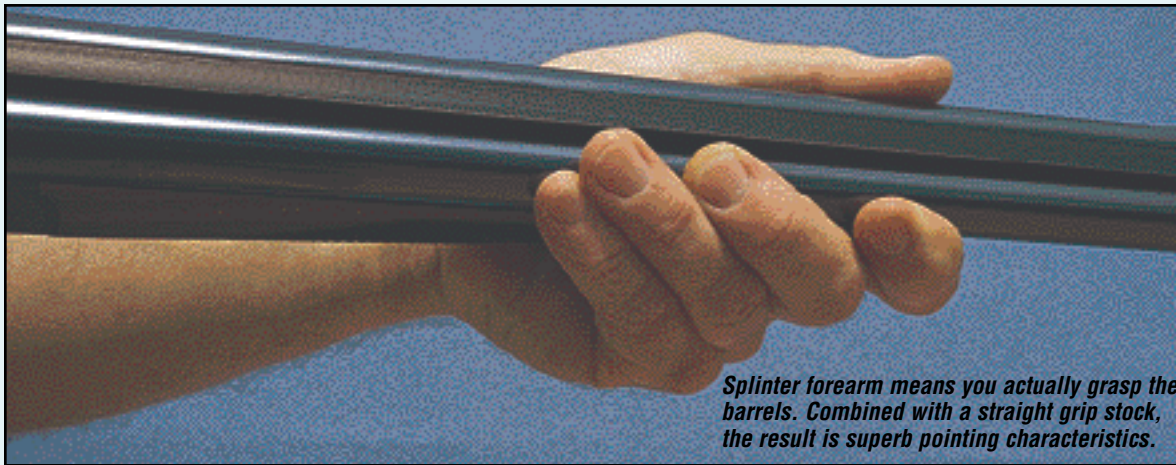
Merkel, which has been building fine guns in Suhl, Germany since 1898, has introduced a classic 16-gauge side-by-side built on a twenty-gauge frame, called the Model 1620. Here's a slim, trim 16 gauge that can also be purchased with an extra set of fitted 20-gauge tubes. Weighing 6 pounds with the 16-gauge barrels, and 6 pounds, 3 ounces

with the 20-gauge tubes, the Merkel Model 1620 is a wand of an upland gun one can carry all day.

Post-War Intrigue

In many ways, Merkel is a remarkable company that survived intact under the most difficult conditions of the Cold War. While traditional Suhl-based gunmaking firms like Sauer, Heym, and Krieghoff relocated to West Germany after the Soviet occupation, Merkel continued to make fine guns under the East German Communist regime. Because of U.S. Treasury Department restrictions, post-WW II guns from Suhl and other Eastern Bloc makers were not exported to the United States.

As shooters, we had to scramble for existing pre-war models or cajole our Army and Air Force buddies into bringing home a Suhl-made Merkel, Simson, Fortuna, or Hubertus from West Germany, where they were readily



Splinter forearm means you actually grasp the barrels. Combined with a straight grip stock, the result is superb pointing characteristics.



Traditional double triggers are simple and reliable.



The Merkel action is a study in classic design.

available through Waffen-Frankonia in Frankfurt and other suppliers. And at the top of our “wish list” was always a Merkel.

Fortunately, history was with us, and today GSI in Trussville, Ala. imports the complete Merkel line of O/U’s, SxS’s, drillings and double rifles.

The lithe, little Model 1620 is built on a compact Anson & Deeley boxlock action. A typical Anson & Deeley lock consists of five moving parts. It is simple, reliable and durable. The lock-up in the Merkel is strong, featuring Purdey-type double underbolts and underbites plus a Greener-type cross-bolt passing through the rib extension that keeps the barrel faces tight against the standing breech.

For Long Life

Did I say, “Tight?” As received from the factory, a new Merkel is one of the tightest shotguns on the market. Purposely so, of course, so that the gun wears in gradually with use, thereby extending its useful life. In any case, tol-

erances have been kept to an absolute minimum at Merkel, indicating not only precise machining but also careful hand fitting during the final assembly phase.

Also adding to the strength of the Merkel’s boxlock action are forged receiver ledges visible on both sides of the action bar just below the barrels, plus side-clips extending out from the rounded portions of the standing breech and enveloping the upper edges of both barrels.

Proven Double Triggers

Merkel’s side-by-sides are fitted with traditional double triggers only. While some might feel double triggers are passé, they still offer the most simple and fastest method of choke selection, plus they’re reliable. When mated with a straight grip stock like the Model 1620’s that permits the trigger hand to freely shift fore-and-aft, double triggers offer many advantages in an upland game setting, where flushes take place at various distances, and for the hunter who is not using dogs, quite unexpectedly.



Sixteen-bore barrels on trim 20-gauge frame make the Merkel a delightful upland gun.

Mastering a double trigger is not difficult. The forward trigger fires the right, normally more open-choked barrel, and the rear trigger, the left. Once that sequence is ingrained, the operation becomes instinctive and lightning quick. It's just like learning to ride a bicycle.

Automatic ejectors and an automatic, tang-mounted sliding safety round out the mechanics of the action while brilliant color-casehardening and a touch of scroll engraving add a bit of class and beauty to the gun.

Steel-Safe Fixed Chokes

The nicely tapered Merkel barrels are hammer-forged from Krupp steel. This results in a high degree of surface hardness — hard enough that the integral chokes are rated “steel approved” by the factory — although I don't think the 1620 is designed for or is going to be used for waterfowling. Merkel does not offer guns with screw-in chokes, but they do recommend Briley as an after-market source.

As received, the 1620 was fitted with two sets of solid-ribbed, 28-inch barrels. The No. 1 barrel was in 16 gauge, with 2¼-inch chambers, and the No. 2 barrel in 20 gauge, with 3-inch chambers.

Both sets were choked IC (marked “VZ”) and M (marked “1/2”). On my scale, the 20-gauge tubes weighed 3 ounces more than their 16-gauge stable mates, bringing the total weight of the gun up to 6 pounds, 3 ounces. In terms of handling and balance, the slight difference in weights between the 16- and 20-gauge barrels was undetectable.

Continental Stocking

Merkel guns are noted for their fine walnut, and the richly figured, dark walnut stock on the 1620 was no excep-

tion. Its slender, splinter forend mated to a straight English type grip keeps the shooter's hands in the same plane and in line. With a true splinter fore-end, the shooter is cradling the barrels rather than the stock.

It is this hand-to-hand, hand-to-barrel-to-target relationship that is so essential to successful shotgunning. On a more subtle note, splinter fore-ends and straight stocks also permit the maker to shave a few ounces off overall weight, resulting in a lighter, faster upland game gun.

On a custom basis, Merkel can provide a stock with any set of special dimensions. As supplied, the stock dimensions of the standard 1620 are set-up for a right-handed shooter with 5/32-inch cast-off at the heel and 1/4-inch cast-off at the toe. Length of pull is 14½ inches. Drop at the comb is 1½ inches, and at the heel, 2½ inches.

The factory buttplate is a hard composite that should be replaced with a rubber pad as soon as possible. The overall oil finish and quality of the checkering were just fine for a field gun.

And to the field we went. There isn't a better way in the world to wring out an upland game gun than to go shoot a 100-bird sporting clays course. The unpredictable appearance of sporting clays from any direction, distance, height, speed, and angle place a premium on a smooth, spontaneous swing and a well balanced gun. That little Merkel was going to have to win or loose on the sporting clays trail.

Ammunition Variables

The only 16-gauge shells I had on hand were several boxes of Remington promotional game loads featuring 1½-ounce of No. 7½s at 1,295 fps. One of the key virtues of the 2¼ inch/16 gauge chambering, when compared to the equivalent 20 gauge, is its ability to deliver denser patterns at

higher velocities in a gun that is still scaled to 20-gauge proportions.

For example, the same promotional game load offering for the 2½-inch/20 gauge consists of 1 ounce of shot at 1,220 fps. So the 16 gauge in this loading delivers approximately 43 more No. 7½ pellets on target at higher velocity and energy levels, and that's pretty much the same story across the board when comparing the two gauges.

The classic "square" load for the 16 gauge that has a reputation for very even patterns is 1 ounce of shot, although you will find heavy 1¼ ounce loadings available from Federal in premium lead, or from Kent in Tungsten Matrix for waterfowling.

Since the popularity of the 16 gauge is greater in Europe than it is in the U.S., it's not surprising that Fiocchi offers the greatest variety of 16-gauge loads. And if you're a handloader, you'll find Ballistic Products' book, *The Sixteen Gauge Manual*, invaluable.

Walking up to the first station that was a combination of doves and rabbits, I cleaned those first 10 clays, and so it went. The little wand of a Merkel did credit to its pedigree. In fact, my shooting partner, who is left-handed, couldn't wait to try it.

The Left Handed Test

He owns and shoots a svelte Geco 16-gauge SxS, and I was curious as to how well and how quickly he could acclimate to the right-handed cast-off built into the Model 1620's stock. Well, he shot the Merkel as well as I've ever seen him shoot, proving once again how shooters readily accommodate slight variations in stocking.

So if you're looking for a classy upland side-by-side game gun that at 6 pounds carries and swings like a twenty while delivering denser patterns with greater retained energy, the Merkel 1620 is a choice contender. As a plus, a Merkel can be had with an extra set of 20-gauge tubes, nicely fitted into an Italian Emmebi leather gun case. And this year, Merkel will begin production of the Model 1620 with sidelocks.

Merkel 1620 two-barrel set as tested \$5995



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Cooper rifles put the lie to the belief all truly accurate rifles wear homely, composite stocks.

Romance On The Range



Story by Charles E. Petty
Photos by Ichiro Nagata

When a rifle looks and shoots like this, **LOVE** is inevitable.

It has been said that even a blind hog finds an acorn now and then. To that we can now add that sometimes even a jaded gunwriter gets his “trigger tripped” when he least expects it. The assignment was simple — call Cooper Firearms, get a rifle to test and write it up. No sweat, that’s stuff I do every day... I just didn’t expect to fall in love.

To say I didn’t know anything about the rifles of Cooper Firearms of Montana might be a little too severe, but my knowledge was limited to hearsay that they had pretty guns that shot well. My instructions were to call Cooper and speak to Rob Behr, head of customer service.

From him I learned that Cooper makes both rimfire and centerfire rifles in everything from .17 caliber up to .308. I could have my choice of calibers and this would determine which of the four basic Cooper actions I would get.

