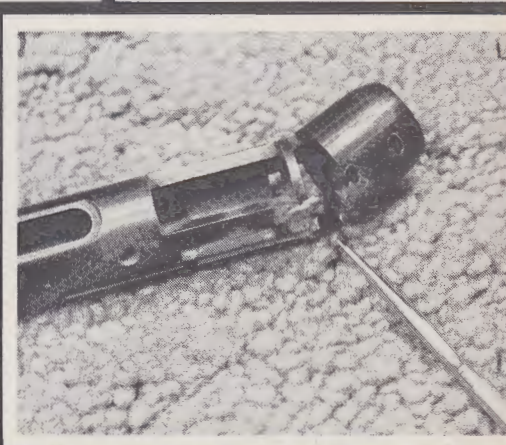
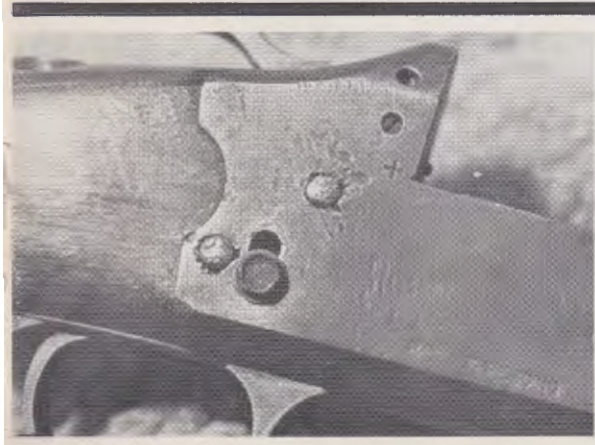
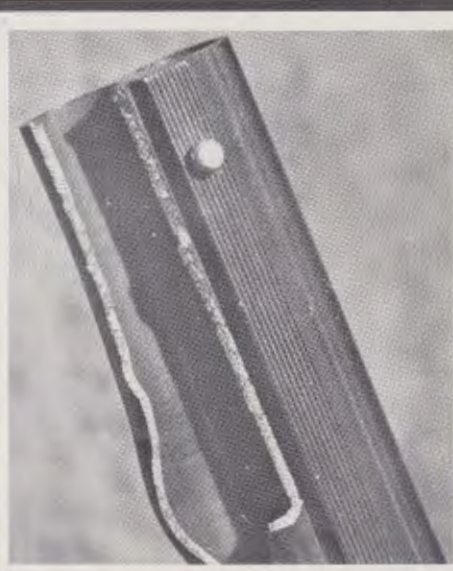
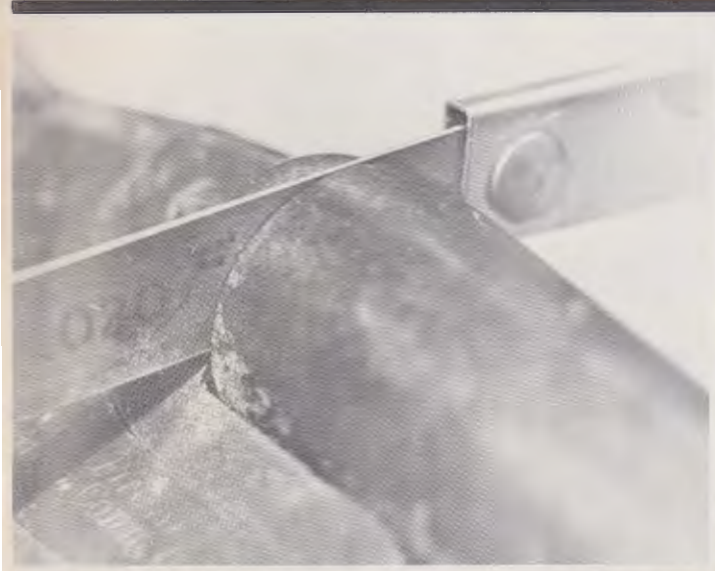


