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Front Cover: Several drawings from the Pitman Notes by Brig. General John T. Pitman. These are of .45 Gov't blanks. Note the use of "Bloomfield Gilding Metal" on the top box. **Courtesy of Dick Fraser, Connecticut**

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From the President

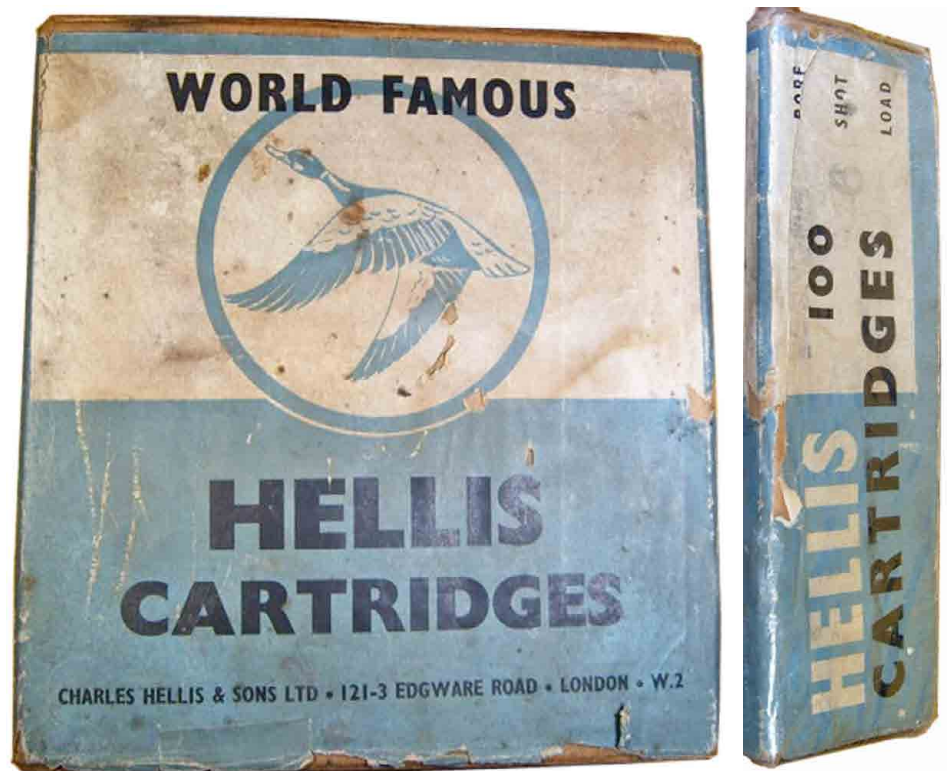
I would like to thank Lew Curtis, Chris Punnett and Pete deCoux for sending cartridge-related material to Aaron Newcomer (IAA Website Webmaster). Aaron is working on the IAA Website Members-Only section as I write this.

Aaron needs content from IAA members. Send Aaron your digital information for viewing in the Members-Only Section (aaron@aaronnewcomer.com).

A special thank you to Matt Collins and Brandon Luter for their efforts in recruiting new IAA members. If my memory serves me correctly, Matt gets new members via his activities with online cartridge auctions and the cartridge show in Manchester, NH that he organizes, and Brandon sets up an IAA banner with back issues and membership applications forms at gun shows he participates in.

Please consider printing of 20 copies of the IAA Membership application form located on the back cover of your IAA directory. Take these membership applications with you on your travels to gun shows etc. and try to sign up new members.

..... Regards, Bob Ruebel



From Tom Seefeldt, Montana. A Hellis 100-round box.

Hellis apparently had a reputation for high quality shot shell loading and also built quality shotguns. Charles Hellis founded his business at 21 Shrewsbury Rd., Westbourne Park, London in 1884. In 1897 he moved to 119 Edgware Rd., Hyde Park, London and moved to the larger property at 121-123 Edgware Rd. in 1935. The company closed in 1956 with the remaining inventory being sold by Henry Atkin Limited and C. S. Rosson who had merged with Hellis some time after WWII.

Developmental Timeline of US 120mm APFSDS-T Tank-fired Ammunition for Use in the M1A1 and A2 Abrams Tanks,

by Jason Abels

It has been a long time since I wrote anything for the IAA *Journal*. My last article on US 105mm Tank-fired APFSDS-T ammunition promised a “Part Two” on 120mm ammunition. So here it is. I apologize for the long delay.

