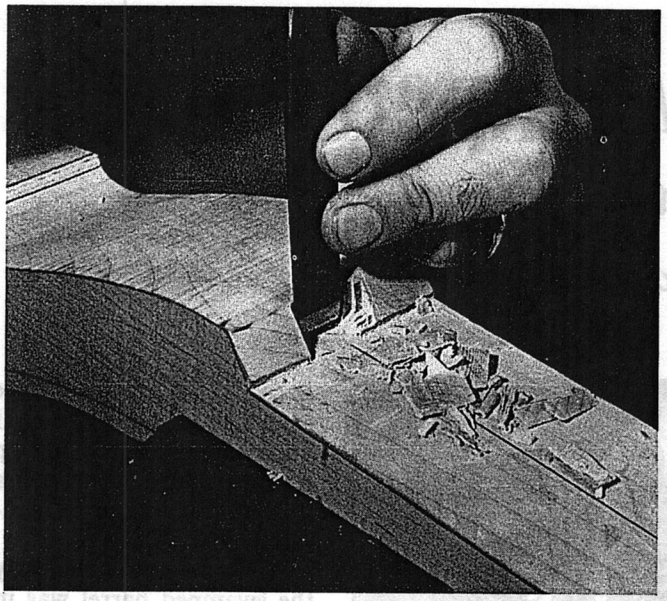
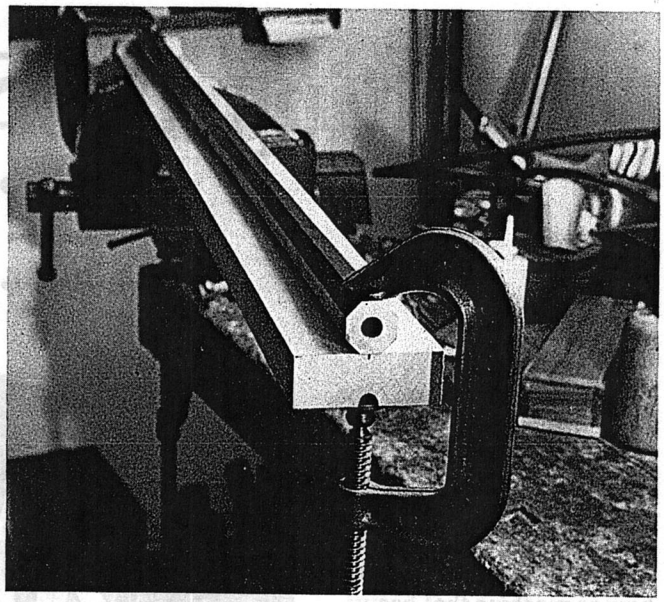


Making the initial cuts at the breech.



The barrel is clamped to the stock blank at breech and muzzle...

end; just make an angled cut there. In fact, I make that cut with a back saw before sawing off the top of the stock. The angle can be filed and gouged to a radius later.

Mark a centerline for the barrel on the stock. If your blank is square, and you have a marking gauge, that's what the gauge is for. If you must angle the barrel on the blank to achieve all the castoff you want, no matter; put the barrel centerline on anyway, but of course you'll have to use a straightedge to do that. Then take a scribe and lightly scratch an "X" on the top flat at both breech and muzzle so that you won't inadvertantly turn the barrel later. Those marks are needed, for the next thing to do is remove the breechplug. Of course, if you feel you need a bit of extra challenge, you can inlet the barrel with the plug left in, and that will insure that you don't turn it. It has been done that way, but I'm simple-minded and like to take one thing at a time.

