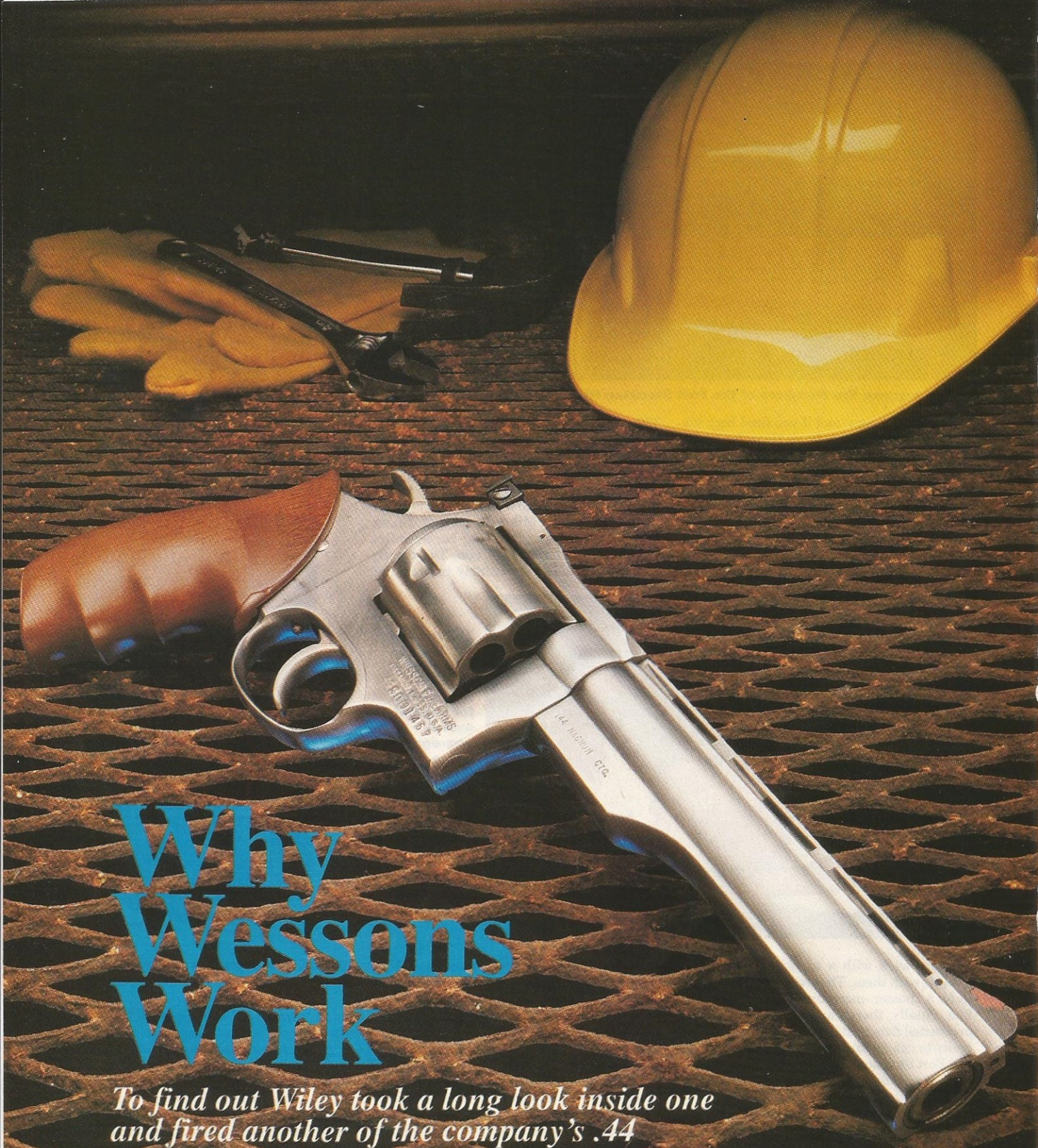


Why Wessons Work

To find out Wiley took a long look inside one and fired another of the company's .44 Magnums. He found there's more than one reason these guns shoot so accurately.