Please note, everything in my collection and all of the specimens photographed in this article are 100% inert and contain zero energetic substances, including the simulated powder charges, primers and tracers.

[Part 1 of Jason’s article appeared in Issue 464]

darts used around the world are typically fitted with either Tungsten alloy or Depleted Uranium (“DU” - also referred to as Staballoy) cores because both are extremely dense heavy metals with excellent armor-penetration qualities. In addition, DU-cored APFSDS-T sub-projectile darts turn into a superheated spray of liquid metal as a result of friction as it travels through the target’s armor. This spray causes havoc inside the enemy tank often causing stored main-gun ammunition to ignite. When this happens, it is common for the turret of the impacted tank to be completely blown off the tank’s hull.

Loaded exactly like conventional, manually-loaded tank ammunition, after being fired, the complete projectile assembly (sabot & sub-projectile dart) travels forward and out of the gun’s barrel. Very shortly after the complete projectile assembly exits the gun’s barrel, the sabot detaches from the sub-projectile dart due to either aerodynamic or centrifugal forces or a combination of both, leaving only the sub-projectile dart to travel down range to impact the target (See Photo 3).

This type of ammunition relies solely on kinetic ener-

Short Description of APFSDS-T and Similar Ammunition

Armor-Piercing Fin-Stabilized Discarding-Sabot Tracer ammunition, or APFSDS-T for short, utilize an outer sabot assembly surrounding a smaller-diameter sub-projectile dart in order to send that sub-projectile dart down range at insanely fast speeds (about a mile a second) and to maximize and focus kinetic energy to a very small impact point on the target. The majority of tank-fired APFSDS-T sub-projectile



Photo 1. Complete developmental timeline sequence of US-made, 120mm tank-fired, APFSDS-T, TPFSDS-T & TPCSDS-T ammunition adopted for use in the Abrams M1A1 & A2 MBT’s



Photo 2a. Typical components & assembly of 120mm ammunition using CCC technology, in this case detailing the M829 APFSDS-T Tactical Round

gy to defeat heavy enemy armor as the sub-projectile dart contains zero explosives. Although extremely effective as a way to defeat heavy, reinforced armor, APFSDS-T as well as all other discarding sabot ammunition does have its downsides. Perhaps the biggest negative is the fact that it is not safe to fire discarding sabot rounds of any bore size over the heads of friendly troops or non-combatants as the discarding sabot petals themselves can be deadly projectiles at short ranges and have wide dispersion angles.

There are a variety of different types of discarding sabot ammunition used by tanks and other gun systems. In this article I will only discuss APFSDS-T, TPFSDS-T (Target Practice Fin Stabilized Discarding Sabot Tracer) and TPCSDS-T (Target Practice Cone Stabilized Discarding Sabot Tracer) ammunition. Information contained in this piece is derived primarily from personal observations, date codes listed on inert specimens in my collection for establishing a developmental time-line, as well as on-line research and considerable insight passed on to me from numerous IAA Members around the globe. I apologize in advance for any inadvertent errors and/or omissions.

While the US has and does manufacture a wide range of tank-fired 120mm APFSDS-T, TPFSDS-T and TPCSDS-T ammunition for domestic use and foreign sales over the years, I am only going to discuss ammunition used in our own tanks and not all of the experimental rounds, projects that did not go anywhere or ammunition sold to other countries but not adopted for continual primary use in the M1A1 and A2 Abrams Tanks operated by US Tank Crews.

