

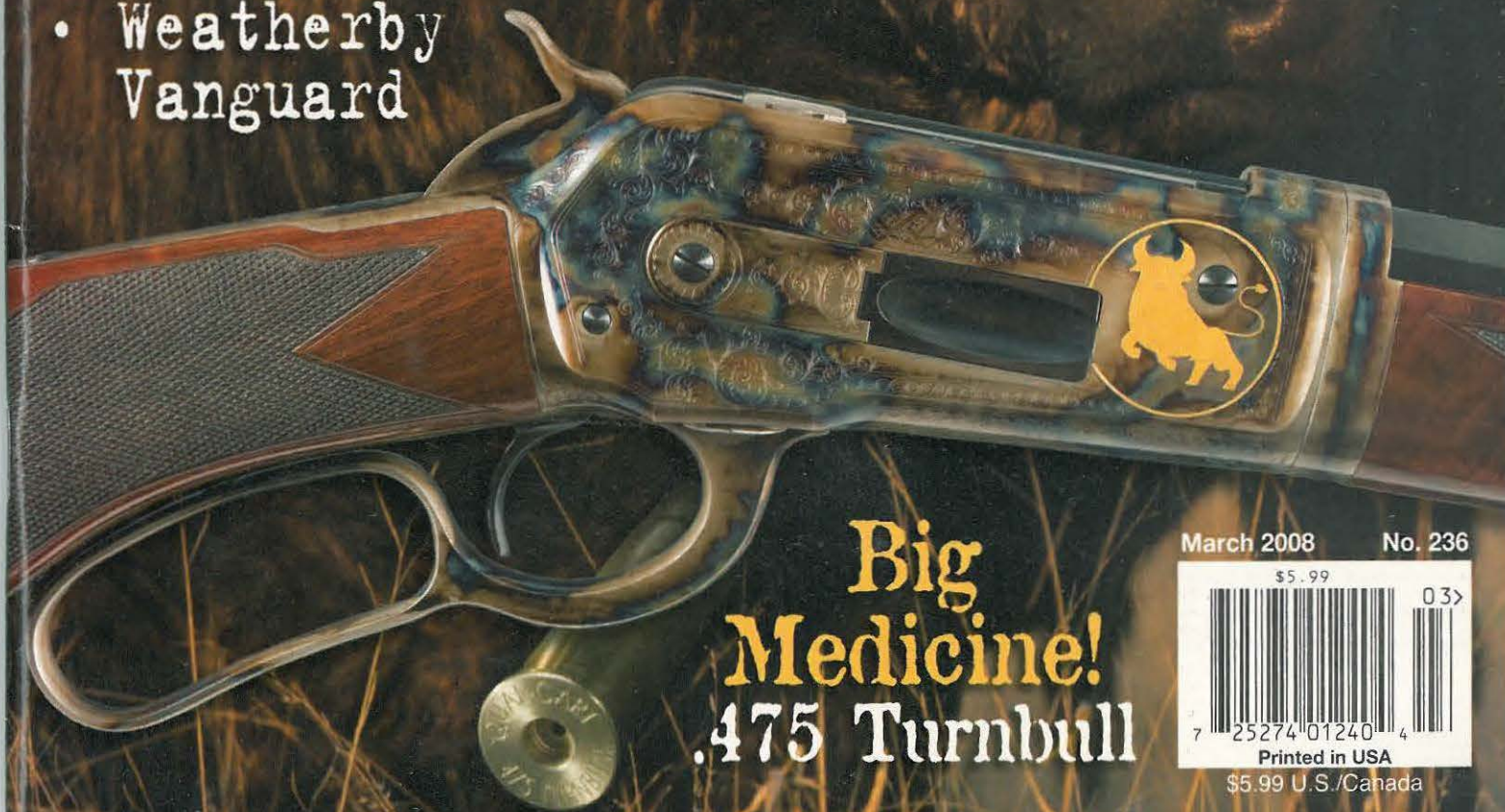
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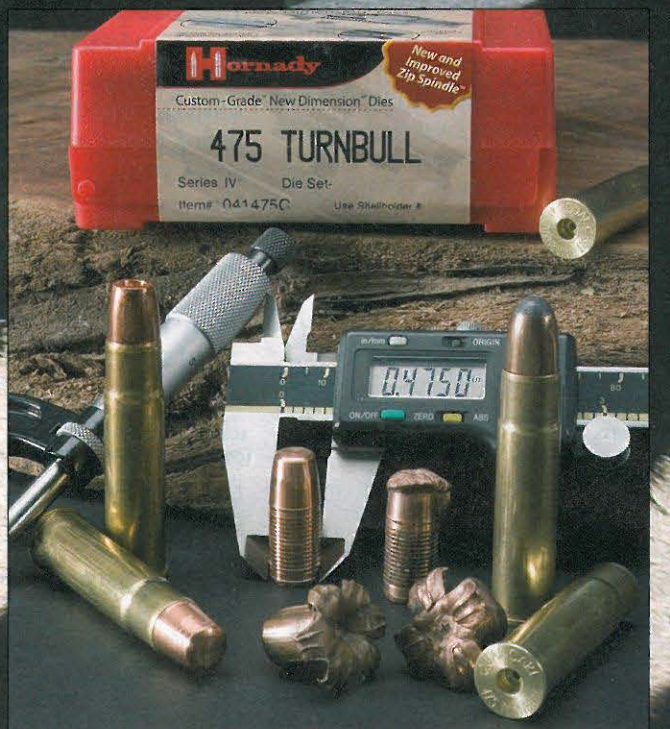
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.475

