

THE BEST HANDGUN BULLET DESIGN?

For years, most shooters believed it was Keith's classic semi-wadcutter—but Ross Seyfried disagrees and names a new heir to the throne! By Ross Seyfried

The classic Keith semi-wadcutter probably isn't the best bullet for your handgun.

I know that statement is like tampering with motherhood and the flag, but I believe it is true. I say it without any disrespect, for Elmer Keith was both my mentor and my friend. I have had the advantage of some time he didn't have. In the process, I have been able to learn some things about handgun bullets he wasn't privileged to see. I still shoot some Keith bullets, but more for nostalgia than performance.

There are a lot of accepted "truths" that surround the semi-wadcutter bullet that aren't fact. "Semi-wadcutter bullets cut a full-caliber hole in hide, are the most accurate, make the largest wounds (nonexpanding), have a flat trajectory,

and are ruined by gas checks." If you believe all of these things, ride with me a while and I'll show you some things that you may find enlightening.

The bullet designs that equal or outperform the semi-wadcutters in almost every category are the flat points. These are truncated cone or truncated radius bullets. The shapes aren't new, although I feel the total concept in cast bullets is just being perfected.

My first experience with the flat points was in my .45 autos. My Pachmayr/Colt pistols were potentially very accurate, but I found that their actual accuracy varied from one lot of 230-grain round nose bullets to the next. If I used semi-wadcutter bullets, the accuracy was spectacular but the reliability became a compromise. I was using these pistols both for personal