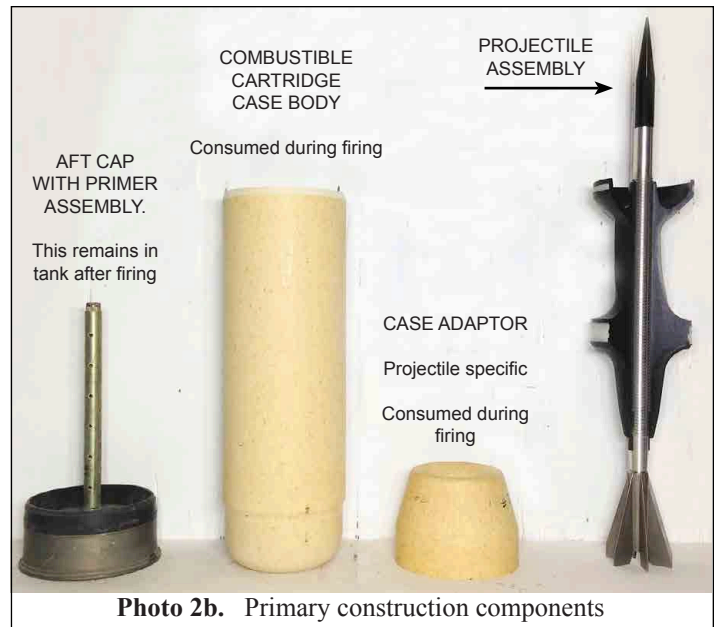


Photo 2b. Primary construction components



Photo 2c (right). Inside view of a combustable cartridge case (CCC) and its case adaptor constructed from cellulose.

Photo 2d (left). Headstamp view of the aft cap from a M829A1 APFSDS-T round.

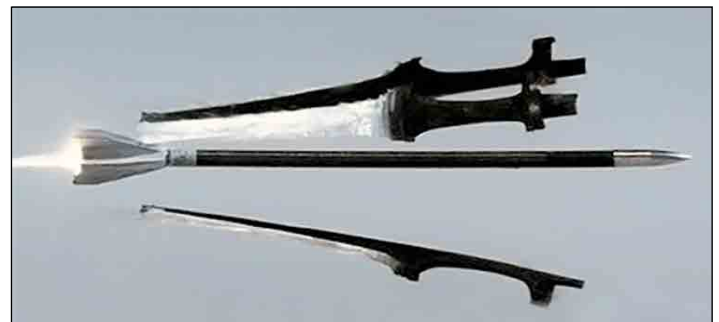


Photo 3. M829A3 APFSDS-T projectile in flight detailing discarding sabot separation and burning tracer element

Brief History

When the United States upgraded its main battle tank (MBT) from the M1 Abrams Tank equipped with the rifled, M68, 105mm gun to the M1A1 Abrams Tank utilizing the German-made, Rheinmetall 120mm L/44 smoothbore gun system designated the M256 in the US, it needed an entirely new type of ammunition. At that time, US 120mm APFSDS-T tank ammunition development was in its infancy. This is especially true concerning the development of 120mm tank ammunition using CCC (Combustible, Cartridge Case) technology, which the new M1A1's M256 gun not only required but also was deliberately built to utilize. This type of ammunition uses cartridge cases primarily made out of cellulose that is consumed during the firing process, leaving only a small, roughly 3" high x 6" wide, round metal "Aft Cap" or steel base-stub with its primer, inside of the tank (See Photos 2a, 2b & 2d). I always assumed that this aft cap automatically fell into a basket at the breech end of the gun when ejected after being fired but I was wrong. After talking with a retired Gulf War veteran, who was a loader on a M1A1 tank crew, I learned that, *"After firing, the aft cap is deflected downward by an aft cap deflector. From there it falls to the turret floor where a few movable gates create a walled barrier, maybe 10-12 inches tall. These gates help contain the aft caps; however, it's in no way a basket. It just helps to keep things tidy and protect the loader."*

One interesting design feature that had to be altered on the projectiles of APFSDS-T, TPFSDS-T and TPCSDS-T ammunition as a result of the upgrade to the 120mm M256 smoothbore gun system from the rifled 105mm M68 Gun can be seen in the obturating band design and its function. Since, by design, APFSDS-T and TPCSDS-T Tank ammunition is either fin or cone stabilized in flight, it is not necessary for the complete projectile to spin at super high RPM's as it travels through the gun's rifled barrel and, then, while in flight to target impact. This is of no concern when using a smooth bored gun like the M256, as it creates very little to no spin on a projectile or just enough spin to help aid in sabot separation. This leaves the sub-projectile dart to stabilize itself in flight via its own fin-shaped or cone-shaped tail assembly. On the other hand, all 105mm fin-stabilized and cone-stabilized ammunition used on the M1 Abrams Tank utilize a specialized obturating band that freely slips or rotates around the circumference of the projectile's sabot assembly. This prevents the sabot and internal dart penetrator from spinning too fast as the barrel's rifling engages and engraves the nylon band. This slip band design is not seen on 120mm APFSDS-T, TPFSDS-T or TPCSDS-T ammunition made for use in smoothbore guns, which instead, all utilize a rigged, non-slip obturating band.

