



JAN 2022

DIGITAL ARCHIVE
EDITION

PRECISION ARMS WORKSHOP

AND THE AMERICAN GUNSMITH ARCHIVE

A TECHNICAL JOURNAL OF CRAFT, REPAIR & RESTORATION

01

ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

METALWORKING HISTORY

POWER ROUTE XL • ARGENTINE 1927 • THERE'S A DEGREE FOR THAT! • LASER LIGHT COMBO

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 217

DIGITAL ARCHIVE EDITION

Preserved for the bench.

This edition presents the original American Gunsmith editorial work in a modern, searchable layout while preserving its issue, author, and source-page history.

ABOUT THIS EDITION

The article text comes from the original issue and has been reflowed for legibility. Obsolete subscription, ordering, association-service, and house-advertising pages are not reproduced.

Original article images appear only where permission has been confirmed. All other image positions remain visibly reserved so approved art can be restored without rebuilding the issue.

Report corrections or rights information to editor@gunsmithmag.com.



AMERICAN GUNSMITH

DIGITAL ARCHIVE EDITION • JANUARY 2022

ISSUE RECORD

ORIGINAL DATE	January 2022
VOLUME	Archive volume not stated
ISSUE NUMBER	01
SOURCE ID	ag-07f8ed05bd19013dbcb3b2c7

DIGITAL EDITION

PUBLICATION	American Gunsmith
EDITION	Digital Archive Edition
ARCHIVE STEWARD	Innovation Network LLC
CONTACT	editor@gunsmithmag.com

Editorial fidelity. Article titles, author attribution, issue relationships, source-page references, and article text remain bound to the archive corpus. Layout, covers, navigation, and conversion notes are newly produced for this edition. Historical statements remain part of the original editorial record.

IN THIS ISSUE

Contents

A complete guide to the searchable editorial work preserved from January 2022.

2**Power Route XL**

AMERICAN GUNSMITH EDITORS • ORIGINAL PAGES 2

3**Argentine 1927**

ROBERT K. CAMPBELL • ORIGINAL PAGES 3-7

8**There's A Degree For That!**

EARL ROBERTS • ORIGINAL PAGES 8-9

10**Metalworking History**

DEAN MEIER • ORIGINAL PAGES 10-15

16**Laser Light Combo**

CHARLIE BRIGGS • ORIGINAL PAGES 16-17

18**Unhelpful Commentary**

BILL SMITH • ORIGINAL PAGES 18-19

20**Glock 19 Mariner**

ROBERT K. CAMPBELL • ORIGINAL PAGES 20-21

22**Reader Forum**

AMERICAN GUNSMITH EDITORS • ORIGINAL PAGES 22-24

MACHINING

Power Route XL

BY AMERICAN GUNSMITH EDITORS JANUARY 2022

ORIGINAL PP. 2

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2476-P02-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2476-P02-F01

Mill Right CNC (MillRightCNC.com), is a manufacturer based in the United States that specializes in affordable desktop CNC and tabletop CNC machines at affordable prices. Mill Right's machines work with various software, including free options and popular options such as Autodesk. The Mill Right CNC Power Route XL Assembled unit mills wood, plastic, foam, carbon fiber, circuit boards, soft metals, and occasional light cuts in hard metals.

It features a working area of 49.5" x 49.5" x 5" on a footprint of 69" wide x 66" deep x 49" inches high with a weight of 450 pounds. Of advantage to a shop new to Computerized Numerical Control machines, the Power Route XL is a powerful, rigid, precision router that arrives 99% assembled. It is assembled and tested at Mill Right's factory and only requires minor finishing to start using, being shipped to you in a large crate and ready to go.

When standing on its legs, the 4' x 4' machine has a work table height of about 30" with a DWP618 2.25 horsepower router, custom billet aluminum router mount, basic clamps, and one 1/4" carbide end mill. The Power Route XL does not come with design soft-

ware, however, Autodesk offers all hobbyists a free license (not a trial) for design software called Fusion 360. MillRightCNC.com/product-category/software also lists other free options, such as Vectric CAD/CAM programs.

The machine has a movement range of 1300mm x 1275mm x 128mm (51"x50"x5") with X and Y rail dimensions of 60mm x 60mm with up to 12mm thickness (2.36" x 2.36"; up to 0.472" thick) and a Z rail of 12mm supported linear shaft. The router is a 120V 2.25 horsepower DeWalt DWP618. The machine has a cutting feed rate of 7620 mm/min (300 inches per minute). The control box comes with the electronics pre-wired for you and sits on a shelf below the machine's work table.

The assembled Power Route XL is about 69" wide x 66" deep x 49" high with a shipping weight of about 550 pounds available for \$5,669. Due to its size and weight, it must ship truck freight. The website will charge about \$500 for truck freight but the actual shipping may differ depending on your location. Mill Right can give you an exact quote if you need.

PEOPLE & COMPANIES

Argentina 1927

Gunsmithing tips for the Argentine Modelo 1927 handgun.

BY ROBERT K. CAMPBELL JANUARY 2022

ORIGINAL PP. 3-7

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P03-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P03-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P03-F02. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P03-F02

While I have published many articles and books about 1911 pistols, I am willing to learn even more. One thing I have learned is that common descriptors such as “GI” and “Series 70” are not as exact as some may think. As an example, some pistols stated to be an exact clone of the of the Colt 1911A1, well, aren’t quite. And others aren’t a clone at all. The Argentine Modelo 1927 is one of those. In contrast to most 1911 copies and clones, the Modelo 1927 is a license-built Colt.

The Argentine Army took the route of consulting Colt and obtaining a license to manufacture the pistol. Let’s look at the history of the pistol first and then understand what the pistol is and isn’t in terms of fitting and function and interchangeability with the Colt 1911A1 and other GI guns. These pistols are as reliable and accurate as any GI 1911. Argentine 1927 pistols aren’t as

inexpensive as they once were but it still is considered for re-builds and even custom work. There are better choices!

Perhaps a more exact concern is if the Modelo 1927 accepts modern after market parts. The Argentine 1911 was once a shooter grade pistol and a handgun that offered a break in price compared to the Colt 1911 with comparable performance. Now, they are more expensive, although still considerably less than a Colt. On that basis anew Colt Series 80 or Springfield Mil Spec may be a better buy as a shooter.

The Argentine pistol is better made of good material than the various Philippine guns based on much personal experience. Today, inexpensive 1911 handguns are offered primarily with cast frames and MIM parts The Ballester Molina, below, was a less expensive pistol to manufacture more similar to the Star pistols.

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P04-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P04-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P04-F02. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P04-F02

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P04-F03. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P04-F03

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P04-F04. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P04-F04

They are well made of good material. The pistol did not accept all 1911 magazines with good function. while the Modelo 1927 is made of carefully-chosen forged steel. The bottom line may be that the Modelo 1927 is a pistol of finite supply. There were only so many made and there will be no more. History When Argentina was looking for a service pistol their search led to the highly respected Colt 1911, then in service for just a few years in America.

By 1914 Argentina had purchased several hundred Colt pistols for evaluation. The Colt 1911 45 ACP pistol was adopted as the Argentine 1916. By 1923 the Argentine government elected to eliminate any dependency

on foreign arms manufacture, a wise move for any nation. Depending on America for pistols and Germany for rifles was a good move for quality manufacture initially but not for continued supply in the case of war or political unrest.

A special commission negotiated a contract with Colt for manufacture of the pistol in Argentina. Colt supplied blueprints and machinery and helped train employees, machinists, and technicians. The Army adopted this new version of the Colt as their The magazines measuring closer to 0.53 in width worked best. Magazines with larger measurements were quite tight in the magazine well. Modelo 1927.

While many pistols were purchased from Colt, the Argentine military eventually began receiving their locally-produced version. The Pistol Sistema Modelo Argentino Caliber 11.25mm is a well made pistol and the original blue finish is comparable to the Colt. Checkering on the hammer spur and slide stop appears identical to Colt-made guns. The fit of the barrel hood, barrel to the barrel bushing, and the internal parts is good.

