

In my opinion, the performance of jacketed bullets in handguns is suspect at best. With the exception of some autos, every handgun I have fired did its best work with a cast bullet. The one thing that normal cast bullets don't do very well is expand, but with the addition of some special casting techniques, you can make expanding handgun bullets that will outperform anything with a jacket on it.

The bullets I am talking about are a combination of a pure lead (or very soft) front and a very hard shank or base portion. Their performance can best be compared to the RWS H-Mantel or

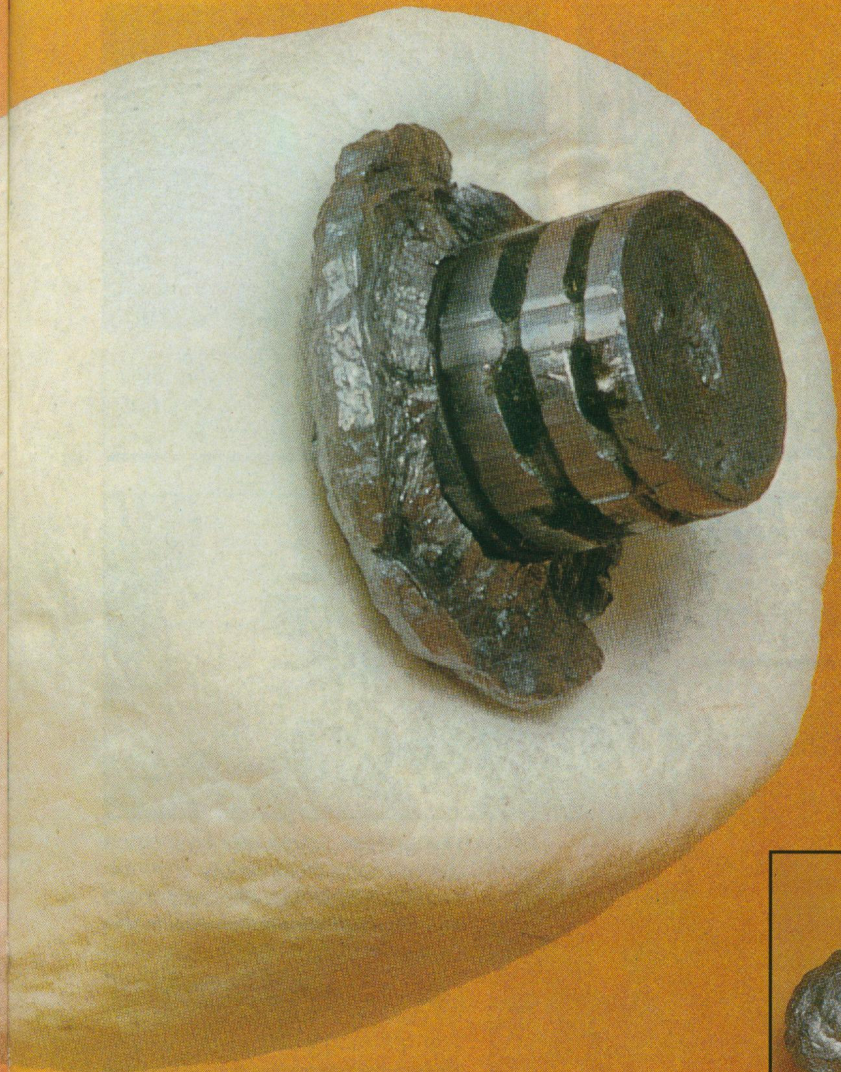
Nosler Partition rifle bullets. Both of these bullets have qualities that encourage rapid and violent expansion of their noses (even at relatively low velocities) combined with deep penetration by their bases. They act like softs and solids in one bullet. They are some of the best game bullets ever made. The exciting part is that within its horsepower limits, I can make a handgun bullet do the same thing as an exceptional rifle bullet.