In the Beginning

1979 - the Round that Started it All: The German-made Rheinmetall DM13 APFSDS-T



Photo 4a, 4b & 4c. Sectioned views of Rheinmetall's, tungsten-cored, DM13 APFSDS-T round – the predecessor to them all, made in 1979. Note the hourglass shape at the forward end of the dart assembly. (Photos courtesy of D.J. Harms)

Circa 1982 – 1983 XM866 TPFSDS-T and XM827 APFSDS-T

Initially, the US rushed to manufacture two different types of 120mm discarding-sabot rounds: one, a target practice round and the other; a tactical APFSDS-T round. The target practice round was designated the XM866 TPFSDS-T (See Photo 5a) and its tactical APFSDS-T counterpart, the XM827 (See Photos 5b & 5c).

Both the XM866 target practice and the XM827 tactical rounds were developed solely as interim ammunition for the M1A1 Abrams Tank before the tank was even adopted for service in 1986 and while the development of higher-quality, more efficient ammunition was under development, namely the target practice M865 TPCSDS-T and the tactical M829 APFSDS-T rounds discussed later. From my observations, each of these early rounds appear to utilize exactly the same



double-banded, long-petal sabot assembly, hourglass-shaped finned sub-projectile dart, CCC and manufacturing methods copied directly from the German-made, Rheinmetall DM13 APFSDS-T round (See Photos 4a, 4b, & 4c). The primary differences between the US-made XM866 TPFSDS-T and the XM827 APFSDS-T rounds and the German-made DM13 APFSDS-T round is that the US target practice round uses a solid-steel penetrator and a matte-blue sabot assembly; the US tactical round uses a DU-cored penetrator with a black sabot assembly and the original German, tactical-use DM13 uses a tungsten-cored penetrator with a black sabot assembly. All three finned sub-projectiles have the same hourglass silhouette profile not seen in later 120mm APFSDS-T German- and US-made tank ammunition (See Photo 4c).

This was truly the developmental era for 120mm CCC tank ammunition designed specifically for the Rheinmetall L/44 gun system used on German Leopard 2 Tanks and the US M1A1 and A2 Abrams Tanks, as well as others. From what I have learned, the Rheinmetall DM13 is the very first purpose-built and adopted, APFSDS-T round made for the L/44 gun.

To the best of my knowledge, the XM866 was only used for a very short period of time for testing and target practice on domestic ranges, and the XM827 was never used in a wartime situation because it was already obsolete by the time the M1A1 was fully adopted for service. According to date codes on the inert XM866 TPFSDS-T projectile in

my collection, it was manufactured in 1982 while the date codes on the XM827 APFSDS-T inert model show it to have been manufactured in 1983. I believe the German DM13 APFSDS-T, from which the two US interim rounds were directly copied, was developed in 1979, around the same time that the L/44 gun system first came into service mounted on Leopard 2 MBT's.

Evolution of Target Practice Ammunition Adopted for Service

Circa 1984 to Present M865 TPCSDS-T

The development of the primary discarding-sabot target-practice round adopted for use on the M1A1 and M1A2 Tanks, type classified in 1984 as the M865 TPCSDS-T, has undergone numerous developmental changes and design upgrades over the years. It started out as a direct copy of the German, Rheinmetall-manufactured, DM38 TPCSDS-T

round (See Photo 6) which borrowed its double-banded sabot petal design directly from its predecessor, the DM13 but with a completely new penetrator design and shape. The contract to manufacture the M865 TPCSDS-T round in the past has been divided between two companies, General Dynamics (GD-OTS - formally Primex) and Alliant Techsystems, Inc. (ATK - formally Honeywell).

Since the M865 is a target practice round, it was designed to match the exact trajectory of the tactical M829 (A1, A2, A3 & E4) series of APFSDS-T ammunition discussed later in this article. In addition to matching the flat trajectory of the M829 series out to about 2000 meters, it was necessary to be able to reduce its overall maximum travel distance to less than 8000 meters to insure that it could be safely fired and contained within most target practice ranges. This range reduction requirement was accomplished by using a very specialized cone stabilizer instead of a finned tail assembly attached to the sub-projectile dart. Like the Rheinmetall DM38, first generation M865's utilized a "Ported" cone stabilizer with 9 highly-precision-drilled ports bored through the cone stabilizer. Later generation M865's are all fitted with "Fluted" cone stabilizers (See Photos 7a & 7b).