By Wiley Clapp

Photo by Kevin May

WHEN DAN WESSON left Smith & Wesson to produce fine revolvers of his own, he carried with him the fierce pride and grim determination that marked the pioneering efforts of his ancestor, D.B. Wesson. His first gun was a funny-looking medium-sized .357 Magnum with several new and different features. Tradition-minded shooters of the early '70s seemed interested in the new revolver, but they didn't make the gun an instant best seller. As a few years passed and the Dan Wesson line expanded and improved, shooters began to notice something different about the new Dan Wesson wheelguns. They worked.

And when I say "worked," that means both in terms of function and in terms of accuracy. When IHMSA shooting took the country by storm in the late 1970s, Dan Wesson revolvers were developed to the point where they quickly moved to the top of the heap as the most common revolver in the winner's circle. After a short period of less than perfect quality control when the company was in other hands, the original Dan Wesson company is back in the hands of the Wesson family. It is now Wesson Firearms Co. of Palmer, Massachusetts. Today's Wessons are the best of them all–capable of accuracy that isn't that far from that of the superb single-shot handguns. Better yet, there are some new developments in Dan Wessons that will make them even more accurate. We'll look into a couple of them in a moment, but we first need to check out the basic Dan Wesson system with a view to understanding why they perform so well.

Reasons Number More Than One

One of the original selling points for the first Dan Wesson revolver back in 1970 was the interchangeable barrel feature. Americans have always liked versatile guns that could perform in more than one role, so the idea of a six-shot revolver with a more or less quick change barrel feature drew a lot of shooter interest. I say "more or less" because the barrel change was a long way from a snap-on and snap-off system. The change required special tools and a feeler gauge, plus it took a couple of minutes to perform. It was, however, a simple procedure which allowed a shooter to swap his four-inch holster barrel for an eight-inch long range barrel or a 2½-inch snubbie. Over the years that the Dan Wessons have been offered barrel systems have been built in quite a variety of lengths, from as little as 2½ inches to as much as 15. Not surprisingly, the medium lengths have been the most popular.

But the apparently desirable idea of an interchangeable barrel system–one revolver for many roles–turned out to have an appeal which was secondary to another effect of the method used to swap barrels. Simply stated, Dan Wesson revolvers turned out to be exceptionally accurate wheelguns. This drew a lot of interest from the IHMSA ramslammers. And when the Dan Wesson company offered the first big-frame guns in .44 and .41 Magnum, followed by special long-frame, long-cylinder guns in .357 and .445 SuperMag, they pretty much had it all.

Aside from the basic high quality of the Dan Wesson revolver there are two other major factors which contribute heavily to the match-winning accuracy of the Wesson revolver system.

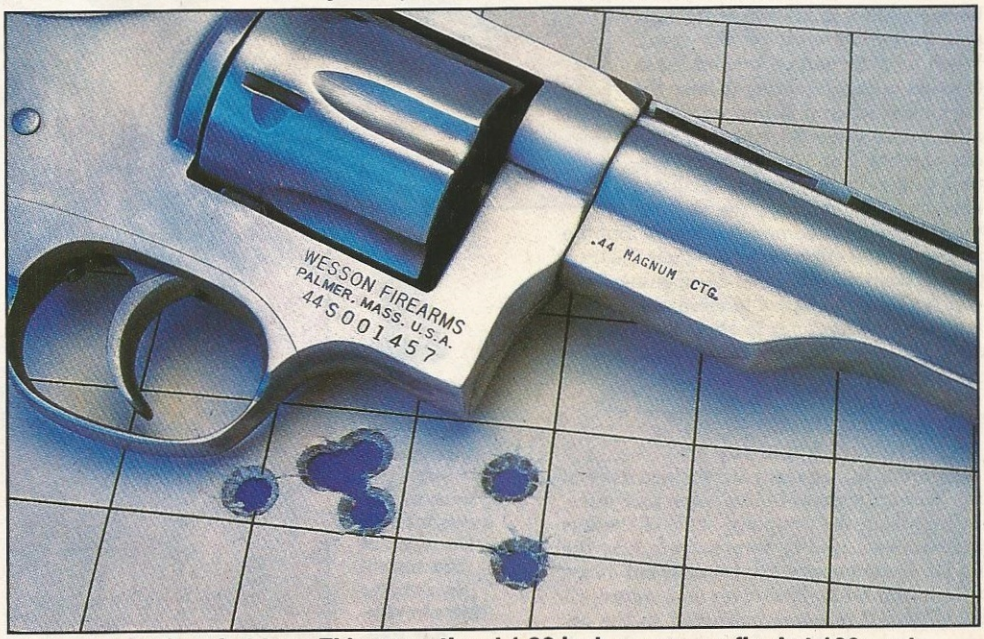
"The beauty of the Wesson revolver system and its interchangeable barrels is that they allow an avid revolver man to tinker endlessly with his handloads, wringing the last bit of performance from a load."