LBT .475/440-grain



LBT .500/470-grain



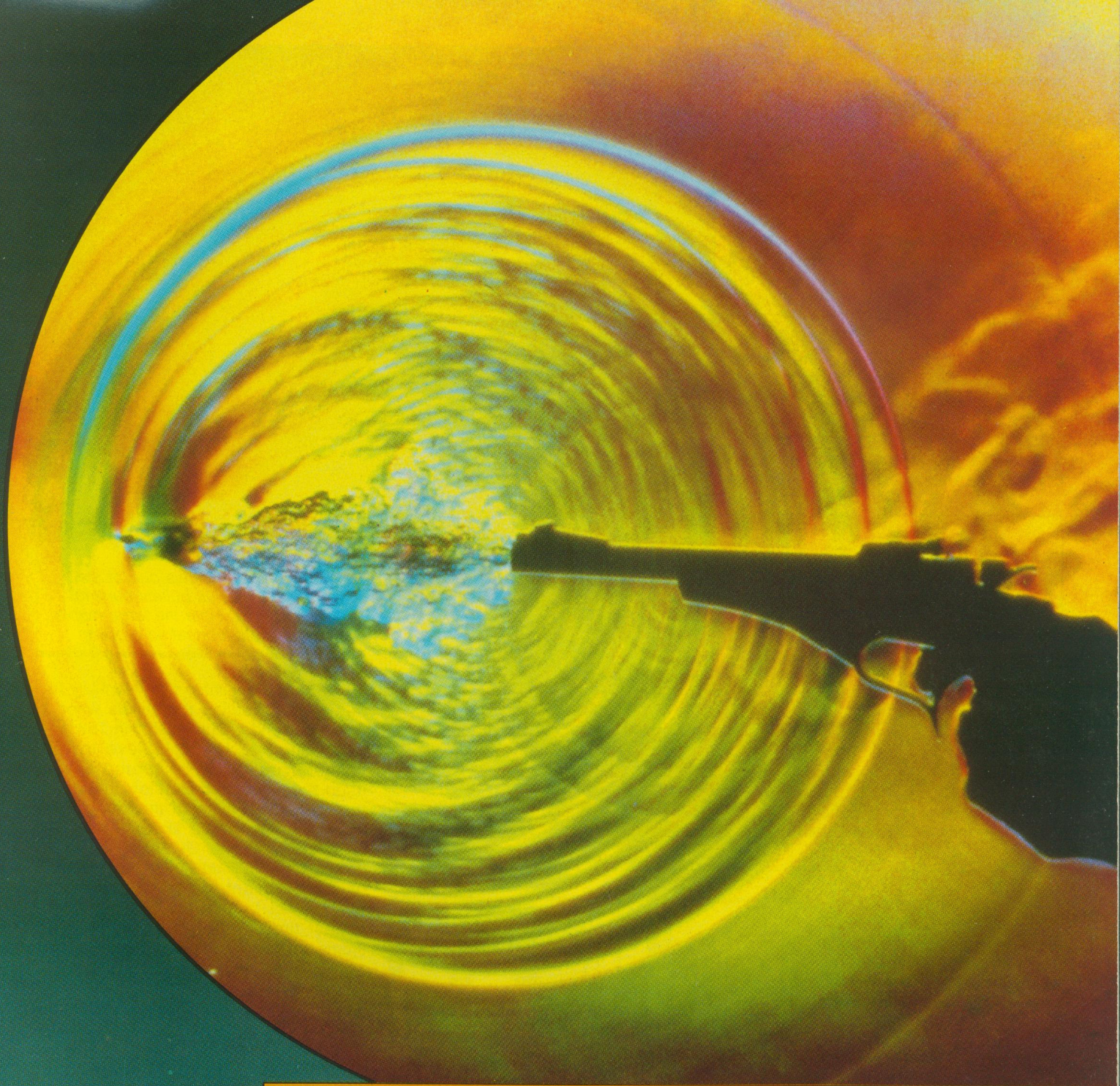
NEI .475/400-grain



Freedom .44/300-grain



LBT .430/320-grain



A Schlieren photograph (above) impressively captures a handgun bullet in flight, along with the shock waves produced when the gun is fired and the projectile enters the atmosphere. (Below) Today's new bullet designs, including truncated cone and truncated radius projectiles, afford handgun hunters heavier slugs which deliver superior stopping power over the Keith semi-wadcutter.

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LBT .358/160-grain



LBT .430/250-grain



H&G .45/230-grain



LBT .32/120-grain



Classic .44 SWC

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defense and in world-class competition, where a feeding failure simply carried a price too high to make the semi-wadcutters a consideration.

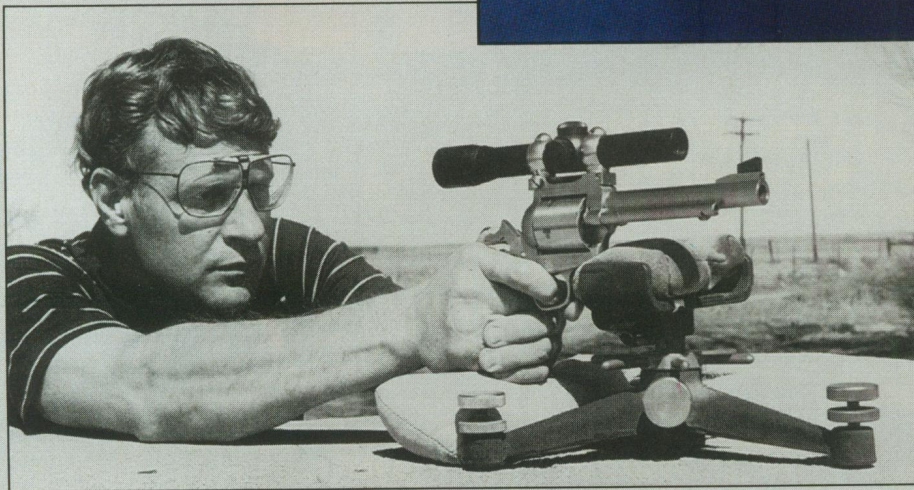
I wrote to Joyce Hornady (Hornady Bullets) in 1978, looking for a better handgun bullet. He told me about a new 9mm bullet that he was making for Eglin Air Force Base. "These bullets proved to be far superior in accuracy to the round-nose style."

A few weeks later, Mr. Hornady sent me some 230-grain .45s in the same shape, and they could shoot! They would also feed just as well as the round nose and had a good, flat point to slap things that might need more abuse than a paper target. These were the "flat-point" truncated cone bullets that are



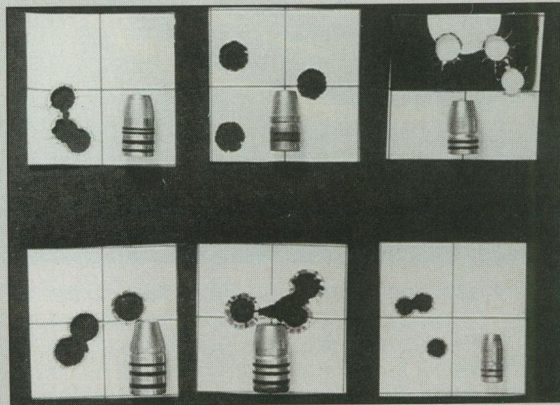
PHOTOGRAPHY BY JIM BROWN

Stop-action photo shows one of the new truncated-radius bullets hurtling toward its target. Note the large meplat and the multiple lubrication grooves.



