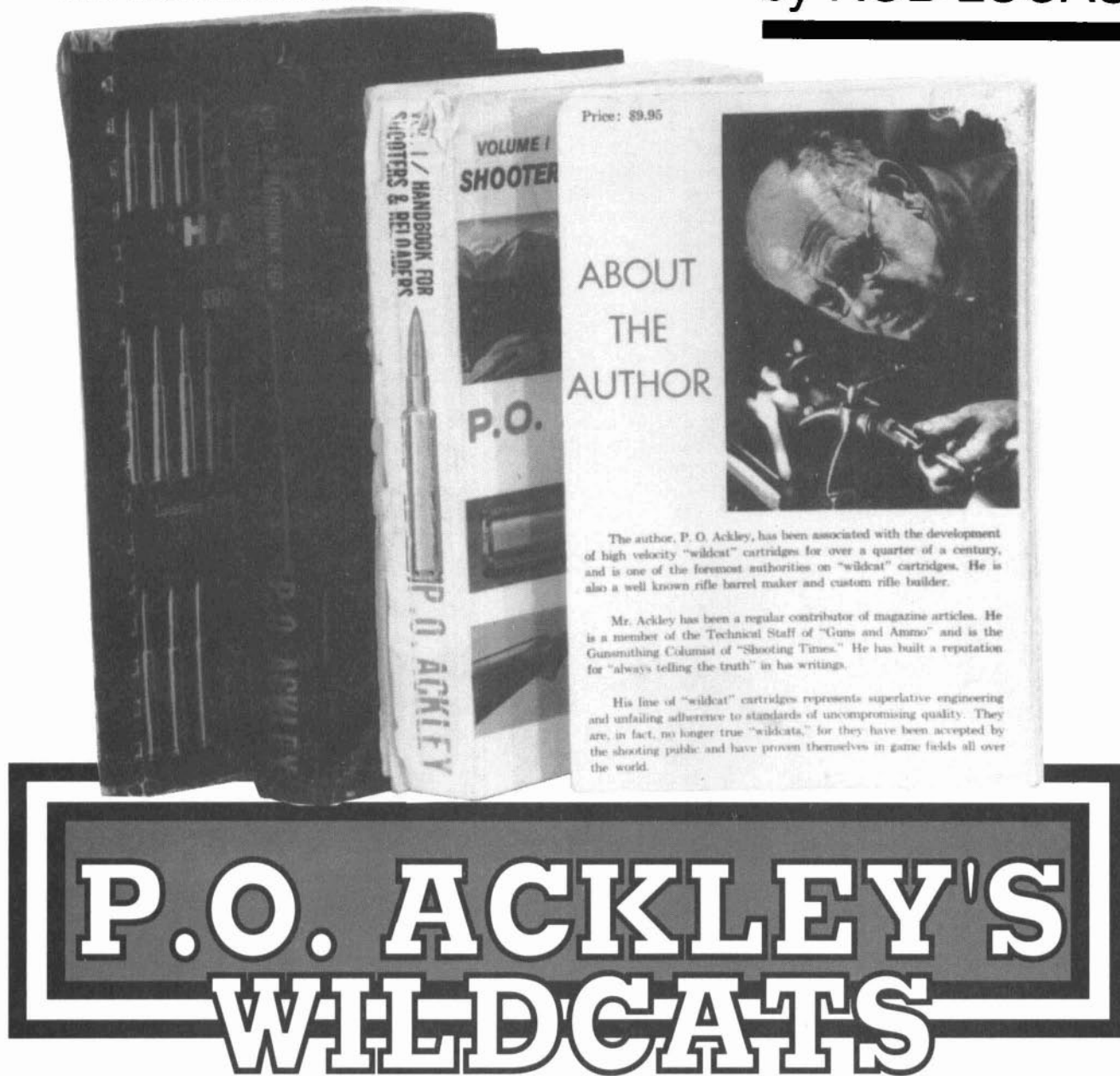


P.O. Ackley wrote three volumes of solid stuff for shooters between 1959 and 1966.

by ROB LUCAS



“SO DID YOU and Mr. Ackley ever solve your respective historical mysteries?” hunting partner Bob Sturgis asked, chomping on crisply burnt bacon.

It was after the New Year. I’d been holed up with the Ackley research, so it had been awhile since we chased pheasants. I had called Bob and set up an early breakfast and some bird shooting—to come up for air.

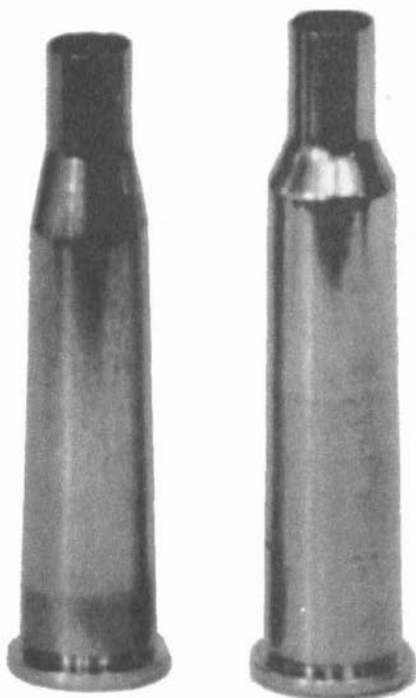
Sturgis knows about historical whodunnits. Among his distant cousins is 2nd Lt. James Garland Sturgis, one of Custer’s doomed officers on the afternoon of June 25, 1876. At least every generation somebody comes up

with a new and revised explanation of how the promising lieutenant and the infamous colonel met their ends at the Little Bighorn, including which Sioux chief actually overwhelmed Custer on the knoll. Bob Sturgis thinks the descendants of either Gall or Crazy Horse can count coup for Custer; I served in Vietnam with a Cheyenne PFC whose great-grandfather fought at Greasy Grass, so I heard a different demise for Yellow Hair. We regularly chew on the Custer mystery.

“Nope. Mr. Ackley and I both failed, you might say. Ackley didn’t reproduce a detonation in his lab, and I

can’t put Ackley up on a pedestal, not yet.”

P.O. Ackley was the foremost cartridge wildcatter and experimenter of his time, and maybe of *all* time. He was a rifle builder, barrel maker, general gunsmith, licensed firearms importer, a magna cum laude graduate and college professor of metallurgy, author of books, and magazine columnist, all of which gave him a pretty broad approach to his craft. You should also know that P.O. Ackley broke both his legs in a stockcar crash in 1948, so he liked a little excitement, too. In *Handbook for Reloaders and Shooters Volumes I & II* by P.O.



The 219 Zipper on the right is Improved. The new shoulder is a stretch.

Ackley, we see that in any area of gunsmithing unknown, Ackley simply set up an experiment, usually involving blowing up a rifle or two, until he figured things out. There was one experiment he didn't finish, though.

The reason we quit hearing spooky stories of hunting rifles wrecked by practice loads of slow-burning powder is that word finally got around: Don't take a chance, don't use reduced loads of slow powders. But it crossed my mind that maybe P.O. solved this mystery as he all but guaranteed he would in his chapter called "Reduced Loads" in the 1962 edition of *Handbook Vol I*.

Rumors of erratic pressure caused by reduced loads of slow-burning powder trace back to the 1940s, but hand-loading became popular in the '50s, which is when the "detonation phenomenon" was quite the fiery controversy. While gunwriters got angry fan mail, gunsmith Ackley got parcel post packages containing mangled rifle parts at his Colorado shop, as often as not "overbore" calibers like the 25-06 Remington and the 25-06 Ackley Improved.

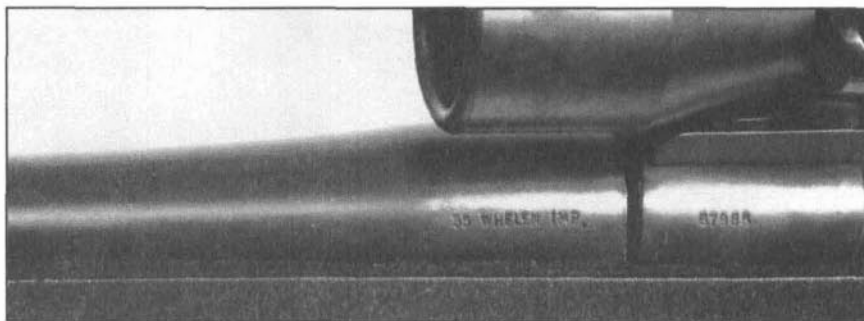
Among the fascinating theories circulating was this one: Under some unknown circumstance, a half-charge plug of slow-burning powder was blown forward by the primer spark into the shoulder/neck area where it wedged, smoldering, until it detonated just like a bomb. Still sounds plausible, doesn't it?

Ackley's friend, Jack O'Connor, got a detonation shooting handloads in a 270 Winchester; a "report like that of a cannon," smoke coming from the action, a cracked locking lug, and a case stuck so hard in the chamber the barrel had to be unscrewed. When O'Connor pulled the bullets from the remaining handloads, he found one case half-full. At the time he was using two cranks of a powder measure to throw one 60-grain charge of 4831, a dubious practice but not considered dangerous.

O'Connor wrote it up in *Outdoor Life*, warning against the use of reduced loads of slow-burning powder. The NRA staff at the *American Rifleman* ran some tests and concluded that "detonations" didn't just happen and that O'Connor—not by name, of course—was nuts. Ackley jumped into this frying pan by providing the feisty O'Connor with a format to

degree shoulder later in the review of Ackley's rimless wildcats. Meanwhile, an old issue resurfaced: P.O. Ackley and the "fireform improved" wildcat cartridge, loosely known as the "Ackley Improved" today, hit the gunsmithing scene at about the same time, the late 1930s. But did Parker Otto Ackley or someone else invent "Ackley Improved"? Of Ackley's sixty-two wildcat rifle cartridges, forty-two are variously "improved" and nineteen of those are "fireform improved," or we could say "true improved," including the five that are still on the RCBS Top 15 list of most popular rifle wildcat reloading dies. The term "improved," though he didn't care for it, became a P.O. Ackley legacy, but did he pioneer or merely popularize this clever piece of gunsmithing?

Elmer Keith did not think Ackley had much to do with the first fire-



When it says "IMP" on a barrel, it means "Improved"—often "Ackley Improved."

rebut the NRA in *Handbook Vol. I*, and he finished off O'Connor's remarks with a short, resolute statement that "in the not too distant future" he would prove the detonation theory in his lab.

To find out if he ever did, I spoke to Mike Bellm, the man who bought Ackley's barrel making business when he retired for the last time. With obvious pride in his voice, Mike said no, P.O. never did blow up a gun under laboratory conditions, but he never quit trying. It was a mystery the grand old guy took with him to the hereafter in 1989. End of story.

My historical mystery had to do with the early part of Ackley's wildcat career. I was hoping to contribute a significant Ackley connection to the year 1945-46 for the 50th Anniversary Edition of *GUN DIGEST*. No problem—a half-century ago, P.O. Ackley used his trademark 40-degree shoulder for the first time with the 30-06 Springfield Ackley Improved. We'll look into the controversial Improved '06 and the 40-

form wildcat. In 1979, Elmer all but swallowed his cigar when I asked him this question: "Maybe I should go all the way and build the Ackley Improved version?"

I'd been reading Elmer Keith for twenty years, but only recently had gotten into Ackley. Meeting Keith in person a second time, we talked about a pair of great old wildcats from the 30-06 case, the 35 Whelen and Keith's own 333 OKH, and he advised going with the Whelen because of better bullet selection. But with a raised eyebrow and a finger pointed my way like the barrel of a 44 Magnum, Keith answered my question this way, as I recall:

"Charles Newton invented the improved wildcat before 1920; it was the blown-out old 256 Newton. Charlie O'Neil fooled with the Improved '06 case before we brought out the 333 after the war. But Charlie Newton beat Charlie O'Neil an' everybody else, including Ackley, by twenty years!"

It wasn't the answer I expected,

but it was definite. Of course, Keith's opinion of Ackley was tainted; the two men disliked each other, although I didn't know it at the time. It was another ten years before I learned of the "Keith-Ackley Battles" of World War II, when the two diametrically opposed experts built Springfield rifles together at the Ogden Utah Depot. Now there's a subject for the historian!

I built that 35 Whelen Ackley Improved rifle, and I was carrying it in 1986 when I heard a "hometown favorite" version of the birth of the fireform wildcat. I ran into a mule deer hunter from the state of Oklahoma, home of famed gunsmith Art Mashburn. This gentleman showed me a pre-'64 Winchester 70 rifle in 300 Mashburn Magnum through which he said he'd fired 5000 rounds. He made custom 300 Mashburn ammo by fireforming 300 Weatherby factories. I was impressed, considering I was still making 35 Whelen Improved cases the old fashioned way by necking up and reforming 30-06 brass. According to this source, Art Mashburn invented the fireform improved wildcat in 1937, the year Winchester introduced the Model 70 rifle and factory-loaded 300 H&H ammo. Mashburn fireformed the 300 H&H to his trademark 30-degree shoulder, and it



This is the place where the 30-06 case should headspace in an Improved chamber, after creating a shiny ring.

was no coincidence that eight years later Roy Weatherby brought out his 300 Weatherby with the same chamber dimensions, but with his "venturied" shoulder.

A man who knows the history of wildcat cartridges as well as anyone living is writer Ken Waters. Waters is on record crediting Lysle Kilbourne with the first fireform improved wild-

cat cartridge, the K-Hornet. Waters wrote this in the 1992 *Wildcat Cartridges Vol. I*, describing Kilbourne's design goal when, in 1939 or '40, he fired factory Hornets in his K-Hornet chamber:

...the Kilbourne concept involves far more than just a simple expansion of a case to fit a chamber of the same shape...in a Kilbourne chamber...firing expands the case to a different shape. Never before, to the best of my recollection, had anyone come up with such a simple method of forming wildcat cases while retaining the undeniable asset of being able to fire factory cartridges in the same chamber, safely. That was Kilbourne's irrefutable contribution...

In giving New York gunsmith Kilbourne "irrefutable" credit for the fireform wildcat, Waters also gives us a concise description of what the fireform improved idea was all about. The wildcatter, instead of creating a brand-new cartridge from scratch, simply reamed a standard chamber to less taper and a sharper shoulder while staying within headspace tolerance, and then fired factory cartridges to make wildcat brass. A sensational idea. The result was a more powerful wildcat chamber that would still handle factory ammo. With his convincing salute to Kilbourne, Ken Waters seems to slam the door shut; P.O. Ackley was not the originator of the fireform idea.

Waters is exactly right about one thing: The first fireform improved wildcat was a rimmed 22 centerfire. In the 1930s, wildcatting was really wild, and the rimmed case was known to be safer and stronger than the rimless case. Art Mashburn's belted 300 Magnum probably isn't the original fireform cartridge, but his rimmed 218 Mashburn Bee is in the running, as is the rimmed 218 Gipson Bee, the Kilbourne K-Hornet, Ackley's 219 Improved Zipper, Donaldson's 219 Wasp, the 22 Lindahl Chucker, two or three "improved" 22 Savage High-Powers, and who knows how many other rimmed 22 wildcats.

When you really dig for the origin of "fireform improved," you run smack into the concurrent development of "modern and efficient," i.e., less body taper and a sharper shoulder angle combined with shorter case length, which opens the door for everybody from Charles Newton and A.O. Wiedner to Harvey Donaldson and Hervey Lovell. It was all happening in the

'20s and '30s; most of the experimenters were New Yorkers who either knew each other or worked together; they were all working on some form of high-velocity 22 centerfire; and there was only a handful of basic brass usable for starting points. For his part, P.O. Ackley never claimed bragging rights for the fireform improved, while others did, like New York wildcatter Harvey Donaldson.

Donaldson began looking for an accurate 22 centerfire in the mid-'30s, starting from the stout, rimmed 22 Niedner Magnum case, which was the 25-35 Winchester necked down. Unable to get it exactly right, he switched back and forth between the Niedner case, the 25-35, the rimless 25 Remington case, and the 1937 219 Zipper case, which P.O. Ackley wildcatted at about the same time.

Donaldson was a sociable sort of 'smith. He knew everybody in the business, and his experiments were well documented. In 1935, Donaldson's friend, M.S. Risley, designed a new chambering reamer for the wildcat 22-3000 Lovell which sharpened the shoulder from 5 to 15 degrees. The "improved" 22-3000 cartridge became known as the R2 Lovell, or simply the R2, and stepped up the velocity of a 45-grain bullet to 3200 fps from a case not much bigger than the 22 Hornet. Donaldson eventually formed a partnership with New Yorker Vernor Gipson, and they settled on the 219 Wasp from a necked-down 25-35 case with .015-inch body taper and a 30-degree shoulder angle. After this, Donaldson promptly claimed credit for inventing both the "Modern and Efficient" cartridge and the so-called "Improved" cartridge, because he gave Risley the idea how to change the shoulder angle of the 22-3000 Lovell to add case volume. What a guy.

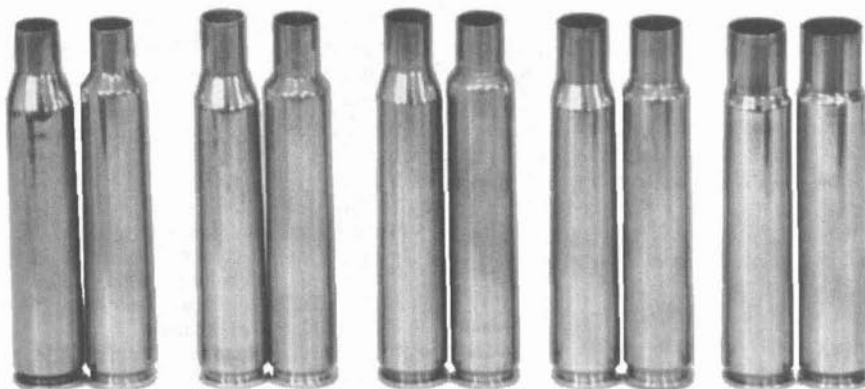
And so, summing up my progress in establishing P.O. Ackley as first with the fireform improved, I told Bob Sturgis: "Crediting P.O. Ackley or any other famous gunsmith with the invention of the improved wildcat is like crediting one or another Sioux chief at the Battle of the Little Bighorn with knocking off Custer; it was a long time ago and there were a lotta guys in the area."

P.O. Ackley's first wildcat cartridge was the rimmed 219 Zipper Improved of 1938, the Winchester factory Zipper blown out with a 28-degree shoulder. It was a winner, but as with the 219 Wasp, it wasn't

just right on the first go-round and there were three versions. The wide Zipper rim, pinched between the breechblock and barrel, was a head-space safety valve to rookie wildcat-ter Ackley, holding the case snug as the firing pin struck the primer and gas expanded in all directions blowing out the case with it. From the photograph that shows a factory Zipper beside Ackley's Improved version, you can see that it was indeed quite a stretch. In fact, Zipper brass made after WWII couldn't cut it; they split their shoulders on fireforming. Ackley recommended using cut-down, necked-down 30-30 brass instead to make his good wildcat cartridge, but a gain of 300 fps with a 45-grain bullet to nearly 220 Swift velocity was well worth the trouble to varmint shooters.

In addition to its positive head-spacing, the rimmed case had another magical property: the rim was a positive reinforcement of the primer pocket area which acted to decrease pocket expansion and therefore prevent gas leakage into the breech. This premise was one that Ackley later challenged in the *Handbook Vol. I* chapter called "Rimmed vs. Rimless." By comparing four hot-loaded 25 Krag rimmed wildcats against his own 25-06 Improved and 257 Roberts Improved rimless wildcats, plus the factory 257 Weatherby belted magnum, Ackley showed that the rimless case, no matter what the breeching system, held pressure in the primer pocket area as well as the rimmed case. Even so, and long after Ackley switched the focus of his wildcat work to rimless cases and the modern bolt-action guns that fired them, he never lost his fondness for lever action rifles and for rimmed cases. The Ackley recipe for efficiency—his combination of body taper, shoulder angle, neck length, and the ratio between case and bore capacities—applied to any factory-made case whether it headspaced on a belt or a shoulder or an old-fashioned rim.

Ackley built a pair of 17-caliber rimmed wildcats and another 17 on the rimless 222 Remington, which we'll look at with his rimless cartridges. The 17 Ackley Bee is the old 218 Winchester Bee with a sharper 30-degree shoulder and .009-inch body taper, necked down to 17-caliber. Ackley recommended simply pouring powder into the case until it was full, scraping the mouth level, and then cramming in a 20- to



These five factory cases—25-06, 270, 280, 30-06 and 35 Whelen—are paired with their improved versions here.

25-grain bullet for an accurate, almost recoilless varmint cartridge usable out to 200 yards or so. The 17 Ackley Hornet is the famous Hornet case given the 30-degree shoulder and about .011-inch of taper.

Ackley's rimmed 22 wildcats in the order they appear in *Handbook Vol. I* are the 22 Improved Jet based on the 357 Magnum case; the final version of his original 219 Ackley Improved Zipper; the 22-30/30 Ackley Improved on the 30-30 case; the semi-rimmed 220 Swift Ackley Improved from the factory Swift discussed later with the rimless 22s; the 22 Savage High-Power Improved from Charles Newton's 1912 original; and the 228 Krag Ackley from the 30-40 Krag case.