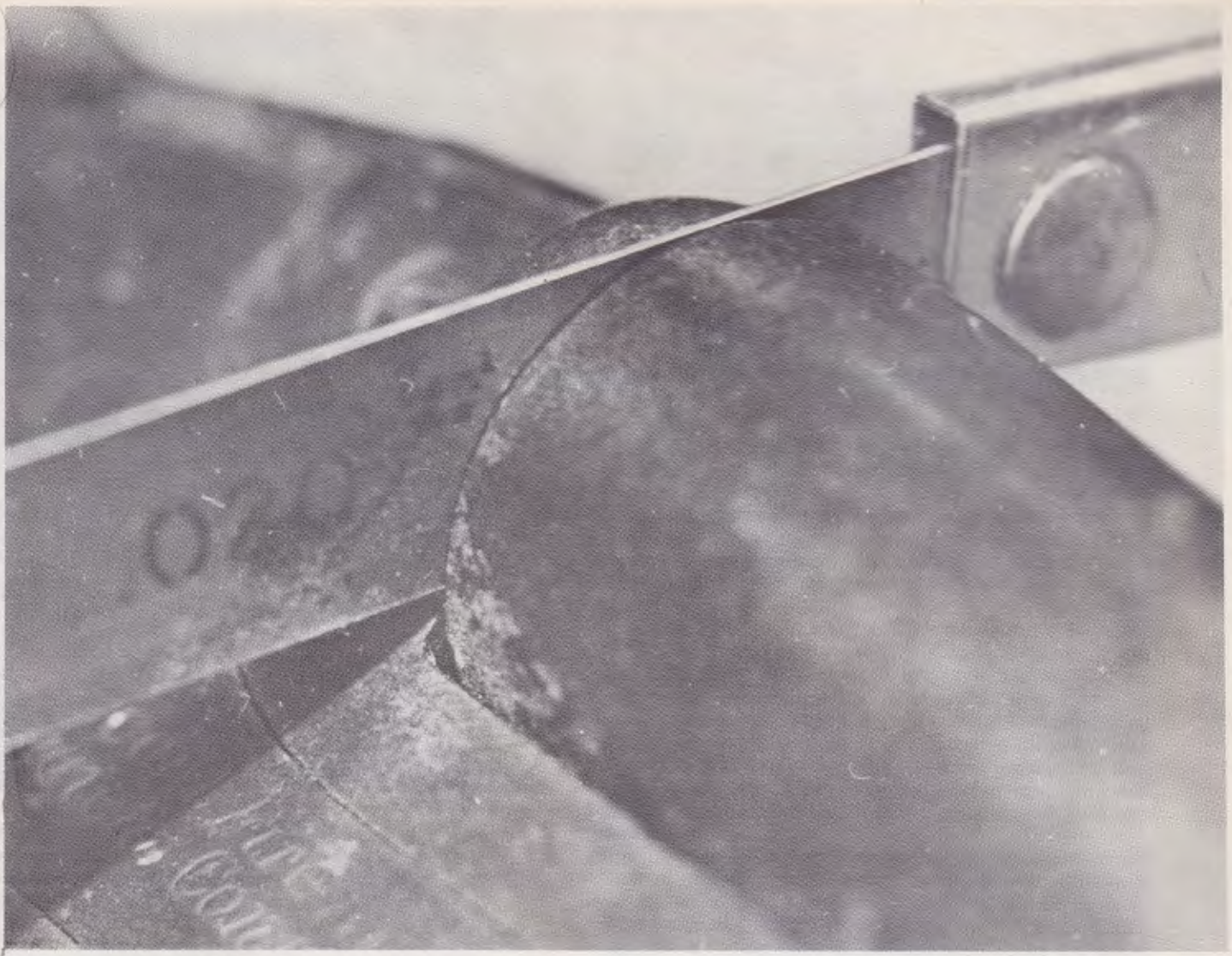
# Home Gunsmithing

# SAFETY

By Ralph T. Walker



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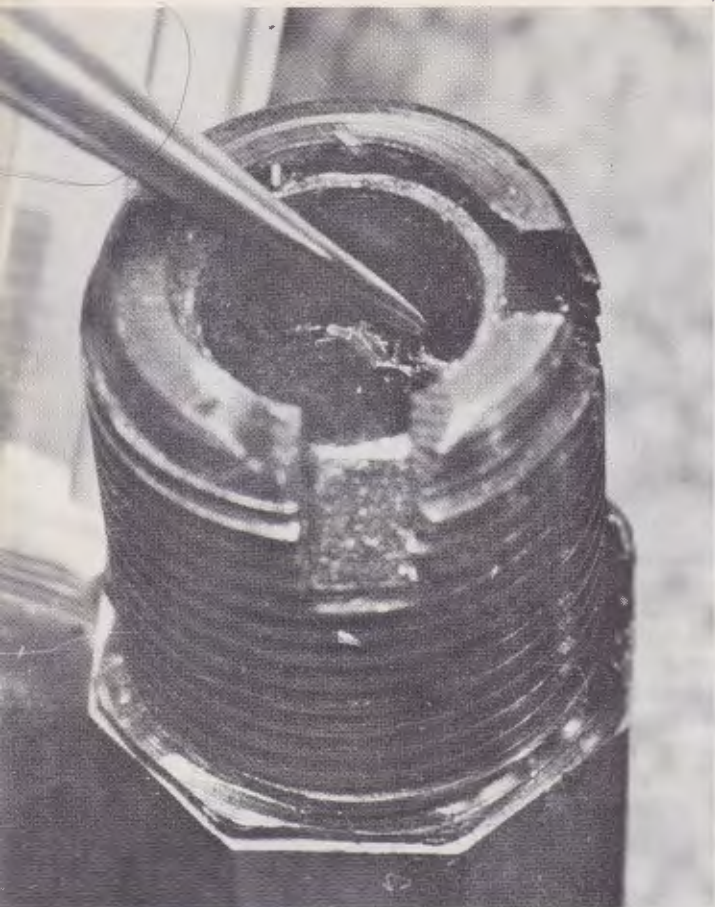
*This well built but inexpensive side/side double shotgun has been damaged by firing short magnum loads over a long period of time. The lower barrel lug has been battered, leaving about .020-inch of play between the barrel and the receiver. This gun could be restored for use with standard-power loads, but it's a project for a skilled gunsmith.*