The pistols were manufactured by Fabrica Militar de Armas, however, assembly took place at the Domingo Matheu plant in Rosario, Argentina. The pistols were supplied to the police forces and the

ARGENTINE 1927 CONTINUED

ORIGINAL PAGE 5

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P05-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P05-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P05-F02. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P05-F02

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P05-F03. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P05-F03

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P05-F04. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P05-F04

Army, Navy, and Air Force. The extractors are tool steel, same as the Colt, and the main-spring housing is nicely checkered but in a different pattern. The grips are hard black plastic and the trigger face is serrated. While there are interesting legends regarding the steel supplied for these pistols, the steel was actually supplied by German, Swedish, and British sources. The pistols are heat treated in the same manner as American issued Colts: spot heat treating.

You may see Modelo 1927 pistols cracked in the same places that Colts crack, including around the slide stop. Like many military pistols, the Modelo 1927 have serial numbers engraved on the barrel, slide, frame, and, originally, the magazine. I have yet to see a

completely matched set, magazine and all, but most of the pistols I have examined featured matching serial numbers otherwise.

I recently was able to examine and work with a nice Modelo 1927 made in 1953, allowing me to refresh my memory about the pistol and also make new observations. More than twenty years ago I upgraded a pistol of the same type with a set of King's Hardballer sights, a nice combination. The Argentine and Colt pistols are generally interchangeable as far as internal parts and grips. However, there are differences, despite the Colt blueprints and careful manufacture.

I would rate the Argentine pistols of excellent quality and they are probably better finished than Parkerized American pistols.

When I attempted a trigger job on my personal Modelo 1927 I learned that the ignition parts were quite hard compared to Colt parts. The trigger job was eventually accomplished after much work but the result was not acceptable. When the slide was dropped on an empty chamber the hammer followed to half cock, indicating I had taken too much material off of the ignition parts.

Even then I was experienced with Colt and other domestic 1911 handguns but I was still learning. Good or bad, the Argentine steel was harder and the experience with that trigger job taught me that it was better to install a high quality ignition set rather than use existing parts. I replaced the now-unsafe modified original parts with a complete Ed Brown ignition set.

ARGENTINE 1927 CONTINUED

ORIGINAL PAGE 6

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P06-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P06-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P06-F02. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P06-F02

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P06-F03. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P06-F03

I've never seen this happen in guns in as good shape as this one. My opinion about the hardness of Argentine parts compared to Colt's has held true since, however, I have had experience with several handguns of the type that friends and customers have customized. The frame rails and frame horns around the grip safety seem softer than modern Colt pistols and the Modelo 1927 is closer to war time Colts which were spot heat treated.

I would recommend a shooter invest in a modern Colt for a custom build as neither Argentine and early Colts aren't as suitable. Modern Colt Series 80 handguns feature excellent quality slide and frames, ideal to serve as the base for a custom project. If used as-is, I would trust the Argentine gun as a carry gun after putting in new springs as the basic gun is as reliable as any GI Colt, and that is a high standard of reliability.

Benchwork The pistol that came across my bench recently was bought in for a complaint common with the Modelo 1927. While a very nice pistol, in perhaps ninety five per cent condition, this one was having trouble using certain magazines. Most shooters will simply use a different magazine in a 1911 if a given one doesn't fit. This owner wanted to know why his magazines did not fit his Modelo 1927 as all them fit his Colt, Springfield, Remington, Para Ordnance, and Rock Island pistols.

Some magazines, such as those from Wilson Combat, fit and functioned well while a few others, especially those with a thick base pad, did not. I took the opportunity to test the pistol with a dozen different magazines. True enough, several types of magazines were very tight going in. They would lock in place but were very difficult to push into the magazine well and then remove. I examined the grip screw bushings.

I have ran across pistols with grip screw bushings driven in too far causing the screw to contact the magazine. This wasn't the case here. The magazines were tested and measuring revealed factional differences between some, yet, none of the other dozen 1911 pistols on hand failed to accept any of them. The only time I have encountered a magazine not fitting a 1911 pistol was a special magazine that Auto Ordnance used in their General's Model due to its different design and magazine latch.

I still don't understand why they did this... With this Modelo 1927 there was no possibility of filing the trigger bow as I did not wish to interfere with the trigger's function nor to make a sloppy fit with other magazines. In the end we simply decided to use magazines that functioned, locked, and which were easily removed. I test fired the pistol using Fiocchi 230 grain full metal jacket



ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2477-P07-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2477-P07-F01

ammunition. A pistol failing to function with this very reliable load isn't due to ammunition. Two magazines fired with no problem and the pistol held a 1.5" five-round group at 15 yards, which is good for this gun. After returning to the shop I locked the slide back to clear the pistol and clean it, only to find the plunger tube was loose. This is not something I've ever encountered in a lightly used pistol in such good shape, however, appearances can be deceiving.

This pistol is 67 years old and may have been handled or fired more than I thought. After removing the slide, I easily pulled the plunger tube away and then re-staked it. I undertook another experiment I had not done on this scale previously. To study the parts interchange more closely I removed the firing pin, firing pin spring, and slide stop, replacing them Wilson Combat parts. There was no problem with fitting.

I did not attempt to fit an extractor but by appearances the Wilson Combat Series 70 was also a good fit. Extractors must be fitted to the specific gun anyway, this was as sure a test. All of the original parts were in

excellent condition. This well worn pistol is functionally excellent. I had a Bar-Sto drop in barrel on had that fit anew production Colt Series 70 slide well as well as a Colt Series 80 without any problem.

The barrel hood was too long for the Modelo 1927 and the locking lugs would not fit into place properly, again confirming this pistol is not drop-in for modern barrels. In general, I find the Modelo 1927 a very good pistol of the GI type. It isn't easily worked, however, replacing the original ignition parts with quality aftermarket components makes for a good shooter. Any aftermarket barrels would require considerable hand fitting. As for magazines, Wilson Combat, Colt factory, and Mec-Gar fit well.

Some, including factory Springfield magazines and other good magazines, may not fit the Modelo 1927. It was interesting working with this handgun and I am glad I had the chance to closely examine it. Like many early 1911s, this Argentine pistol should be left in the original condition as much as possible. AG

MAINTENANCE & REPAIR

There's A Degree For That!

How a firearms instructor's search for continuing education landed him an Associate of Science Degree in Firearms Technology.

BY EARL ROBERTS JANUARY 2022

ORIGINAL PP. 8-9

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2478-P08-F01. Know the rights holder? Please ask them to contact us.
AG-3DBC3B2C7-A2478-P08-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2478-P08-F02. Know the rights holder? Please ask them to contact us.
AG-3DBC3B2C7-A2478-P08-F02

My upbringing is relatable to many of you. I grew up living a simple life on a small farm in western North Carolina and began shooting at an early age. I learned fast the importance of maintaining my own firearm and developed my interest in guns and shooting. It also piqued my interest in the military. The day after I graduated high school, I was on a bus to Paris Island, South Carolina and soon after was being greeted by my Drill Instructor. I was introduced to my new best friend, an M16A2 service rifle.

From that point on, the majority of my adult life has been spent within arms reach of a firearm. As retirement grew near, I tried to picture a post-military career. I had taken a college class or two throughout the years. I became an Emergency Medical Technician, took some Parks & Recreation classes, some Religion classes, but I never really discovered a traditional degree path that interested me.

I dabbled in the security field after retirement but ultimately found my calling as a firearms instructor, working as Mobile Marksmanship ([Facebook.com/MobileMarksmanship](https://www.facebook.com/MobileMarksmanship)) in Virginia. Also, probably like you, I know that it is important to continue training to remain

relevant. A little over two years ago, I found myself searching high and low for my next piece of continuing education.