The author has found Freedom Arms .45 Colt revolver to be an extremely accurate pistol, especially when using the new bullets.

These six targets, showing 3-shot groups fired from a 50-yard distance, attest to the accuracy capabilities of the new projectile designs.



commercially available from Hornady today. I was shooting the bullets when I won the world championship in 1981.

Needless to say, I believe in the shape. There were competitors who used semi-wadcutters because they cut bigger holes in the paper and, therefore, were more likely to mark a higher scoring zone. Of course, some of those same individuals feel that 9mms have an advantage in competitions where steel targets are used and the fastest time wins. I'm told that "the 9mms are better because the bullet gets to the target quicker and therefore registers a faster time than the .45." Sometimes I try to avoid real superior logic!

The truncated cone nose has spread far and wide. Many jacketed bullet makers offer a variety of calibers and weights with this shape. Sierra makes a great 200-grain .45 bullet, and most makers offer some variation. Freedom Arms markets heavy handgun hunting bullets for their .454s and .44 Mags. Their 300-grain .44 and .45 truncated cones, with hardened lead cores, are some of the best *jacketed* hunting bullets for handguns. At the same time, truncated cone cast bullet shapes have flourished. J. D. Jones has made the .44 Magnum a realistic big game gun with his 300-plus-grain truncated cone bullets. This nose shape, combined with its true "heavyweight size," has successfully taken almost every critter on earth. NEI bullet moulds offer a great variety of target and hunting bullets with the truncated cone shape.

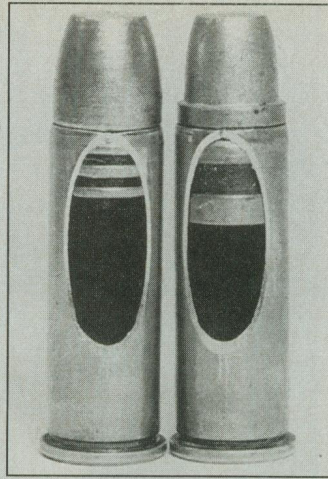
The latest step in handgun bullet de-



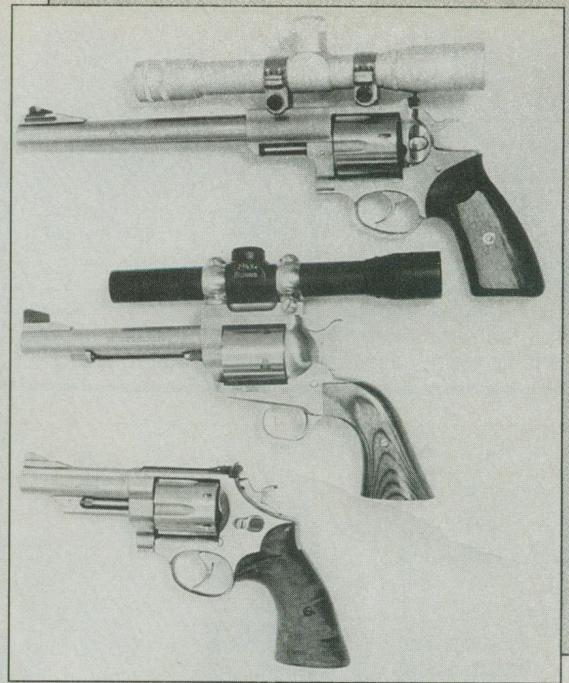
New jacketed bullets which utilize the truncated design include from left to right: Freedom .44/300-gr., Freedom .45/300-gr., Nosler .357/180-gr., Hornady .45/230-gr., Speer .45/225-gr., and the Sierra .45/200-grain.

sign is what I would call a truncated radius, where the sides of the nose are rounded instead of flat. This shape offers some additions to the truncated cone advantages, but mainly they let you have more bullet weight in the nose. Veral Smith of LBT moulds has done a lot of pioneering with this shape, and his results are the finest handgun bullets that I have ever fired. It's important to understand that it takes a lot more than a different nose shape to make a bullet that will consistently equal or better a Keith bullet.