# HOME GUNSMITHING SAFETY

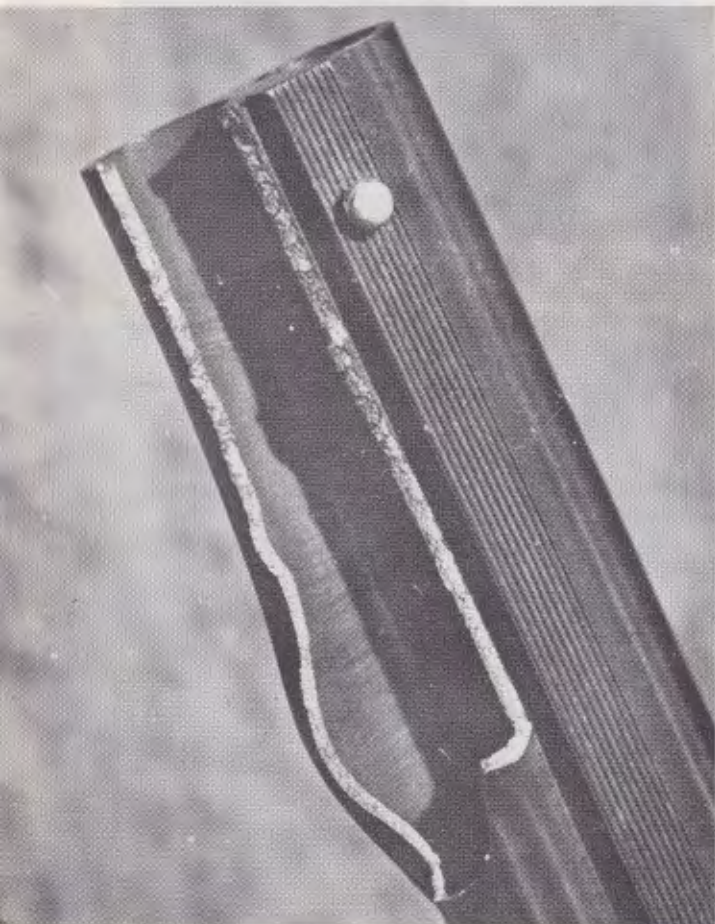
By Ralph T. Walker

*The owner had jammed a cleaning patch in the choke of this .410 double. Trying to drive it out only wedged it in more tightly. A knowledgeable gunsmith – professional or amateur – could have corrected this easily. The owner decided to try shooting it out, with the results shown here. Attempts to shoot obstructions from barrels invariably end in disaster, regardless if it's rifle, handgun or shotgun.*