Sonoran Desert Institute (SDI.edu, kept popping up and SDI is known as the School of Firearms Technology... and that sounded pretty awesome! I scanned their website just long enough to find out that they offer several programs related to gunsmithing and even have a degree program in Firearms Technology. Wait! A degree in Firearms Technology? Is that real? They had my attention.

After a couple weeks of research, I discovered that the school was accredited and accepted my GI Bill benefit, that all the core subjects (Math, English, Science, etc.) that I had taken previously through Military Tuition Assistance while on active duty would transfer over, and because of those transfer credits, I could have an Associate of Science Degree in Firearms Technology within about a year. A look at the class subjects revealed what I would learn.

In addition to the expected maintenance and repair, classwork also included things like making Kydex holsters, hydro

THERE'S A DEGREE FOR THAT! CONTINUED

ORIGINAL PAGE 9

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2478-P09-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2478-P09-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2478-P09-F02. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2478-P09-F02

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2478-P09-F03. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2478-P09-F03

dipping, ballistics, shooting sports management, stock woodworking, checkering, and even building a complete muzzleloader and my choice of building an AR-10, AR-15, or 1911. Finally, college classes made for me! This was the first time I had ever been excited about going to college and getting a degree. SDI is an online school, and I wondered how this would work as I felt like these subjects require hands-on. Well, I'll tell you, it works professionally, efficiently, and smoothly.

I spoke with an admissions specialist, filled out a quick application, submitted some documents, and the following month I was logging into my first class. Tools, books, and re-

quired project parts are shipped to your door prior to the start of class. All classes are taught by instructors and professors that are practicing experts in their field. Group participation is required, which is great because I was able to pick up a lot from my fellow students.

Classes are ran on a semester basis, there are deadlines, there are written assignments, some assignments require picture and/or video evidence, and grades are not just handed out SDI students earn the grades they get. I had a blast earning my degree in Firearms Technology, I graduated magna cum laude, was on the Dean's List, and as a member of

the National Veterans Honor Society; not too bad for a Marine Infantryman, if I do say so myself.

I enjoyed every class, the instructors, my classmates, and I continue to enjoy the guns I built as a student and the ones I've built as a result of the training provided to me by SDI. If you aspire to be a professional gunsmith or a holster-smith, if you own a firearms related business, if you're a firearms instructor, a collector, a competitive shooter, or even just a firearms owner, go check out some of the great training that SDI offers.

Even if gunsmithing doesn't turn into a career, you'll appreciate firearms even more. AG

HISTORY

Metalworking History

A brief overview of the history of metalworking and machining.

BY DEAN MEIER JANUARY 2022

ORIGINAL PP. 10-15

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2479-P10-F01. Know the rights holder? Please ask them to contact us.
AG-3DBC3B2C7-A2479-P10-F01

Metalworking has been a pillar of the development of modern society. Of special importance to us, its use has been critical to building and repairing firearms. It could be argued that metalworking started more than a million years ago, when early humans learned to control fire, however, there is no obvious, definitive moment around the discovery of forging that any historian can point to. Metalworking is the product of along evolutionary process spanning centuries.

A first beginning was around 10,000 years ago when people in early Mesopotamia began working with copper. This metal would be the go-to material for weapons and other durable goods in ancient Egypt, Greece, Rome, China, and India for thousands of years. Eventually, likely by accident, people learned that smelting copper with tin made a stronger material. It now stands in the Qutb complex at Mehrauli in Delhi, India. The structure is famous for the rust-resistant composition of the metals used in its construction.

It is thought to have been erected elsewhere, perhaps outside the Udayagiri Caves and moved to its present location by Anangpal Tomar in the 11th century. Far

This method was used in blacksmithing even in the 20th century. bronze. Early weapons fashioned from this have been found in the Balkans region determined to be up to 7,000 years old. Brazing is believed to be about 5,000 years old when Sumerians made swords by hard soldering and Egyptians pressure welded metal by hammering.

Early iron making has been discovered to be about 4,000 years old, with early examples discovered in India and from the Hittites of ancient Egypt. Early examples of steel, with iron ore heated in a furnace and hammered into shape, is at least 3,500 years old with examples discovered in Sub-Saharan Africa.

Many historians believe that these early Africans had built blast furnaces that could reach temperatures hotter than anything achieved in Europe until the Industrial Revolution, however, they lacked sufficient fuel (wood to create charcoal) for extensive use.

Historians also believe metalworkers in China developed a method for blasting heated iron ore with air to remove impurities via oxidation about 1,000 years ago, centuries before Sir Henry Bessemer would

patent the similar process that bears his name and makes steel by using a cold blast of air over molten metal. As metalworking became better known and more refined, bigger projects became possible.

One early example is the Iron Pillar of Delhi, believed to be the largest weldment ever at the time and for years after. Built nearly twenty-four feet in overall length and weighing more the three tons, the monument to Vishnu near Delhi was manufactured by forge welding pieces of wrought iron. Despite being over 1,600 years old and having once been hit with a cannon, the pillar has a high degree of corrosion resistance and continues to be studied for its insight into the sophistication of early metalworking.

The forging and other processes used to construct the Pillar continued to serve as the basis of forging into the twentieth century. By the 1800s, smiths had become skilled at open die wrought iron forging, a process that required great heat, meaning smiths needed to also become proficient in hammer welding. This provided the means to manufacture the mechanisms leading to the Industrial Revolution, such as the steam engine. With a reliable source

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2479-P11-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2479-P11-F01

1, Coating Flow; 2 Rod; 3, Shield Gas; 4. Fusion; 5. Base metal; 6. Weld metal; 7. Solidified Slag. The process may or may not require the use a filler material. External application of pressure is not required for fusion welding processes, except for resistance welding, where substantial contact pressure is required during welding for sound joining.

Gas tungsten arc welding (GTAW), Gas metal arc welding (GMAW or MIG), Plasma arc welding (PAW), Electro gas arc welding (EGW), Carbon arc welding (CAW), Bare metal ARC welding (BMAW), Shielded metal arc welding (SMAW), Submerged-arc welding (SAW), Flux cored arc welding (FCAW), Flash welding (FW), Arc stud welding (SW), Percussion welding, (PEW), Electroslag welding (ESW), Resistance spot welding (RSW), Resistance seam welding (RSEW), Projection welding (PW), Electron beam welding (EBW), Laser beam welding (LBW), Flow (cast) welding, Induction welding (IW), Oxyacetylene welding (OAW), Oxyhydrogen welding (OHW), Air acetylene welding (AAW), Thermite welding (TW) of high amounts of power, workers could produce even more tools and products for old and new industries.

The Bessemer process helped as well, making it easier to smelt iron ore into high-quality steel. In the early 1800s Edmund Davy, an Irish chemistry professor, discovered the gas now known as acetylene by accident when experimenting with potassium. His cousin, Humphry Davy, was also a chemist and discovered how to use a battery to create an electric current between two carbon electrodes. Both were critical to improving welding and their developments are concepts still used.

Gas welding, brazing, and cutting with oxygen or hydrogen came into their own in the late 1800s. The massive manufacturing spurred on by World War I would show the cost and efficiency of welding compared to riveting. Ships were being built in the U. S. and Europe using arc welding and the huge increase in use called for definition and standardization of welding language and usage. In 1919 the American Welding Society was formed by the Wartime Welding Committee with Comfort Avery Adams leading the effort.

While there is some dispute around how this modernized into shielded metal arc welding, several developments in electrode technology occurred around this same time.

The coated electrode development is credited to the A. O. Smith Company and it was used extensively by the late 1920s. Lincoln Electric began mass producing coated electrodes utilizing an extrusion for the coating rather than dipping. The coating improved the usability of the electrodes and shielded the molten puddle from the oxygen/nitrogen atmosphere.

By the 1950s, the Linde Air Products Company marketed constricted arc cutting. Until it was overshadowed by plasma cutting, this was the best way to sever nonferrous materials by using a gas tungsten arc torch and a high-pressure regulator placed on a separate argon cylinder. Contamination was minimal but the grinding was not and argon was expensive. Airco (Air Reduction Company) is credited with creating the gas metal arc welding (GMAW) process, also known as metal inert gas (MIG) welding.