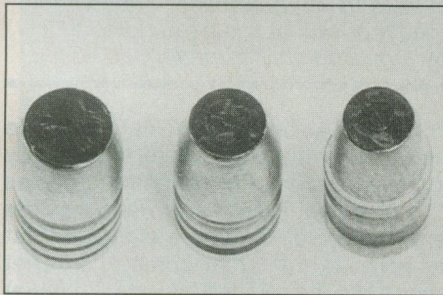
Making a superior cast handgun bullet takes the nose shape plus better lube grooves, different crimp groove placement, and sometimes even the addition of the condemned gas check. I've always felt that the use of only one big lube groove was not quite right. The result of the "one big lube groove" is that most of the bullet's surface doesn't get lubricated during the ride down the bore. Also, when I look at Keith bullets that



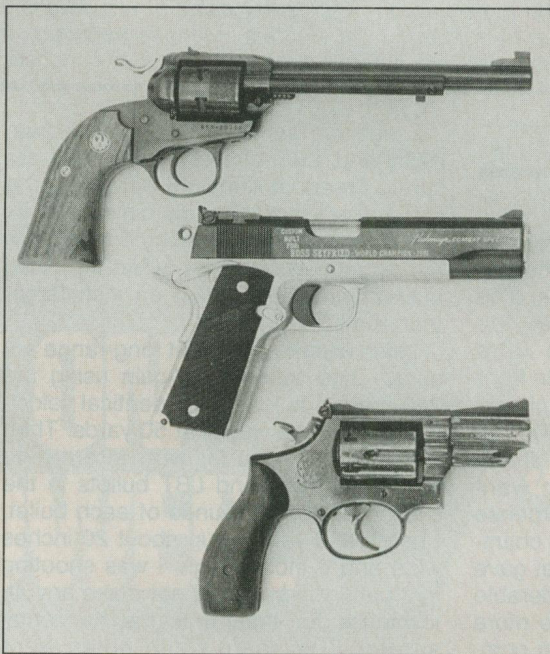
Two cutaway .44 Magnum cases compare the 250-grain TR bullet at left to the 250-grain SWC at right. With both bullets seated to normal depth, note how the SWC limits case capacity.



Hunting handguns (above) used to test the new bullet designs include from top: the Ruger Super Redhawk .44 Magnum/4X Burris scope; the Freedom Arms Casull .45 Colt/2 3/4 X Burris scope; and a S&W M629 4 inch.



The bigger the meplat, the bigger the hole. Note varying size meplats on same-weight .44 caliber cast bullets.



Additional test guns (left) include the Ruger Bisley in .32 H&R Magnum, a Pachmayr Combat Special .45 ACP Government, and a Smith & Wesson Model 19 in .357 Magnum with a short 2 1/2-inch barrel.

have been recovered in undamaged condition, I find that the lube often strays in the groove around part of the bullet and is thrown off for part of the circumference. If the bullet throws the lube out of half of this big groove and keeps the rest, the bullet will be out of balance. This simply can't help your gun's long-range accuracy.

The lube groove arrangement that I find best is to use several shallow, rounded grooves. I know this is in direct contrast to the accepted Keith school of thought, but it works. I think it is especially important to get lube near the bullet's base. This is where the bore friction is greatest. None of this is new news. If you look at the lead bullets fired at about 1,400 fps out of the *Schuetzen* rifles, making half-minute groups at 200 yards, you will see lots of little grease grooves.

In addition to the general shape of the bullet's nose, the crimp grooves should be placed so that much of the bullet will be *out* of the case. This not only increases the effective capacity of the cartridge case, but puts the full-diameter bearing surface of the bullet out in the cylinder throat. The net effect of this is to have the bullet centered in the throat instead of randomly lying in the bottom

of the chamber. In short, our bullet is looking down the barrel when we pull the trigger, and it has a better chance of being accurate. If you have several kinds of handguns of the same caliber, you will find that the cylinders are different lengths. The addition of two or more crimp grooves (on one bullet) gives you a choice of overall length of the loaded rounds. With this arrangement you can use the same bullet in different guns.

While we are reorganizing our bullet thinking, we might as well take another look at the gas check. These little metal cups, fitted to the base of special bullets, are not the bad guys. I will admit that under most handgun shooting conditions they aren't necessary, but under difficult conditions they make the bullet more forgiving. If you are shooting heavy loads in hot weather, they can substantially re-

duce leading and improve accuracy. They make the bullet base tougher and offer a more perfect seal against the hot powder gases. Under normal conditions a gas check will lower, *not increase*, the chamber pressure of a given load.