Four Flavors

Their rimfire action is the Model 57-M, available in .22 Long Rifle, .22 Winchester Magnum and the new .17 Hornady Magnum Rimfire. It’s the only repeater in the line, and is equipped with a detachable box magazine. The other three actions are centerfires — each sized for a different family of cartridges and progressively larger.

This would ultimately be what directed my choice.

The first and smallest centerfire action is the Model 38, designed for the family of cartridges based upon the .22 Hornet and .218 Bee. Next up is the Model 21, which is geared toward cases in the .223 Remington family. The largest action is the Model 22, which handles cases derived from the ancient .30-’06 rim diameter. That accounts for everything from the .22-250 up to the .308 Winchester, which is the largest cartridge Coopers are chambered for.

There are quite a few interesting wildcats in this list. A couple I had to look up, but for several of them, “lookup” was not an answer. But as Behr and I talked, he began to read from the list and one name stood out.

A Little Fireball

Not long before, I had been present when Remington announced they would resume loading the once discontinued .221 Fireball cartridge. I had been singularly unimpressed with the little cartridge in Remington’s XP-100 handgun, for which it was originally designed.

I once thought it might be interesting to make a rifle for it but had never gotten around to it. So here was the opportunity. My only other request was for a left-handed action. That’s no problem although they do charge a bit extra for making the bolt on the “correct” side.

Romance
On The
Range

Cooper's Montana Varminter





GUNS

MAGAZINE

Quality of metalwork on the Cooper line is nothing short of superb.



LOAD	VEL.	1	2	3	AVG.
Remington factory 50 gr. Hornady V-max	2,963	0.43	0.55	0.72	0.57
Cooper Varmint Extreme 42 gr. Calhoun	2,967	0.27	0.53	0.76	0.52

Note: Accuracy results are five shot groups at 100 yd. from benchrest. Velocity is the instrumental average of 10 shots @15 feet.

COOPER RIFLE CHAMBERINGS

Model 38	Model 21	Model 22
.17 Squirrel	.17 Rem.	.22-250 Rem
.17 Ackley Hornet	.17 Mach IV	.22-250 Rem AI
.17 He Bee	.19-223	.25-'06 Rem
.19 Calhoun	Tactical .20	.25-'06 Rem AI
.22 Hornet	.221 Fireball	.243 Win
.22 K-Hornet	.222 Rem	.243 Win AI
.22 Squirrel	.222 Rem Mag	.220 Swift
.218 Bee	.223 Rem	.257 Roberts
.218 Mashburn Bee	.223 Rem AI	.257 Roberts AI
*	*	.22 PPC
*	*	6mm PPC
*	*	7mm-08
*	*	6mm Rem
*	*	6 x 284
*	*	6.5 x 284
*	*	.22 BR
*	*	6mm BR
*	*	.308 Win

Note: AI= Ackley Improved



Unique three-lugged bolt offers concentric support and may be one of the secrets of the Cooper's accuracy.



Remember that as all this was going on, I had yet to see a Cooper catalog, although I did look at a couple of rifles some years ago at the SHOT Show. My perception had been that Cooper rifles were expensive so I left the details up to them with the understanding that I just wanted a basic rifle. When we were done, I wasn't at all sure what would eventually arrive other than it would be left-handed and chambered for the .221 Fireball.

Cooper also offers custom loaded ammo and they would include a box. In the meantime I ordered a set of dies from Redding and some new Remington ammo. I also picked up a box of original Remington ammo at a gun show.

When the dies arrived, I loaded several boxes of middle-of-the-road charges from several loading manuals. New brass is available from anyone who sells Remington bulk brass and data is plentiful. That first effort was just to have some ammo for break-in and zeroing, since my supply of factory ammo was limited.

Happy Day

Several months passed and the gun arrived. It was truly handsome, and contrary to its nice appearance, I subsequently learned it was the least expensive offering in their entire catalog. Also included was a catalog, and at last I had the opportunity to see the extent of Cooper's other offerings.

My gun is a Model 21 Varminster. The stock's forend is a bit different from what we're used to. I'd hesitate to call it a beavertail, but it has a rather flat bottom with a nicely rounded grip area. It will be equally happy on the benchrest or offhand.

I guess the biggest surprise was the amount of figure in the stock. Cooper classifies it as AA Claro walnut, and I was expecting something completely plain. This was not the case here, but the figure was not so intense as to jump at you. Rather, it appears with considerable subtlety and is obvious when you look for it. There is no checkering on the forend, but the pistol grip has a simple panel of nicely hand-cut checkering on each side.

Name Of The Game

One of the Cooper rifle's claims to fame is superior accuracy, and each rifle comes with a laminated test target. Mine measured .057 inch. I should tell you it is only a three-shot group, which was fired in Cooper's 50-

continued on page 50



Touring Coop

Above (l-r) 1: In an age of CNC machining, Cooper still chambers each barrel manually — the correct feel is vital. **2:** Roughing out a cheekpiece takes only a disk sander — and a lot of skill. **3:** Steaming out a tiny stock dent. Why? Because it's the right thing to do. **4:** Finishing a cheekpiece with careful file work. Notice the stock's fine figure. **5:** Checkering — no fancy tooling, just careful, patient workmanship.





Cooper Firearms

STORY BY CHARLES E. PETTY

Pundits say you can't have your cake and eat it too. I take great exception. With a Cooper rifle you can, and get a big serving too.

The definition of custom rifle is a lot more flexible than it used to be. To my eye, the key was always a finely made stock with hand cut checkering and an oil finish. When composite materials came along the line became a little blurry, but dinosaur that I am, fine wood is still the key.

Nearly equal in importance is accuracy. I'm sure that some would reverse that order and that's okay too. Still, beauty is as beauty does — and since you can't tell how accurate a rifle is until you shoot it — looks count for a bunch.

Of Mud And Craftsmanship

I've just returned from a trip that, conservatively, was an adventure. Two days elbow deep in Montana mud may not sound like much fun, and in fact the prairie dogs showed much more sense and stayed in their nice dry holes. But the third day more than made up for a few minor inconveniences, for it was spent watching a group of craftsmen and women pour their hearts into making some truly fine rifles.

The company was founded by Dan Cooper. He worked for a time for Kimber of Oregon, and knew there was still a good market for upscale rim-fire and smaller centerfire rifles.

The first product was a dainty little single-shot bolt action chambered for the .22 CCM (Cooper Centerfire Magnum). The cartridge was designed to improve on the accuracy of and duplicate the ballistics of the .22 Magnum in a reloadable case. It looks a lot like a straight walled .22 Hornet.

Cooper got started in the business when, as a college student, he cut the grass of Kimber founder Jack Warne in the late '70s, and worked there off and on until he founded Cooper Firearms of Montana in 1990. The business started in a garage and grew through a succession of them until the eventual move into a modern building that is now bursting at the seams.

Mission Statement

I don't think anyone would accuse Dan Cooper of modesty when he says, "We build the most accurate production rifles in the country... maybe the world." Well, I don't know about that since I haven't tried them all, but mine sure is a tack driver, and definitely meets Cooper's other goal, "to build rifles that shoot as good as they look."

The product line has grown to include three single-shot and one repeating action in rimfire and centerfire calibers up to .308 Winchester. Cooper's product line has a very distinct bias toward wildcat and varmint cartridges. In this day and age where magazines seem to be so important, the fact that these are single-shots is impressive for their elegant simplicity.

The Single-Shot Advantage

It's common knowledge that stiffness is a desirable commodity in rifle actions, so if they don't have a gaping hole in the bottom for the magazine well, they are obviously going to be less prone to vibration. Another unusual feature is the bolt's three locking lugs.

Aside from the obvious shorter bolt lift for cocking, this three-lugged system adds some strength, but I think the most important point is the alignment of the cartridge within the chamber. This is a huge factor in accuracy and it's ever so much easier to center something when you have three points instead of only two.

The secret to any good rifle is a good barrel, and Cooper uses lead lapped match grade barrels from Wilson Arms. The small Connecticut-based barrel maker holds tolerances to no more than .0002 inch (that's two *ten-thousandths* of an inch!). These are the best barrels Wilson can make, and come to Cooper turned to the proper diameters, threaded and crowned. All they need is fitting to the action and chambering.

"If you look at the retail prices of various varmint style rifles from major makers the Cooper is a tremendous bargain."

Since the action is simply a round tube, Wilson also provides some initial action work. There is always material left over when a barrel is made, and it turns out that there is enough to make an action too. Wilson drills and reams a hole that will form the beginning of the bolt channel.

From there the embryonic action goes to another machine shop where the complicated broaching operations needed to create the bolt ways are done. The bolt is precision ground at yet another shop.

Robot Machinist

The only piece of CNC equipment in the Cooper shop is an older machine center with a tool changer, but it does an incredibly varied amount of work. The barrel threads are used to hold the receiver blank on the fixture — this arrangement allowing the machine complete access to the work — and after a fairly lengthy machine cycle the receiver is nearly complete.

The ejection port is cut and the tang shaped in minutes, and then the machine picks up an assortment of drills and cutters to finish the job. Holes are drilled and slots cut and pretty soon a receiver that needs little more than deburring and finishing comes out of the machine.

First Class Furniture

But the thing you notice most about Cooper's rifles is the stock. You can tell from a mile away this is not the normal spray finished sapwood. More about that in a minute. Cooper buys properly seasoned blanks of Claro and French walnut in grades from AA to Exhibition. They are roughed



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out on a two-spindle duplicating machine, but from then on it's hand work.

Stocks are produced in two basic designs: Varminter and Classic. We could just as well call the trim Classic style traditional or, better still, simply elegant. The Varmint design has a 2-inch wide forend that is nicely rounded to fit either hand or sandbag.

I spent a lot of time in the Cooper stock shop and watched awestruck as a talented stockmaker with nothing but a pencil outlined a classic's cheekpiece and then made it happen with a couple of wood rasps. Then there's lots of sanding, and detail work to complete the rough inletting and get the surface ready for finishing. That done, all the stocks go to the checkering department where two talented women do all the hand checkering.

They use only simple templates to lay out the patterns and then execute them with a combination of power and hand checkering tools. The higher grades of classic stocks have a more complex pattern and on them the forend is also checkered. Again, it's an impressive sight to watch such casual creation of beautiful artistic work.