Initially, use of inert gases for welding on carbon manganese material was thought to be too expensive, so CO₂ (a non-inert gas) was used as it also produced suitable shielding and penetration into the base material and remains the norm. Since then, various gases

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2479-P12-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2479-P12-F01

Above and The workpiece was turned by a rope moved via a bow or foot pressure against a spring pole or treadle. as well as mixed gases have made it possible to weld almost all ferrous and nonferrous metals. Each invention or improvement has created means for new kinds of and/or easier fabrication. Automatic processes are being used in large shops with positioners that turn in varying configurations. Such fixturing enables most welds to be made in the flat position, enhancing speed and weld quality.

While beyond small shop and gunsmithing work, robots have become more versatile for general fabrication, even when not used for repetitive welding. Software that is readily adapted to almost any weld type or shape aids in quick changes from one weldment to another with the click of a mouse. A cutting tool is used to remove small chips of material from the workpiece. Relative motion is achieved in most ma-

chining operation by means of a primary motion, called "cutting speed", and a secondary motion called "feed".

The shape of the tool and its penetration into the work surface, combined with these motions, produce the desired shape of the resulting work surface.. Machining Machining is a process in which a material (often metal) is cut to shape and size by a controlled material-removal process. This is usually subtractive manufacturing, where material is removed from a workpiece in a controlled manner until the final shape is created. How this is controlled is dependent on the tool.

As with many technologies, precise meanings evolve with developments. In the 1700s, a machinist described craftsmen that built or repaired machines. This was almost always bespoke work done by hand, such as by carving or filing. By the 1900s, a machinist described a person conducting what we now consider "traditional" pro-

cesses on workpieces such as drilling, milling, turning, tapping, planing, etc. It would also imply use of machine tools such as lathes, milling machines, drill presses, and the like.

The three principal machining processes are turning, milling, and drilling. Turning operations are operations that rotate the workpiece as the primary method of moving metal against the cutting tool. Lathes are the principal machine tool used in turning. Milling operations are when a tool rotates to bring cutting edges to bear against the workpiece with milling machines being the principal ones used.

Drilling operations are when holes are produced or refined by bringing a rotating cutter with edges at the lower extremity into contact with the workpiece. Drilling operations are done primarily in drill presses but sometimes on lathes or mills. An unfinished workpiece requires having material cut away to

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2479-P13-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2479-P13-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2479-P13-F02. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2479-P13-F02

The ML7R was first launched in 1917, not to be confused with the ML7. create a finished product based on blueprints or measurements taken, such as making a replacement part. Around workpiece needing a specific outside diameter could be turned on a lathe against a cutting tool to create a smooth, round surface. A drill can be used to remove metal in the shape of a cylindrical hole, especially boring down the Zaxis. A mill typically spins a tool to cut sideways along the Xand Yaxis of the workpiece.

Computer Numerical Control can greatly automate these processes and software has improved continually, making the machine ease of use and finished product design ever easier. However, the basic machining operations and the effect of a given tool on the type of material in a given workpiece remains the same. Lathe A sort of inverse drill, lathes spin the workpiece against a tool. A potter's wheel spinning clay to fashion a uniform, cylindrical shape by the hands may be the earliest type of lathe.

More complex woodworking lathes have been discovered to be around 3,000 years old in Egypt and Greece. Wood turned artifacts that are over 2,000 years old have been discovered in Italy, Turkey, and China, and a painting from that era depicting a lathe was discovered in Egypt. The first

lathes required two workers with one turning the workpiece with rope and the other shaping with a tool. It was essentially a potter's wheel for woodworking. The Romans improved on this by adding a turning bow.

Spring pole lathes in later designs eased the wood work. A pedal, such as used with manual sewing machines, was used for rotating the work piece. These spring pole lathes would remain in use until the early decades of the 20th century. A drawing by Leonardo Da Vinci in the 1480s illustrates an early treadle wheel lathe. While also foot powered, a large flywheel provided momentum for more consistent turning of the workpiece. In 1772 a horse-powered boring machine was installed which was used for making canons.

During the Industrial Revolution, steam engines and water wheels were attached to lathes to turn at higher speeds, making the work faster and easier. Of course, powered tools were critical to the Industrial Revolution and the lathe stood central as it allowed development of other tools. Russian engineer Andrey Nartov invented a lathe with a mechanical cutting tool supporting carriage and a set of gears in the early 1700s.

French inventor Jacques de Vaucanson made an allmetal slide rest lathe in the 1750s with his work documented in the Encyclopédie, the famed Systematic Dictionary of the Sciences, Arts, and Crafts. Dutch gun-founder Jan Verbruggen installed a horizontal boring machine that turned the workpiece was installed in the 1770s in the Royal Arsenal, Woolwich for cannon manufacture. Henry Maudslay became an artificer at the Royal Arsenal around this time.

His son, also named Henry, would invent the first practical screw cutting lathe, micrometer, and other key tools that would lead to the Industrial Revolution. Key inventions like this combined with mechanized power allowed faster and easier work. Metalworking lathes evolved into heavier machines with thicker, more rigid parts. Between the late 19th and mid-20th centuries, individual electric motors at each lathe replaced line shafting as the power source.

Beginning in the 1950s, servomechanisms were applied to the control of lathes and other machine tools via numerical control, which often was coupled with computers to yield computerized numerical control. Today, manually controlled and CNC lathes coexist in the manufacturing industries.

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2479-P14-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2479-P14-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2479-P14-F02. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2479-P14-F02

Mills Milling machines have also been a major influence in production and manufacturing, allowing countless innovations. The first modern incarnations were made to speed up filing with the earliest being built in the 1770s in France with a milling cutter being designed Jacques de Vaucanson shortly thereafter. Improvements would continue through the 1800s, with milling machine designs purpose-built toward production appearing in the middle of that century.

At first, they didn't allow for the typical X, Y, and Z axes of movement common today and were more like a drill press. In production use, several machines might be lined up, with each performing a single operation. Brown & Sharpe created their Universal Milling Machine allowing three axes movement in the 1860s. Improvements evolved, such as the jig borer for precisely locating hole centers, and the machines became more accurate.

Rudolph Bannow designed the Bridgeport milling machine in the 1930s, a 3 axis mill design still in use today. It was lighter, cheaper, and easier to use than comparable mills of the day. Bridgeport Machines, Inc. based in Bridgeport, Connecticut was founded soon after and manufactured milling machines until being bought out by Hardinge, Inc. in the early 2000s.

A standard manual knee-type vertical milling machine, Bannow's design proved so influential that some people still refer to

any manual mill as a "Bridgeport" and it is considered to be the original multipurpose mill. At the most basic level, a milling machine uses rotating cutters to remove material from a workpiece secured on the table by feeding it to the tooling. A variety of tooling is held in the spindle by a variety of collets and chucks. Along with the set speed, this is used based on the job being done.

With the tooling and speed set, the table fixturing securing the workpiece is moved along the available axis, controlled either manually by handwheels or by computer. A three-axis milling machine is the most common with tooling movement along each axis denoted as X, Y, and Z. By having a cutter that can move side to side, back and forth, and up and down, a machine should be able to cut a workpiece at any point on its surface.

Creating a new set-up by manually reorienting the workpiece on the table allows the cutting tool to access to any side of the workpiece. Depending on the hardware or software controlling a CNC mill, the cutting tool may not be able to move through all of the axes at once. For example, a three-axis machine denoted as "2.5D" or "2 + 1" indicates the mill can move through X, Y, and Z but not at once.

Instead of performing a smooth curve in 3D space, the machine would have to stop its movement along one axis before moving in another. Some mills have more than

three axes of movement, allowing for rotation around one or two of the X, Y, or Z axes, taking account of position and orientation. In practical terms, these axes can be exploited by either rotating the cutting tool or tilting the table holding the workpiece.