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*Here, a case head had separated, leaving remainder stuck in the chamber. Normally a simple matter to correct, an ill-advised person tried to remove the brass by driving a screwdriver between the case and chamber, scoring deep gouges in the chamber wall and ruining it beyond repair.*



## Knowledge Is The Key To Any Do-It-Yourself Job Involving Firearms

PERHAPS NEVER BEFORE in the history of firearms has there been more interest in home gunsmithing than now. There are probably a couple of dozen reasons for their interest, such as more leisure time, an ever increasing sporting goods industry, mass produced guns versus a longing for the oldtime hand craftsmanship, et al. You name a reason and chances are that it is somehow a contributing factor.

GUN WORLD, like any other publication, tries to give its readers what they want and judging from the letters received, home gunsmithing is of prime interest. Add the other shooting publications, plus several recent books on home gunsmithing, including my own Hobby Gunsmithing Digest, and it all adds up to the fact that more data and information is available on the subject of gunsmithing than ever before. Only a couple of dozen years ago, you could count the books on the subject of gunsmithing on your toes and have a few left over.

The majority of home gunsmiths abide by the same rule that all professionals follow in that they limit their projects to those within their capabilities. This means both in knowledge and skill. The resulting project is a good, safe job and a certain sense of personal satisfaction and pride. This is as it should be, whatever the degree of ability and is really the whole purpose of home gunsmithing. Regrettably there is another side to the coin.

For some unexplained reason that has always been a mystery to me, there is a certain category of people who read directions, do research, or seek professional help only when something goes wrong! Until then, they plunge ahead like a bull in a china shop. They become involved in a gunsmithing project, break every safety rule in the book, then stand in front of a gunsmithing shop counter with the shattered remains in a paper bag and without a scratch on them ask, "What'cha think went wrong?" While the majority of would-be gunsmiths remain unscratched, many are not so lucky.

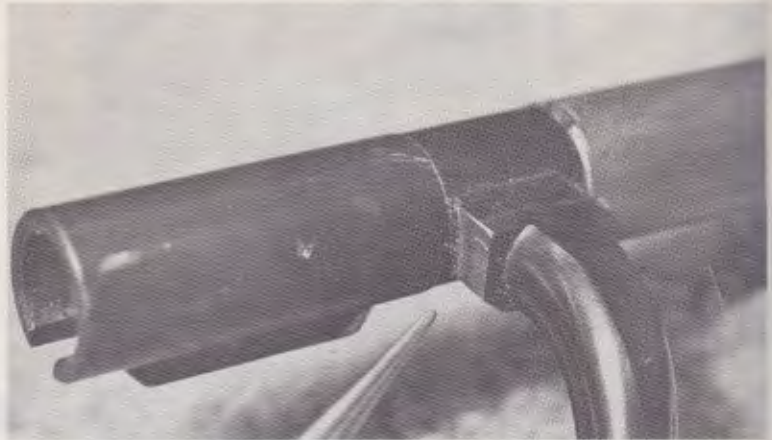
This is by no means intended to discourage home gunsmithing, but is an effort to encourage safe home gunsmithing. Twenty-five years ago, not one shooter in a thousand reloaded his own ammunition. Today, reloading has become an enjoyable part of firearms primarily due to shooting publications and the industry promoting a positive program of safe methods of reloading.

Safe home gunsmithing, like safe reloading, begins with one word — knowledge. Anyone involved in any form of technical work soon realizes that the more he learns, the more there is for him to learn. The top professional gunsmiths in the country are the most ardent readers you have ever met and constantly are seeking ways to improve not only their skill, but their knowledge as well. They simply learned a long time ago that knowledge and skill are inseparable. The beginning home gunsmith should adopt the same attitude and will find that gunsmithing is one of the most fascinating aspects of firearms. However, like