# Turnbull

### Dave Scovill

**I**t's been nearly 100 years since the folks at Winchester Repeating Arms (WRA Co.) began work on a 2.4-inch .50-110/100 case necked down to .46 caliber. According to Daniel Shuey's book *W.R.A. Co. Headstamped Cartridges and Their Variations*, there were three versions, one at 2.325 inches and another at 2.339 inches, both with short necks, and a 2.410-inch case with a longer neck. Bullet weights included a 400-grain lead flatnose and a 360-grain hollow-point Express. Notes in Shuey's book list 42.0 grains of Sharp Shooter powder developing 2,362 fps and 4,960 foot-pounds (ft-lbs) of muzzle energy from a Winchester Model 1886 rifle, apparently with the 360-grain bullet.



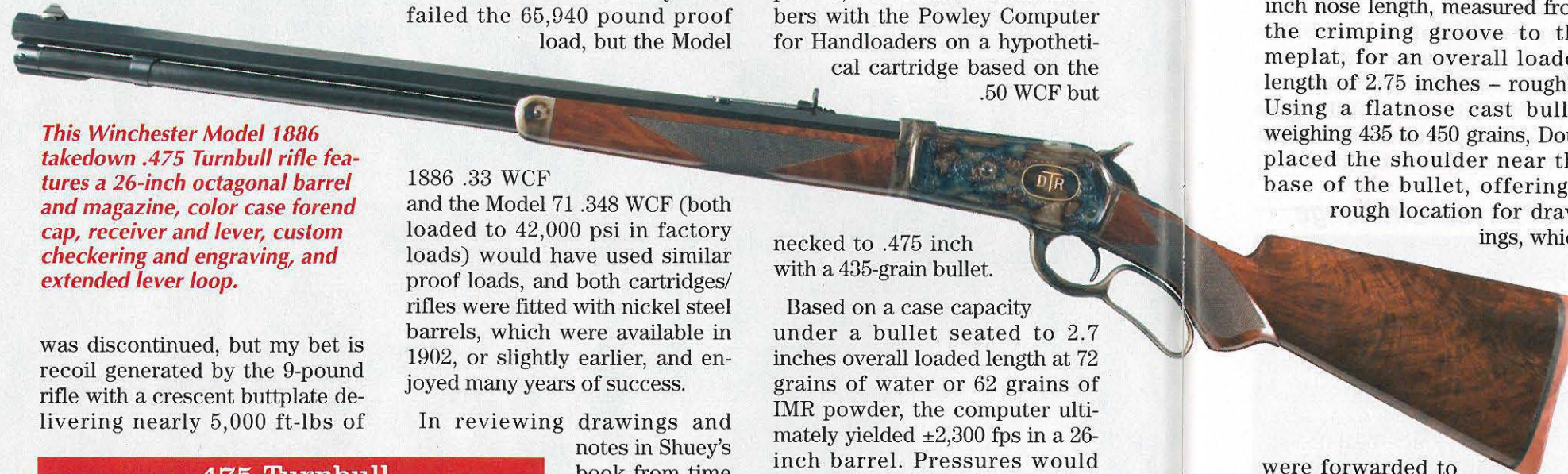
Quality Cartridge brass is headstamped for the .475 Turnbull. Hornady sizing dies were used to work up handloads with a variety of bullets, including the North Fork solid and Barnes X and TSX bullets.