A 4-axis and 5-axis machine can cut the workpiece from different angles than just the normal three and can complete the workpiece in a shorter time frame. This eliminates the need for multiple set-ups and complex fixtures, while greatly reducing the possibility of incorrect alignment, something that's a risk every time the workpiece has to be reoriented. It also allows for more complex geometries and a smoother final finish.

A denotation of "3 + 2" milling is used to describe some five-axis machines, with the two rotary axes used to orient the part and tool angle, and then the three normal axes used for milling. A full five-axis machine. The head is mounted on the ram by joints that allow it to swivel in two directions. The ram can slide back and forth on the turret, which can swivel on the column. The table sits on the knee, and it can move horizontally in the X and Y axes.

The knee rides up and down the column (one form of Z-axis movement) and the head contains a quill in which the spindle can slide up and down, another form of Z-axis movement, or when the head is swiveled, an additional axis.

METALWORKING HISTORY CONTINUED

ORIGINAL PAGE 15

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2479-P15-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2479-P15-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2479-P15-F02. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2479-P15-F02

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2479-P15-F03. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2479-P15-F03

allows all five axes to be moved simultaneously. This requires more complex design as done with computer-aided manufacturing software but it saves time and provides a better finished surface due to less start-and-stop motions. Drilling Gun drills, also known as Through Coolant Drills, are straight fluted drills which allow cutting fluid to be injected through the drill's hollow body to the cutting face. They are used for deep drilling and a depth-to-diameter ratio of 300:1 or more is possible.

While gun barrels are the obvious example of needing this kind of machining and the reason for the name, gun drills are also used in mold making, die making, and making engine parts such as crankcases. Coolant is delivered through the center of the gun drill tool while a motor turns either the tool or the workpiece, or both. A feed system provides thrust to the tool to begin gun drilling. The tool is guided accurately into the workpiece by a bushing.

While drilling, chips are flushed out along the gun drill flute by the force of high-pressure coolant. No peck drilling or interrupted

feed is necessary to clear the chips, and cylinder heads. The coolant provides lubrication and cooling to the cutting edges and removes the swarf (chips) from the hole. Modern gun drills use carbide tips to prolong life and reduce total cost when compared with steel tips. Speed of drilling depends on the material being drilled, rotational speed, and the drill diameter.

A high speed drill can cut a hole in P20 steel at 30 inches per minute. Gun drilling can be done on several kinds of machine tools. On lathes, it is generally practical with hole depths of less than 50 diameters. There are also purpose-built gun drilling machines, where longer aspect ratios can be drilled. A typical gun drill consists of three parts: a carbide tip, a heat-treated alloy shank, and a steel driver.

All are typically silver brazed together, and are designed to allow coolant to pass through its entire length. The shank must be properly formed, heat-treated, and aligned to absorb cutting torque, sagging, and the whipping associated with high RPMs. Any size, feature, or length configuration can be optioned from

0.045" to 1.625" diameter. The drill is positioned and held in the spindle nose, then guided into the workpiece through a pre-started hole or guide bushing that prevents vibration and ensures accuracy.

Gun drill cutting edges form thin, curled chips that are carried away from the bore by high pressure lubricant. The off-center design of the cutting edges creates pressure within the bore that is carried by pads behind the drill tip. The coolant that flushes the chips also lubricates these pads, which burnish the surface and develop the fine finish for which deep hole gun drilling is known. The future. The most obvious, on-the-horizon next step in metal working is additive manufacture.

Better known as 3D printing, this process builds up apart layer-by-layer by placing material only where it's needed. Additive manufacturing produces very little scrap or wasted raw materials, especially with very intricate designs. While mainstream recognition of AM didn't begin until affordable desktop 3D plastic printers became available around 2010, the process is much older. (Continued on page 17)

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2479-P17-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2479-P17-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2479-P17-F02. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2479-P17-F02

The concept of 3D printing was described as early as 1945 in a short story by Murray Leinster, however, the first attempt at practical application wouldn't happen until 1971 when Johannes Gottwald patented the Liquid Metal Recorder. Various other patents of the concept were filed through the 1980s with only a few attempts at production using hot-melt plastic. Laser sintering made the process more feasible for making metal parts.

Development of more powerful lasers in the 2000s allowed powdered metals to be fully melted, providing another leap for practical metal AM. Joule printing, a patented process by Digital Alloys, utilizes resistive heating of metal wire to form parts. Metal 3D printing remains out of reach for most of us. Entry-level machine costs can start around \$50,000 and go up to a million or more. Powdered metal, currently the most common base material, has a starting cost of around \$130 per pound, depending on the type.

However, the same used to be true of CNC machine options, which today can be had at prices affordable to gunsmithing shops. Like CNC, 3D printing will become increasingly more mainstream and affordable as will the design software for additive manufacture. Some industry experts predict additive manufacture will account for the majority of all manufacture within the next decade or so.

Even if this optimistic outlook proves true, it will be many years before AM replaces traditional metal working in most industries, especially in production. However, before then it may become more common for custom work. If the trend of improvement in technologies and price continue, gunsmiths working custom projects, especially those needing the replacement of unavailable parts, may print a one-off part based on a scan and reverse engineering in computer-aided design software included with the 3D printer. AG

PISTOLS

Laser Light Combo

A short bit on the XTS-CGLL, a green laser and light combo for your projects.

BY CHARLIE BRIGGS JANUARY 2022

ORIGINAL PP. 16-17

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2480-P16-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2480-P16-F01

If you follow the consumer firearms magazines (GUNS, Rifle Shooter, Handguns, American Rifleman, etc.) as I do, you can't miss (no pun intended) all the articles on the newest and latest and greatest weapons lights and lasers, as well as some combinations of the two. And, it seems to me, most of them are both pretty expensive and fairly large. To make matters worse, they usually require also expensive and oftentimes hard-to-find batteries! Well, here's one I found accidentally that has none of those shortcomings.

From what I've seen, the nearest competitive product is at least twice as large and costs at least \$200 more. And, probably more interesting to many (most?) of you with an FFL, there's a very good profit margin in selling them and they're easy as can be to sell.

The XTS-CGLL is made by Extreme Tactical Sports (XTS) and marketed by DMA, Inc. (Dragon Martial Arts), a wholesaler located in Arlington, Texas (DMA-inc.net). As always, I'd like to point out that I'm not compensated by Brownells, XTS, DMA, or (unfortunately) anybody. My articles are always

submitted for the benefit of you, fellow members of the gunsmithing fraternity. The XTS-CGLL light/laser combines a 300+ lumen light with a green (not red) laser in a tiny package.

As you probably know, green lasers are considered much better for daytime shooting and are arguably better for nighttime as well. Instead of expensive, hard-to-find batteries, this one is rechargeable with a simple micro USB cord that is also included. While charging, a small indicator light will be orange and it changes to green when the unit is fully charged. Charging time for mine seems to be a little over an hour.

This little laser/light gem has an ambidextrous on/off switch on both sides. It is shown here next to a dime to demonstrate its small size. It attaches easily to Picatinny rails on a handgun, rifle, or shotgun. It measures at 1.7" x 1.25" x 1.41" and has five modes: laser, light, laser and light, strobe light, or strobe light and laser. Once installed, it does not have to be removed from the gun to recharge, thereby saving your zero adjustment for the laser.

Every time I've demonstrated one of these to a potential customer in my shop they've immediately bought one. This includes a customer that didn't have an existing rail on his shotgun, so he paid me to install one. Several of my customers even insisted on paying more than I asked, assuming I was given them a too-deep discount and selling it at a loss. The firm's website shows a minimum order, which really isn't all that bad, but you might talk to their sales rep Matt Jones about that.

The FFL discount compared to the suggested retail prices are really good! And, compared to the prices of the "big guy" competitors, you're in a great marketing position. If you sell any retail items in your shop or have been considering it, I recommend adding the XTS-CGLL to your inventory.