In addition to testing chamber pressure, I have tried to compare the most important qualities of the SWC with those of the LBT flat nose bullets. I made my best effort at a scientific look at the bullets by studying the .44 Magnum in detail loaded with 250-grain bullets. I shot the shapes in .32, .357, .44, .45, .475, and .500 calibers with similar results.

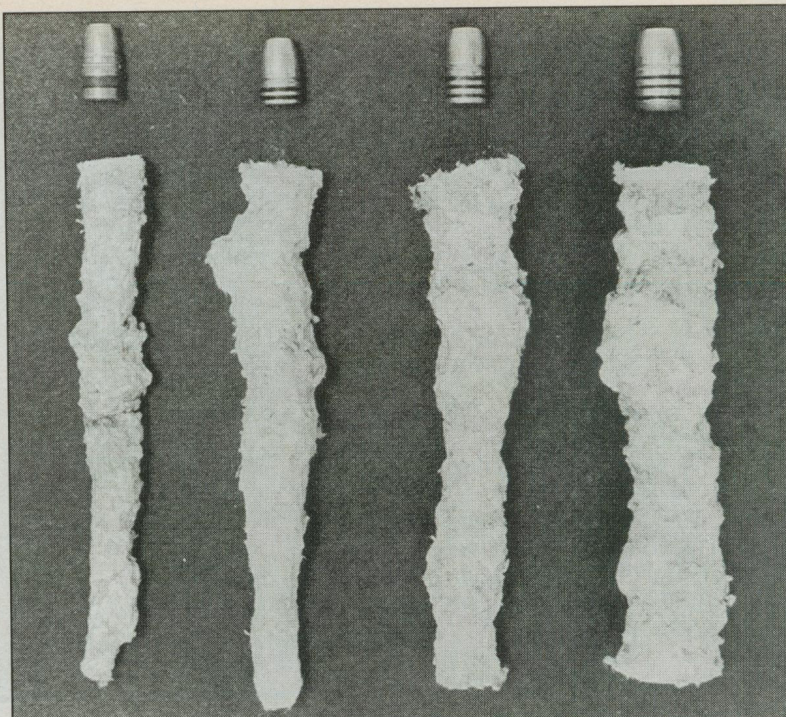
Initially, I had some pressure work done. I loaded 3 different 250-grain bullets with identical components—powder, primer and case. The bullets were Elmer's-exact-design 250-grain Keith,



Gas checks, fitted to the base of cast bullets, are not the harmful appendages we were once told, and in many cases make a good bullet better.



Pressure tests were made using the three bullets seen above, which include from left to right a truncated radius, truncated cone and SWC.



Plaster casts of wound channels made in wet newspaper are six inches in length, beginning at a depth of two inches and ending at a total penetration of 8 inches. New truncated shapes performed well.

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the LBT flat nose with plain base, and the same LBT bullet, except gas check-style, fitted with a Hornady check. The important bullet variables between the Keith and LBT bullets were lube grooves, percentage of the bullet in front of the crimp groove, and the gas check.

In summary, the Keith bullet gave the highest velocity but at the *highest chamber pressure*. In fact, the Keith went about 3.5 percent faster at the expense of almost a 13 percent increase in chamber pressure. The gas check bullet gave the lowest velocity but at a considerable reduction in pressure. After some more ballistic laboratory work has been completed and published, you should be able to safely equal the Keith velocities at lower pressures. **WARNING: Even though you are using the new bullet shapes, do not exceed maximum loads published in the reloading manuals. Any increases over listed maximums can be dangerous with any bullet!**

Satisfied that the pressures were more than acceptable, I shot the bullets side by side for accuracy. I loaded the Keith and LBT bullets to the identical velocity, 1,400 fps. I used a new Ruger Super Redhawk scoped with a 4X Burreis handgun scope. This is one of the most accurate handguns I have ever fired, capable of consistently producing groups under 2 inches at 50 yards. At the end of hundreds of rounds of shooting, the average LBT group was smaller by about 1/4 inch.

I tried the same thing with 310-grain Keith and LBT bullets in my superaccurate Freedom Arms .45 Colt. Here the LBT bullet's accuracy margin was even better, occasionally printing 5 shots under an inch at 50 yards, while the Keith bullets averaged almost an inch larger than the LBTs.

I also wanted to look at long-range accuracy and trajectory. Again using the 250-grain .44s loaded to identical velocity, I zeroed the Ruger at 50 yards. Then I shot at 200 yards, with alternating rounds of Keith and LBT bullets in the cylinder. After 10 rounds of each bullet, I had a 200-yard group about 20 inches wide and 6 inches high. I was shooting in a puffy wind and did not make any allowances for that, thus the horizontal spread. The sharp Keith holes were evenly mixed with the rounded LBT holes in the paper. At 200 yards there isn't any trajectory difference that I can measure.