The negative side is that soft nose handgun bullets are a minor pain in the neck to make. If you're looking for bullets to shoot by the thousand, they aren't for

STOPPING POWER SECRET: **CAST SOFT NOSE BULLETS**

It's surprisingly easy to cast your own soft nose handgun





you. If, on the other hand, you want ultimate performance on game up to elk size, this is it.

The construction of the bullets is very simple and quite variable. You make them in ordinary bullet

“Paper accuracy is fine, but the soft noses really shine when they land on meat.”

moulds, any bullet mould...the ones you are using right now. Even though this work is directed at handgun bullets, the same technology can be used in rifles, utilizing harder nose metals as velocity increases. My favorite recipe is to make the front one-third to one-half of the bullet's length out of pure lead and the

The pure lead noses of these bullets expand readily on contact with soft targets, but the hard alloy bases retain their shape for penetration. Jacketed soft nose handgun bullets can stop when they hit bones, but the hard bases of these cast slugs punch right through, often leaving behind a “donut” of nose metal (right).



bullets for better performance on game.

By Ross Seyfried

This “before and after” sampling of soft nose bullets in .45 and .32 caliber shows how the noses expand, yet the bases hold together.

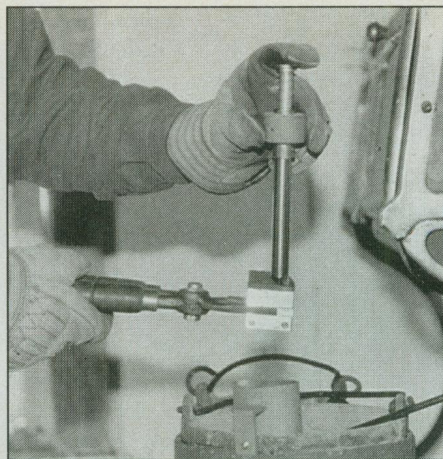


CAST SOFT NOSE BULLETS

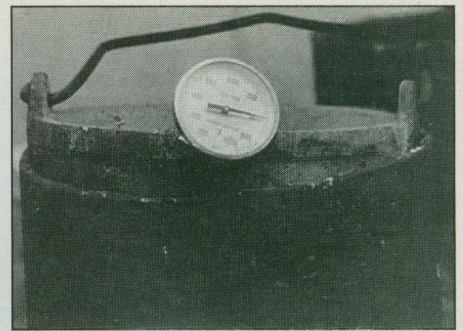
remainder out of wheel weights. You can use more or less soft lead in the nose and other metals to form the base, tailoring the bullets to your requirements. To make the soft nose bullets, you put soft lead in the mould first and then fill the mould with the base metal. With the correct technique, the two metals fuse together, forming a welded joint, but they do not mix.

There are four different methods that you can use to get the same end result. The first is the LBT Soft Nose Caster. This is a self-contained electric lead melting pot that meters a precise amount of soft metal into the mould's nose. The Soft Nose Casters are a special modification of the small Lee pots. They work like ordinary bottom-pour casting pots, except the lead is released by dropping the handle rather than lifting it. This dropping of a counterweight is what meters the doses of soft metal for the bullet noses.

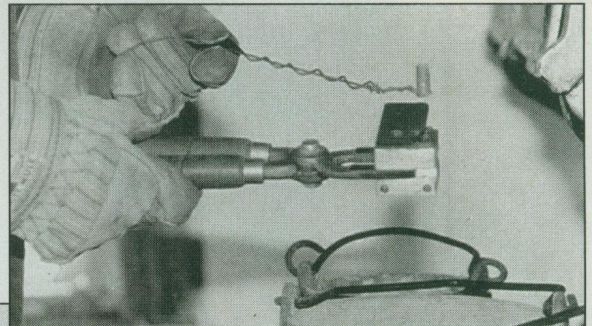
The LBT Soft Nose Caster is the best method I have seen for making soft nose bullets. Unfortunately, they are not currently in production. They were dropped due to insufficient sales, probably be-