Photo 6. German made DM38 TPCSDS-T projectile assembly



Photo 7a. Target Practice M865 TPCSDS-T Sub-Projectiles fitted with range-reducing cone stabilizers



Photo 7b. Range-reducing cone stabilizer assemblies

The aerodynamic principle behind the "ported" cone stabilizers is known as the LochKegelLeitwerk principle (LKL). The way it works is that the ported holes are machined to an exact size and shape, so that when fired at very high exit velocities they are "open," aerodynamically. As the sub-projectile dart slows with distance, these ports become "closed," aerodynamically. When this happens, the sub-projectile dart becomes unstable due to increased drag and falls to the ground within the required 8000 meters. I am not sure of the exact aerodynamic principle behind the fluted tail-cone stabilizer but I believe it is similar to the LKL concept. As mentioned above, the M865 is highly accurate within 2000 meters, following the same flat trajectory as the tactical M829 APFSDS-T series of tank ammunition, which is not only considerably more expensive to fire than the M865 target practice round, but it is also strictly restricted to wartime use only due to their DU cores.

In my personal inert collection, I have M865 specimens manufactured from 1987 to 2002, with obvious design modifications over the course of their development. These modifications can primarily be seen in changes to the M865's sabot petals, cone stabilizers and the method used to attach their projectiles to their combustible cartridge cases.

M865 TPCSDS-T Design Changes Over Time

1984

M865 TPCSDS-T MOD1:

Originally, when first type classified in 1984, the 120mm M865 TPCSDS-T round was an exact copy of the German, Rheinmetall DM38 TPCSDS-T round (See Photo 6) with the exception of having a brilliantly blue anodized sabot assembly marked with US stenciling. The DM38 used a light matte blue colored sabot (See Photo 10).

This MOD1 variant utilizes a "ported" cone stabilizer assembly with a tracer screwed into its base, the German DM13/38 "double nylon banded" long three-petal sabot assembly, and is fitted "over" its CCC with a rubber gasket (See Photo #11). This early variant also has its complete