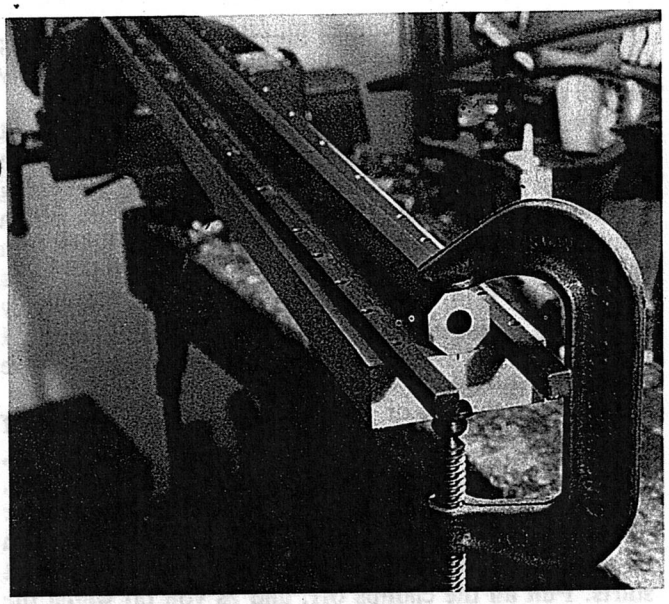
I never assume that even a fine quality barrel is anything like a perfect octagon. Best to check that out if you want to avoid inletting gaps later. Using a vernier, check the diameter of the barrel at fixed spots, measuring across the top corners of the side flats. Then measure across the bottom corners of the side flats, making sure to take the reading at the same spot. You might well find that the barrel is larger in diameter at the bottom flats; I've run across that a number of times. Side flats which taper inward toward the top, needless to say, make it well nigh impossible to make a decent inlet.

The ready solution for that is treating the barrel just as if it's a big inlay. And what does an inlay or lockplate have at its edges? Yes. Draft. The edges angle *in* underneath. Even with a barrel that's perfectly true, I draft the side flats anyway, because that not only will assist me in getting a perfect fit, but will also relieve strain on the thin edges of the forestock later when you're trying to remove that tightly-inletted barrel. I simply grab a big mill file and drawfile both the side flats at an angle, doing most of the cutting on the bottom corner of the flat, and keeping the file a fat sixteenth away from the approximate center of the flat. A couple of thousandths on each side is enough, maybe a little more. You don't need anything like the heavy draft you'd file on a thick trigger plate.

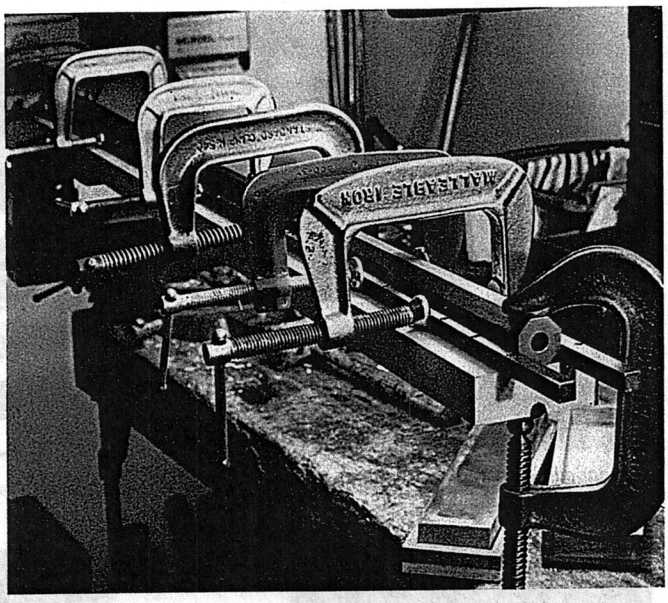
With that done, measure the diameter of the barrel just at the breech, and halving that dimension, mark off the radius on each side of your centerline at the breech end of the stock blank. Using flat chisels, cut a preliminary inlet for the barrel in the angling portion of the stock at the breech. The reason for doing that, of course, is to be able to set the barrel in the position that it will be inletted. With that cut made, C-clamp the barrel to the stock blank at breech and muzzle, aligned on the centerline as well as you can visually. No need to fuss about thousandths of an inch with that. That reminds me of a late 19th century machinest who couldn't resist buying a new-fangled micrometer, elegant in shiny brass and nickel, just because a salesman came around with it. The fellow really wasn't too sure what the thing was for, though, and when his partner asked what he was going to do with it, he said "Well, it's for measuring thousandths of an inch. You know, precision." "But how many thousandths are there in an inch?" queried the other machinest. "Jeez, I dunno, " said the fellow. "Must be a million of 'em." The next time the Starret salesman came around, they were using the thing for a welding clamp.