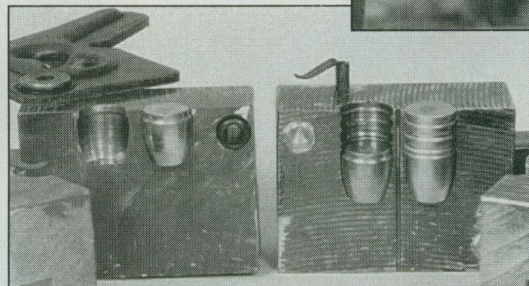
The Trammco Metering Lead Ladle (above) dispenses a precise amount of soft lead for the bullet nose, ensuring uniformity. Alloy for the base is then poured directly in.



Soft nose casting works best at a temperature of 800 degrees Fahrenheit or higher. The mould must be kept hot so the lead will flow into the nose.



The author often uses mini ladles made from empty cartridge cases to measure lead.



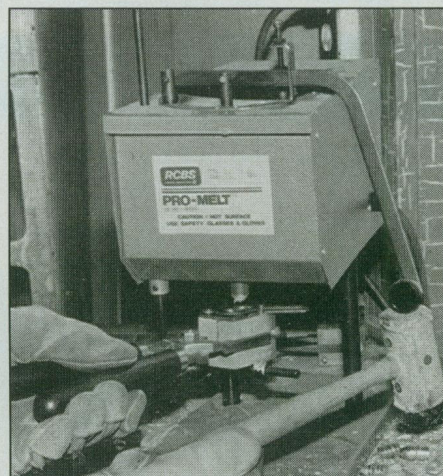
Left: LBT makes a set of moulds for casting noses separately. The resulting bullets work well.



Nose sections cast using standard moulds are not as perfect as noses from the LBT mould (second from left), but accuracy is good.

cause no one knew what they were. The cost is \$90. If you want one, write LBT. If LBT sees enough interest in the machine, they might make another run, but for now you have several "Plan B's."

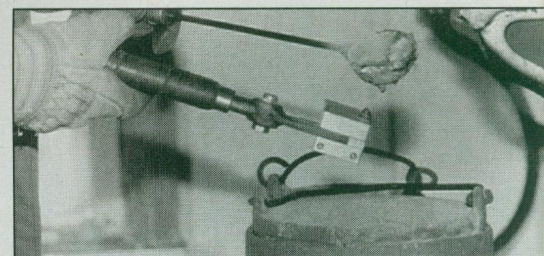
The second method is to use a special two-part mould. One mould has cavities cut that make only the front of a bullet, from nose to crimp groove. You make these "bullets" with pure lead and then later, in a second operation, put the pre-moulded noses in a regular mould. To make the finished bullet, you put your noses in the mould using gloved hands or tweezers (so you don't get burned) and close the mould. With the sprue plate still open, you use the largest hardwood dowel that will fit in the mould and push the soft nose down hard. This actually upsets the soft nose, perfectly filling the cavity. After you set the noses, you close the sprue plate and fill the cavities with the harder metal. With this method



Once the soft nose metal has been poured, the mould is then filled to the top with the base metal. The RCBS Pro-Melt bottom-pour furnace works well.

and all other methods of soft nose casting, heat is your friend. The metals and moulds must be hot—not ordinary casting temperature, but very hot. I normally cast bullets at around 750°F, but for soft noses I run the metals at 850° or more. The extra heat allows the metals to weld together and also causes the soft metal to flow and fill the cavity better.

My next soft nose system requires the least special equipment, but also makes bullets that are "less pretty" on the average. However, the bullets do work very well despite their visual flaws. Almost all of the bullets shot in this story, as well as sample recovered bullets, were made in the following way. These bullets were



An old-fashioned lead ladle can also be used to pour the base metal. Heavy gloves and eye protection should be worn throughout the casting process.