First, look at the means of suspending the cylinder in the frame of the revolver. Like most double-action/single-action wheelguns, the Wesson cylinder is mounted on a crane which swings out to the left. *Unlike* most other revolvers of this type, the Wesson cylinder latch locks the cylinder and crane closed at the rear as well as at the junction of the frame and cylinder. There's a spring-loaded latch on the crane itself, a latch which the shooter thumbs downward to lower a lug engaged in the frame of the revolver. This action enables the shooter to swing out the cylinder for removal of fired cases and reloading. Best of all, it means the cylinder is positively fixed in place in relation to the frame at the instant of firing.

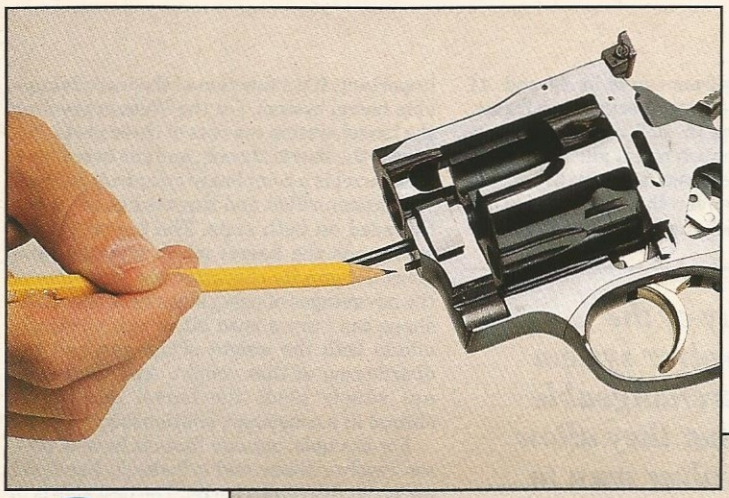
The second factor is probably even more important: It's a function of the interchangeable barrel system. On the Wesson revolver the barrel system consists of three parts–the barrel, the barrel shroud, and the barrel nut. The barrel is a completely cylindrical section of precision-rifled and throated barrel stock threaded on both ends. The barrel shroud surrounds the barrel when installed and gives the gun its characteristic look. One of the advantages of using shrouds is that their shape can vary a good bit, which positively affects both the weight of the gun and the distribution of that weight. And the barrel nut simply holds the barrel and barrel shroud in a consistent relationship.

For example, assume that we have a Wesson revolver frame and cylinder in hand and are about to install a barrel. The first step is to pick up the barrel and screw it into the frame. As the barrel goes nearly all the way in, the shooter places a shim gauge (provided with the gun) against the front face of the cylinder and closes the action. He then screws the barrel down against the gauge, tight enough to get a fairly snug fit. The gauge is typically about .006 inch thick and the shooter has just set the critical barrel/cylinder gap to this dimension. With the barrel in place, the next step is to slide the barrel shroud over the barrel. On the front face of the revolver frame there's a short steel pin projecting forward. This pin engages a matching recess in the underside of the shroud and keeps the shroud from turning. Now the shooter places the muzzle nut on the end of the barrel and uses the combination wrench (also provided with the gun) to tighten the nut firmly in place. Barrel installation is complete.