The heart of the matter in this business involves nothing more elaborate than a pair of steel rails drilled full of holes. The rails serve as a jig, which, when clamped tightly to the barrel, will conform to that swamp very nicely. The holes are for woodscrews to hold the rails in place after the barrel is pulled out.

The best material for the job is plain old cold-rolled mild steel, and the best dimension, at least in my experience, in 3/8" square. The rails which you see in the illustrations here are hot-rolled stuff, but cold-rolled is smoother and seems a bit truer, though that's not something critical. I do prefer not having a scaled surface, but if you use cold-rolled stuff, anneal it. You want it dead soft, with no appreciable spring to it. Two pieces 46" long will handle most jobs; I angle off one end of each rail to rest against the breech angle of the stock blank. Shorter



...the drilled rails laid alongside...

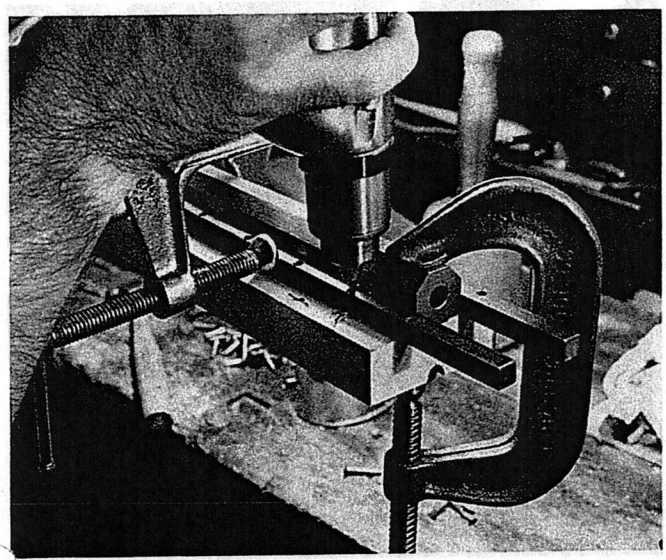


...and clamped to the barrel with all the C-clamps in the neighborhood.

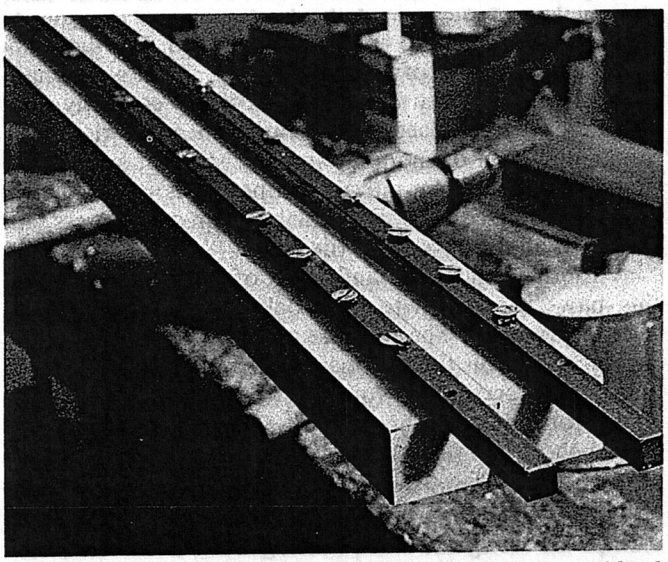
rails, of course, should be used for shorter barrels.

Now then. Trundle down to the hardware, and buy a box of No. 8 round-head woodscrews, one-inch length. An entire box sounds extravagant, I know, but there's a reason for it. The holes drilled in the rails must be rather precise so that the rails can't torque and slop about on the screw. If you change brands or even production lots later, you may find that they're a poor fit for the holes in the rails. So get a box, and you won't have to worry twenty years from now. You'll note here in the illustrations that I've used countersunk or flat-head screws, but avoid that. The edges of those things are sharp enough to cause nasty slices, leaving what Roy Underhill calls "strawberries" on the stock blank. In any event, mike the shank of several screws, and select a drill bit that will provide a slip fit with the average of the lot. Strike off a line on one face of both rails that's equivalent to half the diameter of the shank plus a sixteenth inch or a bit less, measuring from the edge of the rail. Now, that places those holes right on the outside edge of the rail, doesn't it? Yep; the idea is to keep the screw holes off any finished surfaces, of course.