Rimmed 22-caliber wildcats look like antiques now, but not so long ago there was a market and a demand for Ackley's designs. The Improved Zipper, the Improved 22-30/30, the Improved Savage High-Power, and the 228 Krag were all matched for use in the most popular rifles of the day. His 22-30/30 with 40-degree shoulder and .017-inch taper designed for the Winchester '94 pushed a 45-grain bullet more than 4000 fps, which made some people very nervous. But, post-WWII, Ackley simply saw the 22-30/30 as the successor to the Improved Zipper and a step up.

In the 1962 *Handbook Vol. I*, Ackley describes an experiment on the subject of chamber pressure and the strength of the Winchester Model 94 rifle. After rebarreling a "junk pile" Model 94 to 30-30 Ackley Improved, he fired a series of factory cases while incrementally unscrewing the barrel and lengthening the firing pin so it could hit the primer. His point: The Improved case with less body taper tightly gripped chamber walls and

thereby transferred less pressure in the form of thrust back to the bolt. And the Model 94 was stronger than the experts gave it credit. The icing on this experimental cake came when he fired factory 30-30s in the Improved 94 with its locking lug removed—no support but the finger lever—with the result that there was no special result but excessive primer protrusion.

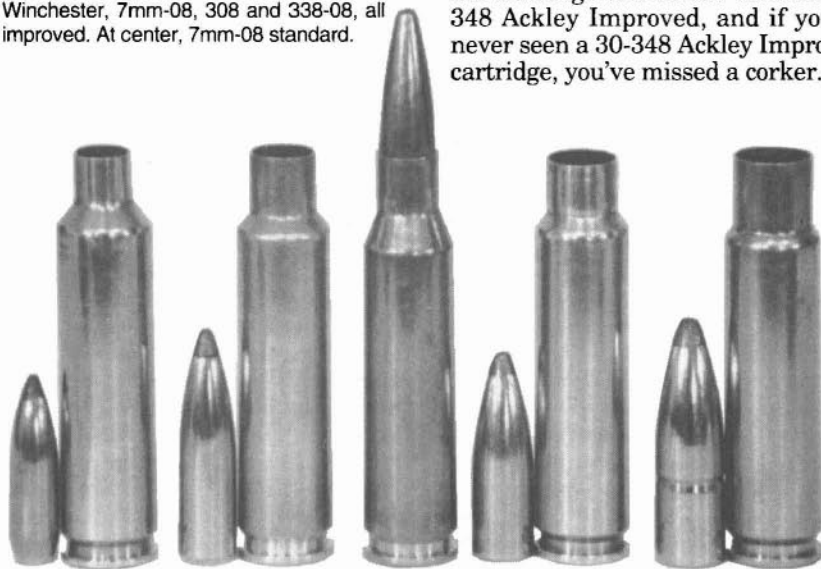
For Model 94 users in states where the 22 was banned on big game, Ackley offered a 6mm/30-30 that equaled the performance of the 243 Winchester, a 90-grain bullet at 3300 fps. There were two versions of the Ackley 6mm Krag Improved, the short one with a 25-degree shoulder and the full-length, blown-out version with 40-degree shoulder, both for single shot rifles.

Among Ackley's 25-caliber rimmed wildcats is one of his best, developed from the feeble old 25-35 Winchester. The 25-35 Ackley Improved for lever-action rifles came along about 1950, and it jumped the velocity of 100-grain bullets in a 25-35 Model 94 by a whopping 600 fps. Originally, the 25-35 Ackley Improved was a straight fireform wildcat—buy a box of factory 25-35s and fire them in the wildcat chamber, then commence handloading. But post-WWII 25-35 brass, like post-war Zipper brass, was too thin for this treatment, and Ackley again recommended using 30-30 Winchester brass instead. The 25-35 Improved became a "pure" wildcat instead of a fireform improved, and this partly explains why this great cartridge lost popularity. In an Ackley 25-35 Savage 99 or Winchester 94, 100-grain bullets could safely leave the muzzle at 3000 fps. Designer Ackley went to great lengths to explain that this was largely due

to the effect of the straight-sided case "taking the load," flattening against the chamber walls and reducing thrust to the bolt. There was more to the improved wildcat than just velocity.

There are a pair of Ackley wildcats from history's first modern wildcat, the 25 Krag. The 25 Short Krag Improved has a case length of 2.14 inches and 28-degree shoulder, while the 25 Krag Improved is the full-length 2.31-inch case, 40-degree shoulder and only .010-inch of taper. These, depending on your ter-

Here's the 308 family, all with the 40-degree Ackley shoulder: (from left) 243 Winchester, 7mm-08, 308 and 338-08, all improved. At center, 7mm-08 standard.



minology, could be either the 6mm Krag necked up or the re-shaped 30-40 necked down. Ackley's full-sized 25 Krag was too hot for Krag rifles—100-grain bullets at 3400 fps—and was intended for P-14 Enfields and single shots.

P.O. Ackley's excellent 30-30 Improved makes anybody's list of all-time best wildcats. It hoists 30-30 Winchester velocity in a lever-action rifle up to nearly 308 Winchester performance from a modern bolt-action or semi-automatic. Ackley's 30-30 illustrates the improved concept perfectly: 40-degree shoulder, .017-inch body taper, and still a good length of neck. Ackley lists loads in *Handbook Vol. I* showing 2700 fps with a 150 round-nose. Being a lever-action guy myself, I'd prefer something like the 170-grain RN Corelokt at 2500 fps. Now that's an improvement over the factory's 2200 fps.

Ackley wrote that his rimmed 30-

40 Krag Improved was among his very best wildcats, but in its cartridge description he points out that it was not popular due to the lack of suitable actions. And we can see why. How'd you like to try for 2900 fps with a 180-grain bullet in a Krag rifle? Ackley says it's possible with a 30-40 Improved, but best in a Hi-Wall or P-14 Enfield.

I can find no Ackley wildcats based on the 45-70 case, so that brings us to his work with our largest rimmed case, the 348 Winchester. Ackley necked the 348 both up and down, gave it the 40-degree shoulder, and one or two of his 348s deserve special note. If I ever build an American double rifle on a 12-gauge shotgun frame, the cartridge will be the rimmed 30-348 Ackley Improved, and if you've never seen a 30-348 Ackley Improved cartridge, you've missed a corker.

Imagine the squat, sloping 348 case blown out to minimum taper with a 40-degree shoulder, making the shoulder look as wide as the rim. This is an impressive wildcat, and like most of Ackley's work on the 348 case, it was a personal request from *Guns & Ammo* writer Bob Hutton for the Winchester Model 71 rifle. With its minimum-taper case helping to reduce thrust to the Model 71's rear-lug locking mechanism, a 170-grain bullet from a 30-348 could safely beat a 180-grain bullet from a 30-06, going about 2800. I've read that 2900 fps is no problem in modern guns.

And there's the original 348 Ackley Improved, the 35-348, 40-348 and 450-348, all of them with the 40-degree Ackley shoulder and minimum taper. Have a peek at what's possible with the 450-348, which is the same cartridge as the 450 Alaskan, with numbers that look like

those from the 458 Winchester Magnum: Ahead of 68 grains of IMR-4064, Ackley shows a 500-grain bullet for the 450-348 Improved traveling 2040 fps!

Initially, the big English belted case, a new frontier to explore, intrigued P.O. Ackley. When 375 H&H brass became available on the West Coast in early 1939, and some of his customers wanted "magnum" performance in a standard length action, Ackley got very busy. Though it was barely a year since the Improved Zipper put him in the wildcat business to stay, he designed the 30 Short Ackley Magnum No. 1—the 375 case shortened to 2.45-inch and necked down with 28-degree shoulder. It failed, dead and buried shortly after WWII, but better Ackley magnums later followed, and by the 1950s, his customers had three distinct families of magnums to choose from with two shoulder angles and three case lengths.

The belted case taught P.O. the law of diminishing return with respect to maximum case capacity: With any magnum there was a point, based on the ratio of case capacity to bore capacity, when adding more powder to gain velocity meant giving up everything else—case life, barrel life and cartridge efficiency. Ackley labeled most belted magnums, factory or wildcat, his designs or someone else's, "overbore" or "badly overbore." He tried to build belted magnums that made sense and which filled a market need, cartridges of better design and better efficiency than those from the factories. In his 1966 *Handbook Vol. II*, a time when every American arms company was cranking out belted magnums of good, bad and ugly design, some of his most interesting and unrestrained rhetoric shows up. But, as always, Ackley let the customer make the decision.

Ackley's smallest belted cartridge is a 22, but is neither based on a belted case nor qualifies as a magnum. It was a customer special request known as the 228 Belted Express; the shortened 30-06 case with a belt swaged around its head. It took three separate swaging steps to build up a belt on an '06 case, but with characteristic enthusiasm Ackley started with one and ended up with a whole family of these hybrid magnums, including 224 Ackley Belted Express, the 228, 6mm, 243, and 25 Belted Express. The 228 Belted Express became the best known and was meant to duplicate



These are the four steps to 35 Whelen Improved: the 30-06 case, the 40-caliber cylinder, the sized case, the fireformed case.

the old 1938 228 Ackley Magnum for shooters who, in Ackley's words "feel the belt affords a better headspace and produces a stronger case." In the '50s, this crowd was persecuted but persistent, big game hunters who preferred very small, very fast bullets. And they were right fussy about their cases.

Of his two belted wildcats in 244-caliber, Ackley praised one and condemned the other. One had "the ideal maximum capacity" for the 6mm, and the other was "over capacity and in no way compares to the 243 Winchester and the 244 Remington." The 6mm Belted Express, or 228 Express necked up, is "one of the finest of all 6mm wildcats," while the 6mm Ackley Magnum from the shortened 300 Winchester Magnum case was a waste of time and gunpowder. In describing another "overbore" 6mm, the original 244 Holland & Holland Magnum, Ackley tells his readers about a load of slow-burning 50 BMG machinegun powder reduced just 15 percent in a 244 H&H which completely disintegrated a rifle, a reminder that "detonations" were especially likely in the big belted cases.

The belted magnums we think of today as "standard length"—the 300 Winchester, 264, 338 and 7mm Remington Magnum—Ackley thought of as "short," because they came from the 2.85-inch 375 H&H case shortened to about 2.50-inch to work through a 30-06-sized action. Calling them "short" was accurate, but bad market strategy—nobody wanted a magnum that's "short" because magnums were supposed to be "big." Even the stubby Remington 350 Magnum which Ackley thoroughly despised was never called "short" by Remington. Ackley's short magnums were

right for the time, about 1940 into the 1970s, and were the forerunners of today's medium-length magnums from 264 Winchester Magnum and 7mm Remington Magnum through 458 Winchester Magnum. Ackley started with the 28-degree shoulder in 1939 and stayed with it in his short No. 1s and No. 2s, figuring that 28 degrees was sharp enough up front with the belt handling headspace at the rear.

The smallest "Short Belted" Ackley magnum was his 30 Short No. 1 necked down to 25-caliber, 28-degree shoulder, .024-inch body taper and a case length of 2.45-inch, and called the 25 Ackley Magnum. Or it could be the 300 H&H case shortened and necked down. He didn't like this one much, but he thought it was better than most because it held a little less powder and thus had a better ratio of powder capacity to bore size. (Question: Does a cut-down 257 Weatherby in a lever-action BLR sound intriguing to anyone?)

Next is a very interesting Ackley magnum—the 6.5mm—which isn't listed in *Handbook Vol. I or II*, but is mentioned with other wildcat 6.5 magnums. Ackley was blunt about this one—not recommended, badly overbore. As you know, the 264 Winchester Magnum is a 6.5mm magnum, actually a 256-caliber. Of all factory belted magnums introduced over the years, the 264 Winchester held a special place in Ackley's heart—it was inexcusable. Ackley figured the 264 was way overbore, for starters, and had a neck that was obviously too short. On top of that, Winchester had to counteract bad case design with a sneaky double-diameter bullet that was supposed to hold down initial thrust pressures so this lousy cartridge

could reach its published velocity numbers, which it didn't do in any case.

Ackley thought his 6.5 magnum would have been a better deal for both Winchester and the shooting public if a 256-caliber magnum was needed in the first place. You won't see the Ackley 6.5 magnum in his books, but have a look at his nicely proportioned 270 Magnum and you see the design.

The 270 Ackley is one of the original Short No. 1s, and it needs 10 more grains of IMR-4350 to move a 130-grain bullet 140 fps faster than the standard 270 Winchester. Though Ackley did like his 270 magnum design, it is an example of the "diminished return" characteristic he was so quick to point out: If one wants magnum performance one must to pay the price in increased blast, recoil and expense. The 270 Ackley Magnum is a good modern cartridge and holds up well compared to the bigger 270 Weatherby Magnum.

Necking the 270 Ackley up to 7mm, or the 30 Short down, gets us to a word P.O. was damned stingy with in describing any belted magnum—flexible. The 7mm Ackley Magnum, like the 7mm Weatherby that came before it and the 7mm Remington that followed, can do lots of things with different bullet weights. Case length of the Ackley Seven Mag is the same 2.45-inch, while the Weatherby is 2.54-inch and Remington is 2.50-inch. The modern Remington Magnum gets 3020 fps with a 175-grain bullet, while the older and slightly shorter Ackley version shows 2950 fps with the 175-grain weight. A 160-grain bullet chronographs 3150 fps in the Remington and 3125 in the Ackley, so we perceive that these are virtually the same cartridge, but the Ackley wildcat is obsolete. P.O. Ackley, the barrelmaker, found that pushing Seven Mag bullets any faster shortened barrel life dramatically.

When you hit 30-caliber-and-up in the Ackley belted magnums, you find three different wildcats of the same bore size and a bunch of confusion. There are the Short No. 1s, the Short No. 2s, and the full-sized Improved Magnums. The differences can be explained by going back to Ackley's first belted wildcat in 1939.

The 30 Short Magnum No. 1 was Ackley's third career wildcat design and his first from a belted case. It had the 28-degree shoulder, .024-inch taper, and a case length of 2.45

inches, compared to the 12-degree shoulder and nearly .07-inch taper and 2.85-inch length of the "new" 375 H&H which all the fuss was about. The 30 Ackley Short No. 1 gave 3000 fps with a 180-grain bullet, a tad more than the older, bigger 300 H&H, but a bit less than the modern 300 Winchester Magnum. This was a good wildcat, but it's long obsolete.

All the Short No. 1s with the 2.45-inch case length are obsolete, and the reason is a matter of history rather than performance. A rifle chambered for the 30-06 Springfield could not be rechambered to 30 Ackley Short No. 1 without setting the barrel back a thread; a 30-06 cartridge could not accidentally be fired in a 30 Short rifle. I don't know if Ackley designed the 30 Short No. 1 with this in mind, but it's why he designed the Short No. 2s, which have a case length of 2.53 inches, almost as long as the Weatherby. A 30-06 chamber can become a 30 Short No. 2 by opening the bolt face and reaming to the magnum specs.

The 30 Short Magnum No. 2 came along in 1946 and was one of Ackley's first wildcats following his Ogden, Utah, Army Depot experience. He recognized his earlier mistake and fixed it, while keeping the 28-degree shoulder and trimming body taper to .020-inch. Ackley shows, in the *Handbook*, a 180-grain bullet from the 30 Short No. 2 Magnum leaving the barrel 10 fps faster than from a Short No. 1 with the same load of 67 grains of 4350. We can think of the No. 1 and No. 2 Short Magnums as nearly identical except for case length.

The 333-caliber bullets were popular for a time, and Ackley chambered his No. 2 Short to take 33-caliber bullets. The big difference between 30 and 33 calibers was bullet weight—up to 220 grains in 30-caliber, but all the way to 300 grains in 33. The most popular 33-caliber was 333 OKH, the 30-06 necked up. Ackley liked 333 OKH just fine and said it made an efficient big game cartridge, except for the difficulty in getting 33-caliber bullets. Ackley's 333 No. 2 pushed a 275-grain bullet to 2478 fps using 66 grains of IMR-4831, while the 333 OKH took 57 grains of the same 4831 to reach 2314.

The 333 Ackley Improved Magnum isn't pictured in the *Handbook* either—a 300 Improved was substituted. But for big bore enthusiasts, this 33-caliber magnum compares to the wildcat 338-375 H&H, which is a

slam-dunk long-range big game cartridge. Here again, Ackley shows his occasional lack of patience for the big bores, saying that his 333 is "concocted by necking up any of the big cases" and that it should be "relatively satisfactory," emphasis on the word relative.

Moving to 35-caliber in the belted magnums, Ackley thought two of his own were pretty good ones—the 35 Ackley Magnum No. 2, made by necking up the 30 No. 2 Short, and the impressive 35 Improved Ackley Magnum from a full-blown 375 H&H necked down. Ackley described the 35 No. 2 as maximum bore capacity for the 35-caliber, powerful enough to dispatch anything that walks or crawls, while feeding nicely through a standard-length action. The 35 Ackley Improved Magnum requires a Model 70 or FN magnum-length action, Magnum Mauser or Brexex. If a magnum action were the shooter's preference, then the 35 Ackley, Mashburn, Apex, or Norma super-magnums could all outperform the parent 375 H&H with 300-grain bullets by as much as 200 fps.

Ackley could not resist improving the old 375 H&H, as did most of his contemporaries. He found the old British standby overrated and unchanged since the time of his own birth. The 375 Ackley Improved resembles the extinct 375 Weatherby, but with a sharper shoulder angle. Ackley recommended his 375 over the competition with customary reservation, saying that if so much power were really needed then his design at least had a decent neck, minimum taper to cut down bolt thrust, and relative bore efficiency. The big news with the Ackley 375 was that it was a true fireform improved, and cases could be made by simply firing factory 375 H&Hs in the improved chamber. This one shoved a 300-grain bullet out the muzzle at 2750 fps, but at the expense of a 10-grain increase in the powder charge.

Finally, despite his preference for "smaller and more efficient," Ackley took a couple of shots at the super-magnum market. I think he had some fun with his 450 and 475 Ackley Magnums because the English counterparts with their long sloping shoulders, steep body tapers and cigar lengths represented antiquity. A full year before the 458 Winchester came out, Ackley necked his 375 Ackley Improved to 45-caliber and then all the way up to 475. The 450

Ackley Magnum has a tiny little shoulder, more of a bump, and the 475 Ackley is a virtual cylinder. You would think Ackley shortened his 450 or 475 Magnums to work through a standard-length action, but he didn't. I don't think he was much interested.

"There are few so-called English elephant guns which approach it in power," he wrote of his 450.

We have reached the last and most important group of Ackley wildcat cartridges, the rimless wildcats. These are the Ackley designs that survived, the wildcat kittens from his 1938 rimless 228 Express Magnum. It is time to hear from the man himself, P.O. Ackley's stated purpose from *Handbook Vol. 1* for "improving" a factory or original cartridge. It reads as follows, and note the restraint in the language.

...to increase the capacity of any given cartridge through the process of fire-forming, and to perhaps change its shape to what would be considered a more efficient one.

Ackley "standardized" the wildcat cartridge, which sounds odd but is accurate, and the four ingredients in the standard Ackley recipe are:

1. Minimum body taper. To Ackley, a case with too much taper was a "self-actuating wedge" that backed itself out of the chamber during combustion. For the rimless case, Ackley preferred a taper of .0075-inch per case inch. An improved rimless case with a length of 2 inches got a taper of .015-inch. The improved straight case stretched less, lasted longer and provided a better gas seal than a tapered case. Most importantly, a brass case with minimum taper gripped chamber walls tighter, which meant less thrust transmitted rearward to the locking mechanism. And a straight-walled case ejected easier than a tapered case.

Ackley tried some interesting and semi-dangerous experiments to prove his point about the benefits of minimum body taper in a rifle cartridge. Starting with that most popular of the old-fashioned tapered cases, Charles Newton's 250-3000 Savage, and a Savage 99 rifle, Ackley loaded it hot and fired it until a case backed up so hard against the bolt that the action froze. Then, after improving the chamber to give .015-inch taper, he fired the same overload in this 99 rifle and the case ejected like butter. Not finished yet, Ackley worked up more loads until pres-

sure caused a primer to fall out of the action, a load way too hot for regular use. But when he cranked the lever, the case ejected as easily as a plinking load.

2. A sharp shoulder angle—40 degrees being best for a rimless case. A sharp shoulder angle aided in the perfect headspacing of the rimless case and better defined the distance between the bolt face and the contact point on the chamber shoulder. The sharp shoulder increased case life by restricting brass flow in the shoulder area; a sharp shoulder confined burning gas longer within the case during initial thrust and thus helped complete powder combustion.

Interestingly, Ackley started his career in Charles Newton's footsteps; the first three Ackley wildcat designs had the 28-degree Newton shoulder—the rimmed 219 Improved Zipper, the belted 30 Short No. 1 Magnum, and the rimless 228 Ackley Magnum from the 7x57 case. Newton's shoulder angle impressed the young Ackley because, most important to the young barrelmaker who held Harry M. Pope in high esteem, it meant better barrel life and long case life. If Harry Pope could resize one brass case 30,000 times, then Parker Ackley should be able to design a sharp-shouldered chamber that would give 100 firing/reloading cycles. In the 1930s, a 28-degree shoulder was radical, but P.O. Ackley was just getting started.

Before enlisting for service in World War II, Ackley opened the 30-06 Springfield's 17-degree shoulder to 28 degrees, but he did not like the result. Returning home after the war, he moved his gun shop around a couple times before settling in Trinidad, Colorado, and it was 1945 before he could get around to fixing what was wrong with his wildcat '06—there was not much performance gain over the standard '06. The 28-degree angle

did not raise the shoulder height enough on the '06 case to make more powder space unless neck length was sacrificed, which he would not do. I've heard that Ackley tried Kilbourne's 35-degree shoulder, but I can't find evidence of it, and in any event he settled on 40 degrees as proper for the '06 Improved. The 40-degree shoulder worked so well in every way that Ackley adopted it for all rimless cases, including the five Ackley designs on the current RCBS most popular list.