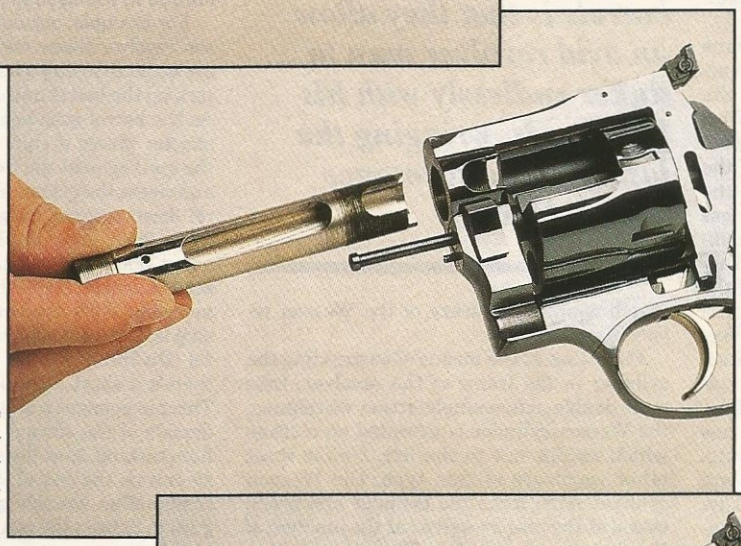
At this point we need to look at some of the subtleties of what we have done. Screwing a barrel into the frame with no tools means the male threads on the barrel and female threads in the frame have a certain tolerance between them; if they didn't, you would have to use a wrench to get them together. But the other end of the barrel also has male threads, threads that mate with those on the



It's hard to believe but true: This exceptional 1.96-inch group was fired at 100 yards in the 1:14 twist barrel. The ammo was John Koppel's Pro Load 300-grain JSP.



1 **Using a specially built Wesson .44 cutaway revolver, Stan Waugh shows how to install a barrel. Here he points his pencil at the barrel shroud pin mounted in the frame.**



2 **Wesson barrels are threaded on both ends; one end is about to go into the opening in the front face of the frame . . .**

inner surface of the barrel nut. The rearmost edge of the muzzle nut contacts a shoulder inside the barrel shroud when the nut is tightened down. In effect, the tightening of the muzzle nut has two functions: First it locks the barrel shroud in place, pushing the shroud back into firm contact with the front face of the frame; second it pulls the barrel forward against the frame threads, effectively placing a certain amount of tension on the barrel. Actually that barrel is in traction–held at the rear and pulled forward at the front. When a doctor puts a broken leg in traction he is attempting to keep the various fractured bones immobile and in the same relationship with one another. The Wesson barrel system, originally designed to facilitate barrel swapping, keeps the parts of the system in the same relationship. But the real beneficial effect of the design is the traction–a positive vibration-dampening force which allows the barrel to vibrate in a similar pattern from shot to shot. It works extremely well, and the downrange performance of the gun sure shows it.

3 **. . . and be screwed into the frame.**

4 **Here Stan uses a shim-type gauge between the face of the cylinder and the rear of the barrel to set the barrel/cylinder gap.**

Inside And Outside Looks Reveal Accuracy

In order to demonstrate the accuracy of the Wesson system I obtained a pair of revolvers from the company. One of them is the cutaway used to demonstrate how the barrel system works. Elaborately cut away, the nonfunctional revolver has appropriately placed recesses machined in the action area as well as the cylinder, barrel/frame junction, and muzzle nut/barrel shroud areas. The other revolver is a normal Wesson .44 Magnum with six-inch barrel and standard ventilated rib barrel shroud–a shooter. I used this revolver for accuracy evaluation in the machine rest.

In past shooting sessions I have confirmed to my satisfaction that a properly adjusted Wesson usually delivers a bit better accuracy than other makers' .44 Magnums. I attribute this to the quality of the barrel in part, with the system we've just described taking a bigger piece of the credit. To see how accurate this particular revolver was I went to the range with a random sampling of five different commercially loaded .44 Magnum loads. We were able to confirm the accuracy of the gun by shooting 12-shot groups (twice around the cylinder) with the gun mounted in a Ransom Rest. Although five loads is far less of a sampling than would be ideal, the average group size was 1.77 inches, which is excellent.