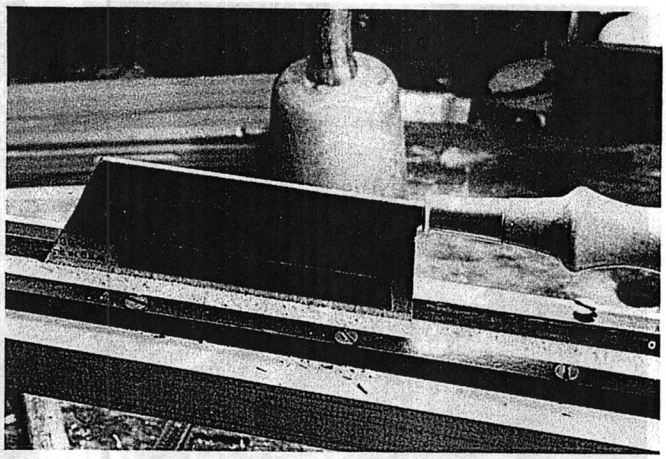
I centerpunch positions for sixteen to eighteen screw holes, starting three to three-and-a-half inches from the breech end of the rails. Why not have screws all the way to the breech? Well, the extra wood around the lock area just can't be trimmed down enough to remove evidence of a screw hole that's scarcely a quarter-inch from the barrel, hence our reason for staying away from that section. Holes may be spaced three inches apart; if you're making up short rails for a "jager" or stutzen (literally, a "short rifle") barrel with a pretty radical swamp, it's best to space them about 2 1/2″ apart. In either case, use the same spacing all the way to the point where your muzzle swamp makes a serious turn outward. On long barrels, that may be as much as five inches back from the muzzle, though a stutzen barrel may have most of its muzzle →



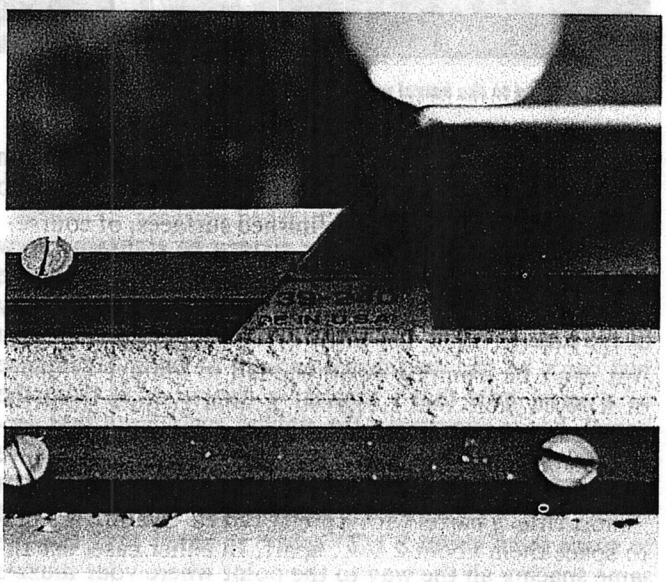
Pilot holes for the screws are drilled...



...and the rails screwed firmly in place. Bivins recommends round-head screws rather than the flat-heads shown here.



A chopped-down back saw with all the set taken off the right side is then run down the inside of the rails...



...cutting to an approximately 1/4" depth, as indicated by the tape on the side of the saw blade.