3. A good length of neck. No short necks for P.O. Ackley, unless a customer or a factory case left him no choice. He felt that a short neck was indefensible: It put the bullet too deep in the powder space, made resizing unnecessarily difficult because bullets sometimes pushed right through, and decreased bullet pull at the critical moment of ignition. And a short neck just looked like hell, too.

4. A correct case and bore capacity ratio—with a goal of near maximum, but not over maximum. The hole in the barrel through which the bullet was being pushed could handle only so much gas volume in a relatively short period of time, and for each bore size there was an ideal maximum which could be equated in grains of powder. Because few factory cartridges have the perfect "load density," this is the tricky ingredient in the Ackley wildcat recipe, and the least understood. It means, as Ackley tried to explain, when you reload your first improved wildcat case, you can expect bullet velocity to go down before it goes up.

By "improving" a rifle chamber, reaming out body taper and sharpening the shoulder angle, Ackley got a better and more efficient case as well as one that held more powder—10 percent more in some old rimless designs. But when a factory cartridge is fired in an Improved

chamber, velocity went down because the bigger chamber lowered loading density, or foot/seconds of velocity per grain of powder. Therefore, to realize the full wildcat wallop of a fireform cartridge, one must top off with more powder, use the powder space gained by improving—use all of it, or nearly all. And then, quite often but not always, you achieve both maximum velocity and the ideal ratio of case capacity to bore capacity.

In my own thinking, my experience reloading for three Ackley Improved wildcats plus the new Ruger No. 1 in 30-06 Improved, there is a sort of "take-over point" with the fireform wildcat. It's the point where, using a particular powder in improved cases, I work reloads up to maximum level in a standard case with that same powder, and I find that chronographed velocities are always lower. Sometimes a couple hundred feet per second under factory numbers. There I stop and sort things out, compare accuracy, set velocity goals, look for pressure signs, etc. Then working up again toward the actual maximum powder capacity of the improved case, chronographing as I go, it happens, velocity goes over the top into wildcat country and I'm getting 200, 300, and even 400 fps above factory numbers.

As an example, my Savage 99 in 250 Ackley Improved is a pre-war gun with the brass cartridge counter and push safety on the bottom of the action, so I settle for modest velocity gains compared to what's possible. The barrel is a 20-inch heavy taper, about the same as the cut-down factory barrel it replaced, and it likes 100-grain Noslers at 2950 fps. There's a chart for five different loads with 100-grain Noslers chronographed in my rifle with both the old barrel and new Harry McGowan Improved barrel, and you can see the Ackley Improved recipe at work:

THE ACKLEY 250 DIFFERENCE

Load (Gr./Type)	Standard 250 Sav. Velocity (fps)	250 Sav. Ackley Imp. Velocity (fps)
FL Remington 100 CL	2708	2624
35.5/IMR-4064	2727	2640
36.5/IMR-4064	2819	2738
37.2/IMR-4064	2900	2878
38.0/IMR-4064		2950

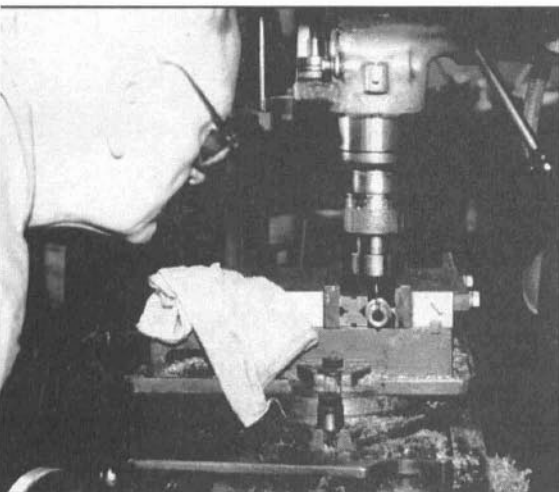
BEFORE & AFTER IMPROVING: INSTRUMENTAL VELOCITY COMPARISON OF FACTORY 30-06 AMMO

Bullet (Wgt./Gr.)	Fact. Vel. (fps)	Ruger 30-06 Chamber (fps)	Improved 30-06 Chamber (fps)
150	2910	2937	2902
180	2700	2736	2669

Oehler 33 chronograph with 10-foot screen spacing

It takes 36.5 grains in the Improved chamber to get the same velocity as 35.5 grains in the factory chamber. But once past the "take-over point," more powder in the Improved really increases velocity. Ackley recommended 40 grains of 4064 to reach 3271 fps in his tests. You can see more examples in the charts on 30-06 handloads and 250 Savage Improved, 257 Roberts Improved, 35 Whelen Improved factory loads.

There were a few rimless wildcat 17s before Remington brought out their 17 Remington based on the 223



If you have to set a wildcat barrel back, you have to deepen the extractor cut.

case in 1971. Ackley's experiments with the 17 go back to 1944 and the rimmed 17 Ackley Bee, but his rimless 17 appeared when Remington announced the 222 Remington Magnum in 1958. Ackley was too late with the 17 Ackley Magnum to make the 1959 *Handbook Vol. I*, but it shows up in the 1962 *Volume II*. The factory 17 Remington load shows a 25-grain bullet at 4020, and the Ackley wildcat gives a 25-grain bullet from 3650 to 4187, so they are about identical. It's curious that, while most rimless 17 wildcats were based on their 222 Remington case, Remington picked the 223 case to standardize the 17. The 223 has the same case capacity as the 222 Remington Magnum which was Ackley's choice a dozen years earlier.

The list of Ackley wildcat 22s on rimless cases is surprisingly short. They are the customer-requested 222 Remington Magnum Improved; the 22-250 Improved which is a fine cartridge, but not for the usual reasons; the semi-rimmed 220 Swift Improved; and three versions of the original 228



Duane Wiebe inspects a new 30-06 Improved chamber. This is how they all do it.

Ackley Magnum, two short ones from the 7x57 case and the longer, most popular 228 from the 30-06 case. The Ackley 22-250 and 220 Swift wildcats are "mechanical" improvements, as Ackley termed them, designed less to goose up velocities than to improve case life by better case design. The 22-250 is on the RCBS list of most popular, so it must work.

A very interesting wildcat is the 230 Ackley. When the 228 Ackley Mag-



When the first fired case looks like this, the job is ok.

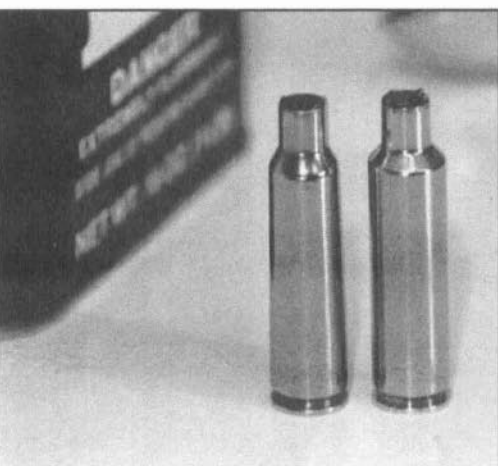
num with its true 228-inch diameter bullets was outlawed for use on large game in some states, Ackley responded with this 230-caliber wildcat. It is the 30-06 case shortened and necked to 23-caliber with a 28-degree shoulder. Ackley designed it in 1957 to move a 23-caliber, 70-grain bullet at nearly 3500 fps, which compares to the 243 Winchester. The issue here became whether or not light bullets held up at high impact speeds on big game, and it is still in question. Ackley maintained throughout his career that a properly constructed small bullet at high velocity was the killing equal of the slower big bullet.

In 244-caliber, we find an Ackley

fireform wildcat design that P.O. himself disliked, the 243 Winchester Ackley Improved. It was a customer request of straight fireform variety. I can picture Ackley staring at the short-necked factory 243 and shaking his head, wondering what he could do with it to make it look decent while admitting that it was already a pretty efficient cartridge. He reamed out more taper, sharpened the shoulder to 40 degrees, but he couldn't do a thing with that neck. Velocity with the 243 and 243 Improved are about the same, a small gain, but Ackley's wildcat looks more "crisp" and gives better case life in bolt guns.

Ackley gave the 26-degree-shouldered 244 Remington exactly the same treatment because his customers wanted a fireform 6mm. It worked out that a 244 Ackley Improved gives the 105-grain bullet about the same velocity as the standard 244 gives the 100 with better case life, not a bad trade. Order RCBS 6mm Remington Ackley Improved 40-degree dies if you want to reload for this wildcat.

Stepping up to 25-caliber, we have two of Ackley's all-time greats, the 250 Savage Improved and the 257 Roberts Improved. And we have a third which Mike Bellm remembers Ackley describing as "just a damned abortion," the 25-06 Ackley Improved. Ackley's favorite rifle cartridge was the 250-3000 Savage fireformed to a 40-degree shoulder and .016-inch body taper. Again, checking with Mike, whose Bellm Contender Barrels is the successor to "Barrels by Ackley," the reason is simple: The 250 Improved shows one of the highest velocity increases over the factory numbers while proving to be the ideal case capacity for the 25-bore. The 250



The all-time Ackley favorite—the Savage Improved. It will hold 47.4 grains of IMR-4350.

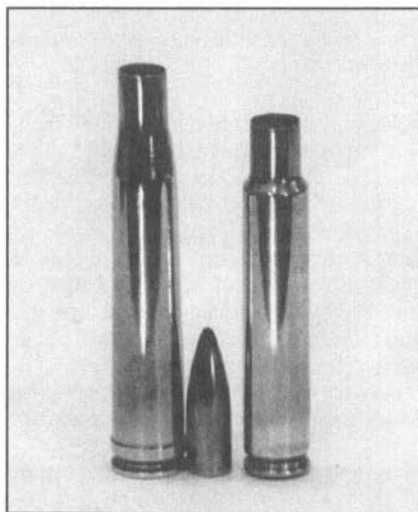
Improved steps up the performance of Newton's old-time cartridge almost to 25-06 Remington levels in a bolt action, and to 257 Roberts level in the lever-action 99. In any kind of rifle, the old 250 Savage has a reputation for accuracy, and the accuracy is the same or better in an Ackley Improved chamber.

I read somewhere that RCBS' most popular set of custom reloading dies, in a rifle caliber, are in 257 Roberts Ackley Improved. That seemed unlikely because Ackley designed this fireform wildcat in 1950, so I called Jeanne Reilly at RCBS and she sent me the list. The 257 Ackley Improved is not number one, it's number two on the Top 15 custom die chart. One of many wildcat 257s from the 7x57 case, Ackley blew out the standard Roberts 20-degree shoulder to 40 degrees and reduced body taper to .017-inch for a net case capacity gain of five full grains of slow-burning powder—not quite 10 percent. My FN-actioned 257 Ackley Improved gives velocities with 100- and 120-grain bullets that make me wonder why some factory doesn't figure a way to standardize this fine wildcat.

I was cautious at first about using data from Ackley's thirty-five-year-old reloading books, but not anymore. Ackley said a charge of 47 grains of IMR-4350 starts a 125-grain bullet at 2970 fps in an Improved Roberts, and it does start a 120 Nosler that fast. My accuracy load with the 120 Nosler is 45.5/4350 for 2903 fps, and this past deer season I put five of them into a sight-in group of 2x3 inches at 300 yards. No wonder this wildcat is still popular.

Why did Ackley dislike his 25-06 Improved? Remember the detonation mystery that he never solved?

He assumed that guys who couldn't understand how to fireform cases were the same guys who were blowing up 25-caliber wildcats. Ackley wrote that it was flat dangerous to fireform the 25-06 Improved with reduced loads, and that it wasn't a flexible hunting caliber at reduced velocities anyway. Ackley's 25-06 Improved originated from the necked-down and fireformed '06 case, but of course now you can fireform factory 25-06s in an Improved chamber. Ackley recommended the 25-06 Improved for those who wanted "the highest velocity possible from the .25



These are the 300 H&H and the 30-06 Improved, once called the "poor man's magnum."

bore regardless of other considerations."

Here, on the subject of fireforming cases, is what the most prolific wildcatter of all time had to say: Use a good stiff load with a medium or heavy bullet, and save the "cream of wheat" routine for breakfast. Or language to that effect. So you get one less shot in the life of a brass case, but you get headspace exactly right and avoid a bad accident for a dumb reason, like trying to save money. Mike Beeks of Grayback Wildcats, formerly called Buzztail Brass, makes pre-formed Ackley Improved cases, the perfect compromise. Buy pre-formed cases from Mike, size them in your wildcat dies, and shoot targets or game right now. Mike's wildcat case business is 90 percent Ackley designs, and he has some modern applications of the Ackley 40-degree shoulder recipe that Ackley didn't cook!

There is only one rimless 256-caliber Ackley wildcat. It's based on the '06 case and called the 256-06 Ackley Improved. Ackley suggested that

while his wildcat might have a better shape, the standard 6.5-06 wildcat had maximum case capacity for the 256-bore and was more efficient.

In 270-caliber rimless, there are two Improved designs, one P.O. liked and the other he wouldn't recommend. He thought the 270-257 Roberts Ackley Improved should be a great big game cartridge and compared it to the still-born 270 Savage round. Ackley saw the 257 Roberts case as the perfect volume for the 270-bore, and 130-grain bullets from a 270-257 Improved could be loaded to equal the standard 270 Winchester, making a very efficient wildcat. But the 270 Winchester Ackley Improved was a different story altogether, another customer request that resulted in a wildcat inferior to the standard cartridge. P.O. wrote that the standard 270 was already "over-bore," so a 40-degree shoulder with minimum taper couldn't offer much improvement, if any.

The 7x57 Ackley Improved Mauser is in the same class as his 250 Savage and 30-30 Winchester—it is a great cartridge with a significant performance gain over the original factory round. Ackley rated the 7x57 Improved more useful than any Seven Mag for the "average shooter." With a 40-degree Ackley shoulder and .015-inch taper, a modern 7x57 Improved Mauser sneaks up close to 280 Remington and 7mm Remington Magnum performance—3100 fps with 140-grain bullets.

And what about a 7mm-06 Ackley Improved or 280 Remington Ackley Improved as an "all-around" big game cartridge? They are the same cartridge, with the latter being a tiny bit longer starting from the 280 Remington case: 40-degree Ackley shoulder, .015-inch taper, 5 percent more powder space than the standard 7mm-06 or 280 Remington. While the 7mm STW is the hottest Seven Mag on the market and is currently RCBS' "Most Popular Wildcat," ask yourself if 3500 fps (sometimes) with a 140-grain bullet in a necked-down 8mm Remington belted case is all that much better than 3300 fps from the '06-sized 280 Remington Improved? A cartridge similar to the 7mm STW was available in 1950, the 7mm Mashburn Magnum Long from the full-length 300 H&H case, but Ackley essentially trashed it as inferior to any of the shorter 7mm magnums. The 280 Ackley Improved is now number ten on RCBS' current list of most popular wildcat dies sold, and it will climb that chart because I intend to have one!

Quick, how many rimless 30-caliber factory cartridges are there? Answer, only six if you count the comatose 30 Remington. At some point in his career, Ackley gave the 7.62 NATO/308 Winchester the improved treatment, but he ignored the 30 Carbine and 300 Savage, and there was no 307 Winchester until just before he retired. The Ackley gold in 30-caliber rimless is found in the 30-06 Springfield.

Starting in 1945, the 30-06 Ackley Improved has had more bad press than all the other sixty-one Ackley wildcats combined, with detractors usually trying to prove that the Improved '06 wasn't even as good as the standard model. Ackley, somewhat chagrined by the controversy, patiently explained that writers who did not understand the Improved idea always show his '06 Improved with loads that made it look bad, or from rifles with 22-inch barrels.

I've read one or two articles knocking the '06 Improved; there's one in *Wildcats Volume II*, and I'd rate the weird-looking test gun itself a wildcat. I agree with Ackley. Let's say it again: Open up a brass case for more powder space and load density goes down, and velocity goes down with the same powder charge. Ackley thought he explained all this rather well, but some guys never got the message.

Ackley had a great respect for the standard 30-06 cartridge and preferred it over the 270, a surprise coming from the consummate small bore advocate. P.O. argued that "real world" 30-06 ballistics were better

than 270 ballistics, and he offered this opinion in the "which is better: the 270 or 30-06?" debate that's seventy-five years old and still going strong:

It will be seen that the 30-06 is a lot more gun over the average hunting ranges than the 270 is with equal weight bullets. Of course, the 270 150-grain factory load may be flatter at ranges out beyond 1000 or 1500 yards than the 30-06 150-grain factory load, but very few shooters are able to hit a flock of circus tents at these ranges without first sighting in. Within game ranges the 150-grain 30-06 bullet is quite noticeably flatter and has more oomph when it arrives.

The 30-06 Ackley Improved adds 100-150 fps to the best handloads in an '06 rifle and is at its best with 180-grain bullets. At 2900-3000 fps, a 180-grain spitzer from an '06 Improved is on the heels of the 300 H&H and 300 Winchester. Look at Ackley's 30-06 Improved and note the length of neck. Ackley could have gone the route of wildcatter Rocky Gibbs whose 30-caliber wildcat from the '06 case has a neck as short as that of the 243 Winchester, but a long body for greater powder capacity. The 30 Gibbs Improved will outshoot the 30-06 Ackley Improved by a couple fps. Ackley stuck to the principle that a long neck resists bullet pull without a crimp and is practical in ammunition used in hunting rifles, holding the bullet firmly through action cycling and recoil. The one thing P.O. Ackley was not was a target shooter. So, like it or not, he got exactly what he

wanted with his 30-06 Improved and happy 50th anniversary to it. The 30-06 Ackley Improved is currently number twelve on the RCBS chart.

In his 8mm-06 Improved, Ackley saw a standard-sized wildcat equal to the performance of the 300 Winchester or H&H magnums, and he wasn't far wrong. Again, he suggested a 5 percent increase over maximum 8mm-06 loads, meaning a 200-grain 323-caliber could be started above 2800 fps, which is also what's possible with 200-grain bullets in his 30-06 Improved.

And finally, Ackley's biggest rimless improved wildcats were the 35 Whelen Improved and 375 Whelen Improved. He necked the Improved '06 up to 35-caliber to make 35 Whelen cases, and then necked the 35 Improved up again to get 375 Improved, both with 40-degree shoulder. He recommended both. My Mauser-action 35 Improved will almost beat factory 338 Winchester Magnum velocity with 200-grain bullets. Since Remington picked up the wildcat 35 Whelen as a factory cartridge, I just buy these and shoot them in my rifle, just like the Oklahoma hunter with his 300 Mashburn.

Besides the four basic ingredients in the Ackley Improved recipe, the matter of correct headspace for the rimless case in an improved chamber was of paramount importance to P.O., and to owners of custom rifles in wildcat calibers. Ackley went so far as to suggest that custom riflemakers really ought to provide a set of custom dies with every rifle, with the sizing die locked down tight.

P.O. ACKLEY FIREFORM IMPROVED WILDCATS FROM CURRENT FACTORY CARTRIDGES

Cartridge	Performance Gain over Factory	Ackley Comment
222 Rem. Mag. Ack. Imp.	About 5% more powder capacity	More useful if necked up to 6mm
219 Ack. Imp. Zipper	350 fps above top 45-gr. factory Zipper load	Recommended, but use 30-30 brass post-WWII
22 Swift Imp.	Better extraction, case life	Mechanical advantage with velocity equal to Swift
22-250 Ack. Imp.	50 to 100 fps, case life	Use Swift data and buy RCBS dies with 40° shoulder
22 Sav. H.P. Imp.	300-400 fps with 70-gr. 228-cal. bullets	One of best 22s with heavy bullets
243 Ack. Imp.	Extraction, case life	Mechanical advantage; originally a customer request
244 Rem. Ack. Imp.	Very little gain in any bullet weight	Auth. note: use RCBS 6mm Ack. Imp. 40 in 6mm rifles
25-35 Ack. Imp.	500-600 fps with 100-gr. bullets	Recommended, use 30-30 brass post-WWII
250 Sav. Ack. Imp.	300-400 fps with 100-gr. bullets	Recommended, Ackley's all-time favorite
257 Robts. Ack. Imp.	300 fps with 100- or 120-gr. bullets	Recommended, Ackley's "all-around" cartridge
25-06 Rem. Ack. Imp.	About 200 fps with 100-gr. bullets	Not recommended, despite customer success. "Overbore"
270 Win. Ack. Imp.	Little or none with more powder	Not recommended, factory 270 is better
7x57mm Ack. Imp.	300-350 fps with 140-gr. and 200-250 fps with 175	Recommended, more useful to avg. shooter than 7 mags
280 Rem. Ack. Imp.	250 fps with 140-gr. bullets	Recommended, 7 mag veloc. in '06 case
30-30 Win. Ack. Imp.	250-300 fps with 150-gr. bullets	Recommended, excellent for lever guns
30-06 Spfld. Ack. Imp.	100-150 fps in any bullet weight	Recommended, equal to 300 H&H
30-40 Krag Ack. Imp.	500 fps with both 150s and 180s	Good, but not many rifles can use. Hot
348 Win. Ack. Imp.	200-250 fps above 348 factory load	Recommended, better case life, less thrust
35 Whelen Ack. Imp.	5% powder capacity, 100-150 fps in 200s, 225s, 250s	Recommended, flexible big game cartridge



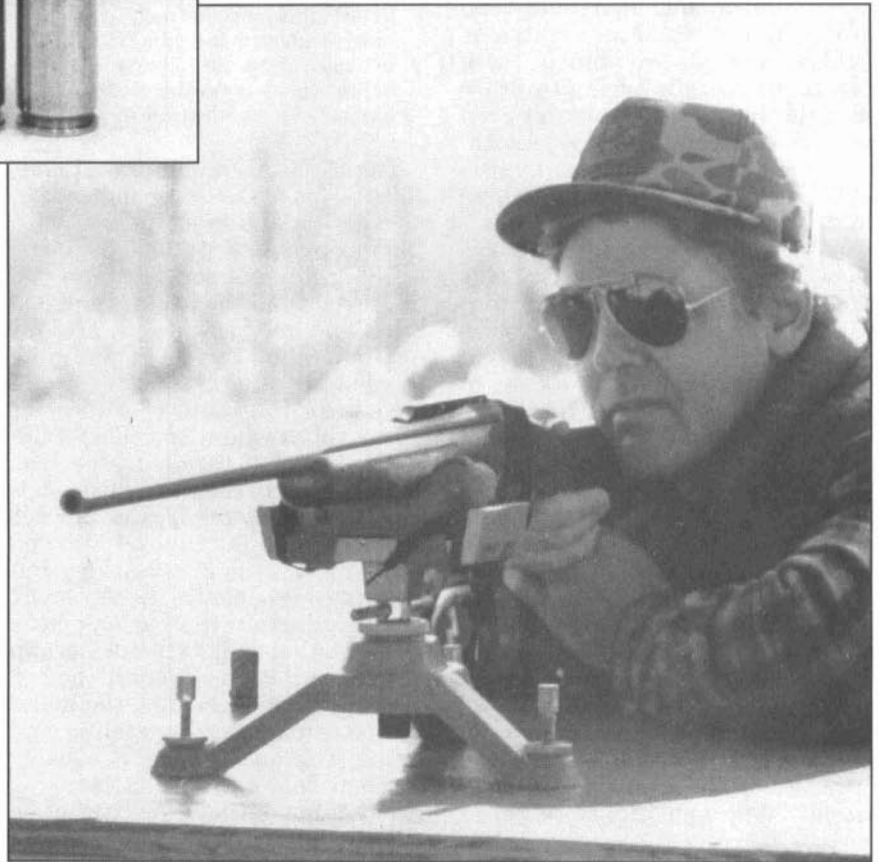
These five Ackley's are on RCBS' "most popular dies" list—257 Roberts, 22-250, 280, 30-06 and 35 Whelen, all Improved.