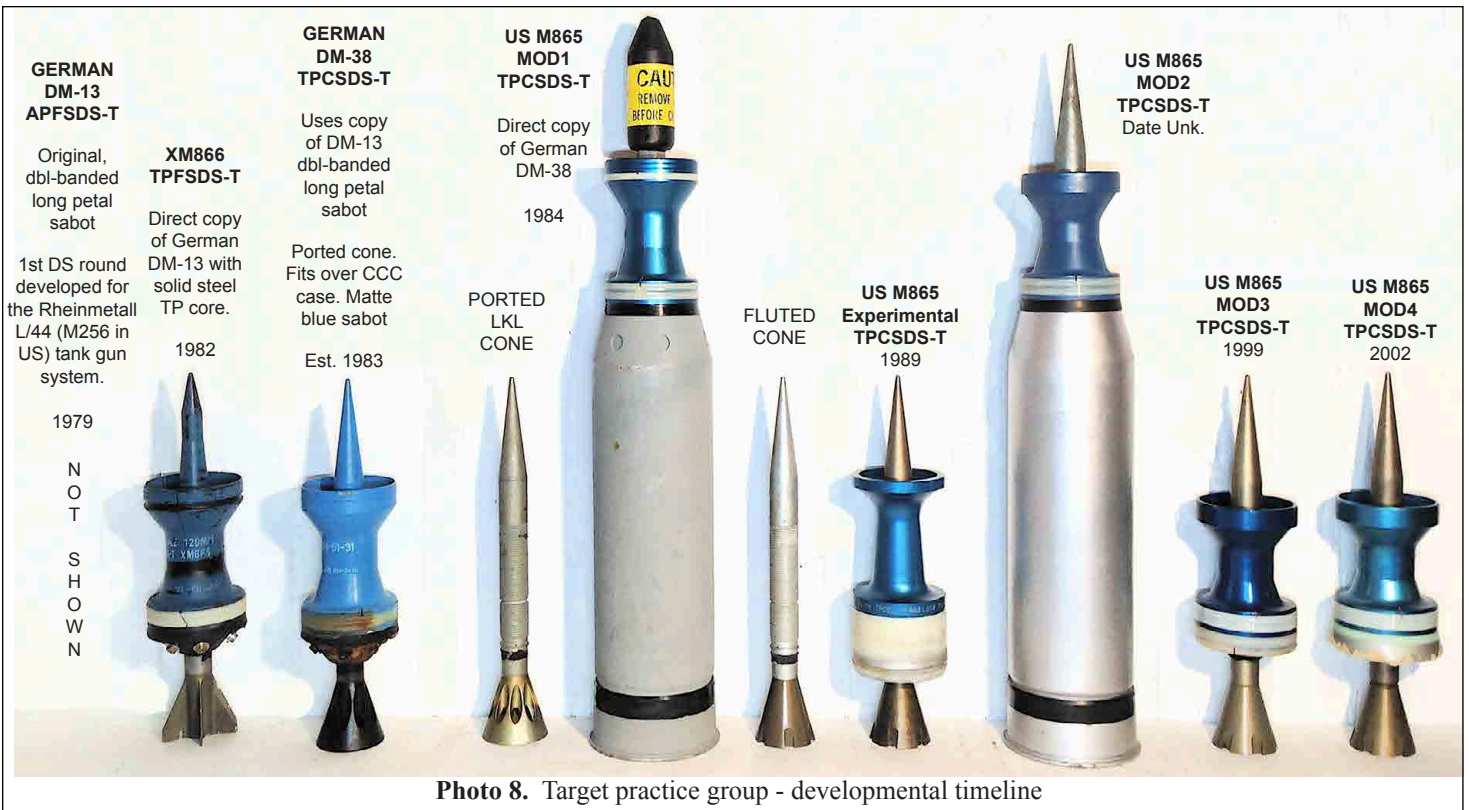


Photo 8. Target practice group - developmental timeline



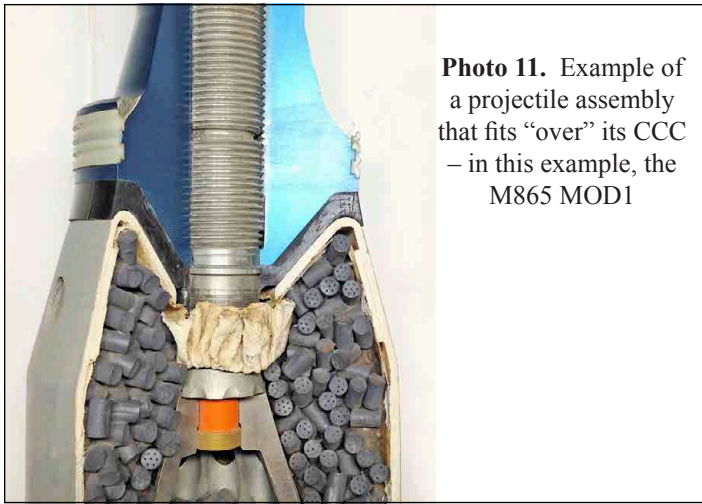


Photo 11. Example of a projectile assembly that fits “over” its CCC – in this example, the M865 MOD1

projectile assembly secured to the CCC adaptor from the inside with 6 attachment bolts (See Photo 12). I have inert projectile specimens of the MOD1, all dated 1987, so this first series M865 TPCSDS-T round was produced, at least until 1987.

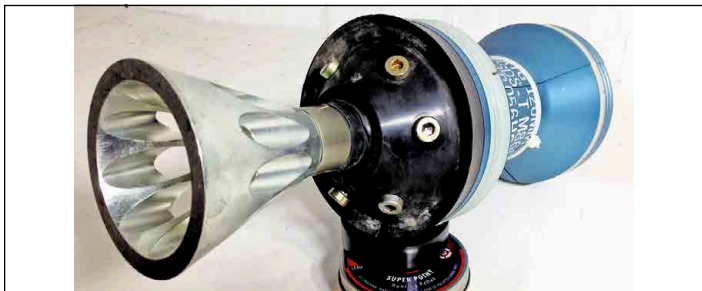


Photo 12. Detail view of the 6 connecting bolts that secure the case adaptor to the projectile assembly from the inside – DM13, XM866, XM827, DM38 & M865 MOD1 variants only