A Job For Perfectionists

All stocks wear a hand-applied oil finish that is the responsibility of one very talented woman. Honest — I couldn't have made this up — they call her the finishing wench... a term she resents not at all. Speaking as one

who has failed miserably at this job, it was a real learning experience to watch her work.

It is a tedious process of applying finish and letting it dry, sanding and doing it all over again. Tiny dents you can hardly see are raised with a damp cloth and a hot iron followed by sanding. It's really remarkably effective, and the little dent I felt was gone. When all is done each stock will have received several coats of finish followed by sanding with ever-finer abrasive until that unmistakable custom look is there.

From finishing, the stock goes to final assembly. Here the action inletting is completed and glass bedded. Cooper beds the action's recoil lug and the first inch of the barrel. That's all, the rest of the barrel is free floated. I asked about bedding the tang area of the action and was told that wasn't necessary.

The remainder of the inletted surfaces are sealed to reduce warpage due to absorbed moisture. The trigger is installed and adjusted and the whole job is inspected. From there it goes to the test tunnel.

Proof Of The Pudding

All Cooper rifles come with a laminated test target, and when mine arrived I was amazed to see the group measured less than .1 inch. I commented about this and was told that Cooper didn't measure by the common center-to-center method. Their standard for centerfire rifles is bore diameter plus .125

inch. This ensures every Cooper will meet the company's accuracy guarantee of half-inch, 100-yard groups.

The huge popularity of composite stocks has really altered our perception of what it takes to make an accurate rifle and some folks think you must have one for best accuracy. We forget that composites are relatively new developments and we had good rifles long before the first composite stock was made. A truly accurate wood stocked rifle does, however, require the strict attention to detail given the Cooper rifles.

High Order Value

Maybe the best news of all in this story is that you don't have to pay a lot to get a Cooper rifle — you can — but it isn't required. If you look at the retail prices of various varmint style rifles from major makers the Cooper is a tremendous bargain.

The basic "Varminter" retails for \$995. That's what I have. The gun you see on the centerfold is one step up. It is a Montana Varminter, with a better grade of wood and a stock designed to help cooling. A left-handed action is available at a small premium, and you can add fancy features such as skeleton or Neidner buttplates, exhibition wood and other custom touches that can raise the price considerably. But regardless of the model you look at, this is a marvelous example of getting what you paid for.



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ROMANCE ON THE RANGE

continued from page 45

yard test tunnel. The way they do it is to mount a 36x Leupold benchrest scope and use the same custom loaded ammo they sell under the Varmint Extreme label.

Even with the limitations of just three shots and fairly short range, there are plenty of benchrest shooters who would kill to get a group less than one-tenth inch.

At first glance some might think it's impossible to shoot groups like that with a rifle in a wood stock. My, how quickly we forget. Today's super-accurate rifles are universally found with composite stocks but those are relatively recent developments, and we had super-accurate rifles long before we had plastics and Kevlar. It just takes a skilled stock maker and careful attention to detail.

Before I shoot any new gun it always gets a thorough inspection. The 24-inch stainless steel barrel is from Wilson Arms, and borescope inspection revealed a barrel that had obviously been lead lapped, with crisp, sharp rifling. The safety operated properly and the trigger weighed 3.5 lbs.

All Important Break-In

All Cooper rifles come with scope bases so a Leupold 6.5x20 target scope was mounted in Leupold rings and to the range we went. Anytime you get a new rifle that is likely to shoot well, it is very important to condition or break-in the bore.

I do this by cleaning the bore after every shot for the first five, then after two shots for another 10 rounds. You can tell a lot about a barrel simply by how it feels when you push a tight patch through it. High or low spots reveal themselves by their resistance to the patch. Ease of cleaning is also a good indicator of barrel quality and dry patches pushed through this barrel came out nearly clean very quickly.

You can almost always combine the barrel break in process with zeroing the scope, and by the time I had fired the break-in rounds, the Leupold was just right and it was obvious that accuracy was going to be good. I knew from the outset that this was going to be as much a handloading project as it was a gun test.

Point Of Departure

Reference ammo, in the form of factory loads, was limited to three: new Remington with 50-grain Hornady V-Max bullet, Cooper's Varmint Extreme which is loaded with a 42-grain Calhoun custom bullet and some 20-year old Remington that was loaded with a 50-grain softpoint. In order to judge our handloads we need to have a baseline measurement provided by factory loads.

The older Remington ammo was eliminated when the first couple of groups were over 1.5 inches.

Handloading Begins

There is plenty of loading data for the .221, and the search for accuracy began with a systematic investigation of both powders and bullets. The initial work included bullets of 40-, 50- and 52-grain weights, and Accurate 1680 and 2015 BR, Norma N200, Hodgdon 4198 and Alliant Reloder 7.

Over the course of several weeks, a total of 27 five-shot groups were fired with various combinations of these components. Things looked pretty good as I was shooting but when all the groups were measured, those 27 groups averaged .430 inch. What had begun as a fun exercise has turned into an accuracy crusade that continues to this day.

Accuracy of the little Cooper rifle is phenomenal and I have seen some pretty fancy rifles — costing a heck of a lot more — that didn't shoot nearly as well. It's surely a tribute to the maker, but the little cartridge has also proven to be ever so versatile. And the cool thing is that you can shoot it all day without concern for recoil and with considerably less noise.

The crusade has expanded to include other bullets, powders and primers and advanced loading techniques of neck sizing, neck turning and case forming. All those adventures will take some time to tell, so look for a follow-up next month on loading the .221 Fireball.

Couldn't Part With It

I have been far too busy having fun with my Cooper to send it to Ichiro Nagata for photography, so the rifle you see here is a show gun that Cooper exhibits. It's a Model 21 (as is mine), in the Montana Varminter stock. The ventilation cuts in the forend are there to help with barrel cooling, and are the visible identifiers of the Montana Varminter model.

This one happens to be chambered for the .223 Remington, and has a fluted barrel, which is an extra cost option. The stock is AAA Claro walnut, also an extra cost upgrade. The scope is a Leupold 6.5x20 Vari-X III in Talley rings.

Truly, we shooters suffer from an embarrassment of riches today. We have rifles of elegant style and beauty and we have extraordinarily fine shooting rifles but it's not common to find them in coexistence. In the Cooper they do — in spades.

My experience has created a condition that can best be described as lust. And some idle conversation with Dan Cooper is going to lead us to yet another adventure.

I remarked that I had yet to see a .22-250 that shot as well as everyone claims they do. Cooper's smirk indicated he thought otherwise. So the deal was done, and pretty soon we'll find out. I can't wait.

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The Real Reason We...

"It must be the best, because so-and-so uses it."

How many times have we heard that? And how many times, heaven help us, have we bought something for that reason, only to find out later that so-and-so had different needs than we did, and what was right for so-and-so wasn't right for us?

It applies to handgunning, too. Let's look at a few examples.

Why A Revolver?

I was on the indoor range at my gun club, and at the opposite end of the firing line from a couple of young guys who were busily potting away with their auto pistols, while I was getting in some practice time with a double-action sixgun. Through my Gentex active hearing protectors, I heard a whispered conversation. They were discussing why old guys like the one on the end didn't trust modern technology and only used old-fashioned revolvers.

I couldn't help but smile. While I can't deny being something of a Luddite geezer, that wasn't the reason for the wheelgun. This particular range is very strict about not leaving brass on the floor when you're done. An auto would give me the choice of sweeping it up with a broom and putting lead dust in the air, or bending down with my old back to pick up a hull at a time from the dirty floor.

With the swing-out cylinder gun, I could simply punch the empties out onto the table and pick them up in one swoop at the end of the session and dump them in a plastic bag. I had come to shoot for fun.

Why A 9mm?

Most would answer that question, "More bullets." Well, there's that, but there's a little more to it.

The more ammo thing takes different forms. I travel to

firearms teaching sites by air for the most part, and FAA limits how many pounds of ammo can be carried on board in checked baggage. I can get a helluva lot more 9mm Luger rounds within that poundage than I can .45 ACP rounds.

If the range we're using is remote and buying ammo locally would be inconvenient, switching to 9mm will get enough carry loads and practice ammo in under the limit to get me through the week.

Since 9/11/02, there has been another possibility that makes the 9mm more attractive to travelers. On that day, air travel in the U.S. shut down and stayed down for some time. Travelers were left to make their own way home, sometimes across several thousand miles, and there were horror stories of people hitchhiking their way back.

My wife and elder daughter were trapped in Las Vegas by the shutdown, and unable for days to get rental cars due to the swollen demand. I felt comfortable knowing they were armed.

Some modern terrorist scenarios involving biological weapons have led authorities to predict longer transportation shutdowns than the last one. If it happens, a traveler relying on 9mm will have more ammo to get him home than the one with the .45, if the ammunition supply cannot be replenished in transit, which might indeed be the case.

Besides, the 9mm kicks less, and that matters to some more than others. Also generic ammo is way cheaper for 9mm than for larger calibers.

Why A .45?

"More power" is the standard answer. Well, yes and no. The fact is, the best modern 9mm defense loads (115 grain JHPs at 1,300 fps or better, and 124 grain JHPs at 1,250 foot-seconds or so) will deliver dramatically more tissue damage than a 230 grain ball .45 round.

Of course, the .45 is more effective with JHPs, but it's less dependent on projectile design for terminal efficiency than is a smaller caliber gun throwing a bullet of only half the weight.

I'm partial to the .45 Auto for police issue, and for defensive use in cold weather. One reason is that even the most efficient hollowpoint bullet can plug if it has to go through enough layers of winter clothing, and a JHP whose cavity is filled with inert matter is a JHP that will probably not expand. If the bullet is going to turn into flat-nosed ball, I want it to turn into large diameter flat nosed ball.

Military history throughout most of the 20th century, being repeated now in Afghanistan, shows us that 9mm ball is an impotent manstopper, and .45 ball is a pretty efficient one. Certainly, .45 hardball penetrates too much to be ideal for American law enforcement or citizen self-defense settings, but the same is true of 9mm ball.

While the citizen can change guns or ammo with the season, most cops can't, and in regions where winter brings deep cold, the .45 caliber makes particularly good sense as an all-weather police duty weapon.

The reasons that compel another handgunner's choice may not be on point to our own needs. As a rule, the question "why" generally needs to go past just the initial asking to be truly informative, and certainly needs to go past supposition.