Writer Lucas got good enough to chronograph without sights.

If, in improving a chamber, the interior length from bolt face to chamber shoulder contact point was cut too long, the fireform process became dangerous, to include protruding primers, stretched cases, and even complete head separations. Gunsmithing the improved chamber had to be done right with no shortcuts, and it wasn't good enough just to wiggle a 30-06 Improved chambering reamer inside an '06 chamber to "clean it up." In Ackley's view, the barrel had to be set back the distance of one thread.

To take you through P.O. Ackley's prescribed method of gunsmithing the improved chamber, I chose the 30-06 Springfield and a Ruger No. 1 rifle. I'm lucky enough to live within a few miles of where two of the best gunsmiths in America do business, and for allotting me after-hours time during their busy season I owe a debt to Gander Mountain's director of gunsmithing, Jim Tertin, and to Duane Wiebe who agreed to cut my improved chamber as I shot pictures and pestered him with questions.

My Ruger No. 1 was brand new; other than 100 or so factory and handloaded rounds fired over the chronograph screens there wasn't a scratch on it. Surrendering the soft case to Duane, I noted the time, 4:40 p.m., grabbed my camera gear, and followed him back into the Gander Mountain gunsmith shop in Wilmet, Wisconsin. The rifle was snugged into an oversized Wilton vise where its headspace was checked with standard "go" and "no go" gauges. This Ruger chamber closed normally behind the 1.940-inch "go," but refused to close behind the 1.946-inch "no go." (I forgot to write down if Duane was using the old standard or new stan-



dard 30-06 gauges so I'm using the old standards.) There was just .006-inch between minimum and maximum headspace.

Off with the stock, action parts on the bench, and out came the Ruger barrel using the biggest crescent wrench I have ever seen.

"Sixteen threads per inch, so .0625-inch comes off," Duane informed me, carrying the barrel across to the Clausen Mark II machine. The lathe, turning against the stationary cutter, made a sort of rubbing sound as it scraped .0625-inch from the rear end of the barrel, one full barrel turn. Looking through the camera lens I thought I saw a wisp of smoke among the sprigs of silvery metal that peeled off.

"Well, there goes the factory warranty," I said to nobody.

The rear end of the barrel complete, checked and re-checked, Duane took the same .0625-inch of metal from the barrel shoulder and then used a Bridgeport milling machine to deepen the Ruger's extractor slot the same .0625-inch. From there it was back to the vise for some very careful licks with a pair of sharp files before Duane rotated the action back onto the barrel to check rib alignment and extractor function. Perfect so far. Then the barrel was chucked back into the Mark II machine for the big step—a JGS 30-06 Ackley Improved chambering reamer was fitted into a floating bit and carefully guided into the turning Ruger chamber to open it to Ackley Improved dimensions. Using a small flashlight and the 1.940 "go" gauge to make depth

checks, Duane's goal was to cut the Improved chamber exactly .004-inch short, as P.O. Ackley advised. The reamer widened the Ruger's chamber shoulder from .440- to .455-inch to give fireformed 30-06 cartridges a shoulder angle of 40-degrees and a body taper of .015-inch. In what seemed like no time at all, Duane switched off the lathe.

There were two tests to verify correct rechambering to Ackley Improved. First, the chamber being .004-inch shorter in headspace dimension, or approximately 1.936, the Ruger's breechblock should now not close on the "go" gauge. Second, with the breech locked behind it, a standard 30-06 cartridge should make contact in the Improved chamber at the junction of neck and shoulder in order to fireform perfectly without case head stretching. I watched Duane thumb the "go" gauge home and try to close the action; the polished breechblock

hours with no shortcuts, and the gunsmithing charge was \$92. Was it worth the money? What can I say? The work is great; the results show it. Duane advises me that a competent, careful gunsmith can do the same work, but in less time, for the average bolt action. Yes, it was worth the money—have a look at the handload chart for the Ruger No. 1 30-06 Improved.

Stopping well short of the maximums in *Handbook For Shooters And Reloaders*, my 30-06 reloads with 150-grain bullets in the improved chamber chronograph 3066 fps, as compared to max handload velocity of 2978 fps and Remington factory 2938 fps in the standard chamber for the same rifle. With 180-grain bullets, I get 2903 fps easily from the Improved '06, or nearly 200 fps above the performance of factory ammunition, and these numbers make my Ruger the long-range energy and trajectory twin of the 300 H&H.

The Ackley recipe works, but some day it will be obsolete and forgotten. What, fifty years from now for the 100th Anniversary of GUN DIGEST, will be written about Parker O. Ackley and his place in the "Wildcatter's Hall of Fame?" Did he invent the fireform improved wildcat? Will they think the Ackley wildcats was a football team? Was Ackley a great gunsmith with an intuitive knack for problem solving, or was he a me-too businessman copying the techniques of others because they paid the freight? Maybe P.O. Ackley was just like that other famous colonel, Harlan Sanders of "Kentucky Fried" fame; Col. Sanders didn't invent chickens, but he sure had the recipe for cooking 'em!

Here's what I think, and the answer's been in front of my face the whole time.

Ackley sold the family potato farm in 1936 to buy a one-man gunsmith business in the one-horse town of Roseburg, Oregon. But he was very much in tune with the New York action in his chosen profession, especially Risley's work with the R2 chambering reamer. How so, way out on the Coast? That farm Ackley sold was in New York State; at the outset of his career, P.O. Ackley moved away from the wildcat capital of the United States. Out of sight, out of mind.

And, unlike Harvey Donaldson, Ackley didn't specialize. He reacted to 1938 market conditions with three different wildcat cartridges in

rimmed, belted and rimless cases, all in less than two years, instead of spending his time trying to figure out why one cartridge punched .01-inch smaller groups than another one on a paper target. P.O. was definitely more enterprising than inventive, and he loses points with the purists.

Re-reading Ken Waters on Lysle Kilbourne I see "...irrefutable..." in the same paragraph with "...to the best of my recollection..." Now that's interesting. Re-reading *Handbook Vol. I*, keeping in mind Ackley's reputation for modesty and honest reporting (when was the last time anybody referred to a wildcatter in any field as "honest?"), I see Ackley describing his Improved Zipper as "...Originally it was simply a fire-forming proposition..." I think he did pull the trigger on the first fireform improved cartridge.

It's that post-War Winchester Zipper brass again, the stuff that split instead of stretch in an Ackley Improved chamber. After the war, Ackley had to recommend using homemade 30-30 brass to make his Improved Zipper, and that's what history remembers: Like the 25-35 Ackley Improved, the Improved Zipper became a "pure" wildcat. But before the war, in 1938 and a full year before the K-Hornet, P.O. did to factory Zipper brass what M.S. Risley did to the wildcat 22-3000 Lovell brass; he reamed a chamber, and with that fat Zipper rim snug between the breech and barrel, he pulled the trigger to find out what the heck would happen. Another 300 fps is what happened, and he fireformed Zipper cases this way until the war production put an end to barrel blanks for wildcatters and brass cartridges for civilians.

There, it's settled. Lots of guys, including M.S. Risley, may have "improved" some wildcat before Ackley came along, but P.O. was first to "fireform improve" a standard cartridge.

Oh, I almost forgot. Chief Crazy Horse went into the Battle of the Little Bighorn unarmed, no rifle. While he was off picking daisies, Cheyenne Chief Two Moons was zeroing in on Custer's command position on the knoll. Two Moons retrieved a battlefield Model '73 rifle with a broken buttstock and rode to within 20 feet of the Colonel and hip-shot him from horseback. I heard that story at least a dozen times, no, fifty times. And every time I heard it...it improved. ●



These four Ackley Improved wildcats were chronographed for this article with an Oehler 33—35 Whelen, 30-06, 257 Roberts and 250 Savage.

came within three whiskers of closing, but positively would not close. Then I tried a Frontier 180-grain softpoint factory cartridge in the chamber, and the Ruger's lever gave me a light "feel fit" locking up. Perfect Improved headspace. Duane poked the muzzle into the Snail machine and fired the barreled-action hand-held, and pausing for a picture, then presented me with a sharp-shouldered, fireformed 30-06 Improved case. Now that was something. The time was 7:17 p.m.

The complete job, made longer because of the necessity of removing the No. 1's tight-fitting rib, took 2½

THE EXTRAORDINARY P.O. ACKLEY...

... the gunsmith who showed them how.

by LESTER WOMACK

WHILE COOLING my heels in an Army camp in 1944, I fired a letter off to P.O. Ackley. I apologized for writing at such a time but gave him some thoughts on a rifle I wanted to make up after the war. I promptly received a lengthy answer detailing the possibilities within my limitations—straightforward and no hard-sell. Highly impressed, I promised myself to meet this remarkable man some day. We have since visited and corresponded for many years.

Parker Otto Ackley was born in Granville, New York, on the 25th of May, 1903. He grew up on the family farm and hunted in the nearby woods, as did all the farm boys of the period. I asked him once when he first became interested in guns.

"When I was born, I guess. At least I never remember *not* being interested," he replied.

It was in those tender years that he started reworking guns. He decided his little Stevens Crack Shot 22 was in need of a new stock and built it a full length Mannlicher type.

"That was the first and about the last stock I ever made," he said.

Since then his interest in guns has been devoted to the metal work, leaving the wood to others.

Ackley graduated from Syracuse University in 1927, magna cum laude. He majored in Agriculture and took a number of engineering classes, along with the R.O.T.C. program. He returned to the family farm to apply his newly acquired knowledge and the first year produced a bumper crop of the finest potatoes known in the country. Times were bad, however, and there were no takers—even at ten cents a bushel.

The country was on a downhill skid into the Great Depression, and eastern states were the first to feel the pinch. Then the stock market crash of 1929 brought down the few small farmers that were left. Ackley managed to hang on a few more years, but he finally decided farming was a losing game.

It was about this time that he noticed an ad in the Arms Chest in the classified section of the *American Ri-*

fleman. Ross C. King had placed his gun shop on the market in Roseburg, Oregon. Ackley thought it over until a late spring freeze finished off his crop. That did it—he took the plunge. King wanted \$2,000.00 for the whole set-up; half down and "the rest when you can." It didn't take long to settle affairs in New York. Ackley loaded Ma and the kids into the old Oldsmobile on Memorial Day, 1936, and headed West—never looking back.

Oregon may not have been exactly the land of milk and honey, but the little gun shop kept the wolf from the door. The Depression years never laid as heavily on the West as they did in the East. Guns in Oregon were working tools, and a lot of repair work was required to keep them functioning.

Ackley had always wanted to make rifle barrels, and he soon contacted an old friend by the name of Ben Hawkins who had been in the gun business nearly fifty years.

"Come on back to Cincinnati," Hawkins said. "Work for me and we'll teach you something about barrel making."

With the family taken care of in Oregon, Ackley headed back east. He began working with Hawkins' master barrel maker, a German who had begun his apprenticeship at the age of twelve in the Old Country. Seizing the bull by the horns, Ackley worked day and night, seven days a week, to learn as much as possible in the least amount of time. It was a golden opportunity and within a year he felt confident to go it alone in the barrel business.

Back home in Oregon, he started building a hand powered deep-hole drill and rifling machine. With his limited funds he could only tool up to bore one caliber, and he chose the 22. For larger calibers he could ream the 22 bore out. About this time he received an order from U.S. Hubble, an old Army Indian scout in Tensleep, Wyoming, to rebarrel a '98 Mauser action to 257 Roberts. After several days and a few sleepless nights, he turned out a barrel.

"Everything on that thing was wrong. I never saw a barrel warp as badly as that one," Ackley says today.

He threw it in the corner and tried to forget the whole thing. There it lay until a letter came from Hubble telling him in no uncertain terms to, "Git that barrel job up here!"

In desperation, Ackley finished the job and sent it off, fearing the repercussion that was bound to come.

The old timer went to rail-head to pick up his express package. Not one to put things off, he put a target up on a pile of cross ties in the railway yard and proceeded to shoot a pinwheel the

first time around. He sent this target and a glowing report off to Fred Ness, at the time Editor of the Dope Bag section of *The American Rifleman*.

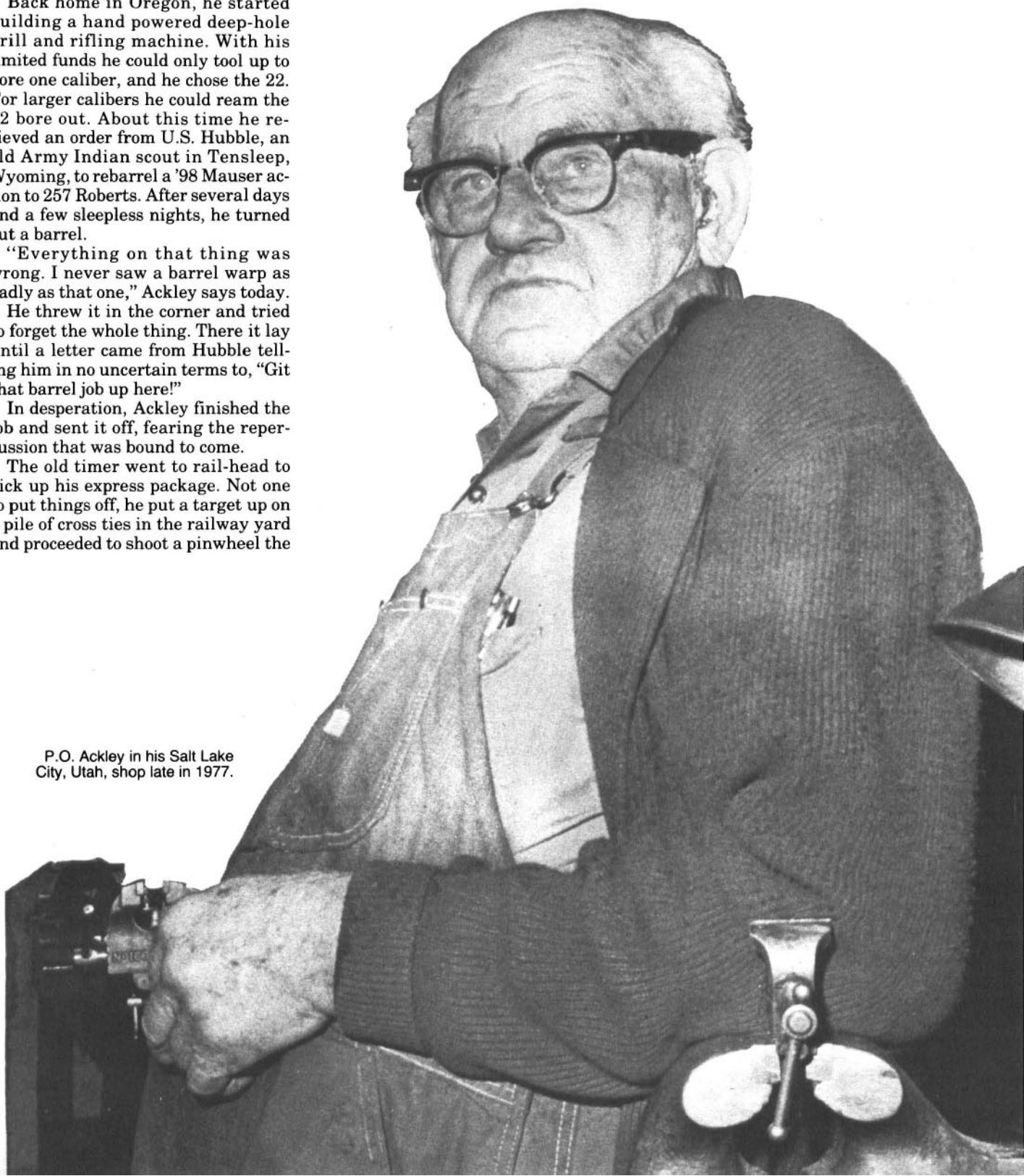
"I never got caught up after that," P.O. says.

About the time he had worked the bugs out of the process and Ackley barrels were coming into good supply, World War Two threw a monkey wrench into the works, so to speak.

Without priority status, he was left high and dry without critical materials. Since he couldn't fight them, he decided to join them.

His R.O.T.C. commission from Syracuse came in handy here. He was sent to the Ogden Ordnance Depot in Utah to set up a repair program, which soon developed into a full arsenal overhaul facility. Here he worked with civilian gun-nuts such as Fred

P.O. Ackley in his Salt Lake City, Utah, shop late in 1977.



Barnes, the bullet man; Elmer Keith, the gun writer; and Ward Koozer, noted gunmaker of the period.

While repairing the Army's weapons, typewriters and what not, Ackley and Koozer decided to go into partnership after the war. They contacted George Turner in Cimarron, New Mexico, who had a gun shop to sell. By 1944, Ackley had enough points for an Army discharge, a deal was closed

ple, many of whom were gun-nuts. What better way for a gun lover to spend his time than visiting a gun shop? Since these people had time on their hands, the problem to the Ackley shop was obvious, a perplexing problem to any gunsmith. It was decided the best way to cope with the situation was to move out of town, and they built a shop several miles away. Suspecting the answer, I once asked

trainees, P.O. took a proposal to Dean C.O. Banta, head of the vocational school at Trinidad State Junior College. Banta was enthusiastic about a gunsmithing curriculum. The new president, Dwight C. Baird, soon had Ackley on the staff to head up the department. A flurry of activity produced enough space and machine tools to start the course, and January, 1947, saw the first students arrive on



Office and shop crew of P.O. Ackley and Company in front of the first Trinidad, Colorado, plant in early 1946. The boss is the only one with a necktie.

with Turner, and they were on their way to New Mexico.

The isolation of Cimarron was soon felt, and Ackley convinced the Ration Board of their need to move to a town with rail service. This proved to be Trinidad, Colorado. They were provided with gasoline ration stamps, and away they went.

They settled in downtown Trinidad and began producing the Turner mount (now the Ackley Snap-In Mount), Ackley rifle barrels, and custom built rifles. It was soon discovered that they were within walking distance of a great number of retired peo-

P.O. if this move solved his problem.

"Nope," he said ruefully, "They just brought their lunches!"

By 1946, Ackley was receiving letters in every mail from men wanting to work for his firm to learn the gun building business. Within a two-year period he received more than 4,000 letters, mine among them, from men eager for hands-on training in the industry. Most were ex-G.I.'s and wanted to take advantage of the G.I. Bill with its provision for on-the-job training.

Since the Ackley shop couldn't begin to accommodate such a number of

campus, and the first gunsmithing school with an academic background was under way. It continues to flourish, as popular as ever.

I got to Trinidad in 1949, and never have I seen a more enthusiastic group of people. Everywhere we went it was "gun talk;" students, instructors, even the townsmen, and P.O. Ackley was the center of it all. Machines in the shop classes were always filled. If for any reason a regular student was absent, someone was there to take his place. This was encouraged by the school and embraced wholeheartedly by the students. The place was a bee-

hive of activity from before eight in the morning until after ten in the evening when they had to chase us out to lock up for the night.