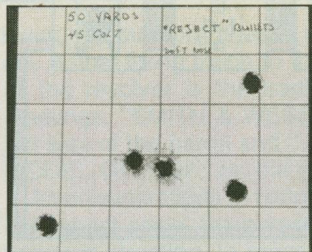


Dropping the hot bullets directly from the mould into a bucket of water will heat-treat the bases for extra hardness.

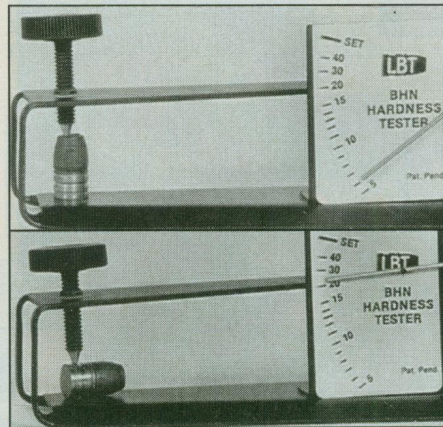
produced by using little "dippers" to pour the soft lead into the nose of an ordinary mould. I make the dippers from pistol cartridge cases, with baling wire handles. All you have to do is to select a case of the appropriate size and twist some wire into its rim cut to make a handle. I have found that 9mm and .38 Super cases are a good balance of length and diameter for making .41-.45 caliber bullets. A .45 auto case works pretty well for the big .475 and .500 bullets. You need a pistol case that will hold as much or more lead than you need to form the soft nose portion of your bullet in one dip. The only way to be sure is to set up and try your dippers, pouring the nose portion of the bullet only. Pour a nose and look at this "bullet." If you have too much "nose," you can file the case down, and if there is too little, you will have to use a larger dipper.

You can calculate a good approximation of the size case required with water. Start by cutting off the nose of an existing bullet and weighing the nose portion. If, for example, you need 100 grains of lead, you will need a dipper that holds roughly 8.8 grains of water. (Lead is 11.34 times as heavy as water, so to get the weight of water divide the weight of lead needed by 11.34.) In actual practice, your dipper won't be completely full of lead, so count on needing about $\frac{1}{16}$ of an inch more case length than your calculations show.

When you have your dipper right, you



Target above, shot using imperfect "reject" bullets in a .45 Colt Casull, still shows acceptable accuracy. Target at right was shot using the same gun and better bullets cast in the LBT soft nose bullet mould.



The LBT hardness tester shows the difference in hardness of the base and nose of a typical bullet cast by the author. The nose is pure lead.

can begin making bullets in earnest. You need two lead pots, one for the soft nose material and the other for the hard base metal. When the metals are at the right temperature, preheat the mould and sprue plate by alternately dipping a corner of each into the hot lead. It's also a good idea to flux the metal more regularly than normal; this keeps the metal clean and makes it flow a little better. If the lead starts to stick to your dipper, a touch of the fluxing wax on the dipper will help.

Even if you have a multiple-cavity mould, you will get the best results if you fill one cavity at a time. Dip the soft lead and pour it in the mould, holding the top of the mould level so that the lead goes straight to the nose. If your sprue plate isn't hot enough, the lead will harden on

the plate instead of running in the cavity. When this happens, dip the plate in the lead again or pour a steady stream of lead over the surface to bring it up to temperature. After you have the nose metal in one cavity, fill it with hard metal, using your regular ladle or bottom-pour casting furnace. You use regular bullet casting procedure to fill the cavities with hard metal. At this point, nothing differs from making regular bullets, except the temperature and the time needed for the sprues to harden.