The mark up is good, it is a popular item that will move fast (especially considering the asking price), and it will quite possibly add additional gunsmith jobs for customers needing a custom mount to use this on their existing firearms. AG



This unit can be mounted on any kind of firearm and useful for multiple reasons.

FROM THE ARCHIVE

Unhelpful Commentary

Plenty of odd ideas, ranging from simple misunderstandings to outrageous myths, plague the gun world. Here are a few of my favorites.

BY BILL SMITH JANUARY 2022

ORIGINAL PP. 18-19

There seems to be a law written somewhere that is as virulent as it is well hidden requiring gun owners of all stripes, from hunters to military to law enforcement alike, to make up and share some of the most preposterous things about guns and shooting. Ideas seem to spread at a speed proportional to their ridiculousness. Here are some of my favorites. Hunting Magazine Hatred This is my gripe and after decades of reading everything I could that had anything to do with hunting.

I have since cancelled my subscriptions to every magazine I've ever read, except American Gunsmith. I seriously believe I could take a full year's worth of issues and compare it to any other year and find the same articles in them. Oh, they are changed around a little but they all follow a standard format. For the sake of keeping this little dissertation down to under 10,000 words, let's just take deer hunting. The outdoor writer who specializes in these stories spent a year in Deer Hunting Stories 101.

Check them out and see if I am not right. The first thing any of them are going to tell you is that they had scouted the territory or old Uncle Udel had seen a monster buck all summer and he knew just where he was. The next thing is that opening day was raining. It always rains or snows on opening day according to Deer Hunting Stories 101. Now, before daylight this nimrod is in his stand, the wind is right, and he has just enough time for a cup of coffee.

Ever think how far the odor of coffee is capable of being carried? Never mind. Daylight breaks, as it usually does, and our trophy hunter is alert, caressing a firearm that just happens to be made by the publisher's biggest current advertiser ever so lovingly and listens for the sounds he knows he will hear and looks for the big buck. The first sighting is a couple of does, it being in the rut (it is always in the rut when he hunts) so he knows a buck will be along shortly.

Sure enough, a buck appears as if on cue but it just a little (?) six pointer. Because our hero is a purist, he won't settle for anything less than ten points, so he continues to wait. Sometime that afternoon a tiny, too-small-for-out-hero four pointer breaks the brush in front of him but again he passes. This goes on until the last day just as light is fading and he has to go home or to another ranch (probably sponsored) for another deer.

So in that last bit of time and light, the majestic big one suddenly gets stupid and walks out—bang, end of story. Get real! First off most deer hunters have waited all year to take a vacation. They go through the same fights with the spouse about spending every vacation in the woods and all that money while they never go out together, regardless of how often they actually do. The average deer hunter is an average guy.

He shoots a trophy buck every chance he gets but his "trophy" is the first legally shootable animal he sees. It seldom is in the rut for most seasons are deliberately set after the rut. If a spike, a four point or

better, comes though he is dead meat and that deer is the trophy deer for him for the year. The average deer hunter cannot afford to pass up horns that he can see and is likely more interested in the meat anyway. What he sees is a sure thing for he may never see horns again all season.

Worse, these articles almost never have any useful advice to help hunters learn how to shoot better—and many need the help. "Don't shoot unless you're 90% sure" is only good advice if a hunter bothers to find out what 90% is for them. Plenty don't. Participating in High Power Sporting Rifle (a wonderful shooting event the NRA refuses to promote) or Hunter Shooter would do every hunter a great service. I say stop feeding us this trophy nonsense. Stop feeding these standard, programmed stories.

Tell us the truth and usable advice that will help the way millions of hunters actually hunt. Above all, stop telling us how nice it is for an outdoor writer to get to hunt deer two or three months solid when we are down to one or two weeks. We can't afford the plush trips so any of these stories are not realistic. I've read all of the classics by writers such as Jack O'Connor and Townsend Whelen. While I enjoyed them and envied them, I knew they were not real for me or for most hunters.

I ask the hunting media to get down to earth and write their stories directed to and on the same level as we are—the average hunter. The next time you listen to a customer in your shop tell you about the four point buck he got that year, remember what I have said.

UNHELPFUL COMMENTARY CONTINUED

ORIGINAL PAGE 19

Hord Shootin' Gun I just can't help from writing about this statement for it probably is one of the most commonly used descriptions I've heard over the years. I've heard it used as a description for about every type of gun. I have no idea where this phrase originated and have wondered if the person telling that means from the muzzle end or the butt end. Is "hord shootin'" one ounce or three-inch Magnums, low brass or high brass, factory ammo or handloads filled with a ladle of propellant?

I have come to the conclusion after analyzing hundreds of guns described as "hord shootin'" that it really comes down to the fact that the owner does not do much shooting, gun owners that are best described as casual shooters.

Given that too many hunters fail to participate in any kind of shooting competition or class and likely only expend live ammunition during a pre-season sight-in day while attempting to get a "nearo" on their firearm (and some hunters don't even bother with that) I guess they have to grasp for the means to describe something that they aren't terribly familiar with. Such a gun owner does a bare minimum of shooting and has limited experience with firearms in general.

He likely knows little to nothing about ballistics, stock fit, types of actions, barrel lengths, or other details. He doesn't know the difference from an ounce of shot and an equal weight in a rifled slug when fired from the same gun. One or the other shoots harder. Sorry, I meant "horder." Further, this guy generally can't estimate 40 yards from 100. He is generally just recoil happy, but he is a customer.

For the gun owner that isn't keen on learning I've found it best to not argue or explain as he won't appreciate either. Instead, I make a mental note of it and repair his "hord shootin'" gun so it will shoot a little "horder." Hunting articles almost never have useful advice to help hunters learn how to shoot better. "Don't shoot unless you're 90% sure" is only good advice if a hunter bothers to find out what 90% is for them. Plenty don't.

Participating in Sporting Rifle (a wonderful shooting event the NRA refuses to promote) or Hunter Shooter would do every hunter a great service. People can be funny. I once had a customer that was a fanatic turkey shoot shooter. If I could have choked his 12 gauge down to .30 caliber he would have gladly paid me to do it. For those not familiar, a turkey shoot (at least those held in my area) is essentially a game of chance masquerading as a competitive shooting event.

Instead of throwing dice, a line of gamblers use a shotgun from a benchrest to fire one shotshell (usually something like #9 shot provided by the event directors) at a paper target. The targets are then judged (not really scored) to determine which one had a pellet closest to center and therefore the winner of that round's prize, which is often a frozen turkey, hence the name. It's essentially Bingo with shotguns.

Well, after many these events and lots of money out of his pocket to tune the choke, he started winning some turkeys. No word on what his resulting cost per pound was. Then, one bright Sunday morning he found out what organized Trap shooting was and he just knew his "hord shootin'" turkey gun would break every target thrown. A champion in the making! He

found out very quickly that despite winning some turkeys, turkey shoots prepared him to manage nine or less per round.

He's now convinced he can buy his way to shooting 50 straight during league shoots. Some fun! One of the first things he learned was that 25 shotshells fired per round did kick and made him sore. He got over that but still can't get the right drop to his gun or the choke he thinks he needs.

While I'm glad he is taking up a competitive shooting sport (I am convinced every gun owner should) I am holding out for him to read up on Trap shooting skill and hope my advice that taking a class and attempting something resembling organized practice won't be in vain. Bits & Pieces Anew customer walks into my shop on what I thought was a nice day as I was just starting on my third cup of coffee—I always work best when I am fully caffeinated.

He hands me a nice (?) Japanese Type 38 chambered in 6.5×50mm SR Arisaka. He asks, "Can you rechamber this to 6.5mm Remington Magnum?" He even seemed serious. "I sure can," I answered, equally as serious. "Will it shoot?", he asks, still serious. "You bet. At least once." Believe it. Years ago I worked my fingers off fixing tap break revolvers. I thought I had to—I was a gunsmith, wasn't I?