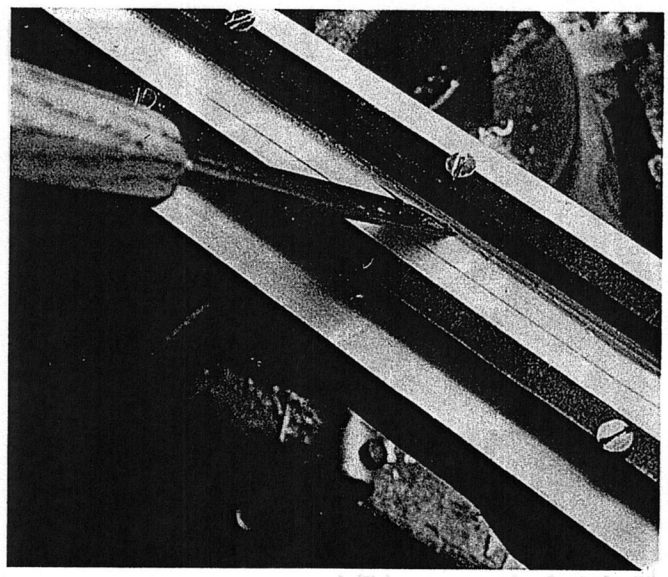
swamp in no more than three inches or so. In either case, the spacing of the screw holes in the area of the muzzle must be decreased to insure that the rail will hold the rapid change of profile at that point. That's especially critical for a stutzen barrel, which if it's correctly done should have a radiused swamp with right much rise. For a longrifle barrel of moderate muzzle swamp, screw spacing of 1 1/2" at the muzzle is fine; 1" is better for the short German cousins. Drill the holes on a drill press, and dress off all the burrs with files.

With the drilled rails and a box of screws in our sweating paws, we return to the stock blank with the barrel clamped atop it. The rails are placed on each side of the barrel, holes on the outboard side, of course, and then scrounge every bloody four-inch C-clamp we can get our hands on. Six to eight should be used on a long barrel, and a short one really requires about the same number if we're to do an accurate job of mashing those rails down to the profile of the barrel. Starting with the breech, place clamps all along the rails, putting them a bit closer together at the muzzle. Keep the clamps between the screw holes. You may find it difficult to clamp the rails tight against the heavily-swamped muzzle of a stutzen barrel; if so, the rails may have to be bent at the muzzle slightly before the clamps are installed.

Now make yourself a center punch that's also a slip fit in the rail holes. Nothing fancy; a piece of nail chucked in the drill press and filed down to fit will do fine. Dropping the punch in each hole, tap in a center mark. Now drill a pilot hole for each screw, feeling for the centermark with the point of the drill, which is easy to do. I drill the holes with a hand drill, and try to keep the thing reasonably straight so as not to cant the screws later; I don't care if I drill through the stock. That makes no difference, but the pilot holes should be pretty tight.

I drag the threads of all the screws through a block of beeswax. Soap will do, or most any other kind of wax, including candle stubs. Drop the screws in their holes, and run them all down tight. It seems like it takes forever to drive them all down, and when you're done the palm of your hand will be right sore. But now the fun part starts. Pull all the clamps off, and as you do watch the rails right next to the barrel sides, seeing that they don't spring out appreciably. If you have a problem spot where that happens, it's best to clamp the thing back up, drill a couple of more holes in the rails, and reinforce the spot with additional screws. Springing out shouldn't occur, however, if your rails are soft. It's possible for the rails to spring *in* slightly at the breech since no screws support the rails there. If they do, cut a piece of scrap 3/8 square stock equal in length to the breech diameter; this can be shoved between the rails after the barrel is out. After all the clamps are off, gently pull the barrel out of the rails. Hah! A perfect profile of the swamp, from stern to bow.