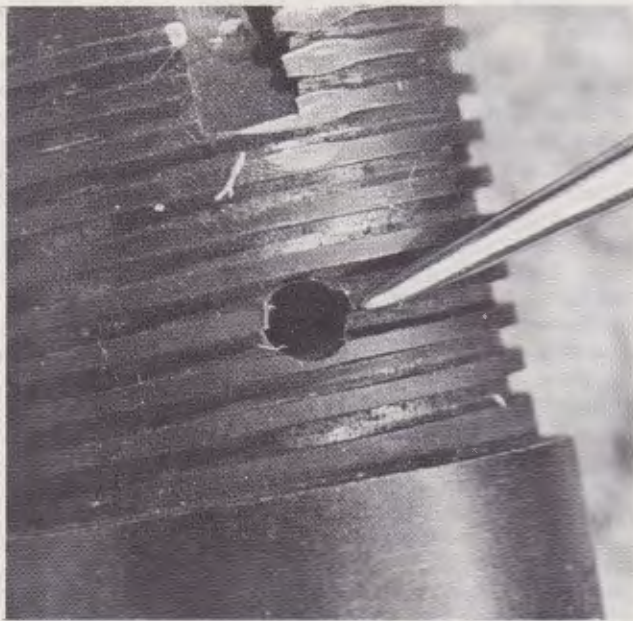
reloading, it must be approached with the proper amount of respect and the skill and craftsmanship will come naturally by the repeated application of acquired knowledge.

Too many home gunsmiths feel that their first project should be to build a custom rifle. The odds against success would require a computer! Again, the basic reason for this belief is a lack of understanding of exactly what is involved in such a project. The best example that comes to my mind is a young man who came to see me from a neighboring town. After viewing his attempt at a custom rifle, it was hard to keep a straight face and point out the mistakes without destroying his interest in gunsmithing.

Having acquired a nice clean Mauser Model 93 action, he had done a really first class job in cleaning up the usual roughness and the action was as slick as a hound dog's tooth. A lot of sweat had gone into all of that hand polishing. He should have sought the help of a professional gunsmith at this point. Instead, he ordered a premium grade commercial barrel in 7mm Remington magnum with the



*This .22LR rifle's owner decided to "make it work a bit smoother," so he started filing away on the rear surface of the bolt handle, which is the locking surface, as on most such rifles. Resulting excess headspace made it unsafe to fire.*



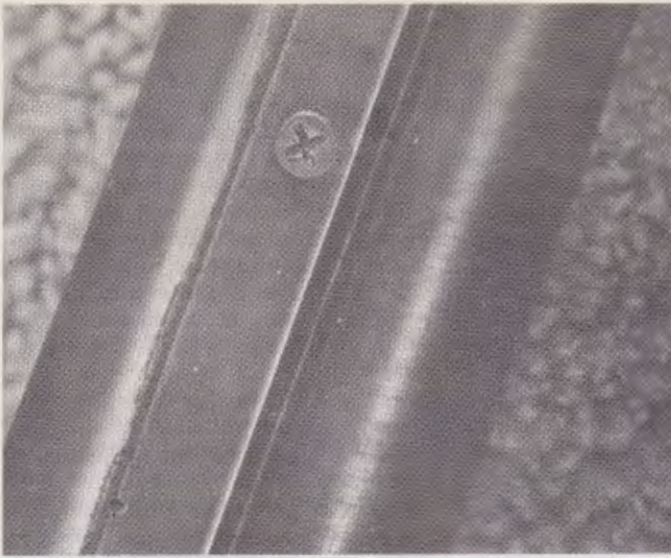
*Left, hole for sight mounting screw was drilled too deeply, clear into the chamber. Instead of replacing the barrel, an attempt was made to repair it by tapping and putting a long shank screw in place as a plug. Text tells what happened.*



*Another bit of gun-butchering: Regular, flat-head screw was replaced by a round-head that gouges hide off of the third finger of the shooting hand.*



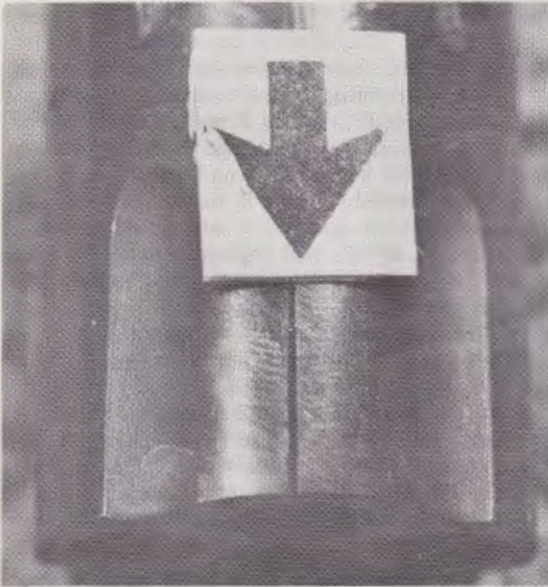
*An example of what happens when a "village welder" tries to braze the bottom lug back onto the barrel of a Savage .22/20-gauge over/under; barrels are damaged hopelessly. A skilled gunsmith could have saved this by silver-soldering.*