## Big Bore Buffalo Buster

# .475 Turnbull

Winchester records show work on the .46 WCF was discontinued in March 1912, but notes do not state bullet diameter, other than .46, which could mean .458 inch, .46 inch or some variation that was rounded off to .46. There was a box of ammunition at the factory, but Shuey makes no mention of bullet diameter, or case dimensions.

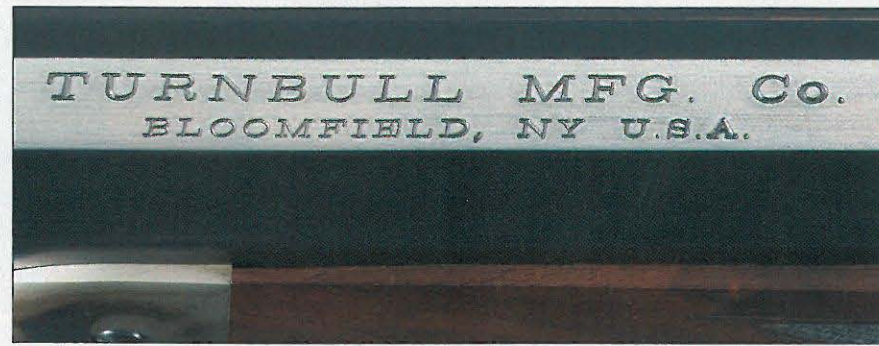
We can speculate why work



**This Winchester Model 1886 takedown .475 Turnbull rifle features a 26-inch octagonal barrel and magazine, color case forend cap, receiver and lever, custom checkering and engraving, and extended lever loop.**

was discontinued, but my bet is recoil generated by the 9-pound rifle with a crescent buttplate delivering nearly 5,000 ft-lbs of

<b>.475 Turnbull</b>				
bullet (grains)	powder	charge (grains)	velocity (fps)	
325 Hornady	IMR-3031	64.0	2,075	
		66.0	2,230	
355 Barnes	H-4198	60.0	2,268	
360 Barnes	IMR-4198	59.0	2,300	
400 Hornady	H-4198	60.0	2,152	
400 Speer	IMR-4198	59.0	2,210	
420 Barnes	IMR-4198	55.5	2,135	
		59.0	1,944	
450 North Fork	IMR-4198	55.0	2,100	
	AAC-2015	56.0	1,783	
430 RCBS 475-450-FN cast	H-322	58.0	1,860	
		58.5	1,900	
		59.0	1,944	
430 RCBS 475-450-FN cast	ACC-2015	56.0	2,056	
	H-4198	56.0	2,019	
500 A-Frame	IMR-4198	54.0	1,900	
		AAC-2015	56.0	1,758
		60.0	1,875	
		60.5	1,906	



**Turnbull Restoration can rebarrel the customer's rifle, or offer a completed rifle, either a Winchester or Browning Model 1886 or 71.**

muzzle energy was, shall we say – objectionable – which is not to ignore the encroaching popularity of bolt actions.