Now you can see the source of those Guslerian saw kerfs in that old Virginia stock. The guy that stocked that rifle had used a system like this, perhaps even with hickory rails rather than steel, and just picked up a back saw and had at it. But hold on a minute. Not just any back saw will do. If it's too long, it won't want to follow the curves. And since saw teeth are alternately set right and left, those right-facing teeth are going to undercut the



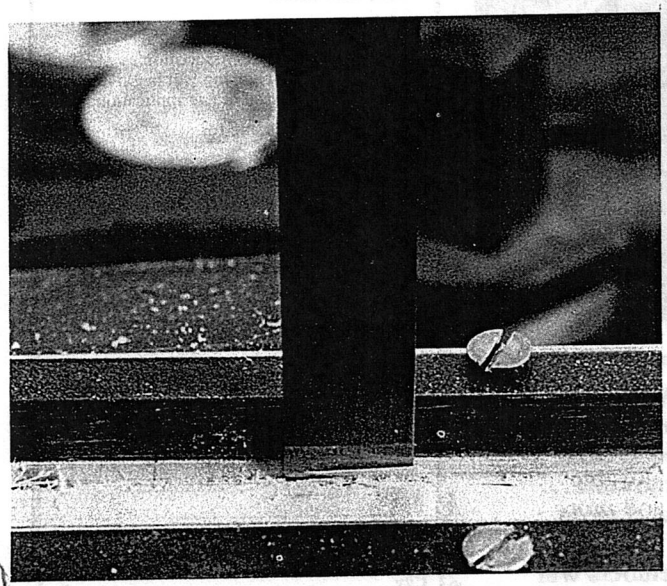
A wedge-shaped chunk is then hogged out next to the inlet with a flat chisel...

rails. So what to do? My solution was to buy a medium-quality saw of small size, and whack off half the length of the blade with a cutting wheel mounted on a bench grinder. I angled the nose of the saw back for better visibility during cutting. Using a saw set, I straightened all of the right-facing teeth, and then stoned the right face lightly. For a depth gauge, I stuck a piece of electrician's tape on the left side of the saw about 1/4" up on the blade, since that's a good depth to start with. Tape is a modern approach, needless to say, but easier to see than a scribed line.

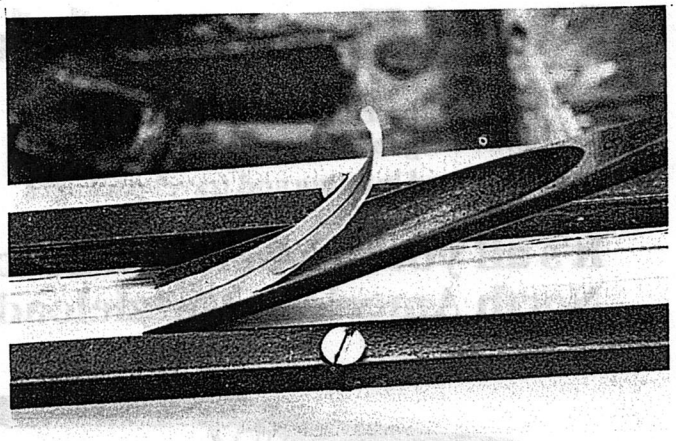
The use of the rails should be pretty evident. Pressing the saw blade against the inside of the right rail (the lock side of the stock) with the fingers of your left hand, run the saw from the breech to the muzzle, and keep at it until you've reached full depth. Making long passes helps to keep the kerf from jamming with dust, but that may happen anyway. If so, just pull the saw out and saw right down through the compacted sawdust. Run the left rail from muzzle to breech, of course. With the right-hand set removed from the blade, you'll find that the saw will tend to angle toward the centerline of the inlet, but that's of no consequence.

When the saw cuts are completed, I use a 1" flat chisel to chop out a wedge-shaped chunk inside the inlet all the way down the stock on both sides. One must take care not to run the chisel into the sides of the saw cuts to any extent for very obvious reasons. When that is done, the angling sides of the inlet can be corrected very precisely with the same wide chisel. The back side of the blade is kept tight against the inside of the rail, and the chisel pushed straight down, and I do mean straight, for the last thing you want to do is undercut. With the draft you've filed on the side flats of the barrel, a sizeable gap would develop, albeit in an unseen place, that would weaken the stock.