When the sprue hardens, open the mould and check the results. If the two metals (nose and base) have mixed, you poured in the base metal a little too quickly. Normally, about 5 to 10 seconds' lapse between nose pouring and filling the base is right. If the bullet is badly wrinkled or there is a large gap between soft nose and base, you waited too long, the metals and moulds weren't hot enough, or both. I said this isn't an easy mass-production project, so don't be intimidated by the first bad bullets. Also, don't worry if the bullets aren't the perfection that you are used to seeing fall out of your moulds. The amount of soft nose will vary some and you will almost always see some wrinkle or dividing line between the base and nose; but, as you will see later, it doesn't matter!

The last method of making soft noses is easier than dippers or two-part moulds, but more difficult than the LBT soft nose caster. The Trammco Metering Lead Ladle is like a heavy-duty hypodermic syringe that injects a measured amount of soft lead into the bullet nose, taking the place of the dippers. This is an adjustable, precision tool that does a very good job. In use, you stand the Trammco tool in soft lead that is at least 2 inches deep. With gloved hands, you lift it vertically and move it over your mould, put the tip in the depression in your mould's sprue plate and push the

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The 3 cast soft nose slugs at left gave better expansion than jacketed soft nose bullets in wet newspaper.

SOFT NOSE BULLETS

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plunger. This deposits a metered amount of lead in the nose. One set screw lets you adjust the amount of lead from a few grains to almost 150.

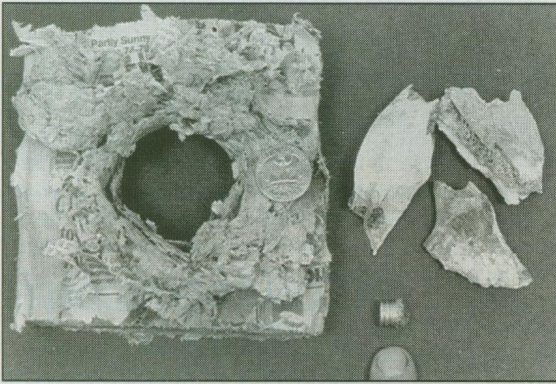
With the soft lead in the mould, add the base metal as we did with the other methods and move on to the next bullet. Trammco also has a little "2nd Alloy Reservoir" that is a steel cup that fits inside a Lee Production Pot (and others with modification). This reservoir holds the soft lead and the ladle, actually allowing you to make soft nose bullets with only one pot and heat source. The ladle costs \$19.95 and the reservoir is \$12.95.

If you will drop your soft nose bullets in water, you can make first-rate hunting bullets without much fuss. Because you are making bullets at high temperatures, dropping the bullets from the mould into a 5-gallon bucket of water will "heat-treat" the bases so that they are very hard and tough. You can also use conventional "oven" heat-treating to harden

Also, if you remelt a bad bullet, put it in your hard lead pot. The addition of a little pure lead won't hurt this metal appreciably, but the antimony from the base will surely ruin your soft nose soup.

The very soft noses pose some minor problems when you put the bullets through your lubri-sizer. If you push the bullets through base first in the conventional manner, the noses may deform badly. If you have problems, size the bullets by pushing them into the die nose first. Then after you have the hard bases down to size, run the bullets through again base first and apply the lube in the usual way.

If you make the bullets like I do, with pure lead all the way back to the crimp groove, some pure lead will contact the bore. If you have leading problems (which I normally don't), you can usually cure them by coating the entire bullet surface with one of the film bullet lubricants usually used on swaged lead bullets. LBT tumble lube works well, but my favorite is a water-based liquid called Rooster Jacket. This is a liquid that you can wipe on with your fingers that har-



Above: This cast SN bullet expanded to leave a large "wound channel" in wet paper, but the hard base still smashed through a large bone. Bullet lube prevents barrel leading problems (R).



the bases and still leave the noses "dead soft." (This assumes you are using wheel weights, Lawrence Magnum Alloy or some other very similar lead/tin/antimony metal to make the bullet's base). This water drop method will give you a Brinell hardness of 22 to 28, a hardness similar to pure linotype. If you are heat-treating or water quenching the bullets to harden the bases, you must be sure that there is no antimony in the soft nose metal or it will harden too. I like to use pure lead with about 1 to 2 percent tin (tin improves casting qualities) for the soft noses. The lead/tin mix or pure lead does not respond to heat-treating and therefore remains soft even while the bases get rock hard.