One might also speculate the Model 1886 .46 WCF may have failed the 65,940 pound proof load, but the Model

1886 .33 WCF and the Model 71 .348 WCF (both loaded to 42,000 psi in factory loads) would have used similar proof loads, and both cartridges/rifles were fitted with nickel steel barrels, which were available in 1902, or slightly earlier, and enjoyed many years of success.

In reviewing drawings and notes in Shuey's book from time to time, I finally realized the .46 WCF was most likely a 1910 version of what we know today as the .450 Alaskan, which is based

on the .348 WCF, which in turn, is based on the .50 WCF case.

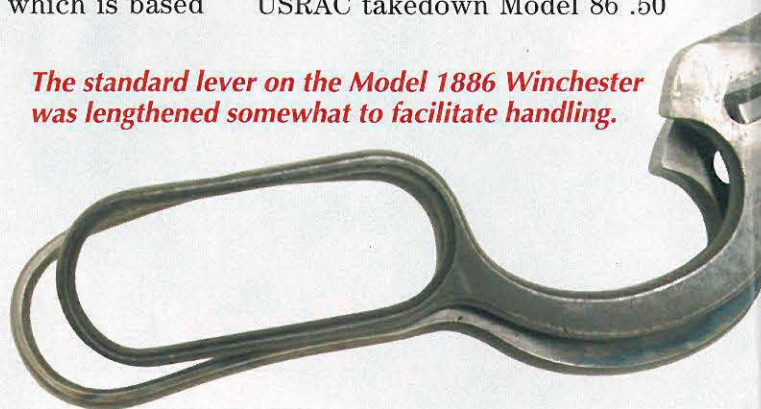
Since there was no reason to duplicate Harold Johnson's .450 AK or P.O. Ackley's .450-348 Improved, I decided to run the numbers with the Powley Computer for Handloaders on a hypothetical cartridge based on the .50 WCF but

necked to .475 inch with a 435-grain bullet.

Based on a case capacity under a bullet seated to 2.7 inches overall loaded length at 72 grains of water or 62 grains of IMR powder, the computer ultimately yielded ±2,300 fps in a 26-inch barrel. Pressures would hover around 41,000 psi using IMR-4198, remarkably close to performance for the .46 WCF.

Armed with basic information on the would-be wildcat, I called Doug Turnbull to ask if he would build a .475 barrel to fit my USRAC takedown Model 86 .50

**The standard lever on the Model 1886 Winchester was lengthened somewhat to facilitate handling.**



**A broad variety of .475-inch bullets was tested and/or modified to produce optimum performance in heavy game. This lineup includes samples from 350-grain pistol bullets to 500-grain solids.**

Express. Since Doug was to build the barrel and adapt it to my rifle, he decided the case should be shorted from 2.4 to 2.2 inches, to accommodate a bullet with a .5-inch nose length, measured from the crimping groove to the meplat, for an overall loaded length of 2.75 inches – roughly. Using a flatnose cast bullet weighing 435 to 450 grains, Doug placed the shoulder near the base of the bullet, offering a rough location for drawings, which

mould for a .476-inch bullet weighing approximately 450 grains when cast from commercial 92-6-2 (lead-antimony-tin) alloy with a heel to fit a Hornady

**Notes in Shuey's book list 42.0 grains of Sharp Shooter powder developing 2,362 fps and 4,960 foot-pounds.**

.475-inch gas check. (Mould number is 475-450.) Weight would vary, of course, from 425 to 460 grains, depending on the actual alloy, but the length would be the same with a nose length, to the crimping groove, of .5 inch.

Meanwhile, Doug cut 2.4 inch .50-110 WCF Starline cases back to 2.2 inches and necked them down to .475 inch. Since Doug planned to include the cartridge in his lineup of custom Model 86 rifles, it was decided to call it the

were forwarded to Dave Manson for the chamber reamer.

At the same time, the folks at RCBS agreed to make a bullet

**Below, Barnes bullets were tested at downrange and point-blank ranges to evaluate performance prior to being used in Africa. Above right, bullets recovered from Cape buffalo exhibited excellent penetration and weight retention. Right, both of these North Fork bullets were recovered from Cape buffalo.**



.475 Turnbull. In relatively short order, Doug made up three rifles to work with various bullets and loads assembled in Hornady reloading dies.