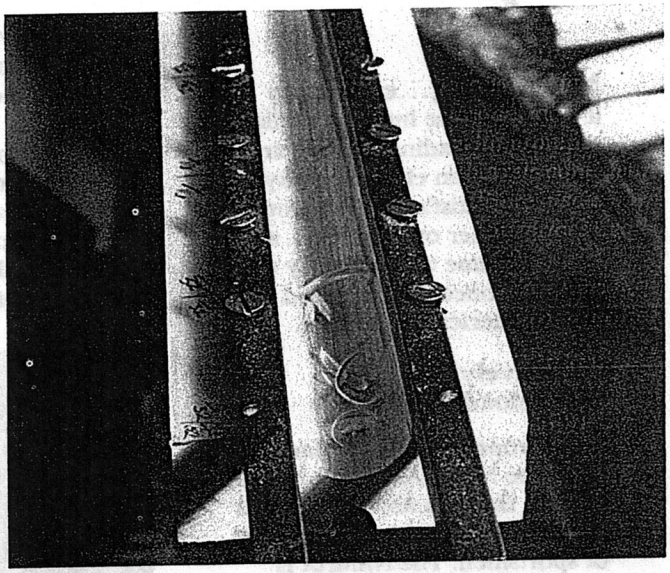
Trimming the edges of the inlet is a tedious job that must be done slowly, and the job that follows is equally tedious. You need depth measurements every two inches or so on the barrel. Push the barrel back into the rails,



...and the walls of the inlet trued by precise right-angle cuts with the same tool.



A large gouge is used for removing the bulk of the waste in the barrel inlet. In the text, Bivins discussed two methods for depth measurement during the inletting.



The roughed-out inlet, ready for finishing cuts; the sides of the inlet are already completed.

and mark both barrel and stock at roughly two-inch increments the length of the barrel. With fractional calipers, measure the diameter of the barrel at each bench mark, halve the dimension, add 3/8" for the rails, and pencil that total dimension on the stock. That's a real drag, right? Yes. A more efficient method, if you want to add a modern twist to the method, is to simply drill a series of holes to each depth, right in the center of the barrel inlet. This may be done quite readily with a 1/8" drill bit fitted with a stop collar; rather than marking depth dimensions on the stock, set the stop collar at that dimension, and run the drill in until the bottom of the collar is visually level with the top of the rails. That can be done with a hand drill, since the hole need not be at a perfect right angle to the stock. With all of those holes drilled, you have a built-in depth reference. Just cut down until the holes are gone, so to speak.

The initial cutting is done with a gouge. I don't like messing around with things, so I use a big 3/4" job, and lay on it smartly with a 16-ounce carving mallet. If you use the drilled depth measurements, gouge right down to

(continued on page 81)

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Call For Help!

In the January issue of Muzzle Blasts' *Long Rifles of Note,* by George Shumway, your magazine addressed a smoothbore by Johanes Faber.

I recently obtained a very similar piece of the Militia Musket or fowling pattern, complete with tiny rear sight. At outward appearance this gun was required to meet militia muster. Upon closer examination, I found it to be an artful and willfull deception. The true bore is actually a rifle of about .56 caliber. It has not been relined but the first several inches from the muzzle have been counter-bored to give the appearance of a large bored smoothbore. One can only speculate on whether this is an isolated case of deception; one devious individual wishing to pass muster yet retain the advantages of a rifle; or, it may have been a more prevalent practice to utilize shot in a rifled bore. In either case, the rifle I have seems to be a unique variety of American rifle, somewhat of a mutant Kentucky rifle.

I'm very curious as to whether other members may have similar guns in their collections and would welcome correspondence regarding this matter.

Leon Kania
Heritage Arms
P.O. Box 871122
Wasilla, AK 99687 ●

Swamped Barrel

(continued from page 23)

within 1/32 or so of cutting away the hole. If you measure each depth increment, leave about the same amount in the bottom of the inlet. A depth gauge is easier to use than a caliper, since you can simply rest the beam of the gauge right across the rails. Have at it, and don't worry about cutting the edges of the inlet, for the bevel of the gouge will ride along the inside of the rail, keeping the cutting edge away from the crisp sides.