But there is more to the story. Wessons are certainly different in their ability to swap barrel lengths, but you also need to consider their ability to change barrels in terms of barrel characteristics. For this story Wesson loaned me a special eight-inch experimental barrel which was different from the norm in two particulars. It was rifled to a fast pitch of 1:14 (one turn in 14 inches of barrel length) and had a special forcing cone and throat. In theory the faster twist should favor the heavier bullets which are becoming more popular with today's handgunners. Repeating the shoot with the same five loads (two of which

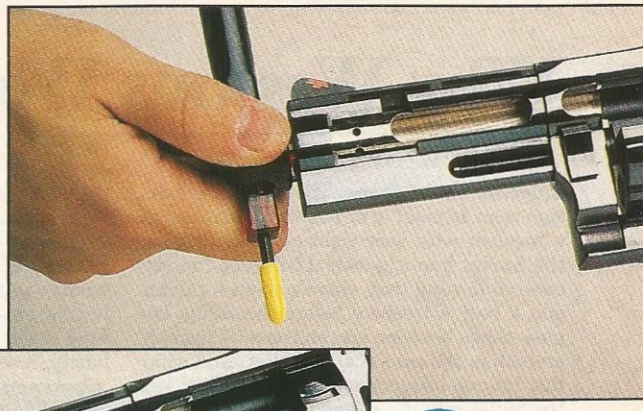
were 300 grainers) we got an average group size of 1.83 inches when using the 1:14 twist barrel. That is an inconclusive difference in view of the limited number of loads used but remains plainly excellent in accuracy.

"Think Like A Bullet"

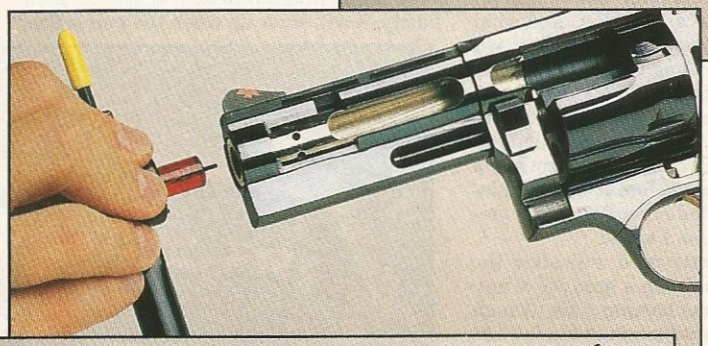
A moment ago I mentioned the special forcing cone and throat in the 1:14 barrel. At the IHMSA Internationals in Fort Stockton, Texas, I had a conversation with Seth Wesson, fifth generation member of the gunmaking Wesson family and president of Wesson Firearms. Seth explained the special barrel the company was playing with by encouraging me to "think like a bullet."

Think like a bullet? How do you do that? Let's see, a .44 Magnum bullet sits serene and unperturbed, all shiny and menacing in its metallic finery. But, even though it's securely crimped in a cartridge case, trouble lurks in the charge of powder and primer beneath it. Peace and quiet come to an abrupt end when someone places our bullet in a revolver and smacks the primer with the firing pin. Then all hell breaks loose. The primer gets that powder charge burning and before you can say "Hot Damn!" the bullet's butt is getting burned and pushed hard by the erupting volcano on which it's sitting. In short order the bullet is looking for relief and can only overcome the restraining case mouth crimp and go forward into the cylinder throat. Here its base swages outwards a bit under the heat and pressure of a hellfire-and-brimstone charge of burning powder. It's running–downright sprinting–to get away from that fire when it jumps across a cylinder gap of a few thousandths of a inch and slams into the barrel's forcing cone. The shortest distance to wherever that fire is not burning is straight ahead, and that's where our tortured bullet would like to go–and as quickly as possible, thank you very much. But it's all hung up in this tapered forcing cone thing, which is causing the bullet's swollen base to swage back down to something like its original size. To top it all off, the bullet is encountering something gun designers call "rifling" and which our tormented slug sees as further tribulation. Now, for pete's sake, the bullet has to spin in order to get away from the fire. Finally, after the spinning motion is perfected and the running speed at its peak, the bullet roars out of the muzzle–literally breaks free into the clear blue skies of freedom and sails peacefully off in the distance. Peacefully that is, until it slams into something hard, like a 54-pound steel cutout of a ram that some dude stuck up in its path. Life is pure hell for a .44 Magnum bullet.