Ackley's years of association with the students of Trinidad Junior College was a two-way street. With an inquisitive mind and a bent to experiment, he now had lots of enthusiastic help. All he had to do was suggest an experiment, and everyone was ready to go. It was at this time that we ran a series of blow-up tests on military rifle actions to determine their strength and suitability for sporter conversion. This was an eye-opener and remains the only scientific approach made to the subject.

Ackley had been making up wildcat cartridges for many years, and now he encouraged students to experiment with most anything within the limits of safety. He had developed many of his line of "improved" cartridges by altering the shoulder angle to 40° and reducing the taper to give the case greater powder capacity. In some instances the shoulder was also moved forward to take advantage of an over-length neck, producing an entirely new cartridge. Some were not necessarily improved by this treatment, and Ackley was the first to admit it if a cartridge turned out to be a turkey. To keep a damper on the students' heady enthusiasm, he insisted on a chronograph report before accepting any ballistic data. Figures don't lie, but liars do figure. The chronograph is an impartial judge.

Now and then someone mentions that he knows Parker Ackley personally, to which I can only reply: Not very well! To his friends he has always been known only as "Pee Oh." It seems that the Parker handle was hung on him when he was young and defenseless. It was simply his mother's family name and he acknowledges it with indifference.

Adulation of one's professor is nothing new, but in Ackley's case the students at Trinidad felt it was more than justified. In spite of his 16-hour days, he was always available to anyone in need of help. He gave freely of any information he might have. He used to say that anybody in the gun business who thought he had a trade secret wasn't kidding anyone but himself. He was always quick with a joke and could see the humorous side of most any situation.

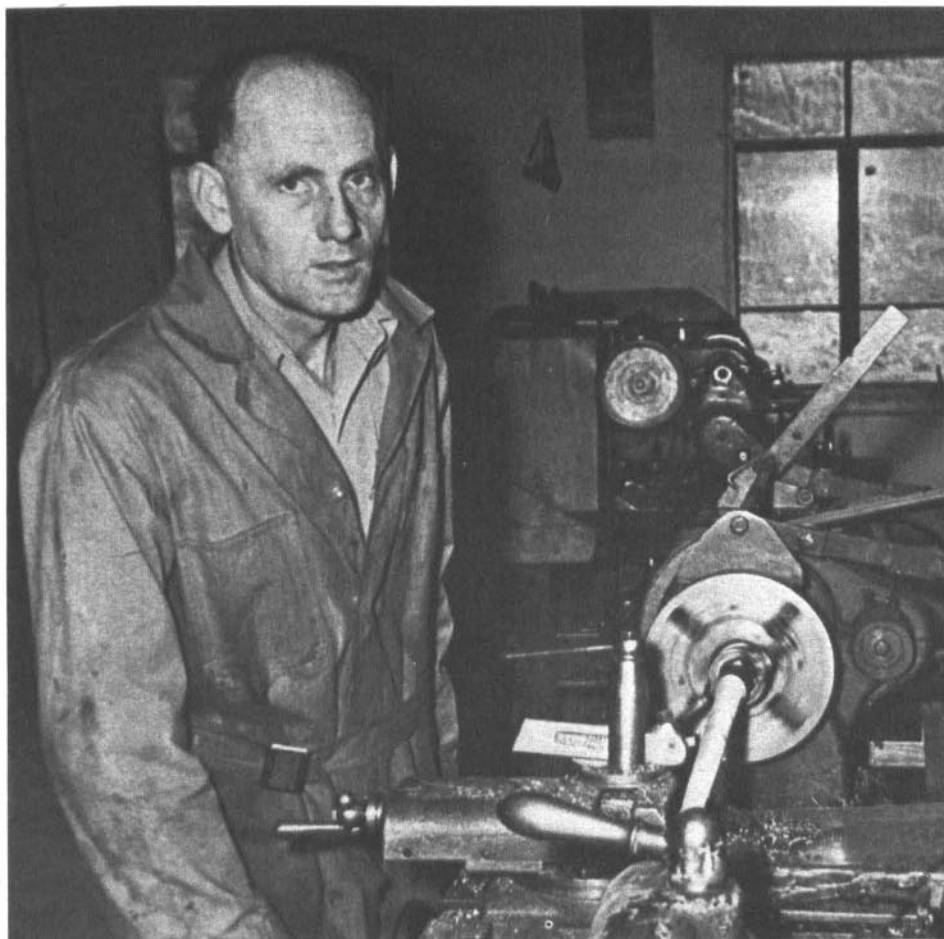
We soon found that he was a man of firm convictions with a couple of favorite expressions for any occasion. Any item of less than the highest quality was "Just a total loss," and anything showing poor workman-

ship was "Rougher than a boar's ass sewed up with a log chain."

Early in the course, Ackley pointed out to the students that gunsmithing wasn't necessarily a road to riches. Since a gunsmith must be proficient at machine work, wood work, heat treating, and a myriad of other skills, was the student also prepared to equip a shop? If not, did he have assurance of employment in an estab-

would have starved to death long ago," Ackley used to say, only half in jest.

The attrition rate among new gunsmiths has always been appalling. Thinking back, I can count all the men from my class still in the gun business on one hand—and have a few fingers to spare. In this manner, he tried to prepare us for the real World when we got out of school.



Turning the contour on one of his barrels, P.O. Ackley looks up from his lathe at P.O. Ackley, Inc., in February, 1950.

lished shop upon graduation? Even if he had his own shop and equipment at the time, was he willing to put in long hours at low pay in order to make a living?

A simple love of firearms wasn't enough to pull one through as the public wasn't disposed to pay a premium price for a man to work long hours on their weapons. As a hobby, you could take all the time you wanted, but gun work was done on a flat rate basis, and one must do the job as quickly as possible when your bread and butter depended upon it.

"If my wife hadn't had a good job, I

The 1939 catalog of Stoeger Arms Corporation listed a new self-loading rifle of the most advanced design. Built by the German firm of Heinrich Krieghoff, this weapon resembled a sexy over-under shotgun more than a rifle and was available for any rimless cartridge. The gas cylinder was about the same size as the barrel and extended to the muzzle. Gas was tapped from the barrel under the front sight and drove a piston rod back to operate the action. Ackley acquired one of these rifles in 8×60mm Magnum shortly after World War II. While I was at Trinidad, we admired this

masterpiece of engineering often.

One day he said, "I'm going to fit another barrel in 7mm to that Krieghoff."

"Why!", I said astonished, "That 8×60 is perfect."

"Just a project," he said, and added, "The barrels will be completely interchangeable."

After burning a suitable portion of midnight oil, he came up with a dead ringer for the original barrel and no alteration of any kind was made on the rest of the rifle. Very few of the Krieghoffs were ever made and this is the only one I have ever heard of in

About the time I left Trinidad, Ackley and a number of students were pursuing an interesting ballistic venture. Since the Japanese Arisaka Type 38 (M1905) rifle is super strong, and the price was right—Arisakas sold for around ten bucks at the time—it was decided to see what would happen when a 6.5mm was re-chambered to 7mm Mauser. Chambering reamers were re-ground with 6.5mm pilots and throating reamers made to cut the throat for the 175-gr. 7mm bullet. No alteration was made to the bore. Several rifles were re-chambered in this manner and fired

dangerous to fire through the old J bore (.318") Mauser rifle. All this is well and good for the keen experimenter, but many remain skeptical.

In 1951, the stockholders of P.O. Ackley, Inc. decided to sell the firm to Easton Engineering Company of Salt Lake City, Utah. Ackley taught his last class at Trinidad State Junior College and moved with the shop to the new location. He worked with the new owner for a short time to fulfill a contract obligation of sale. He then re-established his own shop and happily continued his experimenting. He has been in Salt Lake City ever since.

P.O. Ackley, right, and the author discuss a project early in 1950. This is the second location in Trinidad, called P.O. Ackley, Inc.



the United States. Shortly after finishing the 7mm barrel job, Ackley traded this rifle off to his good friends at the H.P. White ballistic laboratories. It does surface from time to time as it goes to a new owner. Each time I see a listing it always has a notation: "Extra 7mm barrel by P.O. Ackley."

For a number of years following World War One, Springfield rifle blow-ups were reported around the country. Many of these incidents were dismissed with a notation to the effect that the accident was no doubt caused by someone shooting "souvenir 8mm Mauser cartridges brought home from Europe by American servicemen." Ackley felt there were other valid reasons for these rifles coming un-glued since there is much evidence that oversized bullets do not necessarily increase chamber pressures.

from a test stand with factory loads. Only one showed any sign of excessive pressure and this was traced to a reamer cutting a chamber with undersized neck area. This was corrected with a proper reamer and it wasn't long before these rifles were being shot from the shoulder with no problems—except some said they kicked like a Government mule! Accuracy was good with all weights of bullets and cases indicated no more pressure than those fired in standard 7×57 rifles.

After moving to Salt Lake, Ackley built up pressure equipment and worked with different calibers. He found that oversized bullets had little effect on pressures when the bullet was free to leave the case mouth of the cartridge. He also exploded the myth that 8mm S bore bullets. (.323") were

Now that he had complete control of his shop once again, he plunged into even more activity. He became the gunsmith editor of two national periodicals and began amassing material for a book. The first edition of "*Handbook for Reloaders and Shooters*" was published in 1962, Volume II appeared in 1966, and he is today preparing Volume III. These books contain a veritable treasure trove of technical gun lore, sure to excite and please any true gun-nut. In addition to articles by many authors, it gives information and loading data for most every wildcat cartridge in captivity. More than 50 of these cartridges have been developed by Ackley himself, with more to come.

Over the years Ackley has been in constant demand to serve as expert witness in court cases involving gun

accidents. He avoids this dubious distinction like the plague.

"People can pull the dumbest stunt in the world with a gun and then want to sue someone when they get hurt," he says and feels that in our liberal society the cards are stacked against the manufacturer.

Recent cases throughout the country bear this out. When approached by a defense attorney to testify, he stated: "I'm no expert on the subject."

To which the lawyer replied, "You are just the man we want because everyone else is."

Ackley then begged off on grounds

There's valid reason for such a testimonial.

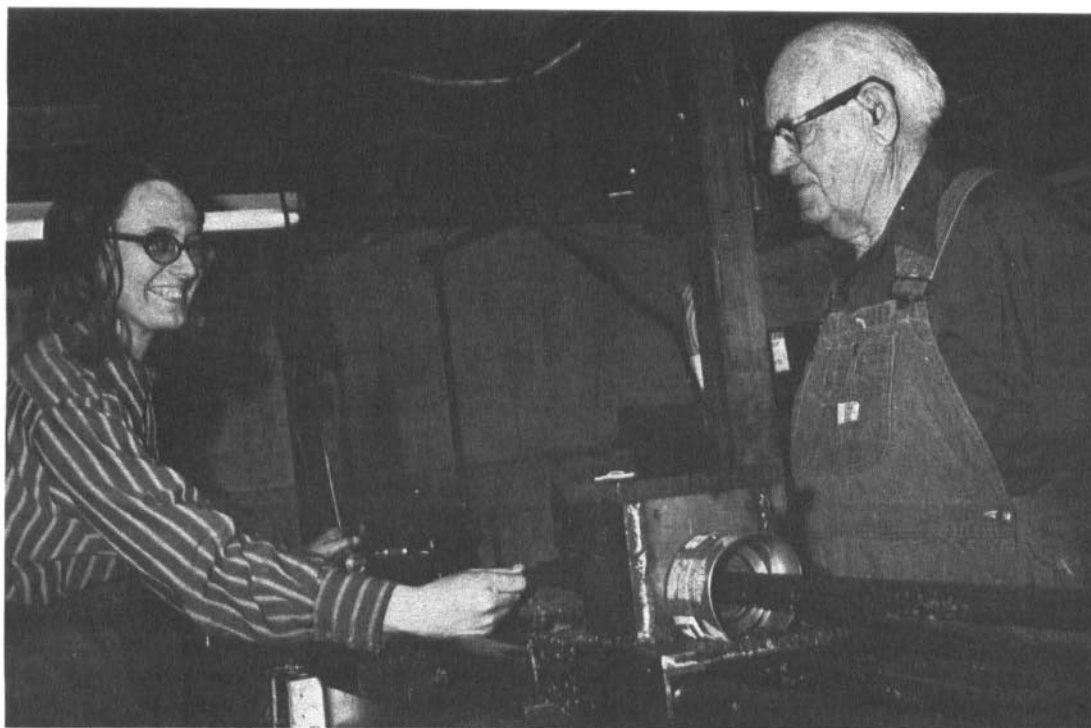
Men work in another's shop for two reasons: they love guns and they want to go into their own business. Ask any about pay and working conditions. They will tell you that each leaves a lot to be desired but they are willing to endure all this until they can start their own firm. The average gunsmith shop today is little more than an on-the-job training program for a never-ending line of aspiring gunsmiths. Since they are gun-nuts, they invariably have a pet project of their own under the bench, or in a drawer,

many in the custom gun business today.

Since moving to Salt Lake City, Ackley has sold his business twice, only to build it up again. Now that he is pushing 80, he says he has to slow down a bit. He does all the bench work himself and his daughter takes care of the office.

"Don't want to build it up again where I can't do the work myself and get into the hired help hassle," he says.

He has paid into the Social Security fund since its inception, and I asked him recently if he had considered re-



P.O. Ackley looks on, and perhaps kibitzes a bit, while Florence Conti operates a deep-hole drill. She will turn that bar into a famous Ackley rifle barrel in the Salt Lake City shop, 1977.

of poor hearing and let it go at that.

As he built up his shop to take care of the increased business, Ackley once again faced the old problem of competent help. To solve this, he took a bold step for the gun business; he hired women bench employees. Women had done a good job for him in the office and shipping departments, so why not hire them for the actual shop work? With proper training, he reasoned, they could do anything a man could do. Florence Conti was his last full-time shop employee, and I asked him one time how she worked out.

"Great," he said, "She puts in an hour's time for an hour's pay. She has eagerly learned to do every job and do it well. She isn't interested in going into business for herself. Best of all, I can leave the place and be assured the work goes on as if I was here."

that can be quickly retrieved when the boss steps out. Supplies mysteriously melt away via these personal jobs.

I asked Florence Conti what brought her into the gun business.

"I wanted a job," she said simply.

Taking another tack I said, "Do you do any shooting?"

"Only in test-firing shop guns," she said, and added, "I don't own any guns."

How many shop owners, I reflected, have dreamed of such an employee and never thought of hiring a woman?

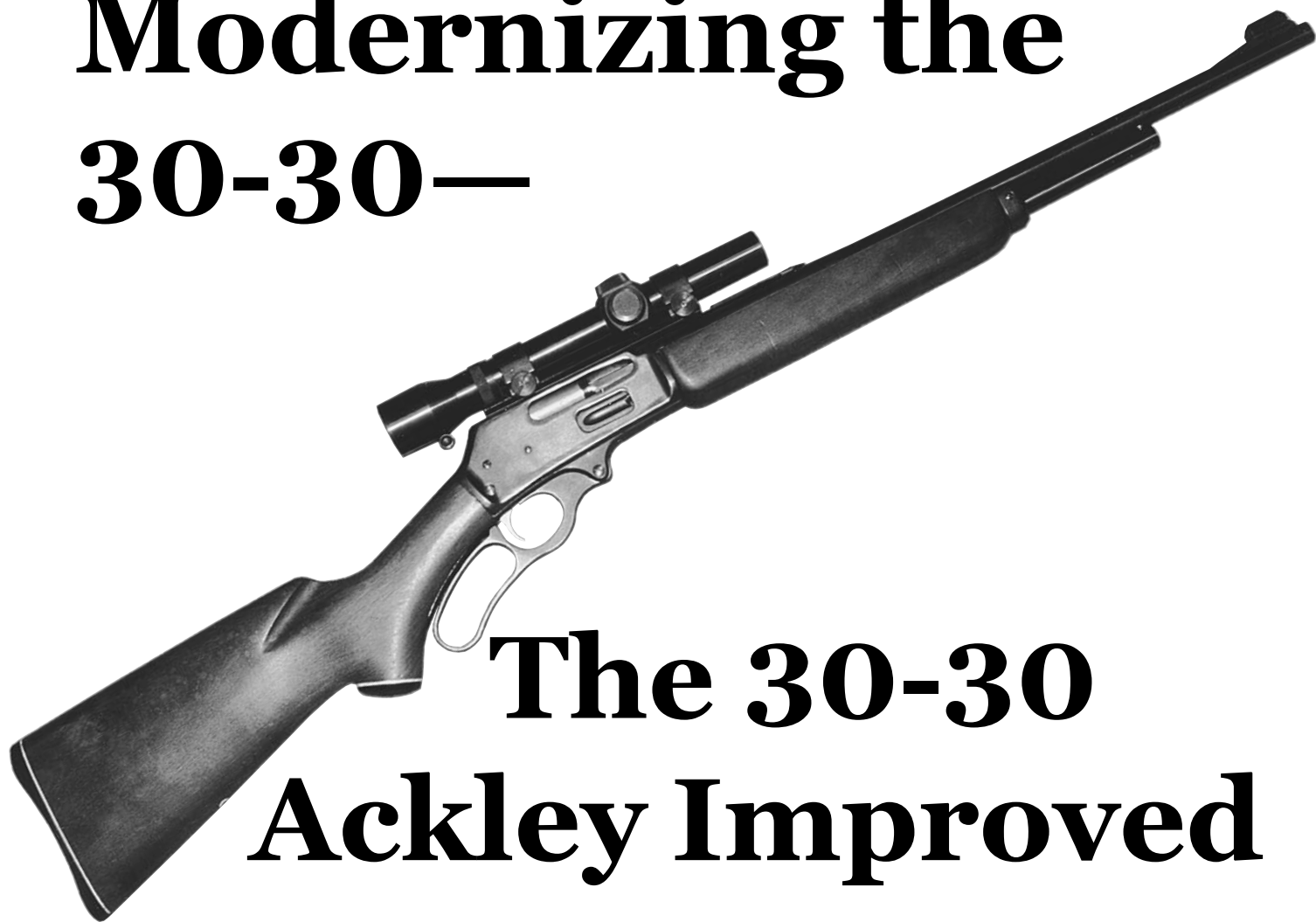
Ackley views with dismay the recent encroachment of the lunatic fringe on the gun scene. He feels the para-military and survivalist mentality can do nothing to enhance the image of gun owners in the eye of the public. This thought is shared by

tirement. Apparently it hadn't even entered his head.

"Got too many things to do to even think of that nonsense," he snorted.

Over the years Ackley has had little time for hunting or shooting in general. The intriguing technical aspect of firearms has been his driving interest. He has had a passing interest in automobiles and still likes to travel occasionally. These trips usually take him and Mrs. Ackley into the open country of the West to poke into old mining camps and do a little rock-hounding. He enjoys taking his dogs for a romp on these outings. Still, the gun is his great interest, and the gun has treated him well. It has been his engrossing curiosity for these many years, and he has been able to make a comfortable living from it. Not everyone could. ●

Modernizing the 30-30—



The 30-30 Ackley Improved

by David Ward

THE 30-30 IS over 100 years old. Without a doubt, it has been one of the most popular medium-range, medium-power deer cartridges ever developed. And for good reason: When used within the proper parameters by a reasonably efficient marksman, it will take deer with monotonous regularity.

Still, it is more than a century old, and consequently it carries along with it some dated baggage, especially when it comes to handloading. Now, if you could make a good cartridge even better by maybe increasing the velocity, most likely increasing accuracy, and certainly increasing case life and loading versatility — all with only a modest amount of cost and effort — would you do it? I would, and I did. Here's what happened:

Let's start with a brief history of the 30-30 (*and I do mean brief, since it's been done so many times before*). Introduced in 1895 as one of the first smokeless cartridges from Winchester and chambered for

their Model 1894 lever action, the combination was an instant success and has been ever since. The reason is simple: It does the job it was designed to do — kill medium- and sometimes even large game at modest ranges efficiently. No doubt, many companies today would be delighted to introduce a product that performs its intended job so well. Consequently, numerous rifles, and in recent years quite a number of handguns, have been chambered for the 30-30. It is the deer rifle that many youngsters east of the Missouri River learned to hunt with, as well as the saddle gun that most Westerners grew up with. There are literally millions of 30-30s out there.

Marlin 336 SC and 3x Weaver scope used for the conversion from 30-30 Win. to 30-30 AckleyImproved. Marlin is a good, strong action, but nearly any 30-30 Win. is a good candidate for the conversion. Have any rifle checked thoroughly by a competent gunsmith before rechambering.

I have two of them. One is an old Model 94 with a half-magazine and a crescent steel buttplate. Somewhere along the way, someone in his infinite wisdom cut the barrel back to 20-1/2 inches (*no crown, thank you; just a trim*) and then reblued the whole package. Fortunately, they did not overbuff, and the original markings are easily readable. It shoots nicely and is stamped 30 WCF. My other rifle is a nice Marlin 336 with a three-quarter magazine and walnut pistol-grip stock. It sports a Weaver 3x scope on its solid-top receiver. It also shoots well, and I smile every time I look at it standing in the rack because of the exceptional deal I made on it a few years back at a local gun show.