Levergun Loads: THE **.35** REMINGTON

By John Taffin

1952 — a truly wonderful year. Ike was elected president and I started high school a year ahead of time. To this day I'm not sure how I got out of grade school early. That is, I have never figured out if I was smart enough to make the leap, or if my grade school teachers just wanted to get rid of me as fast as possible.

High school was a wonderful experience for me especially because of three old maid school teachers. My two English teachers always allowed me to write about hunting and the outdoors, and our school librarian had the shelves stocked with Theodore Roosevelt's books, all kinds of books on exploring and hunting, and even Robert Ruark's books. I first read *Something Of Value* by checking it out of the school library.

Firing A Young Imagination

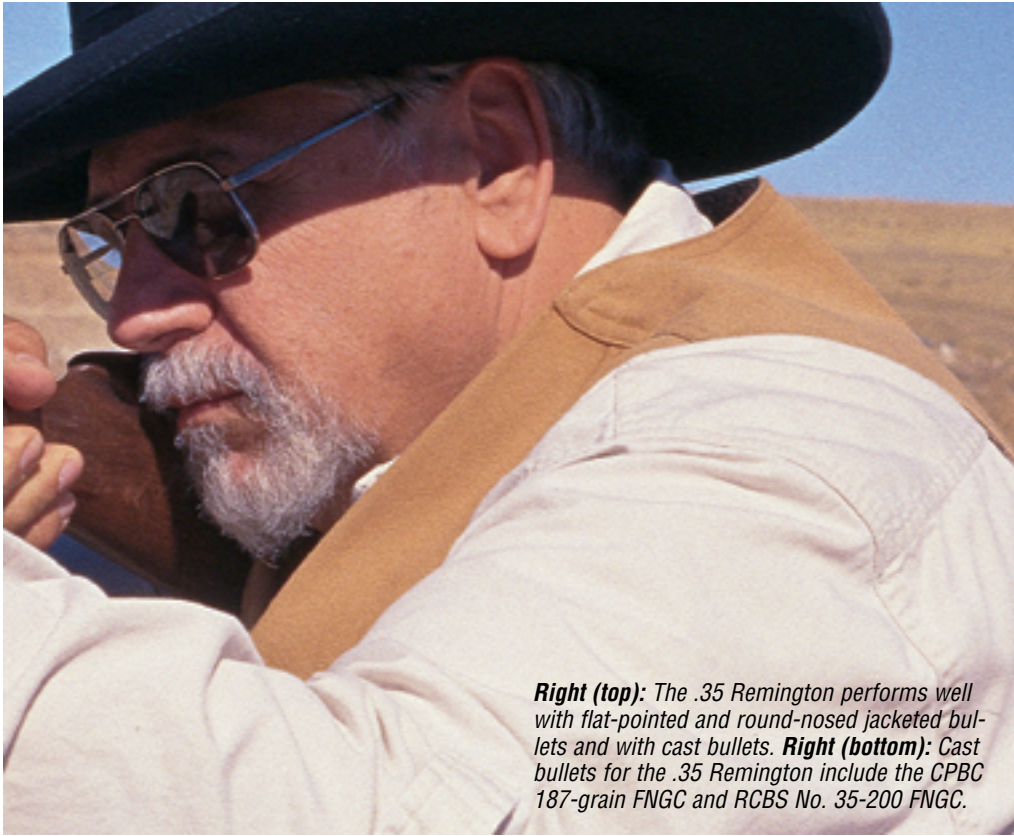
My three main sources of background material were found in *Field & Stream*, *Outdoor Life* and *Sports Afield*. Each made their appearance on the high school library magazine rack each month. I was kept continually enthralled by writers such as Robert Ruark with his wonderful tales of *The Old Man & The Boy*. Corey Ford's *Lower Forty*, *Shooting, Angling*, and *Inside Straight Club* and all the member characters thereof. And, of course, Jack O'Connor's hunting exploits all over the world.

At this point in my life I had not yet really discovered the great joy of sixguns and most of my time was spent going through the pages of these magazines looking at the advertisements for rifles and planning my future hunts.

Something else of significance happened in 1952. Marlin chambered their Model 336 lever action for the .35 Remington cartridge.

The 336 arrived in 1948 as an improved version of the Model 36. However, it was chambered only in .30-30. The more potent .35 Remington originally saw the light of day before World War I, chambered in Remington's semi-automatic Model 8. Both the Remington rifles and the cartridge were very popular with woods hunters between the two World Wars. Now, Marlin had very wisely chambered the .35 Remington in a quality levergun.

Marlin had wonderful ads for their rifles in the magazines I spent so much time with in the early 1950s. Someday I would have a .35 Remington Marlin levergun... Someday.



Right (top): The .35 Remington performs well with flat-pointed and round-nosed jacketed bullets and with cast bullets. **Right (bottom):** Cast bullets for the .35 Remington include the CPBC 187-grain FNGC and RCBS No. 35-200 FNGC.



Questing For A Big Bore

As my high school days ended, I soon discovered the joys of sixguns and all my early Marlin's were chambered for sixgun cartridges. I still wanted that .35 Remington 336 someday. Well, "some-days" come and go all too quickly. The 1950s became the 1960s, which even more quickly passed into the 1970s and 1980s and I still didn't own a Marlin chambered for the .35 Remington.

Finally, about ten years ago, I began looking earnestly for a straight gripped Marlin 336 chambered in the big .35. It

was easy to find versions with a pistol grip buttstock, however that slick and trim little straight-gripped carbine eluded me. I even had several friends around the country looking on my behalf. We got nowhere.

At the time I had a place in the mountains 100 miles north of home and we would often go up there to camp out for the weekend. About 25 miles south of our place, a small combination gun and pawn shop opened up, however it was always closed when I went by. Then about five years ago, I found them open on Labor Day weekend.

Twenty Percent Off To Boot

We stopped in and looked around. A large sign heralded "Special Labor Day Sale — 20 Percent Off Rifles." As I looked around I spotted a straight gripped Marlin 336 on the rack behind the counter.

"What is the old Marlin you've got back there?"

"Ahh, you don't want that one. It's not a .30-30. It's one of those Remington .35s."

My spirit soared and my heart skipped a beat or two. I forced myself to calm down and with as little excitement as possible I asked to see the worthless old .35





Two excellent .35 Remingtons are the Marlin 336 and the T/C Contender Super 14.

Remington. It looked to be in great shape — with only normal wear on the outside, a very smooth action, and a perfect bore.

I looked at the price tag. The amount was very reasonable even before taking 20 percent off. My search was over and that gun shop owner never knew what joy he gave that day.

Last Of Four

The .35 Remington is one of a quartet of rimless cartridges developed by Remington around 1906. The others were the .25, .30, and .32 Remington. The first rifle for which they were chambered, as mentioned, was the Model 8 semi-automatic. By the time Marlin chambered the 336 for the .35 Remington in 1952, Remington had chambered the cartridge in both pump and bolt action rifles, and Winchester had even offered the Model 70 in .35 Remington.

This makes this nearly 100 year-old cartridge one of the few that has been chambered in all four American made repeating rifles, semiautomatic, pump action, bolt action, and lever action.

Why did the .35 Remington survive when the other three Remington cartridges passed into oblivion? Winchester had the

extremely popular Model 94 chambered in .25-35, .30-30, and .32 Winchester Special. Remington's three cartridges were simply rimless versions of the rimmed Winchester cartridges. They are so similar, in fact, that some early .30 Remington rifles are marked .30-30 Remington. That surely was very confusing for shooters.

The .35 Remington was not a copy of anything. The .35 Winchester — which existed at the time in the Model 95 — was more powerful than the .35 Remington, in fact falls between the .35 Remington and the .358 Winchester. The .35 Remington survived for several reasons.

It was chambered in lightweight, easy to pack rifles; recoil is relatively mild compared to other big bores; and most importantly it's an exceptionally good deer and bear cartridge, especially when used in the woods or heavy brush.

And let's make no mistake about what a "brush gun" is. No rifle that is light enough to carry will penetrate brush nor should it be expected to. If it's not a clean shot, it should not be taken. A brush rifle is simply one that is easy to carry in heavy cover with a cartridge powerful enough to stop deer and black bear at close range.

Tubular Magazine Cautions

One of the "drawbacks" in using the lever action rifle with a tubular magazine is that one cannot use spire-pointed bullets. The problem, of course, is that a pointed bullet pressing against the primer of the cartridge ahead of it could cause a discharge in the magazine as the gun recoils. This caution also extends to round-nosed bullets in heavy recoiling rifles such as the .45-70.

I have never heard of this being a problem with the relatively easy recoil of the .35 Remington, and round-nosed factory loads for the .35 are available from several manufacturers. Various loading manuals also give data using round-nosed bullets in the .35 Remington.

Good Tools Produce Good Ammo

For reloading the .35 Remington, I use Lee dies in the RCBS Rockchucker press. I prefer Remington nickel plated brass when I can get it. All brass, whether brand spanking new or previously fired is lubricated with Midway spray-on lube and then full-length resized.