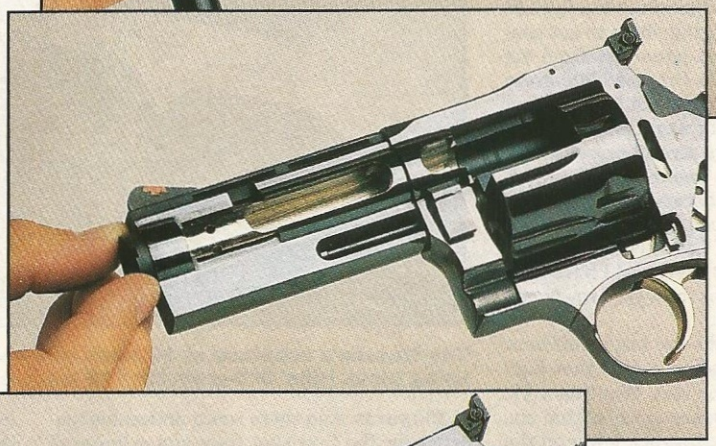
But this is what Seth Wesson was talking about–the severe and seemingly contradictory succession of forces that are at work when a bullet is fired in one of his revolvers. The heat and pressure we have just facetiously described are what make a gun work. But if we want the most in stability–and therefore accuracy–we need to keep that poor bullet's base from being bent, burned, or



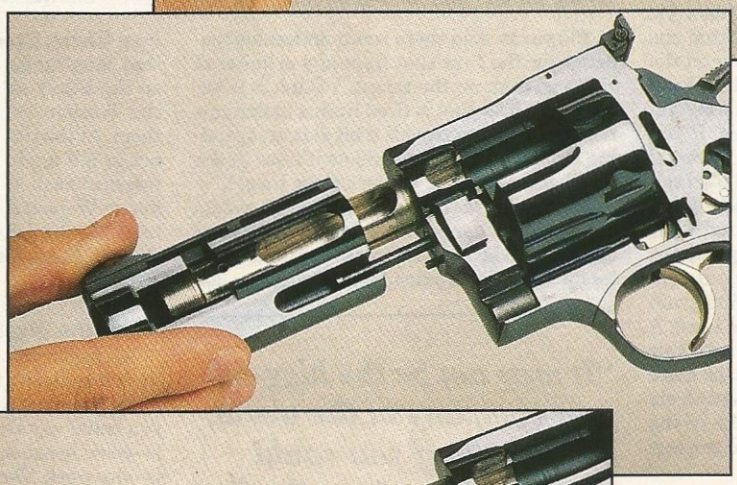
9 **Stan tightens the muzzle nut with the combination tool, pushing the barrel shroud firmly back against the frame and pulling the barrel forward inside the shroud. And that's all there is to it!**



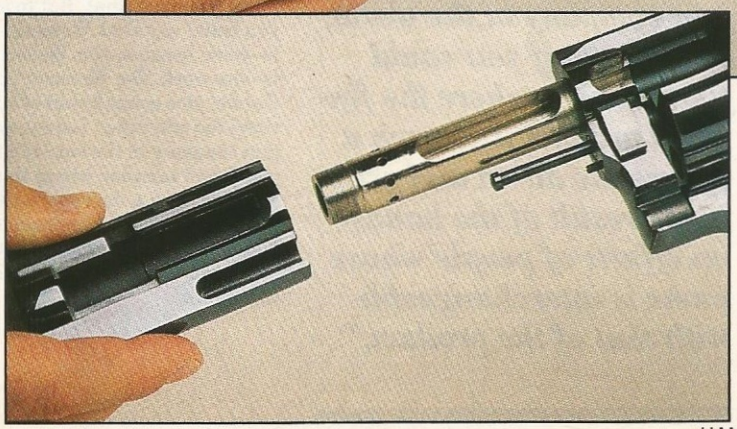
8 **This combination tool which comes with the revolver has a built-in wrench shaped to fit the muzzle nut and barrel.**



7 **. . . and is held in place with the muzzle nut, threaded to match the front end of the barrel.**



6 **The heavy ventilated-rib shroud slides over the barrel and fits flush with the frame . . .**



5 **The barrel shroud fits over the barrel and gives the Wesson its distinctive look; the barrel shroud pin in the frame keeps it from turning.**

Why Wessons Work

squeezed out of shape. The new barrel design is an attempt to do just that. Installed in a revolver with very tight cylinder throats, the barrel has a gentle 11-degree forcing cone. Following that, there's about a caliber and a half of freebore before the rifling begins–that's between six- and seven-tenths of an inch in the case of a .44 bullet. And what this unique contour is designed to do is get the bullet into the rifling with minimal distortion of its base and shank: It comes out of the cartridge case into a tight cylinder throat, goes across a minimal cylinder gap and into a gentle forcing cone, then has a chance to settle down before it begins spinning. If you were a bullet, wouldn't you prefer it that way? I think I would.