I was surprised to find that the 30-30 is a popular number for handloading. My initial thought was that the many hunters who use a 30-30 Winchester instead of a double-whammy, smoke-'em-out-the-bore modern cartridge wouldn't be much

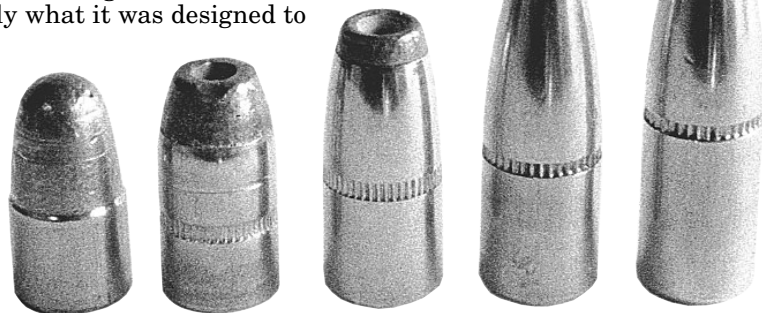
into handloading. Just buy a box of factory ammo at the start of the deer season, touch a few off just to make sure Old Betsy's still on, and then head into the woods.

I was wrong. The 30-30 is a consistent and popular seller when it comes to reloading dies, staying in or around the top 10, and its popularity is further noted by the number of flat-nosed offerings in 30 caliber by the various bullet manufacturers. I suspect that many hunters are loading their own smokeless rounds because factory ammo is expensive, and handloading is not complicated—and relatively inexpensive. Also, of course, for those prone to experiment a bit, handloading offers a chance to squeeze a tad more in accuracy out of rifles not exactly known as tack drivers.

In one of the modern single-shot or magazine-fed bolt-action pistols, the 30-30 becomes something more than a minor-league player. Loaded with a pointed 125- or 130-grain bullet, we now have a solid performer out to about 200 yards. It is also a player in silhouette shooting.

For my purposes here, I will deal with rifles, although any loading data presented should be useable in the stronger pistols. What you get with a handloaded 30-30 is about 2200 to 2300 fps out of a 20-inch barrel with a 150-grain bullet. The requirement of a flat-nosed bullet in a tubular magazine rifle and the open sights found on most lever rifles limit the effective range to about 150 yards. A 125-grain bullet gains about 100 to 150 fps, and the 170-grainer loses about 100 fps to the 150-grain load. Effective range stays about the same, still limited primarily by open sights and type of timbered or brushy country generally hunted with the 30-30.

And what is wrong with those numbers? Nothing at all. The approximately one bazillion deer dispatched with those loads over the last hundred years can testify to that. Why, then, would anyone want to literally improve an already successful cartridge that does exactly what it was designed to do?



Bullets used for loading (from left): Speer 100-grain Plinker, Speer 110-grain Hollow Point, Sierra 125-grain Flat Nose, Speer 150-grain FN, and Speer 170-grain FN. The 30-30 AI can be a versatile cartridge used for anything from varmints up to medium-large big game.



Before and after. Old-timer 30-30 Win. loaded round and case (left) and 30-30 AI conversion. Designed around the turn of the century, the 30-30 Win. has a long neck and gently sloping shoulder and sides that contribute to case stretch and eventual head separation. The more modern 30-30 AI has straight-sided case walls and sharp 40-degree shoulder, making it more suitable for reloading.

By far the most common reason to wildcat and/or improve a cartridge is to increase its ballistic performance. Sometimes it works quite well, transforming a modest performer into a go-getter. For instance, the 250 Ackley Improved from the 250 Savage (see author's article, "The 250 Ackley Improved Works," *Hand-loader's Digest*, 12th Edition), the 257 Ackley Improved from 257 Roberts, the 22 K-Hornet, and many others show significant performance increases. All with the relatively

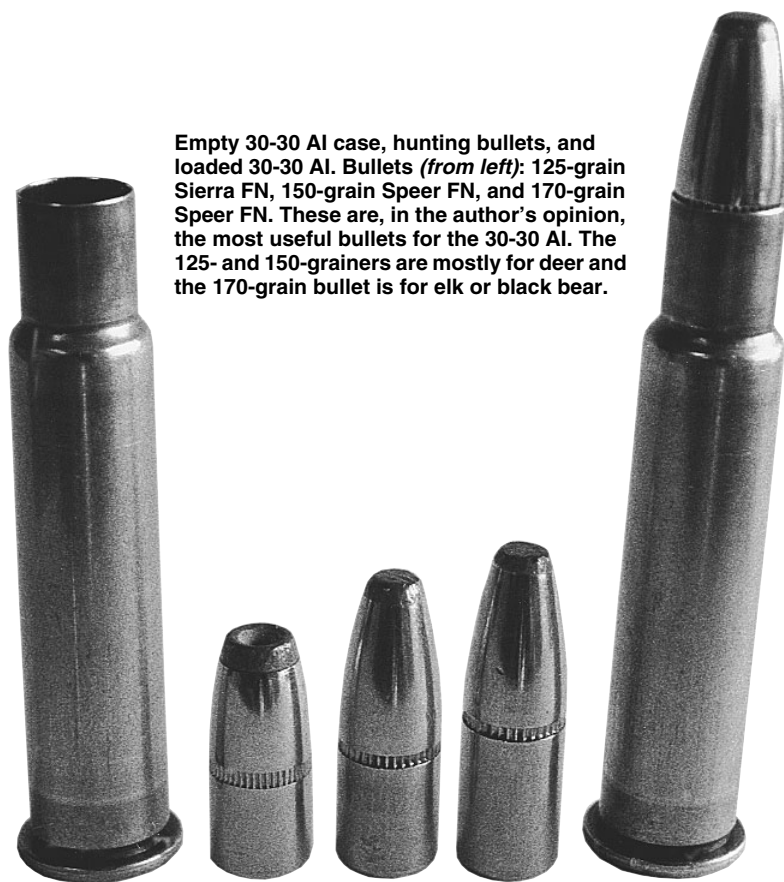
simple process of boring out the chamber to straighten the case sides and increase the shoulder angle, and then fireforming the cases.

Wildcatting doesn't always produce such worthwhile results. It can be, as one editor put it, "a useless exercise in gun-nuttery." Working to upgrade the performance of, say, the 257 Weatherby Magnum, an already overbore cartridge, is simply a reason to help fill your friendly gunsmith's bank account.

There are other reasons for wildcatting. One is to fill a gap in the commercial cartridge lineup. Very few gaps are left to be filled these days, however, since most manufacturers are acutely aware of what the consumer wants and needs. Items like a 270/308 offer good potential if you just have to have 270 performance from a short action.

And, of course, some people just like to tinker.

One of the best reasons to go through the trouble of rechambering a perfectly good rifle to a non-standard cartridge is to modernize it. We are handloaders already, so whether it is one case or another doesn't really make a difference to us. But if wildcatting makes a particular case easier to work with or



Empty 30-30 AI case, hunting bullets, and loaded 30-30 AI. Bullets (from left): 125-grain Sierra FN, 150-grain Speer FN, and 170-grain Speer FN. These are, in the author's opinion, the most useful bullets for the 30-30 AI. The 125- and 150-grainers are mostly for deer and the 170-grain bullet is for elk or black bear.

more flexible in loading – and maybe offers some increase in performance thrown in for good measure – then the project is worth some scrutiny.

That is exactly why the 30-30 Ackley Improved is worth doing. The idea is not to turn your brush gun into a lever-action 30-06 or 308. If you had wanted one of those, you would probably have gotten one by now. The 30-30 AI makes the dated 30-30 case modern and infinitely more reloadable by taking out the taper in the case wall that was so much in vogue at the turn of the century. At the same time, it eliminates that long sloping shoulder and substitutes one of 40 degrees. The process increases the volume of the case by about 10 percent, but more importantly, it all but eliminates that major cause of 30-30 case retirement – case stretch leading to head separation. The minimum-taper case also allows higher pressures in the relatively weak lockup of the lever action.

When loading 30-30 brass in the past, trimming was required after two or three full-power loads. Most cases did not make it past five reloads. Having worked with the 250 Ackley Improved and seen that the straight-walled case design did virtually eliminate stretch in that instance, I began to look seriously at the 30-30 AI. Believe me, I was

hesitant to send the Marlin off to the gunsmith and have the chamber reamed for the new cartridge. Once done, it's done, and the new chambering would affect the rifle's collector's value. It then occurred to me that this rifle was not particularly a collector's piece. What the heck.

Because my gunsmith could not lay his hands on a reamer, I talked with the folks at Clymer Manufac-

turing Co. and discovered that the 30-30 AI is a standard, or in-stock item. That meant delivery time was just a few days away, and the price was quite reasonable.

Then I talked to Jay Postman at RCBS about reloading dies. Jay is a master at solving those sometimes not so small reloading problems. He said RCBS had the dies as a standard stock item. This was sounding like it would be easier than I thought, which is rarely the case.

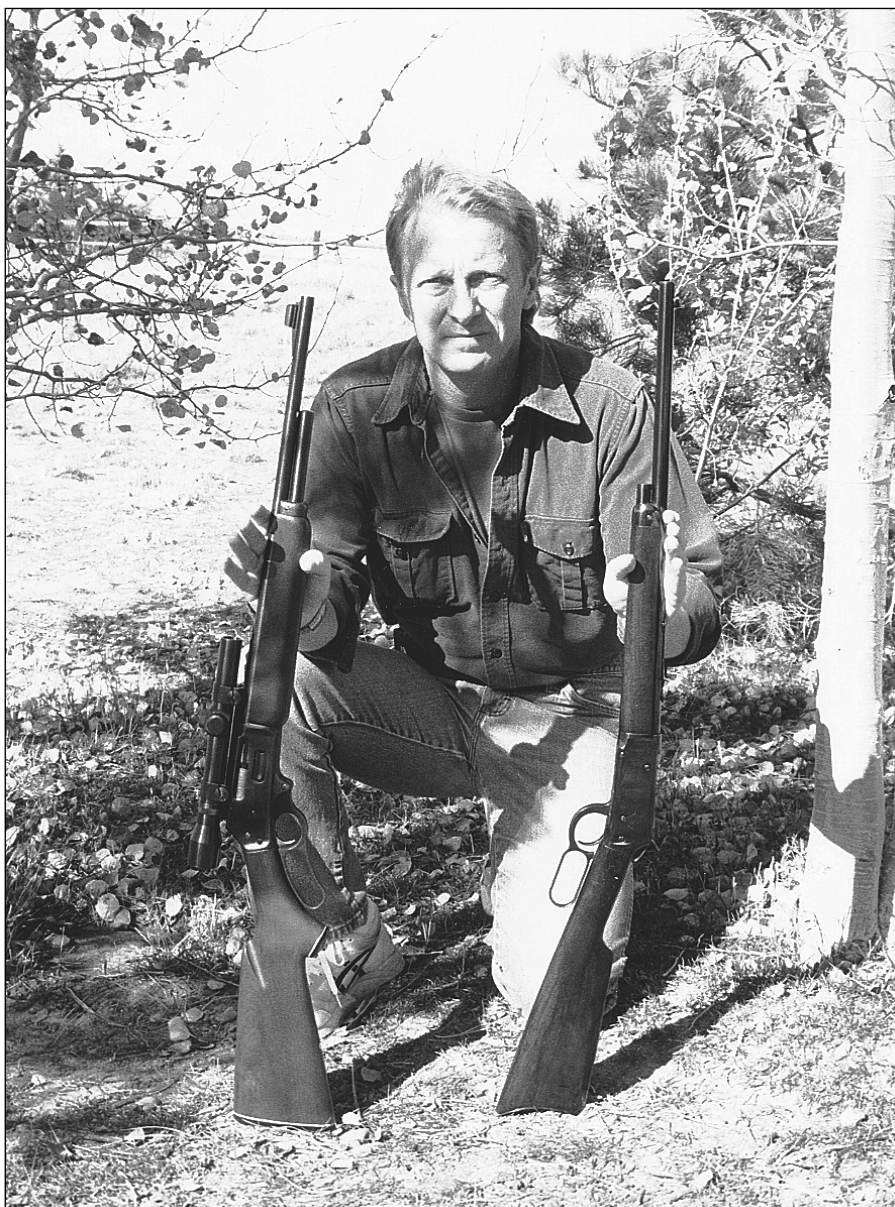
Clymer's reamer arrived promptly, and I took it and the Marlin to my gunsmith in Denver. While they had the rifle, the dies arrived, and I set about loading up some new Winchester cases.

A caution here about loading the 30-30: The case walls are thin. Mine from Winchester miked .012 inch. A 308 Win. case mikes out at .015 inch – a 25 percent increase in thickness. Practically speaking, that means be gentle with the case when reloading. Put the muscle to it and it will buckle or stretch or collapse the case mouth. Go easy on the case lube when resizing and those annoying little dents in the case walls won't plague you. Also, a slight chamfer on the inside of the case mouth helps to start the bullet during seating. Remember these few hints and you'll keep a lot more cases for handloading and toss fewer casualties in the trashcan.

Since the new chamber would be about 10 percent larger in volume, and during fireforming the new case would expand into that space, I decided to load the standard 30-30 cases with a 110-grain round-nose bullet and 31 grains of 3031 powder.



Some of the components and dies used for reloading the 30-30 AI. More modern design makes for longer case life and less case stretch while giving higher velocities.



Author and his two 30-caliber lever guns. At left is the Marlin converted from 30-30 Win. to 30-30 AI, while at right is a half-magazine Model 94 Winchester with the 20 1/2-inch barrel. The latter rifle was not rechambered because of its age.

That is almost a full-power load, about 1 grain less than maximum. I load fairly hot loads for fireforming for two reasons: First is to ensure a complete forming of the new case. Using reduced loads in the past, I found many cases were not fully formed into the new chamber. Grab any powder/bullet combination out of a loading manual and reduce it about 1 grain below max, and the fireforming process will produce a perfectly formed case each time. Second, by having 50 or 100 full-power rounds to expend, a trip to the country allows a complete familiarization with the project rifle. After that much shooting, you learn most of the weapon's little idiosyncrasies – trigger pull, feeding, sights, or whatever. Besides, some practice at targets at varying

ranges never hurts. No sense in just wasting all those shots.

With the rifle back from the gunsmith and the new cases uneventfully fireformed, it was time to get down to the serious business of working up some loads for the Improved case. P.O. Ackley's *Handbook for Shooters and Reloaders, Volume I*, was the obvious place to start. He lists several loads for the 30-30 AI, working mainly with 3031 and 4198. Hoping for more flexibility, I began there and added BL-C2, H-380, IMR 4064, and 4895, and finally Winchester's 748. Immediately, I hit a snag. For the Sierra 125-grain FP, I reduced Ackley's max 4198 load of 35 grains by 10 percent (*as one should ALWAYS do when working up new loads*) and still got indications of high pres-

ures in the Marlin – more than .003-inch case head expansion and cratered and flattened primers. Somewhat disappointed, I backed off another 10 percent and began again. Pressures were fine there, but the experience left me very cautious on published loads. It could have been my particular batch of powder, too. I don't know, although problems did not arise while working with the same batch of 4198 on another project. For the 125 FP and 3031, Ackley listed 39 grains. I stopped at 37 grains, noting indications of excessive pressure above that amount in the Marlin. It was the same situation for the 150-grainers. Published loads were too high for my rifle.

I was initially disappointed. But then I reminded myself that the idea here was not to make an '06 out of this brush gun, but to make the cartridge more flexible and user friendly. Maybe I should write that in big capital letters on a piece of poster board and put it right above my portable loading table so I can't miss it. It is always a temptation to push loads to the absolute maximum when in real-life application, the extra velocity is rarely necessary.

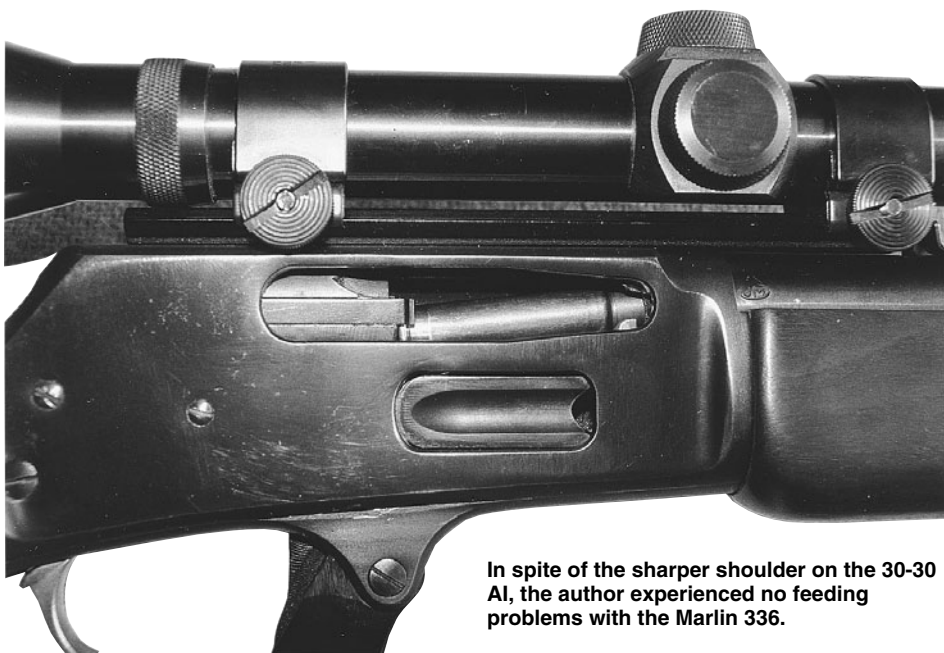
The accompanying table shows the final results of the maximum-load testing, and overall I was quite pleased with what came about. Loads were chronographed on my Competition Electronics Pro-Tach with the muzzle of the rifle about 10 feet from the screens. As can be seen, several powders gave excellent results, but different powders performed better with different bullet weights.

For the light 110-grain bullets (*just the ticket for you lever-actioned varminters out there*) IMR 3031 was the velocity champ at 2750 fps when bumped by 39 grains of propellant. Second at 2678 fps was 40 grains of BL-C2. A distant third was 37.5 grains of 4064, making 2539 fps. In the 125-grain category, 3031 was still the leader with 37 grains giving 2552 fps, but close behind was IMR 4198 with Winchester's 748 and Hodgdon's BL-C2 close to them. Moving up to the 150-grain weight, 3031 is still No. 1 in velocity with 36 grains dishing up 2404 fps. Second place goes to 748 and third to IMR 4895. For the heavy 170-grain bullets, the leader is 4198 at 2210 fps with the remaining powders all giving velocities in the 2050 fps range.

What does all this tell us? First, that, yes, we can improve on the standard 30-30 velocities by a usable 200 fps or so. That would be logical since the case capacity increases by about 10 percent in the

fireforming process. It would also be logical in that the new straight-walled case allows the weaker lever actions to operate at higher pressures. Great. Whether or not any deer might notice the velocity difference at normal operating distances of 150 yards or less where this lever gun is used, well that's another question.

So why bother to convert to the 30-30 Ackley Improved? Two reasons – versatility in loading, and extended case life. Look at it this way: With the Ackley conversion, the handloader now has an extra 200 fps or so to experiment with in finding that best load for his before he is back down to the maximum velocities for the standard 30-30. That's quite a window to work within, and we all know that rarely does the most accurate load coincide with the highest velocity. And with all of that load experimentation going on, case loss will be at a minimum. Case stretch is virtually nonexistent, and consequently, cases keep going in and coming out, getting used again and again. I have



In spite of the sharper shoulder on the 30-30 AI, the author experienced no feeding problems with the Marlin 336.

eight and 10 loads on this brass without a loss, and only recently a trim. Such exceptional performance is not obtainable with standard 30-30 brass.

If you like the handy rifles that shoot the old 30-30 but are frustrated having to load a case designed over a hundred years ago, take a look at the 30-30 Ackley Improved. It is an easy conversion that makes a good old cartridge even better.

BULLET	POWDER	MAX. LOAD (gr.)	VELOCITY (fps)
110 gr.	IMR 3031	39.0	2750
	IMR 4895	39.0	2509
	IMR 4064	37.5	2539
	BL-C2	40.0	2678
125 gr.	IMR 3031	37.0	2552
	IMR 4895	38.0	2369
	IMR 4064	37.5	2368
	BL-C2	38.5	2498
	748	41.0	2512
	IMR 4198	30.0	2521
150 gr.	IMR 3031	36.0	2404
	IMR 4895	36.0	2339
	IMR 4064	35.0	2242
	BL-C2	36.0	2215
	H-380	41.0	2281
	748	39.5	2375
	IMR 4198	29.5	2284
170 gr.	IMR 3031	32.5	2050
	IMR 4198	28.5	2210
	BL-C2	33.0	2021
	H-380	36.0	2061
	748	35.0	2072

Velocities measured on Competition Electronics Pro-Tach 10 feet from the muzzle and based on a 10-shot average. Primers were all CCI 200. Cases of Winchester manufacture. Temperature: 81 degrees F.

WARNING: Loads tested here were safe in the author's rifle. They may not be safe in yours. When testing your own loads, start with a minimum charge reduction of 10 percent and work up from there.



The results of too much force during the loading process. Lack of a gentle touch produced this bent lip and crumpled shoulder on the case at right during bullet seating. Brass used in 30-30 cases is thin, so be careful.

IS THE DAY of the wildcat on the wane? It may well be. There are good reasons, too — overly optimistic, near-impossible claims for some, too many versions which are identical except for the boasts made for them and, more importantly, the introduction of new and better commercial cartridges. For many years there were gaps between factory cartridges which could only be filled by wildcats. Factory cartridge design remained at almost a standstill for years, too, about the only changes being the dropping of older or unpopular numbers. Wildcatters rushed to fill these voids with a multitude of ideas — some good, some bad. Lately the factories have introduced some fine modern cartridges, effectively filling many of those gaps. This has removed the need for numerous wildcats, including some of the better ones. For example, the new 6mm factory cartridges, the 243 and the 244, just about fill the need for this size. The 270, the new 280 Remington, the newer 264 Winchester and the old reliable 30-06

actions and single shots, cartridges which can put them alongside the best of the factory versions and, in some instances, far ahead of any existing factory job.