Following this line of thought, you have to be careful not to contaminate your pure lead supply with antimony while you are casting. Be sure that the sprues made of the hard base metal don't find their way into your soft lead.

dens to a hard wax coating. A coat of this juice on the nose and shoulder after sizing and lubrication makes the bullets perform perfectly in my guns.

I don't want to belabor the point of accuracy, because these are pure hunting and personal defense bullets, but a few words about their potential are probably needed. I will say in general that the soft nose bullet, if made and lubricated with reasonable care, will shoot almost as accurately in any given gun as its "solid" counterpart from the same mould. As a test, I purposely picked five visually imperfect bullets from a batch of soft nose 325-grain .45s. These had differing amounts of lead in their soft noses, large visible wrinkles between soft and hard lead, and one had the dividing line between soft/hard running at a considerable angle to the axis of the bullet. I loaded them with a full-power (1,500 fps) load for my Freedom Arms .45 Colt and shot them through the scoped revolver

at 50 yards. These bad bullets shot a 5-inch group, with four shots in 3 inches. Another lot of visually perfect bullets from the same batch produced a five-shot group that measured 3 inches. The point is that the worst bullets gave me accuracy that I would hunt with.

When we are talking about hunting bullets, expansion is only one of two very important criteria. Game bullets must penetrate deep enough to damage the vitals if they are going to be effective. Remember that the bullet that expands into a nice big mushroom and stops under the skin on the far side when it hits a deer behind the shoulders will probably fail miserably if it hits the shoulder bones. It will also underpenetrate on any kind of raking shot. In fact, I think a bullet hasn't penetrated deep enough unless it leaves an exit wound on all kinds of hits. It's the exit wound that leaves a blood trail, and normally you will need to follow game at least a short distance after a hit with a handgun. With an exit, you have two holes to leak, and the exit is far more apt to leave a trail than the entrance.

The problems that I outlined are a constant concern to high powered riflemen. Those of us who hunt with relatively puny handguns need to make an equally careful study of our bullets. Because the handgun's power is relatively low, adequate penetration on animals larger than deer is often only possible with nonexpanding bullets. When jacketed bullets are made light and fragile enough to expand reliably, it is almost impossible to drive them through heavy bones, or even through a lot of heavy muscle. Most flatten out like a fan blade and come to a screeching halt if the going gets tough. The soft nose cast bullets have their pure lead noses, which are softer and therefore more apt to expand than any jacketed bullet (pure lead and jacket combined).

The magic part is that the cast soft nose offers the "big mushroom," but with a built-in "safety valve." When the soft nose cast bullet hits soft tissue, it expands into a delightful mushroom. When it encounters heavier resistance (bones, tendons or tough skin), the soft mushroom rips away, leaving the hard base to penetrate like a solid. The end result is a bullet that expands rapidly and violently, but still has the potential to smash heavy bones and exit.

The first game animal I shot with a soft nose made a lasting impression that is reinforced every time I use them. I first tried the bullets in 1984. At that time, I was using 350-grain Keith bullets in my Linebaugh .45 Colt, normally cast out of linotype. When I left for Africa that season, I took a few bullets that were pure lead back to the crimp groove, with lino bases. The first shot was at a big boar warthog. These fellows are what you can best call *solid* and tough. They feel more like oak than pork and respond to bullets

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very poorly. A big pig will usually take a hit from a heavy rifle, run some and then expire. When I shot them with solid .45 Colt bullets, they usually ran quite a lot and expired.