So what do we have now? A fine stock blank rendered very unsightly indeed by a bunch of hardware bolted to it, and a round trough with nice straight sides that go swoop when you squint down them. The worst of it is over. Next month we'll pull off the iron and see how to finish the inlet. ●

Back Trail

(continued from page 84)

cally to save the boy slipping away from him after the terrorists truck did its trick on the Marine barracks in Beruit. He almost had a piece of mess hall tray unwrapped from around his spine, when the assistant waved his hand to stop - and the doctor heard again, "You did all that you could."

Granada: Seals in first to guard the host, and all didn't swim away. The 75th Rangers jumped at 500 feet and were relieved by the 82nd. A quiet little war considered a minor campaign. And, I suppose it was, unless you died there.

And taps are blown for the combat weary and those who sleep.... forever. ●

Inletting The Swamped Barrel

Part I

John Bivins, North Carolina

I remember when the first new swamped barrel became available, about twenty years or so ago. Bob Paris and his son, Bob Jr., of Gettysburg, had figured out how to machine that beautiful taper-and-flare so necessary to the appearance and feel of a flintlock longrifle. Bill Large was making them back then as well, but the first one I saw was a Paris, and my eyes about bugged out of my head. I couldn't get one fast enough. After the thing came in the mail, a nice heavy .50 tube all sexy with its wondrous curves, I thought that I'd never reach the end of getting it into the wood. I felt like the caption on one of Kliban's cartoons: "Never eat anything bigger than your head." I decided that the term "swamped" must have had more to do with a sinking feeling in some early gunmaker's gut than it did with the form of a barrel.

The tools of the job: chisels, gouges, a modified back saw, and a warmed-over rabbet plane which will be discussed in the next issue.

Well, I got the thing in after a time. I seem to recall not speaking to anyone for three or four days during that spell. I didn't much like the quality of the inlet, so of course I filled it full of epoxy and squished the barrel down with clamps. Ugh! I wish I could get that gun now and do something nicer with the barrel.

About the only thing I use epoxy for nowadays, at least on a new rifle, is to attach horn nosecaps or ramrod tips. I'd rather be whipped through the fleet than have it in an inlet anywhere, even under a metal inlay. At the same time, I like nice-fitting barrels, and I *especially* like swamped barrels. But the idea of spending twenty hours fitting one to wood appeals to me not at all. Of course, an absolutely perfect swamped inlet can be run on a 1:1 stock duplicator, but that's a fish we'll have to fry later, for the idea here is to do it by hand. Why bother, you might ask. Why not just use a straight barrel and run the inlet with a router? Well, a swamped barrel puts the bulk of the weight where it's needed at the breech, and relieves you of the necessity of hauling around a great deal of unneccessarily heavy iron. It also makes a far better balanced rifle with a nice limber feel. Of course, if you're bent on stocking up a chunk gun, all of this is a bunch of academic nonsense.

I don't know how early the swamped barrel was in use, but I've seen two sixteenth century matchlock rifles--German, of course--with long swamped barrels. So, by the time the American longrifle had developed to the form we know it, the tapered-and-flared rifle barrel had likely been in use for upwards of two centuries. Knowing that the old boys didn't like wasting time any more than I did, and they certainly had no goo to smear in bad inlets, I figured that they had to have some system for inletting the things efficiently. But I couldn't figure what it was. Now, that's the sort of thing that using old guns as documents of technology can solve for us, and prevent us from reinventing the wheel over and over as we're prone to do. Wallace Gusler pulled the swamped barrel out of a nice old Virginia rifle one day back in the 1960's, and found traces of *saw kerf* the entire length of the inlet. With that seemingly trifling bit of information, an entire ancient procedure for executing a difficult job was discovered. Here's how it works.

With the stock blank roughed sawed to shape, leaving extra wood all around as insurance, rip off the top of the blank from muzzle to breech, cutting away an amount equal to half the diameter of the barrel at the breech. If you make this cut with either a handsaw (and try to get one with ripping teeth if you do!) or a bandsaw, then plane or rasp that surface until it is true and straight. If you've ripped it with a table saw, then you're already in business except for trimming away the extra waste at the breech where you had to pull the blank off the blade. As for me, I can't stand the banshee wail of the things; I imagine my fingers flying around the room like carrots in a typhoon. No need to try to saw a nice radius in the blank at the breech →