*A classic example of how not to do things: Loose rib had been tightened with a screw that nicked a barrel wall; it should have been corrected by soldering – except it was a Damascus barrel and should not have been fired with modern ammunition in the first place – owner brought it in to have the firing pins fixed. You can't count on such luck!*

barrel prethreaded and prechambered. Luckily, a mistake was made somewhere along the line and he ended up with a Model 98 Mauser barrel. The threads didn't fit, naturally, so a local mechanic did some fancy filing on the threads and succeeded in getting the barrel about halfway into the receiver before it jammed. Not to be stopped by something like jammed threads, he then applied a big crescent wrench to the action and a pipe wrench to the barrel. They created an embarrassing metal pretzel.

I finally convinced the young man that he should consider himself lucky that the mechanic goofed in his attempt. Filing the threads of a high-powered rifle barrel to make them fit an action for which they were not intended is a no-no of the first order. In addition, a 7mm Remington magnum on a Mauser Model 93 action is a quick way to collect on the double indemnity clause of your insurance policy. The butchered M-93/M-98 custom pretzel now hangs on his shop wall as a constant reminder to know what you are doing when you begin any gun project. He now confines his projects to those within his scope of knowledge and skill and is having a lot of fun with home gunsmithing.

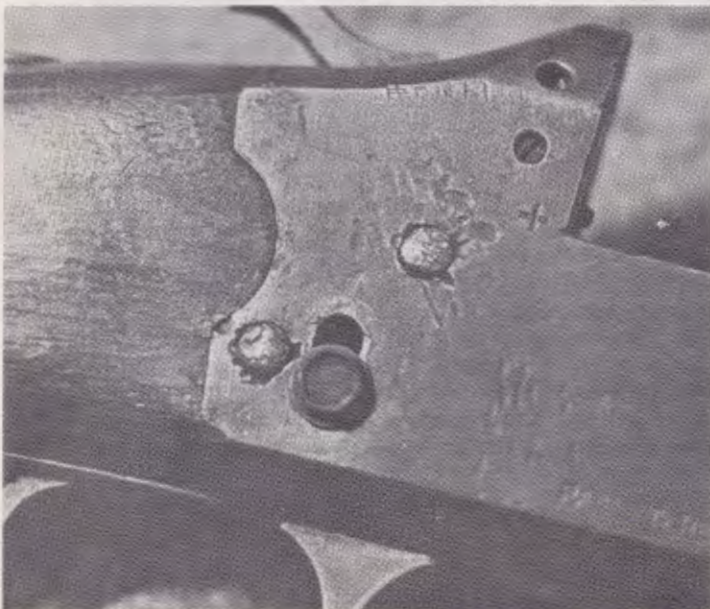


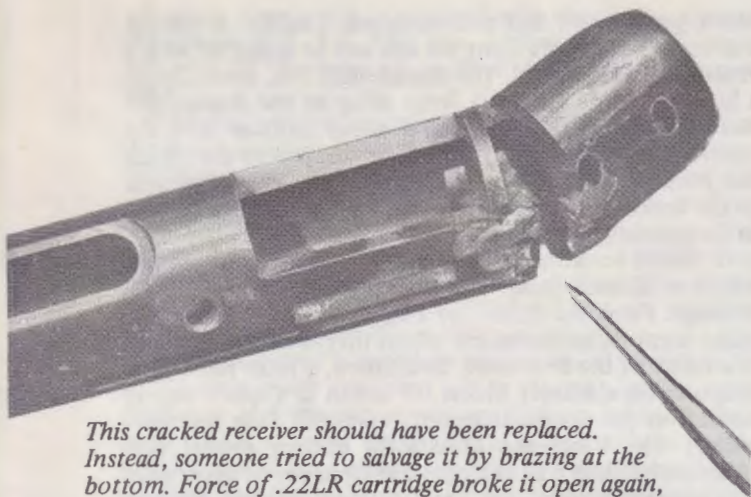
*A revolver chamber, originally .38 S&W caliber, that had been rebored to .38 Special and split by firing high pressure loads. It's remarkable the damage wasn't much worse. Lower left, more inept butchery, with a sheet metal screw to replace the barrel selector button. It damaged the inner part, requiring extensive replacement. Note battered pins.*