Eventually Doug learned 62 grains of IMR-4198 with a 400-grain bullet clocked right at 2,300 fps, and 64 grains pushed the same bullet to nearly 2,400 fps with acceptable case head expansion (similar to Winchester .348 WCF factory ammunition), but recoil was brutal. No wonder, since Doug's loads beat the .450-400 Jeffery, a highly regarded African dangerous game cartridge with a 400-grain bullet at 2,150 fps, and came close to du-



# .475 Turnbull

plicating the .416 Rigby, .404 Jeffery and .470 Nitro Express.

At some point it occurred to me that it would be helpful if we had a pressure barrel, or at least a rifle that could be hooked up to a kpsi strain gauge and not necessarily be bound to an arbitrary pressure ceiling of 42,000 psi. The solution was to rebarrel a Ruger No. 1 .45-70 that was gathering dust. The idea of mounting a scope was intriguing, since the .475 Turnbull by then was churning up 2,600 fps with the 275-grain Barnes XPB and a bit more zip with the Barnes 300-grain softnose.

When Turnbull Restoration mounted a .475 Turnbull barrel on the Ruger No. 1 and Dan Pedersen (Classic Barrel & Gun Works, Prescott AZ; or email: dan@cutrifle.com) attached a quarter-rib, the rifle was forwarded to Barnes Bullets for pressure tests. By that time Doug had fired several hundred test

loads in a couple of Model 1886 rifles, and the .475 Turnbull was shaping up to be the most powerful lever-action cartridge since Winchester dropped the now extinct .46 WCF in 1912.

From the outset, the real challenge associated with the .475 Turnbull was bullets. Pistol bullets designed for the .475 Linebaugh and .480 Ruger would work on relatively lightweight animals like deer, but the powerful cartridge needed tougher and heavier slugs for larger game.

In due course Doug came up with several bullets, including 325- and 400-grain Hornady revolver bullets; Speer 325-, 400- and 500-grain flatnoses; Trophy Bonded 500-grain softnoses; Barnes 360- and 420-grain TSXs; Cast Performance 370-, 410- and 420-grain flatnoses; North Fork 420-grain solids; RCBS 450-grain flatnoses; Woodleigh 500-grain softnoses; and 500-grain Swift A-Frames.

Not only did Doug design the cartridge and build rifles, but he also had to design and redesign bullets that were continually tested in impact medium – some of which were modified with



Mike Stokes dropped this white-tail in its tracks with the .475 Turnbull.



Doug and Mark Sullivan were pleased with the performance of the .475 Turnbull on this 24.5-inch impala at 130 yards.



Doug used a 420-grain Barnes bullet at nearly 2,300 fps to drop this warthog.

deeper and/or larger hollow-nose cavities, others were shortened a bit to facilitate overall loaded length requirements – all in the interest of effectiveness on potentially dangerous big game.

### The real challenge associated with the .475 Turnbull was bullets.

Before long Doug worked up several good loads with a variety of bullets and headed for Africa in pursuit of Cape buffalo with Mark Sullivan. Doug hardly recovered from the journey to Tanzania when he had the first Cape buffalo on the ground. When another bull lumbered in a bit too close, he managed a double – two, 41-inch bulls in less than two minutes.

From the start it was fairly obvious that overall case capacity was nearly ideal for most bullet weights with IMR- or H-4198. Some loads using VV-N133, AAC-2015, IMR-3031 and H-322 proved useful, but in the long run, none of these powders offered any appreciable advantage over H/IMR-4198, give or take a few fps, or minor differences in accuracy out to 150 or 200 yards.