My first trial with the soft nose was at a big old tusker, trotting three-quarters away at about 40 yards. When I dropped the hammer, this piggy simply went "lights out" and didn't kick. Flattening a big warthog on the spot is rare enough to be remarkable. When I examined him, there was a .45 hole behind the left shoulder and a .45 (exit) hole on the point of the right shoulder, with the bullet obviously passing under the spine. Inside, things were entirely different. After entering, the bullet caught a rib and the back of the shoulder bone, throwing fragments that injured the spine. Piggy's clockwork was puree, laced with chunks of lead and bone chips. The right shoulder bone was smashed and the bullet had bounced across Africa after it finished with the pig. If I hadn't pulled the trigger on the Colt, I would have bet that the damage that I saw came from a .375 H&H, driving a 300-grain Nosler!

Typical performance from a soft nose, cast with half its length pure lead and a base of metal that is 22 to 24 BHN (Brinell Hardness), is simply spectacular...by any standards. If they hit only soft tissue at velocities from 1,000 fps to 1,500 fps, the bullets normally expand to about two diameters and retain 95 to 99 percent of their original weight. Bullets that slam into heavy bones, while they still have plenty of speed, act like small grenades. The noses explode violently, throwing chunks of lead and bone in all directions. Right here is where ordinary bullets stop, but the soft nose has the base, about 60 percent of the original weight, held in reserve. This short "solid" slams right through the mess and will usually continue on a straight course for another 18 inches or more (depending on weight, velocity, caliber and what they hit).

One of the reasons that I like to make the soft portion of the bullet long is that the solid base that is left after a major encounter is only about one diameter in length. This short bullet tends to stay nose-on and not tumble, where a longer bullet with its nose shape destroyed will almost certainly tumble. Tumbling, in my opinion, is a very negative action. Tumbling bullets usually follow a very erratic course, with minimal penetration. The recipe for "tumble prevention" is to either use bullets that don't deform at all or to make sure that the expanded or otherwise damaged bullet is as wide as it is long.

When a soft nose hits and expands normally, the soft lead is usually fully mushroomed, with the hard base almost exposed in the center of the mushroom. If the expanded bullet hits something


hard like a rib or shoulder blade on the "far side," the base punches right through the "mushroom" and normally exits. These bullets often leave a lead doughnut under the skin.

The last addition to a soft nose is to drill a hollow point in the nose. Using .44 or .45 calibers for example, a hollow made with a $\frac{3}{16}$ -inch bit, drilled to the bottom of the soft lead and beveled with your case deburring tool, will expand at 600 fps or less. The hollow points can be advantageous on deer-sized game anytime the impact velocity is less than 1,200 fps. Here there is some real potential for personal defense bullets. I'm not in favor of the bullets that expand and refuse to penetrate, but there is a case for keeping penetration to a minimum. I do think that you must have enough penetration to get through heavy clothes and to the "light switch" on a really big varmint. The hollow point soft nose gets really nasty even at .45 ACP speeds, creating enough damage to get the attention of most. It will shoot through a heavy coat or window glass and drive



The amount of pure lead in the nose can be varied according to the individual shooter's needs.

deep enough to do its job, but at the lower velocities the easily expanded hollow points don't have unreasonable penetration for defensive use.

I've used these soft nose bullets in everything from the .32 Mag to the giant .500 Linebaugh with uniform success. I also load the same .45 Colt bullets, with a paper patch, in my black powder express rifles. Running at the express rifle velocities of 1,700 fps to 2,000 fps, the bullets are still reliable, accurate and deadly. If you're hunting critters that don't need the penetration of solids, these soft noses may be the best handgun bullets available. 

DIRECTORY

LBT

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Dept. GA, Box 357
Cornville, AZ 86325

ROOSTER LABORATORIES

(Rooster Jacket and other lubricants)
Dept. GA, Box 19514
Kansas City, MO 64141

TRAMMCO

(Metering Lead Ladle, Second Alloy Reservoir)
Dept. GA, Box 1258
Bellflower, CA 90706