Basic Wildcats

The best and most popular wildcats are largely based on four families of cartridges. First the 30-30 family, all with rim size and thickness in common and, being rimmed, particularly well-adapted to single shots and lever action repeaters. In this group we have the 219 Zipper, 22 Savage Hi-Power, 25-35, 30-30 and 32 Special Winchester, plus two famous old target cartridges, the 32-40 and 38-55. Theoretically, any wildcat cartridge based on any one of these could be made from any or all. Second, we have the rimless group with what we may call "standard" head size, of which the 30-06 is representative. This large group ranges from the small 250-3000 Savage up to the 30-06. Third comes the magnum family, distinguished by its belted-head design,

every conceivable thing that human imagination could conjure up has been done to the famous old 30-06. We might describe it as the "Lovers Lane Special," because it has been "necked" more than any other cartridge in history; it would be impossible to determine the number of 22 cartridges "created" by working over this old cartridge case. They range from the old 22 Heinlein, only about 1" over-all, to the blown-out, full-length versions with necks no more than 1/8-inch long. It has been necked up, necked down and belted, necked and formed to pop bottle shape, re-formed and re-necked to 22 with double and triple shoulders, equipped with extended flash holes for front ignition, and even fitted with steel heads by wildcatters with wild ideas.

Excluding and disregarding promotional ballyhoo, experience has shown that there are certain limits to which the wildcatter must confine himself, especially case capacity limits. With present day components, we know by experience that a 224 bore will not

WILDCATS

Custom gunsmith Ackley—an eminent wildcatter himself—thinks many are. Here's his complete list, with full load data, of those he thinks will survive.

by P. O. ACKLEY

fairly well cover their range and now, with the introduction of the 338 Winchester Magnum, the 358 Norma Magnum and the 458 Winchester Magnum, the large bore field is well covered by factory versions. It is doubtful that there have ever been any wildcats much better in their classes than these relatively new factory cartridges. Another recent factory development is the very fine 222 Remington, which has replaced some of the old stand-bys in the wildcat ranks.

Still, there are a few spots left which can effectively be filled by wildcats. For example, there are thousands of lever action rifles around in calibers declared illegal in many states; these can be brought back into use by rebarreling or rebarreling them for some wildcat designed for them. A good example is the 99 Savage, once made in 22 Hi-Power, 25-35, etc. Such guns can be easily worked over to handle the 6mm/30-30, Improved 25-35, etc., putting them in a class with the 243, 244 or even the 257. There are still many shooters interested in good single shot rifles — these generally call for a rimmed cartridge for the best results. Such fine old rifles as the Winchester Hi-Side, the Sharps Borchardt, etc., can be rebarreled for one of the good wildcats based on 30-30 or 30-40 brass. There are many other fine rimmed wildcats admirably adapted for use in lever

which might be described as a hybrid between rimmed and rimless cartridges. Representative are the 300 and 375 H&H, lately joined by the 264, 338 and 458 Winchester. Normally this group is thought of as having the regular .399" H&H head size but there are smaller ones, like the 240 Nitro (Apex) made by Holland & Holland, which have about the same head diameter as our '06. Fourth, there is the large rimmed group to which belong the 30-40, the 35 and 405 Win. Of these only the 30-40 is current, the others having been discontinued.

Many others have come in for their share of "necking." The Remington rimless series, 25, 30, 32 and 35, were used quite extensively; the 25-20 and 32-20 were once quite popular necked to 22, and the old 25-20 Single Shot, long obsolete, was the basis for the various Lovells — the original 22-3000, the R-2 Maximum Lovell, etc. Because of the difficulty of obtaining brass, the Lovell series has become practically obsolete, replaced largely by the 218 Bee (the old 25-20 Repeater necked to 22, with a little longer body and sharper shoulder), the 222 Rem. and 222 Rem. Magnum.

During the last 25 years, activity among wildcatters has been intense and, since the war, the largest part of this activity has been with the four groups previously mentioned. Almost

accommodate efficiently a case capacity over 40 grains, 25 caliber is best under 50 grains, 270 around 60 grains and 30 caliber about 70 grains. Case capacities within these limits have been found to be a great deal more satisfactory than those with bigger boiler rooms. Even better results will be realized if the capacity is kept somewhat below these maximum limits. Smaller cases produce higher velocity per grain of powder, are a great deal more flexible to work with and will, as a rule, handle a variety of loads better than over-bore capacity versions. They also offer greatly prolonged barrel life, even if the velocity is the same. Until different components become available to handloaders there is not much that can be done to change these things.

The trend for many years has been toward less body taper and relatively sharp shoulders.* The actual value of extremely sharp shoulder design remains to be determined. The author's experience has been that variations in shoulder angle (within reason) have little effect. Certainly it would be very hard to measure the difference in results between a 26° and a 45° shoulder,

*Charles Newton's fine line of cartridges, introduced prior to World War I, combined principles of case capacity, body design and sharp shoulder which have been proved eminently correct.

other factors being equal. Conceivably, the extremely sharp shoulder could be more efficient in combination, with light bullets and slow burning powder. At this stage of the game, however, the value in extreme shoulder angles seem to lie in their sales appeal. Sometimes extremely sharp shoulders aggravate feeding difficulties, especially with relatively short cartridges. It would be difficult, also, to prove any advantage for rounded-shoulder corners opposed to sharp corners. Most wildcatters prefer the sharp shoulder design, feeling it helps to prevent the stretching of cases. Experience has shown that a case with minimum body taper and relatively sharp shoulder angles with sharp corners, requires less trimming than those having exaggerated body taper, long sloping shoulders and round corners. The latest factory cartridges all incorporate the general ideas which most wildcatters have used for many years — the 222, the 243, 264, 308, and 338 Winchester, etc., all boast minimum body taper (or a taper approaching that condition) and shoulders as sharp as deemed advisable from the production standpoint. It is safe to predict any new factory cartridges introduced in the future will possess these features.

The history of many wildcat cartridges is rather foggy and is disputed by many experimenters, each claiming credit for the same idea. In general, however, it can safely be said that a good percentage of the current popular wildcats were created very shortly after the parent factory cartridge was introduced. Indeed, many wildcats were in existence *before* their factory announcement! A current example is the new 338 Winchester Magnum. The design data for this cartridge was in the hands of gunsmiths many months before the factory officially announced it, and it has been necked up and down to create numerous new wildcat versions, such as the 338-7mm or 338-30. It would be difficult indeed, obviously, to give credit to the actual originator. Usually credit is given to some particular experimenter, so that his name becomes associated with it; thus it is established historically as his. The so-called Improved 30-06 serves to illustrate this point. The Ackley version — by no means the original — was simply the first to catch on, thus overshadowing earlier forms which were similar and just as good. To determine without question the originator of the Improved 30-06 would be practically impossible. Doubtless the idea is fifty years or more old.

Experience enables us to select a number of popular wildcats, their popularity influenced by two general factors: merit and advertising. Advertising sometimes creates an artificial popularity which, in time, is neutralized by the lack of merit. In the following list, many wildcats will not be discussed because of this very lack of merit, or for other reasons which make them poor selections for average handloaders.

The Many 22's

A) 218 Mashburn Bee (R)* Originated by A. E. Mashburn of Oklahoma City, Okla., shortly after the introduction of the 218 Bee by Winchester, Mashburn was one of the first to see the flaws in the factory design. The original cartridge was designed for use in the M65 lever action Winchester rifle. Loaded to relatively high pressures, its steep body taper on a comparatively short case gave excessive bolt thrust; this resulted in cases stretching badly and prevented them from being loaded more than a few times. Case separation is common even in strong single shot actions. The Mashburn design, with minimum body taper and sharp shoulder, minimized these troubles.

The Mashburn Bee became a desirable cartridge; it's easily reloaded, has good case life and its ballistics compare favorably with its forerunner, the extremely popular R-2 Lovell. While there are many versions of the Bee, Mashburn's was as good as any — it's better than most — and has become pretty much the standard for Improved Bees. It is the only one for which loading tool makers regularly furnish dies. Admirably adapted to eastern woodchuck shooting and medium range target work, in the West it is widely used for jack rabbits and other pests. Cases are most easily made by firing factory loads in the Mashburn chamber, but they can be made by necking down the 25-20 repeater case, while the 32-20 case can be used in a pinch. A small percentage of cases may be lost in the fire-forming process, but not enough to worry about. Factory loads show no decrease in accuracy when used in the Mashburn chamber, but there is a slight reduction in velocity. When handloaded to maximum velocity, the Mashburn Bee is considerably faster than the factory Bee. It will drive a 45-gr. bullet up to 3250 fs, nearly as fast as the 222 Rem. with the same weight of bullet. Its rimmed case is best adapted for use in single shot rifles.

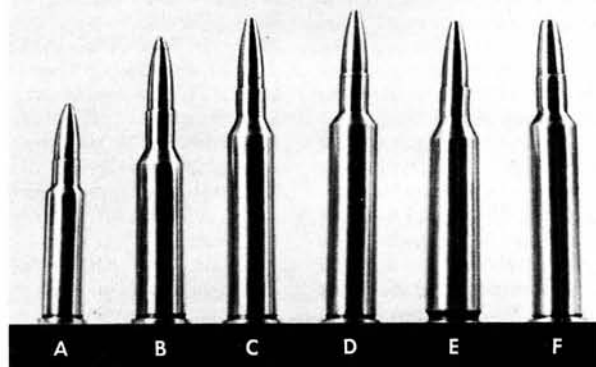
*R=rimmed, R'less=rimless.

Bullet	Powder Charge	Velocity
40 gr.	14 grs. 2400	3100 fps
	16 4227	3400
	17.5 4198	3340
45	8 4227	1880
	16 4227	3280
	17.5 4198	3150
50	16 4227	3100
	17 4198	3050
	17 4198	3050
55	17 4198	3050
	12 2400	2660

B) 219 Donaldson Wasp (R) Very similar to the Imp. Zipper in design, but considerably shorter, it was designed and introduced by Harvey Donaldson, Fultonville, N. Y., just after the last war, and immediately became popular among the bench rest clan. Of less capacity than the Imp. Zipper, its top velocity is somewhat less per grain of powder. It is one of the most flexible and satisfactory cartridges for target, bench rest and varmint shooting. Best adapted to single shot actions, it is also seen in many 98 Mausers and others. The 219 Wasp is a shining example of properly adjusted case capacity to bore capacity for top over-all efficiency and good barrel life — it will produce almost as high velocity as the 220 Swift with 10 grains less powder. Cases are most easily made from 22 Hi-Power, 25-35, 30-30 and 32 Special. Since this is purely a wildcat cartridge, cases cannot be made by the simpler fire-forming method.

Bullet	Powder Charge	Velocity
45 gr.	31 grs. 4320	3560 fps
	31 4064	3640
	30 3031	3780
	25 4198	3610
50	27 3031	3573
	29 3031	3685
	29 4064	3420
	32 4064	3605
55	27 3031	3350
	28 3031	3500
	29 4064	3355
	30 4320	3435
63	27.5 3031	3485

C) Imp. 219 Zipper (R) A very popular cartridge immediately before and after WW II, the reasons for its existence are precisely the same as those for the Mashburn Bee. It is the next step up in velocity after the latter on the wildcat scale, or was before the advent



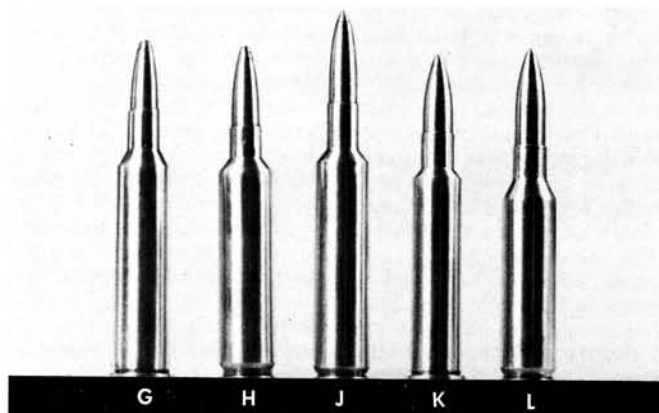
of the excellent 219 Don. Wasp. The Ackley version was originated in 1938 and at first was especially intended for use in the Savage M99. It immediately became popular for single shots, and in these actions its ballistics closely approach or even equal those for the 22 Varminter. Since its advent, numerous other equally good versions have appeared and normally loading data for all versions is interchangeable. Die makers are mostly equipped to furnish the Ackley version. When the Imp. Zipper was first introduced cases were easily made by fire-forming, but after the war this became virtually impossible because of the changes in the quality of brass. Cases finally had to be made from the easily found 30-30 or 32 Special. This requires at least two forming dies and some die suppliers furnish three formers. This increases the work of making cases, but completely eliminates loss of brass, too. Doubtless this case-making labor is one of the reasons for its decline in popularity. Nevertheless, the Imp. Zipper is still one of the finest and most satisfactory 22 wildcats for varmint and target shooting. It has been extensively used for bench rest shooting. Certainly it's one of the best for woodchuck, prairie dog and jack rabbit shooting, and it has proven quite effective on larger animals like deer. Case life is very good, especially when loaded to velocities between 3400 and 3750 fs. It is a highly flexible case to load and of ideal capacity for high velocity coupled with good barrel life.

Bullet	Powder Charge	Velocity
45 gr.	27 grs. 4198	3630 fps
	32 3031	3740
	34 3031	3950
	35 4064	3918
	36 4320	3780
	37 4320	3930
	35 4895	3781
50	32 3031	3713
	33 3031	3782
	34 4064	3759
	35 4064	3817
	35 4320	3700
	34 4895	3583
	31 3031	3435
55	34 4320	3450

D) 22/30-30 (R) Cartridges which could have been called the 22/30-30 have been common for many years. Most were something like the .228-inch 22 Hi-Power necked down to accept .224" bullets, with the shoulder blown ahead far enough to create a long body. Such versions retained all the faults of the 22 Hi-Power and 25-35 – extreme body taper which resulted in stretching of the cases and, when loaded to high pressures, they often gave poor extraction. The 22/30-30 illustrated is of minimum body taper and sharp shoulder design. Ideally suited to lever actions, such as the 99 Savage, it is well-adapted to single shots, too. In SS actions it ballistically approaches the 22-250 and 220 Swift, while in the Savage 99 it appeals to many left-handed shooters. Cases are made by

necking down 30-30 or 32 Special brass, then fire-forming – very few cases are lost. Usually 3 forming dies are necessary although some get away with only 2. Since WW II it has been impossible to fire-form factory loaded 219 Zipper cartridges satisfactorily to the improved form. This 22/30-30 is preferred by many over any of the shorter versions.

Bullet	Powder Charge	Velocity
45 gr.	38 grs. 4895	3972 fps
	38 4064	4050
	38 4320	3980
50	38 4895	3926
	38 4064	4030
	34 3031	3800
	36 3031	4010
	36 4320	3680
	38 4320	3890
	35 4895	3500
55	36 4895	3605
	37 4320	3650
	36 4064	3810



E) 22-250 (R'less) The history of this very excellent and perennially popular 22 cartridge is long, involved and hazy, with many disagreements and contradictions. The popular belief is that the late Captain Grove Wotkins, working with J. B. Sweany, did the original development, back in the mid-1920's, calling it the Swift. The story goes that the cartridge was submitted to one of the factories but, through disagreements, the present 220 Swift was commercially produced instead. About that time the 22-250 became known as the Wotkins original Swift, and is still so listed now and then. Later Jerry Gebby took the cartridge up, sometime prior to 1938, and renamed it the "22 Varminter." The name was copyrighted, thus preventing other gunsmiths from using it, but it didn't prevent them making the caliber – and in great numbers! The majority used the simple identification, "22-250." It was only a matter of time until the cartridge was almost universally known as the 22-250, although most gunsmiths used the original case design so that loading data and loading dies for the 22-250 and the 22 Varminter could be interchanged. Both designations still persist and are used synonymously. This story illustrates the futility of copyrighting a name in an effort to curtail competition.

Regardless of its history, it remains one of the most popular if not the most popular 22 of all time. It's a mystery why some factory has not seen fit to bring it out commercially.

Cases are easily made by necking 250-3000 brass to 22. No forming dies are necessary because the cases are made with one pass by simply running them through the full-length sizing die. Cases can also be made from the 257, 30-06, etc., but the larger sizes require numerous operations, including inside neck reaming; it is best to use 250-3000 brass exclusively. The 22-250 can very well be described as a maximum-capacity cartridge for the 22 bore. Larger capacity cases only result in very limited velocity increases, much greater consumption of powder and decreased barrel life.

22-250 rifles have been – and still are – extensively used for bench rest competition. It is one of the finest

cartridges for long range woodchuck shooting and especially fine for running jack rabbit shooting in the West. It has long been successfully used on deer and similar game and, in spite of laws prohibiting 22's in a few states, it is still giving a good account of itself.

Being a rimless cartridge with standard head size, it is well-adapted for use in all good bolt actions. It is sometimes used in single shot actions with extractors arranged for rimless cases. From an over-all viewpoint, the 22-250 is rated at the top of the heap by many authorities, and justly so.

Bullet	Powder Charge	Velocity
40 gr.	29 grs. 4759	3990 fps
	40 4320	4580
45	35 3031	3775
	37 3031	3995
	36 4895	3830
50	34 4895	3570
	35 4895	3675
	35 3031	3850
	36 3031	3955
	38 4064	3880
55	39 4320	3970
	32 4895	3360
	33 3031	3600
	35 3031	3810
	36 4320	3640
	38 4320	3845
	40 4350	3675
63	37 4350	3350
	40 4350	3560

The 6mm's

Prior to WW II there was little interest in the 6mm's, sometimes designated as 236 (bore diameter), 243 or 244 (groove diameter), 240, etc. Immediately after the war this size was revived and numerous 6mm's appeared. Among these were the 240 Cobra, 243 Rockchucker, 240 Super Varminter, 6mm Belted Express and many others. With the introduction of the 308 Winchester, Warren Page and others started necking it to 6mm and thus the 240 Page Pooper came into being; the last developed into the now-popular 243 Winchester. The 240 Cobra was developed by Homer Brown of the Apex Rifle Company from the 220 Swift. The 243 Rockchucker was the 257 necked down to 6mm by Fred Huntington of RCBS fame. The present 244 Remington is practically identical to the 243 Rockchucker. The 240 Super Varminter is the 270 Winchester necked to 6mm. The 6mm Express was a 30-06 with a belt swaged on and necked to 6mm. Almost everyone got into the act. Since the advent of the 243 and the 244, 6mm wildcat activity has subsided, although there seems to be a growing interest in improved versions of each of these. Many 6mm's have been made on the H&H Magnum brass, but all are badly over-bore capacity and quite undesirable except for highly specialized uses.

F) 6mm/30-30 (R) This is the same as the 22/30-30 except for neck diameter. Very likely there are many other equally good versions. The same advantages outlined for the 22/30-30 apply to the 6mm/30-30 plus the fact that the latter, with its larger diameter, is more likely to be legal in states which prohibit the use of 22 caliber rifles for big game. Actually the 6mm/30-30, in rifles such as the 99 Savage, seems about equal to the two commercial 6mm's, thus making it possible to create a modern powerful rifle out of obsolete models like the 99 Savage in 22 Hi-Power and 25-35. Of course, like the 22/30-30, the 6mm/30-30 is admirably suited for use in single shot rifles.

Bullet	Powder Charge	Velocity
75 gr.	36 grs. 3031	3432 fps
	37 3031	3449
85	34 3031	3025
	35 4895	3150
90	37 4895	3300
	37 4320	2988
	39 4320	3109
	41 4320	3343
105	36 4320	2883
	38 4320	3017

G) 6mm Krag, Short (R) The reason for shortening the Krag case is to achieve a better case-capacity for the relatively small 6mm bore. There are many other versions of 6mm Krag cartridges, one in particular being quite popular. This one is the full length Krag case blown out with sharp shoulder, but necked to 6mm, and it is well-

adapted to the P14 Enfield. The full length, blown out Krag-6mm gives velocities comparable to any of the 6mm magnums. The same cartridge in 25 caliber (fig. P) equals almost any of the 25 magnums, and like the 6mm it is best adapted to P14 Enfields; both are well-suited also to single shot rifles.

Cases for the shorter version of the 6mm and 25 Krag are made by necking down and shortening standard 30-40 brass. The full length, blown out versions, made by necking down to the desired size and fire-forming, also make extremely fine cartridges for larger diameter bullets like the 270, 7mm and 30, all well-adapted to both the P14 Enfield or single shot actions.

Bullet	Powder Charge	Velocity
85 gr.	40 grs. 4350	2958 fps
	36 4064	3045
90	40 4350	2995
100	40 4350	3046

Imp. 243 Winchester and Improved 244 Remington

Although there was some doubt as to the possibility of much improvement by making changes in these commercial cartridges, many shooters had case-stretching troubles and began to insist on changes to alleviate this and other problems. Thus, during the last few years numerous improved versions of these two commercials have appeared. Contrary to the writer's predictions, some noticeable advantages have become evident. The Ackley versions are described herewith, but there are numerous other equally good versions like the Mashburn, Page Pooper and Super Pooper, etc. Loading data for the various versions based on the 243 is interchangeable as it is for the versions based on the 244. Almost all of these improved versions are made by the simple fire-forming method. When factory cartridges are fired in the Ackley chamber, a noticeable reduction in velocity occurs, but without any loss of accuracy. After cases are fire-formed they can be handloaded to regain this slight loss plus a goodly increase. As both of the commercial 6mm's are definitely proving them-

selves as big game cartridges, the improved versions are even better. Certainly these two fine commercial cartridges, along with their "improved" counterparts are here to stay for a long time.