Several years later and a touch of fever, impatience, arthritis, and a lot more smarts, I realized what was costing me so much in time and frustration and came up with the answer for all tap breaks: "There is a time to live and a time to die. Your gun is dead. Bury it!" Bad advice and misinformation abounds, especially in the gun world. Do your best with your customers to combat it. AG

FROM THE ARCHIVE

Glock 19 Mariner

A rare Glock variant intended for use by personnel in maritime units routinely working around bodies of water. Here's how to convert any Glock into a Mariner variant.

BY ROBERT K. CAMPBELL JANUARY 2022

ORIGINAL PP. 20-21

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2482-P20-F01. Know the rights holder? Please ask them to contact us.
AG-3DBC3B2C7-A2482-P20-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2482-P20-F02. Know the rights holder? Please ask them to contact us.
AG-3DBC3B2C7-A2482-P20-F02

There has been a recent run of a pretty rare Glock. The Mariner is intended for “wet” use of some type but most shooters just don’t quite realize what use the means exactly. The Mariner label dates to at least the mid-2000s and was used by Glock in marketing to countries in the Pacific Rim that have military and police forces already using their handguns.

The intention was not to create a handgun to be fired underwater, rather, it was designed for personnel working around water where the handgun was likely to be regularly exposed to water, including being completely submerged, and still needing to come up working. I was asked to evaluate and examine a Mariner by a customer who wondered how good an investment he had made. Other customers have asked if I could upgrade their pistols to Mariner status.

I was surprised the pistol made such a splash (pun intended) on the market. It turns out, yes, you can upgrade any Glock to Mariner status. The question is,

should we? It isn’t that any firearm cannot be fired underwater. Sure they can. At least, they can be fired once under water. The problem all revolves around the compressibility of water. Water isn’t a medium easy to cut through like air. Water basically impedes the movement of the striker and striker spring.

Glock designed what are known as maritime spring cups to make the pistol more versatile for maritime personnel. From what I understand they area restricted item sold only to institutions such as police agencies. Glock limits their sale not due to legal restrictions but to avoid liability from folks wrongly believing the gun is supposed to be fired underwater and proceeding to do so in bath tubs or swimming pools. Firing underwater like this is a very bad idea.

The sound is horrific and may permanently damage your ear drums. You may even suffer a kidney bruise from the concussion of firing a 9mm underwater. Glock cautions against

GLOCK 19 MARINER CONTINUED

ORIGINAL PAGE 21

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2482-P21-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2482-P21-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2482-P21-F02. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2482-P21-F02

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2482-P21-F03. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2482-P21-F03

this firing underwater and restricts the maritime striker spring cups for this reason. Naturally, this makes Glock maritime spring cups much sought after on the black market known as e Bay. The maritime firing pin cups are supplied in pairs, fitting the Glock striker spring and striker. Obviously, these are an essential part that the pistol will not function without. The maritime cups are not solid and sealed, rather, they are designed with an open spot in the cups.

This opening allows water to move through the cups so that water isn't trapped in the striker spring channel if the pistol is immersed. I don't think the maritime cups really allow the pistol to be fired reliably under water more than any other pistol. Rather, if the pistol is worn in bad climatic conditions and immersed in water the maritime striker spring cups will allow water to easily flow from the striker channel and the pistol will fire reliably.

If you ford a creek with the Mariner submerged and then draw and fire the pistol on the other side it will come up shooting as the water will drain out of the striker channel rather than being trapped. Just draw and shake the piece as it is held straight down ensures it is cleared of water. A pistol without a similar provision might not drain water as readily after being submerged. After considerable study of the maritime striker spring cups, here is my take.

The factory striker spring cup is something we never think of. I cannot recall replacing a set as they are trouble free. The maritime striker spring cups have a cut out to allow water to run free offers several variations of their maritime cups, including for Smith & Wesson striker fired pistols. Yet, the Glock Mariner was widely sold, although only as a one time offer. Far offers their own redesigned maritime striker spring cups called the Turbo Maritime Cups. after immersion.

That is an advantage for a diver or someone constantly in and out of water. But for the rest of us the cups are probably not as strong as standard cups and have no advantage. To change the cups if desired (and, hopefully, justified for the owner) the procedure is simple enough. Be certain the pistol is unloaded. Field strip the pistol in the usual manner. Use a Glock tool or punch to hold the striker forward as you press the striker cover out of the slide. Carefully bring the striker assembly out.

Reverse the assembly and place it in the striker channel in the reverse order. This will keep the assembly in place and make the procedure much easier. Depress the spring around the striker and remove the factory cups. Install the assembly as normal. Replace the striker and striker spring with the new striker cups. I test fired the pistol after installation and it was uneventful. That is all that is needed to upgrade a

TOOLS & FIXTURES

Reader Forum

BY AMERICAN GUNSMITH EDITORS JANUARY 2022

ORIGINAL PP. 22-24

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-3DBC3B2C7-A2483-P22-F01. Know the rights holder? Please ask them to contact us.

AG-3DBC3B2C7-A2483-P22-F01

Thomson's October Omnibus The people at Viceblox make a great item and I have since bought both their 1911 and AR-15 Lock & Hold tools. However, the owner quoted on page 21 of the October 2021 issue could be more knowledgeable about where items are manufactured. Tools from Snap-on in their second line products are mostly Chinese, including their toolboxes. Their clothing is made in Bangladesh and is very cheap. The T-shirts used to be made in the U. S. but I guess it got too expensive for their overpriced tools.

Yes, my 14 cabinets of Snap-on tools are very good quality and I paid a bunch but I got rid of the rolling project boxes that were made in China. Any Milwaukee tools made less than 10 years old are made in China, even though they're still priced the same. Black & Decker is now made by the cheapest contractors all over the world. They were good tools in the 1960s. Concerning Miller, I do a lot of welding and use Lincoln Electric. Miller will give you a cheaper price but the quality has not been there for years.

Companies buy Miller on a price point, not on a quality point. Now, firearms. Browning has a location in Utah but it is just a large standard Glock to Mariner status. If you need the cups they are cheap enough, much less expensive than hunting down a factory Glock Mariner. If you cannot find Glock-made maritime striker cups, Ghost Inc. (GhostInc.com, sells a copy of the original and another, improved model they call the Turbo Maritime Cups. I have installed a set of each and they seem to work fine.

These cups allow debris and water to pass through the firing warehouse. They never made guns in the United States except maybe some rimfire pistols and rifles. The older Browning Superposed shotguns and Hi-Power pistols are made by FN in Belgium and sometimes assembled in Portugal for tax reasons. Since the mid 1970s all of their rifles and shotguns are made by Miroku in Japan. The Japanese government does not allow the manufacture of pistols so the .22s are made in Morgan, Utah.

Their clothing, gun cases, and shooting bags that I have seen are made in Mexico. Winchester is now owned by Browning and has been for years. Their rifles and shotguns are manufactured in the same places that Browning rifles and shotguns are manufactured. The Winchester Ammunition is a separate company. Finally, guitars by Fender are made in the USA, but also Mexico, Japan, Korea, Indonesia, and China.

Something to consider while celebrating "Made in the USA." Glen Calvert's "P08 Luger Inspection and Repair" was great. I have one marked 1917 and it did not work when I got it. I did fix it but the job would have been a lot simpler with this article. With regard to discussion in the Reader Forum concerning Parker pin channel. I have never suffered a Glock malfunction related to spring cups but then I have never took a Glock underwater or on a wet operation.

While not needed for the vast majority of owners, this maritime modification can convert any Glock to Mariner statues without needing Glock's restricted items. As I was modifying the Glock Mariner with the new Ghost Inc. Turbo Maritime configuration I also added a set of XS Sights Big Dot sights. Mounting these sights is straightforward. The new pink front post offers a contrast to the common red, green, or yellow front sight. Just thought I'd mention it as you'll see it in the pictures.