CCI's No. 200 Large Rifle Primers are seated with an RCBS hand priming tool,



.35 REMINGTON MARLIN MODEL 336, 20-INCH BARREL

CAST BULLET LOADS

Bullet	Load	MV	3 Shots/50 Yards
CPBC 187 gr. FNGC	18.0 gr. XMP5744	1,462 fps	1½"
CPBC 187 gr. FNGC	15.0 gr. XMP5744	1,212 fps	5/8"
RCBS 35-200 gr. FNGC	39.0 gr. BLC-2	1,998 fps	1¼"

JACKETED BULLET LOADS

Bullet	Load	MV	3 Shots/50 Yards
Winchester 200 gr. PPSP	Factory	1,896 fps	1¼"
Federal 200 gr. Hi-Shok	Factory	1,986 fps	1¼"
Speer 180 gr. FN	38.0 gr. AA#2520	1,959 fps	1¾"
Speer 180 gr. FN	42.0 gr. BLC-2	2,088 fps	2½"
Speer 180 gr. FN	33.0 gr. H322	1,972 fps	1¾"
Speer 180 gr. FN	35.0 gr. H322	2,066 fps	1¾"
Speer 180 gr. FN	34.0 gr. AA#2015	1,925 fps	1¾"
Speer 180 gr. FN	36.0 gr. AA#2015	2,040 fps	¾"
Speer 180 gr. FN	28.0 gr. Reloder 7	1,732 fps	1¾"
Speer 180 gr. FN	30.0 gr. Reloder 7	1,832 fps	2"
Speer 180 gr. FN	42.0 gr. Reloder 12	1,967 fps	1¼"
Speer 180 gr. FN	44.0 gr. Reloder 12	2,052 fps	1¾"
Hornady 200 gr. RN	39.0 gr. BLC-2	1,930 fps	1½"
Hornady 200 gr. RN	31.0 gr. H322	1,830 fps	1¾"
Hornady 200 gr. RN	33.0 gr. H322	1,875 fps	1¼"
Hornady 200 gr. RN	29.0 gr. Reloder 7	1,817 fps	1¼"
Hornady 200 gr. RN	31.0 gr. Reloder 7	1,898 fps	1¾"
Hornady 200 gr. RN	31.0 gr. AA#2015	1,687 fps	1¼"
Hornady 200 gr. RN	33.0 gr. AA#2015	1,831 fps	1"
Hornady 200 gr. RN	36.0 gr. H4895	1,791 fps	1¾"
Hornady 200 gr. RN	38.0 gr. H4895	1,924 fps	2½"
Sierra 200 gr. RN	39.0 gr. BLC-2	1,962 fps	1½"
Sierra 200 gr. RN	29.0 gr. Reloder 7	1,832 fps	1"
Speer 220 gr. RN	38.0 gr. AA#2520	1,958 fps	1¾"
Speer 220 gr. RN	30.0 gr. H322	1,756 fps	2"
Speer 220 gr. RN	32.0 gr. H322	1,841 fps	1¾"
Speer 220 gr. RN	28.0 gr. Reloder 7	1,802 fps	1½"
Speer 220 gr. RN	30.0 gr. Reloder 7	1,869 fps	1¼"
Speer 220 gr. RN	30.0 gr. AA#2015	1,643 fps	1¾"
Speer 220 gr. RN	32.0 gr. AA#2015	1,788 fps	1¼"
Speer 220 gr. RN	34.0 gr. H4895	1,664 fps	1¼"
Speer 220 gr. RN	36.0 gr. H4895	1,820 fps	2"

and powder charges dropped from an RCBS powder measure are checked on my RCBS digital powder scale. As with all sixgun and rifle cartridges destined for use in tubular magazines, I crimp all .35 Remington loads.

Several .357 Magnum bullets are useful in the .35 Remington. Standard 158-grain JHPs can be loaded at the 2,200 to 2,300 fps level to give sort of a super .357 Magnum with an explosive bullet for use on varmints. I take a different path, and instead use heavyweight cast bullets designed for the .357 Magnum, and they are fired at very modest velocities. The result of which is exceptional accuracy and very mild recoil.

Cast And Jacketed

My favorite bullet for this task is Cast Performance Bullet Co.'s 187-grain FNGC. I normally shoot these bullets to 1,200 to 1,300 fps in .357 sixguns, and the same load is duplicated in the .35 Remington with 15.0-grains of Accurate Arms XMP5744. This load clocks out over the Oehler Model 35P at just over 1,200 fps, and is also the most accurate load I

Excellent propellant choices for reloading the .35 Remington.



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have found in this particular Marlin 336. It will place three shots at 50 yards into 5/8 inch. This with a commercial cast bullet, and in an iron-sighted levergun.

When it comes to jacketed bullet loads in the .35 Remington, I go with the Speer 180-grain FN, Hornady and Sierra 200-grain RN, or the Speer 220-grain RN. The most accurate jacketed bullet load I have found is Speer's 180-grain FN bullet over 36.0-grains of Accurate Arms No. 2015 for 2,040 fps. Three-shot groups average 3/4 inch at 50 yards. All groups are shot with iron sights, however, the standard rear sight has been replaced with a receiver sight which works much better for my eyes.

Many loads with all four bullets are in the one-inch category for three shots at 50 yards with iron sights. Some of these include the Hornady 200-grain RN over 33.0-grains of Accurate Arms No. 2015 for 1,831 fps, and Sierra's 200-grain RN over 29.0-grains of Reloder 7 for 1,832 fps. Speer's 220-grain RN is another fine bullet, and yields the following: With 30.0-grains of Reloder 7, 1,869 fps; 32.0-grains No. 2015, 1,788 fps and with 32.0-grains H322, 1,841 fps.

The .375 Winchester and the .356 Winchester — both more powerful than the .35 Remington — have disappeared and yet the Remington remains. One great reason may be that the .35 Remington uses the big bullets of the dead duo with not much more recoil than the .30-30. The .30-30 is a great cartridge when mated to a slick-handling, flat-sided saddle gun. The .35 Remington is probably just a shade greater.

Not Just Rifles

The .35 Remington also has another dimension. For many years it was chambered in Thompson/Center's Super 14 Contender. I often recommended it to handgun hunters who were looking for a single-shot handgun that would handle anything in the lower 48 without excessive recoil. It is also superbly accurate.

Using Hornady's 180-grain Spire Point, which cannot be used in the Marlin, over 32.0-grains of Alliant's Reloder 7 yields a muzzle velocity from the scope-sighted Super 14 of 1,983 fps and three shots in less than one inch at 100 yards. There are a lot of high-dollar bolt actions chambered in more modern cartridges that will not do this.

Other excellent hunting loads I have found for the Super 14 Contender in .35 Remington are Sierra's 200-grain RN over 37.0-grains of Accurate Arms No. 2520 for 1,827 fps. Speer's 220-grain FN over 38.0-grains of Hodgdon's H322 produces 2,035 fps. And Speer's hard-hitting 220-grain FN loaded over 36.0-grains of IMR 3031 clocks 1,827 fps.

Cartridges come, and cartridges go. The .30-30 has been around since 1895 and the .35 Remington since 1906. I expect both of them to be around for many more years with shooting pleasure in store for many more generations of levergun lovers.



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LASSEN COLLEGE

continued from page 34

While Lassen offers a wide range of vocational programs, one of the longest running and certainly the most notable is their gunsmithing program.

Here a student can earn a fully accredited Associate Science degree in gunsmithing after successfully completing one of their two-year courses. Located in the John Wise Vocational Gunsmithing Building are three classrooms with benches, a machine shop, armory and safe area.

It Takes Tools To Teach

The machine shop houses 21 lathes, four mills, three drill presses, two sand blasters, three buffers, seven grinders, a planer, two TIG welders and a complete tool room. Their armory boasts nearly 250 different makes and models of arms for instructional aids. In addition, a 700 yard range is located a short distance from the campus.

My visit to Lassen took place this past July, while they were teaching one and two week NRA gunsmithing courses. Before I arrived I wasn't sure of what to expect, or if my quest was at an end, but pulling into the campus I liked what I saw.

I was impressed by the school's layout, well kept grounds, and modern buildings. In addition, the school is located in scenic north eastern California and the view from the school, especially at sunset, is spectacular. During my visit there were four different summer courses being taught. Of the four, three were being taught by visiting professionals.

Outside Expertise

These classes consisted of Wood Stockmaking taught by Charles Grace, Advanced Engraving taught by John Barraclough, and Custom Built 1911 taught by Marc Krebs. In addition, Basic Rifle Barreling was being taught by Lassen's John Martin

I spent my week at Lassen exploring the campus, sitting in on the four classes, talking to students and faculty members, and snapping pictures. I was very impressed by the quality of instructors Lassen is able to provide students.

Stockmaker Charles Grace

For example, Charles Grace graduated from Trinidad State Union College in 1973 and has been doing full-time custom stockwork since 1980. He's not only a charter member of the American Custom Gunmakers Guild, but is also on their Board of Directors. His skill with wood can be seen by the fact he was chosen to stock the guild's 2001 annual project rifle. This is a great honor that reflects his abilities.

I asked Grace what made him take time from his hectic schedule to teach at Lassen. His answer was a simple one, he liked working with the students, and remembers what it was like when he first started. He says that one of the most difficult hurdles for a student to get past is when they suddenly realize just how much time and hard work stockmaking requires. While it was his first time teaching at Lassen, he said he really enjoyed it and looked forward to coming back. This is a good thing, as his students loved him and couldn't say enough about his teaching skills.

Engraver John Barraclough

Whereas this was Charles Grace's first time teaching at Lassen, John Barraclough has been coming back to teach engraving for 22 years. Born, raised, and educated just outside of London, Barraclough initially learned the art of engraving from a Master English gunsmith in the late 1940s. This old gentleman would get work from Holland and Holland and other shops who received guns in from around the Empire. He taught John how to engrave to "get him out from under his feet."

In 1949 Barraclough moved to the U.S. and eventually studied under Neil Hartliep. He began teaching at Lassen in 1980 and his work is truly amazing.

Barraclough is a very likable and easy going man, no doubt partly due to the amount of patience his work requires. As we chatted about engravers I mentioned that I had visited Tula's museum in Russia and he rolled his eyes and smiled. We talked about the exquisite masterpieces there, and then he handed me a Colt

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M1911 in .38 Super. The result of over 1,200 hours (!) of painstaking work, it was beautifully embellished with small intricate gold scroll work as applied to the presentation guns given by Col. Colt to the Czar of Russia and Sultan of Morocco.

Just something he made for himself, valued at around \$55,000, but who's counting. Barraclough says he comes to teach at Lassen every year for the students. He says he loves to see the light bulb suddenly come on when a student finally grasps an idea and makes it his own. Like Grace, Barraclough's students praised both the content of his course and his teaching skills.

Pistolsmith Marc Krebs

As mentioned, the 1911 class was taught by Marc Krebs. Krebs is well recognized by his peers as being an innovative and talented gunsmith. His work on 1911s brought him national recognition for both his creativity and the quality of his work. As an example, he first created the "snakeskin" effect, now widely copied by others.

Unlike Grace and Barraclough, I knew Krebs, having worked with him on a facts finding mission to Russia in 2001. Also, unlike the others, Krebs is a Lassen graduate.

"Lassen changed my life," remarked Krebs. "By giving me a way to go that I really like. I love gunsmithing, and so I come back every year so that others can learn from my experience."

While a little over the top, Krebs is naturally talented, and works very hard with his students. It's not everyday you can build a 1911 under the guidance of someone like Krebs, and his students devoured his class.

Talented Home Team

While these three men are certainly gifted, Lassen's regular instructors are also excellent. I spent time with Gary Boyd, the Director of the Gunsmithing Program, Steve Taylor who specialized in welding, instructors John Martin and Bob Chavez, and assistant instructor Dave Renner.