And I have a pretty good indication the system works. After firing a good bit of ammunition at 25 yards, partner Stan Waugh and I moved the target frame out to a full 100 yards. After a few ranging shots to get centered up on the target paper we fired six rounds of John Koppel's Pro Load 300-grain JSP ammo and literally did not believe what happened. Three shots were touching and the group, horizontally strung across a couple of squares on the one-inch grid target, measured 1.96 inches between the centers of the most widely spaced shots. Under two inches at 100 yards? I have been doing a lot of long-range shooting lately and I have seen some impressive groups from good revolvers, but this is exceptional.

Six more rounds of the Pro Load stuff went into 3.16 inches, including a first shot high and well away from the rest. Wanting a 12-shot group, I fired six more on top of that six. The second cluster of six struck lower on the target, measuring 2.76 inches. The placement of those shots blew hell out of my 12-shot group–it measured 4.65 inches. If you ruled out the high first shot, the 11-round group would be under four inches–3.97. I can live with 11 under four inches–heck, I can live with 12 in 4.65. Naturally we fired other kinds of ammo from our dwindling supply, hoping that every group would equal that magical first one–and Black Hills 300-grain HP/XTP load was right with the Pro Load. A high first shot caused the first six with this ammo to group into 5.44 inches, but six more went into a 2.91-inch group. The second six were well centered within the limits of the first, so the 12-shot group measurement was that of the first six–5.44 inches.

Accuracy declined sharply when we went to bullets of lighter weight, even some which enjoy superb performance at shorter ranges. I believe the reason for this lies with the special 1:14 twist used in the barrel. It's axiomatic in ballistics that when you use more bullet you need more twist. And .44-caliber bullets as heavy as 300 grains are very long and require a fast twist to fully stabilize. Also, a heavy bullet fired in this barrel does not fully settle down until a certain amount of time has passed and distance is covered. That's why the 25-yard group is only a little smaller than the 100-yard group. At 25 yards the bullet is still yawing a bit, but by the time it makes it all the way to the 100-yard mark it's settled down and comfortably spinning. For several years I have been paying close attention to the performance and group patterning characteristics of different handguns fired in the Ransom Rest. If there is a peculiarity, it will show up when the gun is fired at 100 yards. And there was a noticeable tendency for the first shot from any cylinder of six to go high on the target. I think it is because the first shot is fired from a cooler barrel and therefore travels a bit slower, spending more time in the barrel as it rises under recoil and so strikes higher on the target.

The beauty of the Wesson revolver system and its interchangeable barrels is that they allow an avid revolver man to tinker endlessly with his handloads, wringing the last bit of performance from a load. I believe the 1:14 twist .44 Magnum barrel is the wave of the future in top-notch long-range shooting, particularly when used with heavier-than-average bullets. There are many suitable heavy .44 bullets on the market, including the Sierra 250-grain, Hornady 265-grain, Barnes 275-grain bullets and 300-grain slugs from Sierra, Speer, and Hornady. It is clear that long-range shooting demands a bullet on the heavy side, and the special barrel of the Wesson revolver gets the most from them. At the time this is written the barrel is not in full production, but if you have an interest in such a thing let the Wesson people know (Wesson Firearms, Maple Tree Industrial Center, Route 20, Wilbraham Rd., Palmer, MA 01069; phone: 413-267-4081).

The Wesson's accuracy at 25 yards was also excellent. This 12-shot group using Black Hills' 300-grain HP/XTP measured 1.28 inches centerspread.

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Wesson Family Makes Wessons Work

We began this discussion by promising an in-depth look at why Wessons work and we've given you that. But to a greater degree you could say that Wessons–revolvers, that is–work because the Wessons–people, that is–also work. The Wessons, Seth and his wife Carole, plus a small staff of employees are all there day after day. It may not be the biggest gun company in the world, but I doubt if you could find another where the finished product is to such a degree the direct and proximate result of the hands-on efforts of people whose name is interchangeable with that of the product. Wessons work because the Wessons work.