Prethreaded and prechambered barrels are, in most cases, perfectly safe provided the person doing the fitting is knowledgeable and has the correct gauges and tools at hand to do a safe job. Rebarreling, especially high-powered rifle barrels, should be the last step in the home gunsmith's training and only then under the direct supervision of a professional for the first few jobs. Breech pressure in terms of 40 to 50,000 pounds-per-square-inch is something to take seriously!

Installing something as simple as a new shotgun sight bead on the end of a barrel should require no safety precautions, right? Wrong! First there are three basic types of shotgun sights: the press fit, the soldered and the more common threaded type. The latter comes in three regular sizes, 3-48, 3-56, and 6-48. Select the wrong size thread in the number 3 size and you have a jammed sight, as you attempt to install it. Even choosing the correct size and getting it down snugly to prevent it from coming loose or being blown out is not the whole job.

Each year I see three or four shotgun barrels damaged beyond repair, because someone installed a front sight bead and forgot one simple check: to see if the threaded shank of the sight protrudes down into the bore of the barrel. When the shot charge hits this obstruction, the barrel usually splits, but it can be blown off completely just as if it were stuffed with mud. The correct procedure is to install the sight to full depth, then with a strong light shining in the bore, scribe a line on the threads where it is flush with the bore. Remove the sight, cut off the shank at the line and reinstall the sight in the barrel. Next, with a file or a polishing bob, smooth up the remaining shank until it is exactly flush with the contour of the inside of the barrel. The project is a simple one and perfectly safe once the correct procedure is known.





*This cracked receiver should have been replaced. Instead, someone tried to salvage it by brazing at the bottom. Force of .22LR cartridge broke it open again, doing even more damage. On a high-power rifle, result of such ill-advised "gunsmithing" would've been disaster!*



*Another "village welder" masterpiece: In brazing forend lug back on a high-powered rifle, he ruined the barrel. A competent gunsmith could have saved money for the owner.*

Shotguns are not the only firearms wherein correct sight installation is a must. For example, a gun store owner sent in a high-powered rifle with the complaint that every time his customer fired the gun he heard gas escaping. The rifle had been acquired as a trade-in and the gun shop owner rightfully wanted it checked at the first sign of trouble. A visual inspection of the chamber, the locking lugs and checking with headspace gauges revealed nothing wrong. The rifle then was fired in a method that prevented any possible injury. There was an unusual sound, so a second shot was fired. This time the front scope base went sailing off and one screw buried itself in an overhead plank. Luckily, the scope had been removed.

Sometime in the past, someone had drilled the rear sight screw hole too deep, passing through the receiver, through the barrel and into the chamber. What had occurred next was either stupidity or done deliberately to hide the mistake. The hole was tapped full-length and an extra-long

screw used to secure the scope base. The excess shank of the screw was cut off and the chamber carefully polished to make the screw end blend in with the chamber. How many times the rifle was fired after this butchering job is unknown, but if that final cartridge had been fired under normal circumstances with the scope attached, the results would not have been pretty. It is hard to believe that anyone would place the value of a replacement barrel over the safety of someone and any knowledgeable professional certainly would know that it was just a matter of time before that screw let go and released all of that breech pressure.

Ruptured cartridge cases are fairly rare these days, but they do happen occasionally, generally as a result of a hand-loader who cannot read directions. A professional gunsmith or a home gunsmith who has done his studying knows that such a case can be removed safely without damaging the chamber. The most recent case I saw resulted in someone attempting to use a sharp chisel or punch to cut the side of the remaining case and remove it from the chamber. He ended up damaging the chamber beyond repair.

Attempting to salvage a damaged part or component by welding or brazing is another common beginner's mistake, especially when the job is done by the local village welder with little or no knowledge of firearm safety requirements. It is possible for a trained professional gunsmith to weld or silver solder a part back together, but he must know how and when!