AG firing pins, you should be able to make one from a piece of drill rod on a lathe in about ten minutes plus heat treating. Finally, I really don't want to see another AR-15 article. If people don't have this gun figured out by now, it is hopeless. John Douglas Thomson, AIA Torrance, CA NSSF Gun Ownership Report There's an interesting shift concerning Americans' attitudes toward guns and gun control. Pew Research Center, a Washington, D.

C. think tank that tracks attitudes on social issues, public opinion and demographic trends updated their research on guns. Gun ownership is rising and the appetite for gun control is waning at the same time. Background checks for gun sales topped 21 million in 2020, shattering previous records. 2021 saw over 12.4 million background checks, on pace for what could be the second strongest year on record. Those figures are punctuated by skyrocketing numbers of first-time gun buyers.

NSSF RETAILER SURVEYS LAST YEAR INDICATED THAT AS MUCH AS

READER FORUM CONTINUED

ORIGINAL PAGE 23

40 percent of gun sales went to those purchasing their first firearm, or 8.4 million in 2020. Another survey released by NSSF delved into gun sales in 2021, and as much as 33.2 percent, or 3.2 million people, bought a gun for the very first time in the first six months of 2021. Even Pew Research Center recognized the trends. Pew's gun surveys show firearm ownership is remaining steady with 40 percent of American households reporting a firearm in the home, including 30 percent who report personally owning a firearm.

Still, there's reason to be cautious of these anonymous surveys. The firearm industry believes these figures might be under-reported. Many gun owners self-select out of these anonymous surveys for concerns of privacy or being targeted for harassment or even crime. Firearm ownership is an intensely personal right and firearms owners have valid concerns that speaking openly of firearm ownership could expose them to ostracizing protests like being doxxed.

Newspapers have published names and addresses of concealed carry permit holders and politicians continually call for national gun registries. It is understandable that gun owners are reluctant to self-report the guns locked in their safes. NSSF reports there are at least 434 million firearms in circulation and over 20 million Modern Sporting Rifles (MSRs) such as AR-15 style rifles. These are the most-popular centerfire rifle in America today.

Pew's findings about the reasons for gun ownership match what NSSF uncovered: most people are buying guns for personal protection. More than half the firearms sold in any typical year are handguns and that held true during the record-breaking 2020 buying surge. Handguns are primarily used for two purposes, with some minor exceptions. Handguns excel as

firearms used for protection in the home or for concealed carry use. The other purpose is recreational target shooting.

These aren't the types of firearms that are commonly used for hunting. There are exceptions for big and small game handgun hunters, but those are the minority. Handguns certainly would be poor performers if they were used for bird hunting. The numbers of people reporting buying firearms for personal safety and the number of handguns being sold goes hand-in-hand. As Americans are taking ownership of their Second Amendment rights, the appetite for stricter gun control is fading.

One Pew Research Center survey showed 53 percent support stricter gun controls, down from a high of 60 percent, recorded in the wake of tragic murders in Parkland, Florida. Pew also reported that 48 percent of Americans viewed "gun violence" as a very big problem, which also underscores why record numbers of Americans are buying firearms for protection. Pew's surveys show Americans are split when it comes to the idea that stricter gun control would reduce the tragic mass murder events that have rocked the nation.

That's understandable when the facts of these instances are examined more closely. The first crime the murderer in Newtown, Connecticut committed was stealing his mother's firearm before murdering her as she slept and committing his heinous acts. The accused murderer in Parkland had multiple police interactions, including an instance when he allegedly put a gun to mother's head. That alone would have made him a prohibited individual.

The school and even the FBI was warned he was a threat, and the FBI later admitted it didn't act on a tip. The murderer in Sutherland Springs, Texas, was prohibited from possessing a firearm through at least three determining factors; he

READER FORUM CONTINUED

ORIGINAL PAGE 24

was dishonorably discharged from the U. S. Air Force; he was convicted of domestic violence in a military martial; and he was involuntarily committed to a mental health facility. Like Parkland, authorities failed to properly act. His criminal and mentally-disqualifying records were never submitted to the FBI. These are glaring examples of where more laws weren't needed, but enforcement of existing laws were needed.

The failure of law enforcement and military authorities to act when they were required resulted in tragic murders. That's why the firearm industry has been devoted to promoting Real Solutions. That includes changes made to state and federal laws through the Fix NICS initiative (FixNIC-S.org) to ensure all disqualifying records are submitted so those who shouldn't possess firearms don't get their hands on them. These attitudes are more commonly shared today.

Gun ownership is growing and Americans are increasingly demanding laws that protect their rights and hold criminals responsible. The NSSF has a series of reports that go into further detail. Firearms Retailer Survey by Southwick Associates is based on a survey of retailers identifying best-selling products and who is buying them. The survey allows retailers to compare their business to that of other gun stores across the country.

Among the survey's findings is that 85.6 percent of retailers surveyed reported overall sales in 2020 exceeded sales from

2019. Sport Shooting Participation in the U. S. by Responsive Management covers regional and national participation figures for a variety of recreational shooting activities in 2020. Among its findings is that the rate of participation in nearly every shooting activity was higher in 2020 than in any other year.

NSSF encourages its members to attend a webinar from Responsive Management presenting findings from their studies. NSGA Shooting Sports Participation Report by the National Sporting Goods Association for NSSF covers a variety of hunting and shooting sports disciplines with demographic breakdowns, frequency and number of days of participation, and statelevel participation figures. Among its findings: hunting with firearms increased from 17.2 million to 18.3 million participants.

First-Time Gun Buyers by Info Maniacs, Inc. covers motivations for the first purchase of a firearm and what type of firearms were purchased. NSSF conducted research in December 2020 with consumers aged 18 or older who purchased their first firearm in 2019 or 2020. Among the findings, the top-ranking factors for first-time gun purchases are home protection and self-defense (both 80.3 percent) and also to get involved in shooting sports activities. Two Basket Cases A customer brought in two basket cases to fix.

One is Sterlingworth double Eagle semi-auto 45 ACP. I need a illustrated parts break down on both. I have no clue if all the parts are there. Any help would be appreciated. Both have sentimental value to him. Raymond Clay Raymond's Gun Repair Ansley H. Fox first manufactured shotguns in 1896, founding the Fox Gun Company in Maryland. He went on to found the Philadelphia Gun Company in 1904 and introduced the Sterlingworth model in 1910.

Initially priced at \$25, the Sterlingworth was a utility-grade field gun and rather plain, although special order options were available. A 16 gauge debuted in 1916 and the Sterlingworth line remained in production until 1942. Pumpkin Mountain Gunshop acquired the stock of Mitzie Bielen's A. H. Fox factory surplus parts and has them for sale at AHFoxparts.com. Also, try the AH Fox Collectors Association (Fox Collectors.com) which has identification information and history of the company.

Bev Fitchett's Guns has articles and schematic, Bev Fitchett.us. For the Eagle, FoxCarbine.com has a history of the Eagle as Bill Ordner developed the 45 ACP Eagle Carbine, the progenitor of the Fox Carbine. Also, a search for "Mr. G. J. Fox's Tac- 1 Police Carbine" has a history article on the design. AG

SEARCHABLE ISSUE RECORD

Archive index

Power Route XL American Gunsmith Editors	2	Laser Light Combo Charlie Briggs	16-17
Argentine 1927 Robert K. Campbell	3-7	Unhelpful Commentary Bill Smith	18-19
There's A Degree For That! Earl Roberts	8-9	Glock 19 Mariner Robert K. Campbell	20-21
Metalworking History Dean Meier	10-15	Reader Forum American Gunsmith Editors	22-24

Rights and corrections. Images without confirmed permission remain reserved in place. Authors, photographers, and rights holders may contact editor@gunsmithmag.com. Corrections to searchable text are tracked against the source-page record.



American Gunsmith

The complete searchable archive of a technical journal devoted to craft, repair, maintenance, machining, and restoration.

GUNSMITHMAG.COM • EDITOR@GUNSMITHMAG.COM