I asked them about their teaching methodology, why they taught, and what they looked for in their students. While I liked what I heard, I was more impressed by how they interacted with their students. All are laid back professionals who joke and kid amongst themselves while teaching their students, but this relaxed approach doesn't hide their dedication to the school and its mission.

In addition, the school's Vice-President, Linda Kennedy, is an ardent supporter of the gunsmithing program and a shooter herself. Considering how liberal and anti-gun much of California is, it was good to see a community college there with a well-established gunsmithing program.

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Students Make The School

And just what are Lassen's students like? A good and diverse bunch from all walks of life. Men and women who ranged in age from 20 to 80-something and from across the country. Some were full time students while others attended part time. They all had one thing in common though, a love of firearms and a desire to learn.

Some were here with the desire to eventually become professional gunsmiths, others were practicing professional gunsmiths here to increase their knowledge and skills, and some were here just to learn for their own knowledge. I spent as much time as I could with as many different students as possible, talking and listening to what they had to say, seeing what they were working on, and just talking guns.

Some had been taking summer courses at Lassen for decades in an effort to broaden their skills. There were a number of fellows who said, "I come here for a week or two every summer, it's like my vacation, the one thing I do just for me." That speaks very highly of the school, its instructors, and the curriculum being taught.

Lofting Bowling Balls

Lassen isn't all work and no play. I had the opportunity to go to the range with some of the students and instructors for a little fun. Here we relaxed and I had a chance to shoot some of the rifles built by the staff and students. I have to admit though that one of the female students from the engraving class handily out-shot me with a .50 BMG rifle.

The highlight of the evening was when the instructors broke out a bowling ball mortar. Lassen offers a huge array of courses, one of which is cannon building! So we sat back and watched as their creation threw full size bowling balls almost out of sight. It was, to say the least, spectacular.

My quest came to an end at Lassen Community College. An old and well respected school that's fully accredited, Lassen has been forging gunsmiths since 1945. Their semesters are thoughtfully divided up into one week courses to allow part time students to attend within their work schedules.

In addition to their regular courses they also offer Law Enforcement and NRA gunsmithing courses. If you've ever desired to become a gunsmith, or would simply like to learn some skills to aid you in working on your own firearms, I suggest contacting Lassen. Their gunsmithing program may be just what you're looking for.



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CAST BULLET PRIMER

continued from page 31

More recently, a product called Marvelux has become a favorite.

In use, a small, pea-sized lump of the material is dropped onto the surface of the molten metal. Use your ladle to stir the melt thoroughly, scraping against the sides of the pot and drawing metal from the very bottom. Be aware that beeswax or paraffin will smoke violently, and may burst into flame. Yet another reason we don't cast bullets in our Lady Fair's kitchen.

After fluxing, all dirt and impurities will float on top of the melt, and may be skimmed off with the ladle. A coffee can is a handy, fire-proof receptacle to dump this dross into.

Readying The Mold

If the mold is a new one, or if we've coated it with oil for storage, it must be cleaned completely with a good solvent and an old toothbrush before use. After the solvent has evaporated, the mold may be "smoked."

Smoking seems to help most (not all!) molds to produce better bullets that drop more easily from the cavities. To smoke your mold, ignite two wooden kitchen matches and play the flame along the mold halves until a thin layer of soot evenly covers the cavities. Often, eight or 10 bullets must be cast before this coating of soot is smoothed out and perfect bullets result, but afterwards, the result is usually much better performance.

Ready to cast our first bullet?

Dip your ladle into the melt, and pour a short stream back into the pot to ensure the nozzle is clear. Bring the mold horizontally to the nose of the ladle, then rotate the mold to vertical. How long you pause in this position depends upon the size of the bullet. Large diameter, heavy bullets may require several seconds to fill properly.

Now, lift the ladle from the mold, and allow a small puddle to form on top of the sprue plate before returning the ladle to the molten lead. Watch the sprue as it grows cold and hardens. When it's fully solidified, you may pick up your casting mallet (a 14-inch length of 1 inch hardwood dowel will do nicely), and strike the protruding end of the sprue plate to shear off the surplus lead.

Open your mold over a padded surface (folded t-shirts under an old towel will suffice) and wait expectantly for that bullet to drop. Odds are it won't. Now, use your casting mallet to gently strike the handle of your mold at the hinge. Molds are individuals. Some drop their bullets easily, others

only after persuasion. Use care though, as you can damage your mold if you beat heavily upon the blocks.

A Matter Of Temperature

When that first bullet drops, you'll probably be disappointed. Likely the mold has not yet come to proper temperature, and the bullet will be less than well filled out, or will show wrinkles. Despair not, but continue casting, and soon your bullets will fall from the blocks in good order.

I like to arrange my cast bullets sequentially in rows. Later, when selecting from the cooled bullets, you'll see many that at first glance looked perfect bear flaws related to temperature of mold or alloy. If you lay them out in order, you'll see the point at which the bullets commenced falling in perfect condition, and if it's the case, you'll also see where they may have again begun to suffer problems.

Match rifle shooters often lube, load, and even shoot bullets in the order cast for the utmost uniformity.

Looking For Flaws

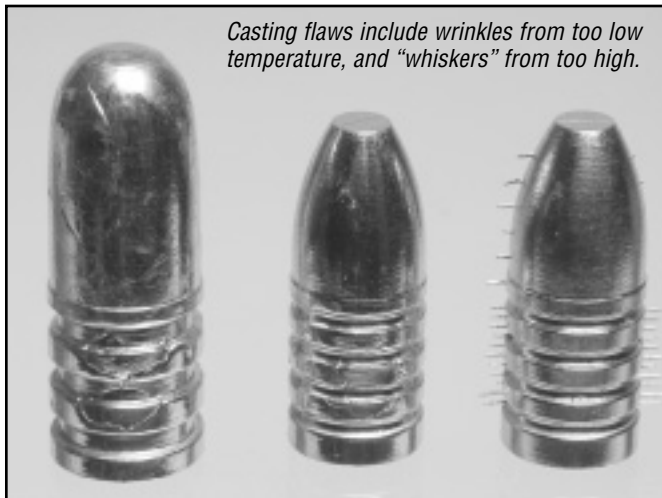
To produce first-class bullets, I find it necessary to constantly adjust the casting rhythm. If the bullets show rounded bands or wrinkling, the mold is too cold, and it's time to pick up the pace. If the bullets assume a frosted appearance, the mold is far too hot, and you must slow your casting, perhaps by alternating with a second mold.

The base of the bullet is an important indicator, and each time the sprue plate is swung open you should examine the bullet's base. A rough or torn looking sprue cut on the base says you're not waiting long enough before striking off the sprue.

A cavity in the sprue cut shows you've not left a sufficient puddle on the sprue plate. As the bullet cools, it draws some of the still molten material from the sprue. If there's not enough material present, a hollow cavity will result.

Other problems to look for are a bullet with a fin around part of the base, due to a loose sprue plate. Adjust the sprue plate

Casting flaws include wrinkles from too low temperature, and "whiskers" from too high.



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to drag lightly across the top of the blocks to correct this. Fins or whiskers on the bullet are often the result of a small splatter of lead having been caught on the face of the blocks, but whiskers are sometimes produced when mold and alloy are far too hot.

Afterwards

Having run all the bullets we want for the present, we'll shut off the pot. If you have children around, take care not to leave the area until the pot has grown cold.

This is a good time to closely inspect your product. Bullets with visible flaws may be put back into the pot. Save a few of these culls however, to use in adjusting your seating die, etc.

If you're after the ultimate in accuracy, weigh each bullet as a check for hidden voids. Lube them by your preferred method, and store them carefully in a way that will prevent them from bumping together, and which will keep them dust free. Pistol cartridge boxes with plastic trays work well for cast rifle bullets.

At one time, nearly every shooter or hunter cast his own bullets. Today, it's rather uncommon, and more is the pity. It's not difficult, and it can be immensely satisfying. Why not give it a try?



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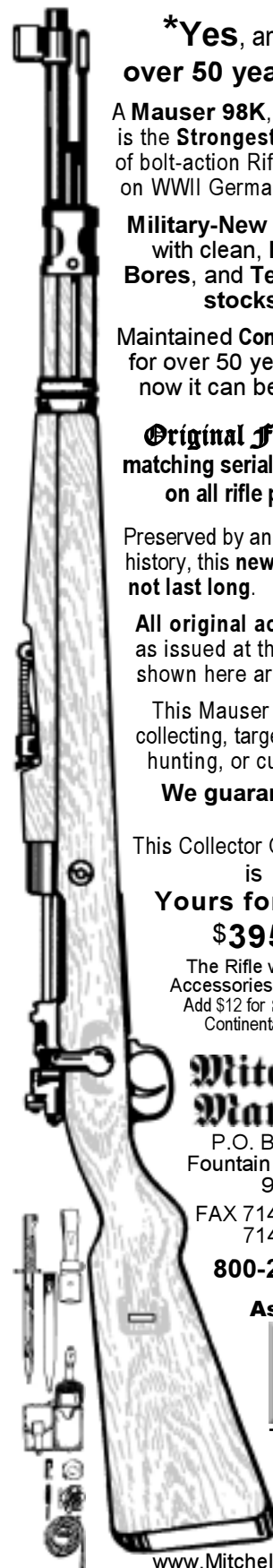
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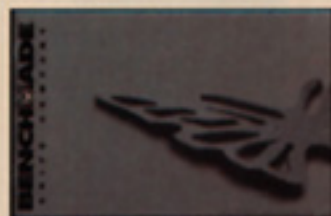
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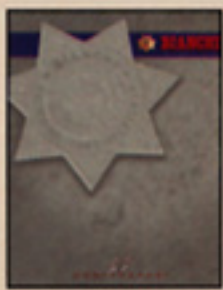
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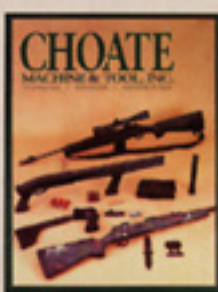
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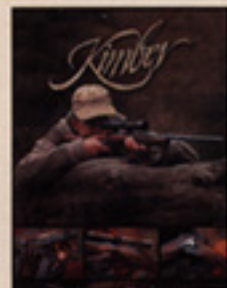
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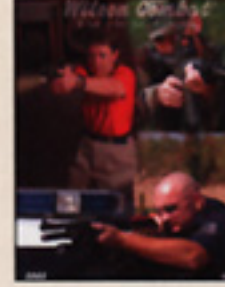
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CATALOG INQUIRY #80

PUMPING UP THE 223

Experiments with a **self-loading** **.223 Ackley Improved**

By Dave Anderson

With all the new cartridges appearing in recent years, it's curious that the selection of .22 centerfire cartridges seems to be declining. Such once famous wildcats as the .219 Donaldson Wasp and 2R Lovell, and such good factory rounds as the .222 Rem. Mag., .225 Win. and .224 Weatherby are dead or dying.