Nine times out of ten, the village welder's attempt results in the gun being damaged beyond repair or a job that is not safe to fire with a ten-foot string. The home gunsmith is far better off to order a replacement part or component whenever possible and attempt welding or silver soldering only when he knows how and when and if no replacement part is available. This is the same thing any good professional will do under the same circumstances. Given the choice, he always will replace a defective part with a new one rather than attempt a salvage operation. It is just simpler and safer.

Conversions of firearms from their original caliber to another caliber always should be done only after all of the facts are known and even then some generally accepted practices can lead to trouble. As an example, many Smith & Wesson revolvers that were chambered for the .38-200 British service round — more commonly called the .38 S&W — found their way back to these shores. Untold thousands were rechambered to .38 Special. In good condition and using standard factory ammunition, about all that happened was a bulged fired case, as the original chamber was larger at the rear than the .38 Special cartridge. However, with the recent advent of high performance .38 Special cartridges, I have seen several of these conversions develop split cylinders. It occurs more frequently in guns other than Smith & Wessons that went through this caliber change.

Many beginners, after reading ballistic charts, decide to convert their existing .308 or .30/06 to something a little hotter like the .300 Winchester magnum. At first glance it appears that all you need is a chambering reamer to get the job done. There are other things that quickly become apparent, such as bolt face alteration, feed problems and the all-important question of whether the action is strong enough for the conversion. Such work never should be contemplated until a professional gunsmith well versed in conversions is consulted.

The conversion of the regular .22 long rifle-chambered arms to the more powerful .22 Winchester magnum rimfire cartridge is another pet armchair project and too often a project put into actual practice. Again, many factors such as feeding, bore diameter, etc., must be considered, but most important of all, less than one gun in a hundred can be converted safely. Most .22 long rifle-chambered guns,

rifles or pistols, simply are not designed or built to withstand the more powerful cartridge and rely on soft materials. In the case of most rifles, only the rear of the bolt handle serves as a locking lug. Even if the gun survives the conversion, the target results generally are worse than the cheapest .22 Winchester magnum rimfire-chambered rifle built.

Shotguns do not attract quite as much attention but magnumitis sometimes gets into a home gunsmith's mind and he decides to rechamber his old reliable double barrel from a 12-gauge 2¾-inch to the more powerful three-inch magnum. Again, all you need is a reamer and, provided you survive the first rounds, the gun chambered for the shorter shell will be simply pounded apart in short order. If you doubt this, take a good look at a new gun chambered for the more powerful shell and you will note that the manufacturer has beefed up the action to withstand the more powerful shell. The same thing goes for the 20-gauge in a slightly lesser degree in most American-built guns. The light upland game 20 will start coming apart at the seams in less than two boxes of shells if converted to the three-inch magnum.

Rebuilding old guns is a fascinating part of home gunsmithing, but knowledge is an absolute must; not only knowledge of the original gun and what pressures it was designed to work under, but how to detect possible hidden flaws that can be a potential hazard. An old repair, a worn locking surface, or just plain loose parts — even if restored — would be of questionable safety. Every box of shotgun shells has a printed warning about damascus barrels, yet seldom does a month go by that someone doesn't come in

and want a malfunctioning part of such a gun repaired. You can explain about the danger of using such guns with modern ammunition until you turn blue in the face and most will continue shooting them. They haven't blown up yet, have they? No, but as a rule of thumb, it is not a matter of whether they blow but rather when. Correctly restored as a collector item, such guns can become a fascinating part of home gunsmithing, for few things give more pleasure than rescuing a fine old gun from the junk pile. Only accept the gun for what it is and what ammunition it was made to use and take into consideration how much deterioration has weakened its original strength.

Handling of tools generally is accepted as child's play by most beginners. Having seen a man accidentally run a stock chisel through the palm of his hand, I have a healthy respect for even the simplest of tools. Start daydreaming or disregard safety precautions with power equipment and you will end up with a damaged project or some interesting scars. Every tool in a home shop should be handled with respect. Proper use and maintenance of tools is part of the mark of a craftsman.

*For years, gun buffs and sportsmen have maintained a position that firearms are but mechanical devices with no minds of their own and that it is the misuse of firearms that creates problems. When properly and safely used, firearms provide a lot of pleasure to sportsmen, target shooters and just plain plinking gun buffs. Any sensible person will agree with this position, for other mechanical devices are often misused and create more problems in a month than firearms do in a year.*