H) Imp. 243 Winchester (R'less)

Bullet	Powder Charge	Velocity
75 gr.	39 grs. 4895	3390 fps
	41 4895	3549
	43 4895	3629
	45 4350	3390
	47 4350	3654
	48 4831	3667
	42 4064	3496
	44 4064	3708
	42 H375	3390
	44 H375	3496
90	39 4895	3223
	41 4895	3499
	44 4350	3312
	46 4350	3391
	46 4831	3310
	48 4831	3420
	49 4831	3492
	39 4064	3268
	49 H450	3026
	39 H380	3026
105	40 H380	3091
	35 4895	2887
	39 4895	2962
	45 4350	3265
	48 4831	3292
	35 4064	2961
	49 H450	3181

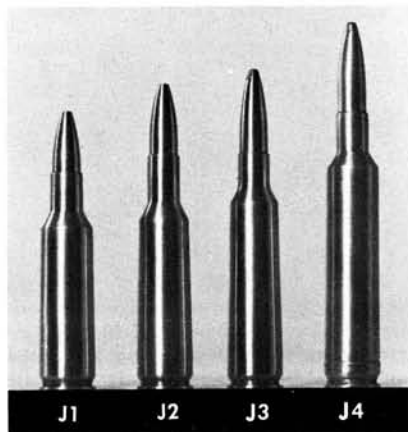
J) Improved 244 Remington (R'less)

Bullet	Powder Charge	Velocity
75 gr.	39 grs. 3031	3374 fps
	41 3031	3492
	41 4064	3452
	43 4064	3553
	46 4064	3704
	45 HiVel#2	3775
	44 4895	3539
	46 4895	3610
	44 4320	3556
	49 4350	3598
90	52 4831	3550
	35 4064	3000
	37 4064	3110
	38 4895	3125
	43 4350	3222
	45 4350	3311
	48 4831	3250
	50 4831	3337
	50 HiVel#2	3308
	52 HiVel#2	3452
105	37 4320	2779
	40 4350	2831
	42 4350	2921
	45 4831	2881
	47 4831	2984

New 6mm's

The 6mm Donaldson International, a relatively new cartridge developed by Harvey Donaldson of Fultonville, New York, is similar to the 6mm International worked up by Remington's Mike Walker. For all practical purposes, loading data for these two should interchange.

Our photo shows that both are closely similar in case capacity, and are both based on the 250-2000 case. The full length of the 250 is used by Remington, the 6mm Don. is shorter and with a



shoulder angle is 30°; the Remington maintains the original 26° shoulder of the 250 case and the original shoulder diameter. Remington reported having trouble with the sharper shoulder from the case forming standpoint. However no trouble has been encountered by owners of the 6mm Don., which is fire-formed to reduce body taper a slight amount, too, a reduction that's all to the good.

The Remington case has a rather long neck, the Donaldson a more conventional average length neck. According to modern thought the Donaldson case has a slightly better design.

Both cartridges, obviously, are efforts to produce a 6mm with relatively small case capacity for target shooting, without emphasis on high velocity; the target shooter is interested in a high degree of accuracy and the loading flexibility which comes with a lesser capacity case.

The first group of loads below were worked out by Robert Hutton in a 30" barrel with 10" twist, but because Harvey recommends a 14" twist, for use with 60-70 gr. bullets, I made up a new 31" barrel with the slower twist and Hutton got the results shown in the second set of figures, using 60 gr. Sierra HP's; the most accurate load was 32 grains.

J1) Donaldson 6mm Int. (10" twist)

Bullet	Powder Charge	Velocity
60 gr.	30 grs. 3031	3330 fps
	32 3031	3651
	33 Ball C	3330
100	33 4320	3125
	36 4350	3225

J1) Donaldson 6mm Int. (14" twist)

Bullet	Powder Charge	Velocity
60 gr.	28 grs. 3031	3135 fps
	30 3031	3291
	32 3031	3461
	33 3031	3586

The loads that follow, furnished by the Remington factory, are *maximum*.

J2) Remington 6mm International

Bullet	Powder Charge	Velocity
65 gr.	36 grs. 3031	3720 fps
75	35 3031	3450
	36.6 4064	3360
82	34.5 3031	3425
	36.6 4064	3310
90	32 3031	3250
	36 4064	3240
100	34.5 4064	3065

Note that velocity figures for both cartridges approach fairly closely the speed attainable in larger capacity 6mm cartridges, again emphasizing the importance of the proper matching of case capacity to bore capacity.

For comparison and comment, two other 6mm's are illustrated: the 22 Varminter (J3) necked up to 6mm and still maintaining the 28° shoulder and other specifications except neck diameter; (J4), the 6mm Belted Express,

made by belting the 30-06 case, then necking it down and shortening it. This latter cartridge should interest shooters wanting maximum velocity from a 6mm bore. The 6mm-Varminter, probably one of the best 6mm's that could be designed, can be made with a minimum of fuss and bother. Only limited loading data is available so far.

J3) 6mm-Varminter

Bullet	Powder Charge	Velocity
80 gr.	36 grs. 3031	3235 fps
90	33 3031	3020
	36 3031	3200

The 25's

25 caliber wildcats are still popular and new versions are being prolifically produced by the clan. Those 25's based on Magnum brass are receiving their just desserts in waning popularity. For best results a 25 caliber cartridge must be under 55 grains capacity, and lesser capacity than that is desirable for best over-all results. Among the better 25 wildcats, we have the various versions of the Improved 257 Roberts, 250 Donaldson, Imp. 250-3000, standard and Imp. 25-06, Imp. 25-35 and others. The 250 Magnums will not be discussed because of their relatively poor efficiency and short barrel life.

K) Imp. 25-35 (R) As with the others, there are several improved versions. Some are called by fancy names, like many wildcats, but they're all just pooshed-out 25-35's. The illustration shows the Ackley version, which features the sharp 40° shoulder and minimum body taper. This one could be described as a maximum 25-35 since it would be difficult or impractical to produce a case of greater volume from this size brass. These maximum versions have the same trouble fire-forming that the Imp. Zipper does - actually it is practically impossible, thus cases must be made from 30-30 or 32 Special brass. The result is well-worth the trouble though, because it is a most surprising cartridge. Like other wildcats stemming from the 30-30 family, it does wonders for the 99 Savage. Like the 6mm/30-30, it can be used in all lever action rifles made for any of the rimmed series.

Bullet	Powder Charge	Velocity
90 gr.	34 grs. 3031	3046 fps
	37 3031	3253
	39 3031	3296
	40 4320	3134
100	36 3031	3060
	36 4064	2976
	38 4320	3129
	32 3031	2637
125	34 4320	2576
	36 4320	2764
	36 4350	2576

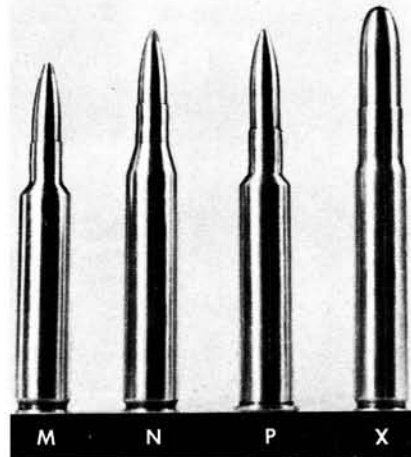
L) Imp. 250-3000 (R'less) Like the Imp. 25-35, this is an extremely good cartridge and can be used in the Savage 99 as well as all good bolt jobs. Also, like the Imp. 25-35, it has optimum capacity for top results from the 25 caliber bore. There are numerous

versions of this cartridge, all of which are fine, and deserving of much greater popularity than they've received. Like other improved cartridges, it has the advantage of easily made cases. Being a fire-formed cartridge, factory loads can always be used, with a slight reduction in velocity. Cases can also be made from '06 brass and many others but this requires a set of forming dies which should include a provision for inside neck reaming.

Bullet	Powder Charge	Velocity
90 gr.	42 grs. 4895	3108 fps
	44 4895	3312
	45 4320	3391
	43 4350	3396
100	42 4350	3129
	43 4350	3276
	38 4064	3130
	40 4064	3271
125	34 4064	2606
	41 4350	2744
	42 4350	2952

M) Imp. 257 Roberts (R'less) This is one of the improved cartridges which has gained wild acclaim. In the writer's opinion, it is about the largest capacity case that can be used for good over-all results with the 25 caliber bore. There are many versions including the Ackley, Mashburn, ICL and many others. All have similar characteristics and for practical purposes all produce just about the same results. Cases are made by the usual fire-forming method or by re-forming '06 brass. Standard 7x57mm cases can simply be necked down and fire-formed. When making cases from '06 brass, the neck should be inside reamed.

Bullet	Powder Charge	Velocity
60 gr.	50 grs. 3031	3860 fps
	62 4064	3868
	56 4320	3960
	42 3031	3245
87	44 3031	3347
	47 4064	3285
	49 4064	3405
	48 4320	3220
100	53 4350	3336
	55 4350	3477
	48 4895	3445
	43 3031	3165
117	46 4064	3165
	50 4350	3257
	49 4350	3120
	47 4350	2970
125	48 4350	3050



N) 25-06, or the original 25 Niedner (R'less) The 25 Niedner is simply the '06 case necked to 25 caliber, using the original shoulder angle. A.O. Niedner started making this wildcat forty or more years ago. It has been revived many times and currently is enjoying a rejuvenated popularity. Although it is somewhat over bore capacity, it is not enough over to seriously affect overall results. It produces slightly higher velocity than the improved 257 with slightly shorter barrel life. It is best used with slow powders and relatively heavy bullets. There have been numerous blown out or improved versions of the 25-06 but in the writer's experience none compares to the original. The Ackley version, for example, has never been as good as the original and the various versions of the blown out 25-06's have been the worst offenders for blowing up guns with slightly reduced loads of slow burning powders such as 4831. The 25-06 has been successfully used on all types of big game in the United States but has gained much of its fame as a long range varmint cartridge. Since it is easily made

efficient and fairly easy to load. The Imp. 25 Krag is too hot with maximum loads for the standard Krag action, and should never be used in it. The P14 Enfield and the better single shot actions are best for it. With careful loading this cartridge will nearly equal the 250 Magnums. Loading data for the Imp. 257 can be used for this cartridge as well as the loads given below.

Bullet	Powder Charge	Velocity
87 gr.	48 grs. 4064	3360 fps
	50 4064	3500
	49 HiVel#2	3610
100	50 4350	3090
	52 4350	3270
	50 4895	3509
125	50 4350	3000
	51 4350	3090

270's 7mm's and Larger Wildcats

These sizes have come in for their share of wildcatting, often in the forms of magnums — the results, with a few exceptions, are not enough better than the factory versions to recommend them. The 270 Winchester is certainly

equally good.

Short Magnums

There are a number of short 30 Magnums that have been popular — in the writer's experience the shortest of these has been the most efficient, an example being the No. 1 short 30 Ackley Magnum (fig. Q). This has a case capacity of not over 70 grains of 4350, for experience has shown that greater capacity than that in 30 caliber results in very little extra velocity, but does require a great deal more powder — a good example of this is the No. 2 short 30 Ackley Magnum (fig. R).

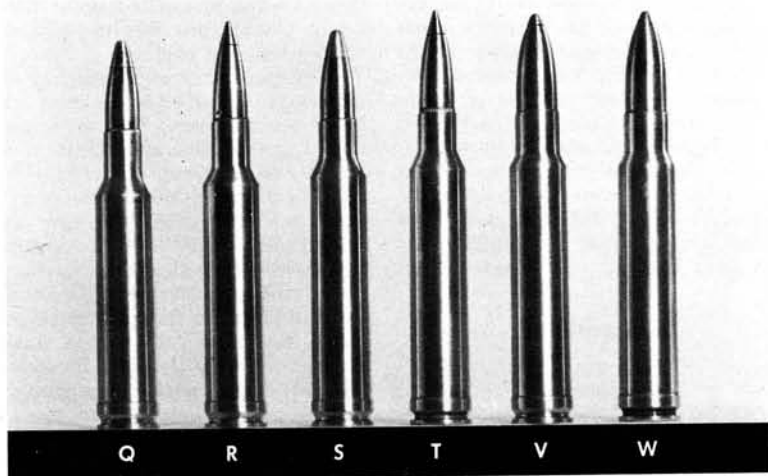
My No. 1 short 30 Magnum was introduced in 1939. A few years later, because there was so much demand for rechambering of 30-06 barrels, the No. 2 short 30 A. M. was offered. This, just long enough to clean up 30-06 chambers without setting the barrel back, results in a cartridge identical in design to the No. 1 short 30 A.M. except for over-all length. That was increased enough to make a capacity of about 76 to 78 grs. This produces no noticeable increase in velocity, but does make the conversion of 30-06 rifles more simple.

Q) No. 1 short 30 Ackley Magnum

Bullet	Powder Charge	Velocity
110 gr.	67 grs. 4064	3650 fps
125	62 3031	3560
150	64 4064	3245
	68 4350	3220
180	58 4064	2940
	63 4350	2950
	67 4350	3050
220	62 4350	2704

R) No. 2 short 30 Ackley Magnum

Bullet	Powder Charge	Velocity
150 gr.	58 grs. 4895	3100 fps
	67 4350	3190
180	54 4064	2810
	67 4350	3060
220	64 4350	2650



by simply necking '06 brass to 25, it doubtless will continue to be relatively popular for a long time to come.

Bullet	Powder Charge	Velocity
87 gr.	43 grs. 4064	3229 fps
	43 4895	3204
	45 4320	3307
	54 4350	3345
100	42 4064	3038
	44 4895	3094
	44 4320	3064
	53 4350	3188
	58 4831	3245
120	48 4350	2825
	50 4350	2935
	55 4831	3038
	57 4831	3101

P) 25 Krag (R) This cartridge is based on the full length 30-40 Krag case necked down to 25 and blown out by fire-forming to create a cartridge with minimum body taper and 40° shoulder. Velocity is relatively high and the case, although of maximum capacity for the 25 bore, is reasonably

maximum capacity for the 270 bore, if not of over-bore capacity. The only really interesting results with 270 wildcats have largely been obtained with smaller cases such as the 300 Savage or the 308 Winchester necked down. The 7x57mm factory cartridge is not over-bore capacity and the 7mm bore can accommodate a slightly larger capacity such as the Imp. 7x57, an extremely fine cartridge. Since the advent of the 280 Remington, which amounts to little more than a 7mm-06 or 285 OKH, there is no longer much place for 7mm wildcats other than the Imp. 7x57. The same is quite true of 30 caliber. We have the popular 308 Winchester and 30-06. The '06 can be blown out to the improved version, thus creating slightly higher ballistics. The Ackley improved '06 has attained a relatively high popularity along with similar versions which easily produce velocities comparable to the standard 300 H&H Magnum factory loads. Other improved '06's like the ICL, etc., are

Since the advent of the 338 Winchester Magnum there has been an epidemic of necking this cartridge down to 30 caliber. Sometimes called the 338-30, the most common name (which seems to be the one that will stick) is the 30 Belted Newton (fig. S).

This is so similar to the No. 2 short 30 A.M. that the above loading data is interchangeable.

The most recent newcomer in this class is the 308 Norma Magnum (fig. T), similar but not identical to the 30 Belted Newton. However, it is similar enough in both design and case capacity that loading data for the 30 Belted Newton and the No. 2 short 30 A.M. is usable. Some difficulty might be found with 308 Norma brass, when attempting to use the top loads recommended for the other two. Norma brass is a bit thicker and possibly a little softer, which might result in loose primers; therefore, with Norma cases approach

maximum loads a little more carefully than with American brass. This does not mean that Norma cases, using maximum loads especially developed for them, won't produce velocities identical to the others.

The 308 Norma Magnum and the 30 Belted Newton also appeal to shooters because rechambering jobs can be done without setting the barrel back.

It would be hard to say which, if any, of these 30 Magnums would be better than the other, and it might be added that there are a number of equally good versions developed by other gunsmiths.

T) 308 Norma Magnum

Bullet	Powder Charge	Velocity
110 gr.	67.5 grs. 4064	3406 fps
	69.5 4064	3622
130	66 4064	3380
	68 4064	3516
150	65 4064	3156
	67 4064	3271
180	69 4350	3006
	71 4350	3087
220	65.5 4350	2687
	67.5 4350	2746

Another new factory Magnum cartridge (short enough to work through standard actions) which is bound to be of interest to big game hunters, is the 358 Norma Magnum (fig. V). Practically identical to the old 35 Ackley Magnum (fig. W), introduced in 1939, the only difference is a degree or two in shoulder angle. In a belted case this is of little consequence. The 35 Ackley Magnum, which proved itself all over the world as a highly efficient big game cartridge, is probably powerful enough for any game in the world if the right bullet is used. Owners of rifles for the 35 Ackley Magnum can now use the new commercial Norma ammunition (or brass) without altering their rifles.

The following loads, worked out for the 35 Ackley Magnum, can be used in the 358 Norma Magnum except perhaps for the very top loads. These could conceivably give trouble for the same reasons cited under the 308 Norma Magnum.

Bullet	Powder Charge	Velocity
200 gr.	60 grs. 3031	2824 fps
	65 3031	3185
	74 4895	3113
250	62 4350	2700
	65 4350	2850
	68 4320	2920
	70 4895	2900
275	70 4895	2810
300	68 4895	2670
	74 4350	2701
*250	70 4320	2790

*Norma factory load, also usable in the 35 Ackley Magnum.

X) 35 Whelen (R'less) This is an old wildcat and one of the best for shooters preferring a big bore with heavy bullets. The 35 Whelen was introduced by Colonel Townsend Whelen and James V. Howe many years ago. It is simply the 30-06 expanded to 35 caliber, and cases are easily made by

Rates of Twist in Inches

Caliber	Twist (in.)	Caliber	Twist (in.)
22 Hornet	14/16	25 Krag	10/12/14
218 Bee	14/16	25-06 Imp.	10/12/14
222 Rem.	14	6.5mm	9/10
219 Zipper	14	270 Win.	10/12
22-250	14	7mm	10
220 Swift	14	280 Rem.	10
22-30/30	14	30-06	10/12
243 Win.	10	30 Bltd. Newton	10/12
244 Rem.	12	308 Norma Mag.	10/12
6mm wildcats	10 to 14	338 Win. Mag.	10
25-35 Imp.	10/12/14	358 Norma Mag.	14/16
250-3000 Imp.	10/12/14	375 Norma Mag.	12
257 Imp.	10/12/14	458 Win. Mag.	14

Because twist usually depends on bullet weight, our table shows several examples in most calibers. For example, 25 caliber barrels are generally furnished with a 10" twist unless the shooter plans to use only bullets below 100 grains; then a 12"/14" twist is indicated. The 22 Hornet (and similar cartridges) is usually made with a 16" twist, but 14" works equally well. In 6.5 there are so many bullet weights that usually the short 9" twist is used; with light bullets only a slower twist can be employed, and this applies to all calibers, of course.

running '06 brass over a 35 caliber expander plug. This cartridge has proven adequate for all large North American game and not many other wildcats have retained its popularity. There are numerous improved 35 Whelens, most of which are blown out with sharp shoulders to achieve a little more powder capacity — these are easily made and fire-formed to produce cartridges with a little more steam. Such cartridges as the 358 Winchester have been able to create no more than feeble competition for the 35 Whelen, and many wonder why it, like the 22-250, has never been brought out commercially.

ously, despite claims of the "most powerful rifle in the world" and other advertising phrases, the 458 Winchester is adequately powerful for any big game animal on earth and for the time being, at any rate, hunting will still be confined to the earth.

Factory cartridges, when they fill the necessary requirements, have certain advantages, notably the all-important one of ammunition availability *over the counter* in all parts of the world. The dyed-in-the-wool handloader may take exception to this, but he can well be jarred into reality when he tries to sell his pet wildcat rifle. Resale value is an important consideration for most shooters and rifles for factory cartridges are much easier to sell on the used-gun market. Usually shooters interested in wildcat rifles prefer to start from scratch rather than to purchase a used rifle. The once-a-year-hunters, who represent the vast majority of used-gun buyers, have no use for wildcats nor would they know what to do with one if they did buy it.

Wildcatters have run wild in more ways than one. Without regulation of any kind, thousands of wildcat cartridges have been created which have little merit. Dozens of versions exist in each little phase of the business where one good one would do better. With no regulation to restrict such cartridges to a merit basis great confusion has resulted. Many loading-die makers have grown gray trying to keep up with the parade. Let there be no misunderstanding, though — we want no part of "regulations!"

In spite of these things, and in spite of factory competition and waning popularity, we will always have wildcats. With the thousands of obsolete guns about, and the abiding interest ever existing in things new, there will always be a place in the guns and the hearts of shooting enthusiasts for wildcat cartridges. *Long live the wildcats.*

The Big Big-Bores

Up until recently there have been numerous big bore wildcats of interest to big game hunters, but there is little if any excuse left for their existence since the introduction of the new big bore commercial cartridges, namely the 338 and 458 Winchester Magnums and the 358 Norma Magnum. Such wildcats as the 450 Watts, 450 Ackley Magnum, 475 A&M etc., will be replaced by the 458 Winchester Magnum. Obvi-