Others, such as the .22 Hornet, .222 Rem. and .220 Swift have loyal followings, but their glory days are past. What's the reason for all this, at a time when interest in varmint hunting and varmint rifles is higher than ever? Two reasons — the .223 Rem. and the .22-250 Rem. cartridges.

Changing Varmint Scene

The .223 has the huge advantage of cheap, high quality military surplus ammunition and brass. It is accurate, light recoiling, easy on barrels, and inexpensive to reload. Its ballistics are more than adequate for the ranges and size of game most often encountered. Need more velocity and power for flatter trajectory and bigger targets? The .22-250 fills the gap.

Many varminters are coming to recognize the virtues of AR-type rifles. The best modern ARs are capable of astonishing accuracy, better than all but the best bolt-action rifles.

They also have the advantage of an immediately available follow up shot. The shooter can observe the bullet strike through the scope and if it is a little off the mark, immediately correct and fire again.

Most ARs are available in .223 only, and the design of the action and the magazine limit caliber choice to cartridges of similar length. For those wanting more power, the obvious answer is a wildcat based on the .223 case. One of the best and most popular choices is the .223 Ackley Improved.

Enhanced Performance

To "improve" a cartridge means to reshape it to increase its capacity. This can include reducing body taper, sharpening the shoulder angle, and (sometimes) moving the shoulder forward and reducing neck length. Improving cartridges was especially popular in the post-WW II era.

The easiest way to get formed cases for an improved chamber is by fireforming. Cartridge brass is pliable stuff. When a factory round is fired in an improved chamber, gas pressure blows it out to conform to the new chamber dimensions. The problem is to maintain proper headspace.

With rimmed cases, the rim keeps the case from moving forward at the blow of the firing pin. Similarly, the belt on belted magnum cases maintains headspace. That's one reason why wildcats based on the belted H&H magnum case became so popular.

With rimless cases, which headspace on the shoulder, it's not so simple. If you want to fire standard .223 ammunition with its 23-degree shoulder in an Improved chamber with a 40-degree shoulder, chamber dimensions have to be such that the factory round is a tight "crush" fit. This is the only means of ensuring correct headspace. Just running a reamer into a standard chamber generally won't do it.

Here's what P.O. Ackley himself said:

"The chamber can be reamed out so that the new chamber just barely cleans up the corner between the shoulder and neck, but this will not produce a crush fit which is necessary for fireforming factory ammunition. So the headspace has to be about .004 inch under minimum go gauge... it is almost always necessary to turn the barrel in a little bit in order to minimize headspace."

Guns & Ammo, December 1971

Ackley improved just about every case he could get his mitts on, including rimmed and belted cases. I don't believe the term "Ackley Improved" was ever copyrighted or trademarked, but when today's shooters speak of an Ackley Improved rimless cartridge, it is generally understood to mean a case with minimum body taper, a sharp shoulder (usually 40 degrees), and a chamber that will accept and fire the standard factory cartridge.

The Custom AR Arrives

In the late 1980s, practical shooting competition was expanding from handguns to include rifle and shotgun matches. I noticed several top shooters using AR-type rifles with upper units built by Lee Mosher, owner of Insight Shooting Systems Inc. (ISSI), located at Pueblo, Colo.

I shipped Mosher an AR upper to which he fitted his match package. This included a 20-inch, heavy free-floating match barrel and steel handguard with a very attractive and comfortable polyurethane cover.

MUZZLE VELOCITIES (FPS)

Load	Factory rating from 24-inch barrel	Les Baer 20-inch barrel	ISSI 26-inch barrel
Black Hills 50 gr. V-Max	3,300	3,251	3,394
Black Hills 52 gr. Match	3,300	3,253	3,387

Mosher converted the receiver to “flat top” configuration with a machined scope mounting rail, cut the chamber to minimum dimensions, adjusted headspace, and fitted and tuned it for accuracy and reliability.

To say the accuracy of the ISSI unit came as a shock is putting it mildly. With just a 1.5-4.5x Weaver scope, heavy factory trigger, and various brands of factory and surplus ammunition, the ISSI unit never fired one five-shot group that exceeded an inch. With a higher-powered scope, 1/2-inch groups were routine. I wrote about this unit in the November 1990 issue of *GUNS Magazine*.

Out Of The Blue

I hadn't talked to Mosher in over a decade, though I'd see his systems being used at matches and knew he was quietly going about his business. So it was a pleasant surprise when Mosher called in late 2001, and an even more pleasant surprise to find he was also interested in the .223 AI cartridge. He was kind enough to let me test one of his prototypes, the second .223 AI he had ever built.

Mosher built the unit around a 26-inch,

match-grade, stainless steel Hart barrel with a 1:12-inch twist. He fitted his machined scope rail, a chrome bolt and carrier, one-piece gas ring and titanium firing pin.

He used a JGS precision reamer to cut the chamber to correct dimensions so that factory .223 ammunition can be fired. Quality of workmanship is outstanding. The unit exhibited excellent fit, finish, and function.

The ISSI upper fit beautifully on a Les Baer lower receiver, chosen for its high quality and for the great 27-ounce Jewell two-stage trigger it carries. Fit was rock solid, with no perceptible play between the two components. I used Burris Zee rings to fit a 3.5-10x Weaver Grand Slam scope.

First order of business was to fireform some cases, which was also an opportunity to check accuracy with standard .223 ammunition and compare velocities from the 26-inch barrel to those from a standard .223 with 20-inch barrel. (See chart above).

Both types of Black Hills ammunition printed five-shot groups right around 3/4 inch in the ISSI unit. Improving a chamber generally reduces the velocity of factory ammunition slightly, due to the larger combustion chamber, but the longer barrel more than made up the difference.

Superior Quality Dies

Mosher included a set of Redding Competition dies. These dies are simply superb quality. Both sizing and seating dies use a sliding sleeve that keeps the case straight and supported. The sizing die, with interchangeable bushings, gives complete control of how much and how far the case neck is resized.

The seating die has a micrometer-adjustable dial calibrated in .001-inch increments. The first round loaded was slightly too long to fit the magazine. I measured the overall length with a dial caliper, turned the knob on the Redding die down .005 inch and ran the round through again. Checking with the caliper revealed overall length was reduced precisely .005 inch. Imagine that!

Bullet and powder manufacturers provide load data for cartridges whose case dimensions, capacity and pressure limits have been standardized. In North America the standards are maintained by the Sporting Arms and Ammunition Manufacturers Institute (SAAMI).

Companies that stamp, for example, “.270 Winchester” on cartridges, rifles, or loading dies are guaranteeing their product falls within tolerance limits for that cartridge as specified by SAAMI.

For obvious safety reasons we can't provide load data that has not been pressure tested and found to be within industry limits. Since wildcat cartridges by definition have not been standardized, there are no industry standards. Different versions of “improved” cartridges can vary significantly in such dimensions as shoulder angle, neck length, and capacity.

Thirteen Percent Increase

Even standard cartridge cases can vary in capacity due to differences in brass thickness. For comparison purposes I pulled the bullets from several .223 factory rounds, dumped the powder charge and checked case capacity. The cases held from 28.7 to 29 grains of water.

Cartridges from the same box of ammunition were then fired in the ISSI chamber, resized, and their capacity measured. These held 32.5 to 32.7 grains of water, indicating a case capacity increase of 12 to 13 percent. The next step was to go through my current reloading manuals and check load recommendations for the parent .223 Rem. cartridge.

For each powder/bullet combination, I averaged the starting load from the different manuals. Since I knew case capacity of the Improved cases had increased by 12 to 13 percent, I felt it was safe to increase the starting load by 10 percent.

From this starting point it was simply a matter of increasing powder charges in .5-grain increments while watching for pressure signs. I consider a chronograph an essential tool for load development.

Experimental Loading Tip

Each powder increment should produce a velocity change that is roughly linear, and any change in that progression is a sign it's time to back off.

For example, let's say adding .5-grain of powder increases velocity 55 fps over the starting load. Another .5-grain addition shows a 62 fps gain, the next .5-grain addition a 52 fps increase.

Then, we add an additional one-half grain powder and gain only 20 fps (or conversely, jump up 100 fps). Any significant change such as this, or in extreme spread or standard deviation, should be considered a warning sign.

Test Components

Both Lee Mosher and I found powders recommended for the parent .223 Rem. case, particularly those on the medium/slow end of the range, produced excellent results in the .223



A new generation of varminters are taking to the accurized AR.



AI. These included Hodgdon BL-C2, W-W 748, Alliant's Reloder 12, and IMR-4064. Faster powders such as IMR-4198 and Reloder 7 gave good accuracy, but didn't achieve quite as high velocities at safe pressures.

Hodgdon H-335 seemed to work particularly well with the unit I had, with low extreme spreads and standard deviations and excellent accuracy. Mosher advised his personal favorites were two Accurate powders, AA-2460 and AA-2520.

Test bullets included the 40- and 50-grain Hornady V-Max, 50- and 55-grain Nosler Ballistic Tip, 52-grain Speer JHP, and Sierra 50-grain BlitzKing. Different powders, bullets, and individual strings of fire gave velocities in the following ranges: 55-grain bullets: 3,500 to 3,600 fps; 50-grain bullets: 3,650 to 3,750 fps and 40-grain bullets: 3,900 to 4,000 fps. These are about 250- to 300-fps faster than the same bullet weights in most factory .223 Rem. loads.

We used 26-inch barrels, while factory velocities are taken in 24-inch barrels, which likely accounts for about 70 to 100 fps velocity gain. Both Mosher and I are satisfied that these loads are safe in our individual rifles with the components and loading equipment we use.

And He's Not Satisfied Yet

With the prototype unit I was using, five-shot groups consistently averaged a bit better than 3/4 inch at 100 yards. Mosher got roughly the same accuracy with his unit. These, remember, were the first two he built. Although this is very good accuracy, it isn't as good as my older .223 Rem. ISSI unit. Based on experience with the two prototypes, Mosher had JGS make him a new reamer to his specifications.