For general purpose, Doug pro-

vided a few useful loads that will work on any animal on the planet, a few of which he used on Cape buffalo, elk and bison. In most instances, they can be increased somewhat, but recoil

becomes quite stout – hardly anything folks would use for plinking. Using H-4198, for example, he reached 2,600 fps with a 325-grain Barnes TSX in a 26-inch barrel. The same powder can de-

velop 2,400 fps with a 400-grain bullet or 2,300 with a 435-grain pill. Overall, however, 2,100 fps with bullets ranging from 400 to 460 grains will shoot through an elephant skull or nearly full-

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# .475 Turnbull

length though a Cape buffalo or bison, so it's not necessary to redline the .475 Turnbull to achieve the desired result.

For my purposes, a 430-grain RCBS 475-450-FN at 2,150 fps is sufficient for larger game, and the Barnes 275-grain PBX can run upwards of 2,700 fps for soft skinned, non-dangerous game. Some folks might like to consider the .475 pistol bullets from Speer or Hornady, but they tend to decompose at impact velocities well above rational speeds achieved from revolvers. The word "splatter" comes to mind.

Doug is offering properly head-stamped cases (to avoid problems in foreign countries) along with Hornady or RCBS reloading dies and Barnes TSX bullets in standard weights. The folks at Turnbull Restoration can build a Model 86 or 71 (takedown or standard receiver) on a rifle they



**The fight with this Cape buffalo started at 70 yards, but it refused to stay down until it received a 420-grain Barnes bullet between the eyes at 15 paces.**

provide, or your rifle can be converted; standard Model 86 .45-70 octagonal barrels can be rebored to .475. Either way, the conversion includes a complete action job to ensure flawless feeding and function. For non-reloaders,

custom loads are in the works as well.

As a rule, maximum loads in the .475 Turnbull churn up just a bit less than 5,000 ft-lbs at the muzzle of a 26-inch barrel, and about 70 fps less in a 22-inch barrel. In practical terms that translates to nearly 2,800 fps with a 275-grain bullet, a bit over 2,700 fps with a 300-grain bullet and a 400-grain bullet at just under 2,400 fps. A 500-grainer generates 4,897 ft-lbs at 2,100 fps. Doug has reached these plateaus with IMR-4198 and/or H-4198. Other powders that get in the ballpark include AAC-2015 and VV-N133. At these performance levels, however, the .475 Turnbull is unnecessarily powerful for most game on this continent, or Africa, and it's a bit more friendly toward the shooter with 360- to 435-grain bullets at upwards of 2,100 or 2,200 fps.

For comparison, a 470-grain hard cast flatnose bullet at 1,500 fps or so will shoot through a Cape buffalo at almost any angle, and a 400-grain bullet at 1,800 fps

will do the same, assuming the bullet is up to the task – such as a tough softnose, solid or hard cast design. We have also punched through bison with a 550-grain bullet at little more than 800 fps, so it's apparent that a big-bore dangerous game rifle is reasonably efficient if it gets much past 1,900 fps with a properly designed bullet weighing 360 to 500 grains.

\*\*\*

## PARTING COMMENT

In early load development, Doug was attempting to refine loads with IMR-4198, so I dredged up a few loads with H-4198, VV-N133 and AAC-2015. When velocities exceeded 2,000 fps with a 430-grain RCBS cast bullet, accuracy/chronograph sessions were limited to 25 rounds or so owing the accumulative effects of recoil on my protesting shoulder.

In an effort to extend shooting sessions, I hauled out the Caldwell Lead Sled, a rifle rest designed to add weight – shot bags or sandbags – to decrease felt recoil. But even with a layer of stout styrofoam fashioned to cushion the crescent steel buttplate, the heel cut through the pad at the top of the rear support and put a dent in the metal backing! Shortly thereafter, Doug forwarded one of his rifles with a shotgun butt finished with a relatively soft recoil pad – not necessarily for the benefit of my shoulder, for which I am very grateful, but to prevent further wear and tear on the Lead Sled and the crescent steel buttplate on my rifle.

That's probably more information than you need to know, but it clearly demonstrates why the .475 Turnbull is arguably the most powerful lever-action cartridge ever, although it fits nicely in a Ruger No. 1 with the same barrel contour as its .45-70. Doug tells me he has another brainchild, a .475 Short, but for now I'll let you guess what that might fit in.

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