When I mention the sharp full-caliber holes in the paper in contrast to the rounded holes of the flat nose bullet, I think we are looking at the reason for another semi-wadcutters myth. That is the one that says the sharp-shouldered bullet is a better game bullet because it cuts a full-caliber hole in the hide. In fact, any handgun bullet makes an entrance hole in skin that is the size of the flat nose or meplat on the front of the bullet. I know they look different on paper, but if you shoot game you find the entrance hole of the .44 Keith bullet is about .38 caliber, the size of the flat on the Keith bullet's nose.

In the pictures you can see the holes I shot in fresh beef hide. Again I used the

250 Keith .44 and the LBT flat nose. The meplats on the two bullets are virtually identical and so are the entrance holes in real animal hide. If you want a bigger entrance hole, you use a bigger meplat by going to the larger bores or a bullet shape like the LBT WFN (wide flat nose) that simply offers a broader nose and more slap when it lands.

You will find similar results after the bullet is inside the critter, too. Again, the full-diameter sharp shoulder of the semi-wadcutters does not do the work the nose flat does. You can see the photo of the plaster casts made of the permanent wound channels left in wet paper. The Keith bullet with the smallest nose flat makes the smallest channel, while an increase to a WFN shape makes a considerably larger wound with a .44 caliber bullet, and the big .500 Linebaugh flat point really starts to get after it. The reason "why" is even more apparent after another test.

I made up gelatin blocks with a handful of sand mixed in. (Makes a great tooth-shining dessert when you are finished.) I painted bullets with black paint and fired them into the sanded gelatin, catching them in soft rags and foam

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.44 MAGNUM PRESSURE/VELOCITY COMPARISON

BULLET: 250-grain	VELOCITY fps	PRESSURE (C.U.P.)
Keith plain base	1,528	39,650
LBT plain base	1,504	36,400
LBT with Hornady gas check	1,473	34,600

All loads used identical charges of Hodgdon H110 powder, Federal cases and Federal #155 primers. Fired in 10-inch, nonvented pressure barrel.

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downrange to avoid further damage to the bullets. After passing through the 8 inches of sanded gelatin, the paint still remained on the Keith shoulders, while the nose flats were sanded bright. The same was true with flat point shapes; only the nose flats were polished by the sand. I made this test at both high (1,400 fps) and very low (600 fps) velocities. The results are almost the same at both velocity extremes. As a bullet is "flying" through soft tissue, the nose makes contact while the sides of the bullet are in a semi-vacuum. Of course, the Keith shoulder does contact bone in some cases, but bone damage in animals hit with both bullet shapes is so similar I doubt if any real difference in performance could be proven in the field.

In addition to the "serious" bullets, there are also some "fun" bullets like the LBT "Quiet Bullet." These bullets are designed for plinking without recoil, taking small game, and even indoor practice with the big-bore handguns. Their shape is like a thread spool with a nose. The quiet bullets don't use conventional lubrication; instead their entire surface is coated with one of the "dip" or "wipe-on" lubes (Rooster Jacket, Corbin Dip Lube, LBT tumble lube, etc.). The bullets are designed to have minimum bore contact and friction so that they can be shot with very small charges of fast powder. They are seated in un-sized cases, by hand if you wish. I carry a few of the "quiet" rounds for thumping rabbits or squirrels, a useful plan where I don't want to disturb big game with noise or blow up the little critters with horsepower.

OK, it's fair to ask what I've proved. I think the new bullet shapes can equal the semi-wadcutter on almost every count. Where I have talked about performance on game, I refer only to solid or nonexpanding bullets. Terminal performance can be altered for better and worse if the bullets are soft enough to expand with either bullet shape. My own experience has shown me that the new truncated shapes with better lube grooves are less apt to lead the bores, will penetrate deeper, and can be driven faster than the SWCs. Using the LBT shapes, you can have a bullet that is the same length as a Keith but considerably heavier. This is a real plus where you want maximum weight in any given caliber for hunting. If nothing else, the new shapes are more versatile, lending themselves to changes in meplat diameters and different load lengths. I've used the flat-point shapes in paper competition and now use them almost exclusively in the hunting fields, as well as carrying them in my "security blankets." I thought you might like an honest look at the alternative, too.