The prototypes have a throat diameter of .254 inch. The new reamer cuts the barrel throat to a tighter .250 inch. The new reamer also cuts a slightly shorter throat than the original. With the shorter throat, bullets can be seated deep enough to fit and feed from the magazine and still have a short jump to reach the barrel lands. Another change was to go to a 1:14-inch twist, which Mosher felt was better suited to the lighter 40 and 50 grain bullets.

He has tried barrels from Lawrence Rifle Barrels and found they were equally as accurate as the fine Hart match barrels. He reports both makes of barrels cut with his new reamer have been producing superb accuracy, with many groups in the 1/4-inch range.

Other Details

In the course of firing some 200 rounds of standard 223 Rem. and 300 .223 AI cartridges the ISSI unit functioned perfectly.

"The AR-15 is almost perfectly suited to feeding the 40-degree case," Mosher commented, "better than most bolt guns."

Something I like to see with any semi-auto, rifle or pistol, is a consistent ejection pattern. Wanting to recover the cases while shooting the .223 AI unit from the bench, I



.223 Ackley Improved cartridge (left) shows sharpened shoulder angle that increases case capacity.

noted where the first case landed, then set a range bag on the spot. From then on, just about every case ejected from the ISSI unit went spinning neatly into the bag.

Mosher does a lot of tuning and fitting to ensure smooth functioning. He found that the bolt locking lugs at the 1:30 and 3:00 positions tended to scratch cases. Relieving the edges of the lugs not only stopped the case scratching but led to a more consistent ejection pattern.

Latest Developments

Although both prototypes functioned reliably, Mosher felt the feed/ejection cycle could be smoother. On current models he slightly reduces the gas port diameter, and he now uses a Les Baer bolt and bolt carrier (1/4 ounce heavier than standard), and a chrome silicon recoil spring buffer from David Tubb. The result, he says, is superbly smooth operation.

Are improved cartridges worth the trouble? In his later years, P.O. Ackley himself seemed to doubt it. At the age of 63, he wrote:

"You cannot change the shoulder angle a few degrees and blow out the case a few thousandths and revolutionize the industry"

Guns&Ammo, March, 1970

The .223 AI may not be revolutionary, but it's an absolute charmer nonetheless. It is amazingly efficient in terms of velocity produced per grain of powder. Cases expand so little they scarcely seem to need trimming, and resizing is virtually effortless. With the .223 AI, performance nearly equals that of the .22-250 Rem., and the same rifle can still shoot economical .223 Rem. ammunition. That's an impressive combination.



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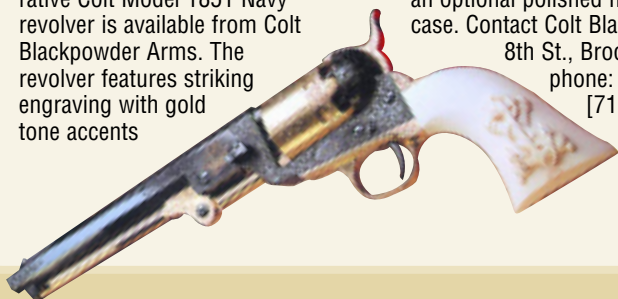


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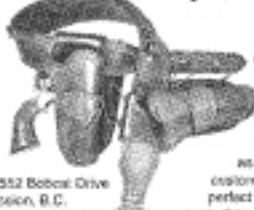
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CAMPFIRE TALES

continued from page 82

However he didn't stop there. The entire 3,000 acres has been returned to native grasslands and boasts a good-sized buffalo herd.

Buffalo hunting is a little different on the Hawes Ranch. The cook shack is a real Kansas prairie dugout complete with sod roof. Hunters sleep in teepees and pursue buffalo on horseback. Firearms? Buckskin clad Lee prefers his hunters continue the 19th-century tradition by using single-shot rifles, either muzzleloaders or black powder cartridge style.

His backup rifle is a custom Lone Star rolling block built by Dave Higginbotham and chambered in .50-70. Lee is a dinosaur, a throwback, and a real part of an America we must not lose. Those who forget the past have no future. I feel tremendously blessed for being able to spend three days with him. Oh, yes, my freezer's now packed full of buffalo meat. I took mine with a .45 Colt sixgun.

Texans Then And Now

From Kansas, we headed south to Texas, a state literally overflowing with real American history. What could be more representative of Texas than the Texas Rangers? We were able to spend a day at the Texas Ranger Hall of Fame and Museum in Waco.

Not only is this a vital part of Texas history, it is also the history of sixguns as one studies the hundreds of handguns used from the Paterson of John Coffee Hayes, up to the most recent Colt 1911s and Smith & Wesson Magnums.

Then it was off to Fredericksburg, Texas, and the Admiral Nimitz Museum (Nimitz, a native of Fredricksburg, commanded more men in the Pacific Theater of WW II than any commander before or since.); The National Museum of the Pacific War; and the simulated Pacific Combat Zone all in one complex.

Dedicated to the men and women who brought us victory in WW II, I felt a complete sense of awe and respect for all the young Americans that sacrificed everything so I could still be free 60 years later.

A few blocks from the Pacific landmark I found another part of real America. His name is Joe Gish, and he is a lifetime collector of things western.

Gish maintains a large private museum, no entry fee, no donations, and he is willing to give everyone a private tour. One caution, however. He is not interested in meeting with large numbers of general tourists, but rather those like Ray and I who are really interested in Western history, especially Joe's part of Western history.

Gish has been collecting since the 1940s with his main interest being silent movie westerns, real cowboy equipment, and Texas Rangers. His large museum houses thousands of items ranging from saddles to sixguns, movie posters to very rare leather belts and holsters, uniforms, badges, you name it, if it is pre-war western, it is probably in Joe's museum.

He asked nothing in return for the tour and the opportunity to handle many of his valuable items except that we share the same appreciation he feels. There are no signs, but just about anyone in Fredericksburg can direct a seeker to Joe's Museum.

Going The Extra Mile

Finally, we left Texas on a Saturday afternoon headed back to Kansas to pick up our frozen meat for the trip home. The meat processor was closed on Saturday and Sunday, however he gave us his home phone number so we could call and inform him when we left Texas and he could meet us at the plant.

Good plan, but as Bobby Burns put it so eloquently, the best-laid plans don't always work. As we traveled, we cell-phoned throughout the afternoon and evening. We called the home number only to get an answering machine. Since we couldn't connect, we stopped about 100 miles out for the night. We were back up and on the road at 6 a.m., and at the plant by 8 a.m. on Sunday morning.

Tim Copeland had indeed received our message, but for some reason could not connect with us. So he did what seemed natural to him, going the extra mile. He was waiting for us when we arrived at his place of business.

America is still out there, and it still works because of millions of people like the Turkey Creek Kid, Bonnie Tear, Possum Creek Bill, Lee Hawes, Joe Gish, and Tim Copeland. May it ever be so.




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CAMPFIRE TALES

BY JOHN TAFFIN

AMERICA: IT'S STILL OUT THERE!

At one time in this country, there was one America. Today there are several. There's the America presented by the media. It is most often distorted and oblivious to the values of real America.

Everyone has seen the map showing "blue" America and "red" America. The Blue Zone exists along both coasts in areas where many residents do not consider red America's existence. The Red Zone, a.k.a. The Heartland as well as The Fly-over Zone, is an almost totally different world. It is the closest thing to real America, at least the America I grew up in.

The Red Zone is still populated with those more likely to farm, ranch, hunt, fish, drive pick-ups, even attend church regularly. Most do not care for Hollywood's brand of morality, in fact they cling to the real family values the other America often ridicules.

Millions of "Red Zoners" have made Rush Limbaugh an American institution, and have shunned the big three alphabet network news broadcasts for Fox's "We report; you decide." Most simply want to live their own lives, not try to tell others how to live theirs.

Trip Through Real America

Two weeks prior to the last election, my friend Ray Walters and I voted by absentee ballot before loading his four-door, 4x4 Ford F150 to spend three weeks and 5,000 miles in *our* America, the Red Zone. Traveling through eight states, Idaho, Wyoming, Nebraska, Kansas, Missouri, Oklahoma, and Texas, we were in the very Heart of the Heartland.

We traveled through rugged mountains, desolate deserts, rolling hills, flowing plains, as well as areas with thousands of hardwood trees showing their autumn colors. We were rained on hard enough to look for a second ark, we drove through three snowstorms in the mountains, we froze in a harsh Kansas wind, and we sweltered in southern Texas heat.

We hunted, we shot, we ate, we saw, we rested, and

above all we met great people in our Real America. Space precludes listing all of them and the reader would certainly tire of an endless list, so I share a few that to me represent America at its best.

The Future Of Shooting

Just north of Branson, Miss., we attended the SASS Regional shoot hosted by the Southern Missouri Rangers. It's always a joy to meet new people at these shoots. However, on this occasion I met a new friend who was head and shoulders above the rest even though he was all of about five feet tall. My new friend's name is the "Turkey Creek Kid." He's 12-years old, and he's a Cowboy Action Shooter.

Totally polite, very unassuming, and with a smile that will soon be melting teenage girls' hearts, he was excited about shooting. So much so, that he had a large Cowboy Action Shooting decal that would be going on the outside of his school locker on Monday morning.

When it comes to shooting, I'm pretty much the past. The Turkey Creek Kid is the all-important future. We *must* encourage young people if we expect the shooting sports to survive.

Turkey Creek didn't show up all by himself. He is a very fortunate young man to have grandparents that care enough about him to spend quality time with him. My hat is off to Bonnie Tear and Possum Creek Bill for taking the world's most important jobs, that of being grandmother and grandfather, seriously. We need more like them.



The Buffalo Hunter

Lee Hawes of Ford, Kan., is pure America. Lee and his wife Tamie have the Hawes Ranch Outfitters outside of Ford, Kan., which is just southeast of historic Dodge City. Lee is also known as "The Buffalo Hunter," since much of his living is made hosting buffalo hunters on his fourth-generation ranch.

In the early 1870s, Dodge City was one of the main buffalo hide shipping areas with nearly 400,000 hides going out in the years from 1872 to 1874. Hawes's great-grandfather started a ranch in the area in 1880. Lee is totally connected with the past, and by purchasing and leasing, he has managed to put his great-grandfather's ranch back together.

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