1989

Experimental M865 TPCSDS-T

In my collection, I do have an experimental version of the M865 that was not adopted. It incorporates a completely new sabot design and a wider, 3-inch non-slip nylon obturating band. It is dated 1989, and I speculate that its place in the M865 developmental timeline is between the MOD1, using the DM38 style of double-banded sabot petals and the MOD2, using the all new shortened, single-banded sabot petals (See Photo 13a). It is also a brilliant blue anodized color and uses the newer “fluted” cone stabilizer assembly fitted with a tracer element. The obturating band is much wider than the MOD1’s and is designed to snap “into” its CCC instead of fitting over it like the MOD1 (See Photo 14). It was never adopted, so I believe it was a study in sabot design that led to the eventual adoption of the shortened MOD2 sabot assembly adopted for use on all future M865 TPCSDS-T sabot petals to date.



Photo 13a. Experimental M865 TPCSDS-T projectile with elongated sabot, fluted cone stabilizer and wide obturating band that snaps “into” the CCC adaptor. Not adopted for service.

M865 MOD1	M865 Experimental	M865 MOD2
US copy of German DM-38	NOT ADOPTED	New shortened single-banded sabot
Dbl-banded Long Sabot Ported LKL cone	Single-banded New Long Sabot Fluted cone	1st adoption of a fluted cone

Photo 13b. Side by side comparison of the M865 MOD1, Experimental M865 and the M865 MOD2 projectiles detailing sabot design changes

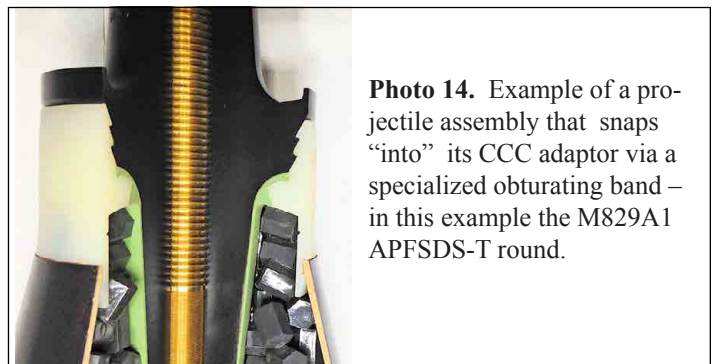


Photo 14. Example of a projectile assembly that snaps “into” its CCC adaptor via a specialized obturating band – in this example the M829A1 APFSDS-T round.

Date Unknown
M865 TPCSDS-T MOD2

While I am not sure of the exact date this variant of the M865 first took place, this modification shortened the overall length of the sabot petal assembly, eliminated the top nylon bore-centering band and switched from a “ported” cone stabilizer to a “fluted” cone stabilizer with a tracer element that screws into its base. The color of the sabot petals was also changed from the brilliant blue anodized color to a darker matte blue color (See Photo 15b). The method of attachment is similar to the MOD1 in that it fits “over” its CCC, but without the use of the 6 attachment screws. The base end, or “aft ramp” of the sabot assembly on this variant has the seams of its three sabot petals sealed with a thick bead of rubbery silicone sealant (See Photo 15c). I was told that this sealant helps to keep the projecting gases behind the projectile and from leaking between the sabot petals, which could effect optimal sabot separation, accuracy as well as possibly damaging the lining of the gun’s barrel.



Photo 15a. M865 TPCSDS-T MOD2 – 1st adoption of the short sabot assembly and fluted cone stabilizer

Photo 15c. Detail view of the typical application of a rubbery silicone type of sealant applied to the aft ramp seams between each sabot petal - 1st adoption observed in the M865 MOD2



Photo 16a. M865 MOD 3 TPCSDS-T projectile assembly made in 1999.

Est. Date 1990
M865 TPCSDS-T MOD3

This variant of M865 also uses the same “short” sabot as the MOD2 and a “fluted” cone stabilizer assembly with a tracer attached; but it uses a completely different method of attachment to its CCC. Instead of fitting, “over” the CCC, this modification has a nylon band that snaps “into” its case. It also has the rear aft ramp seams of its sabot petals sealed with a bead of rubbery silicone sealant. This MOD also changed the color of its sabot petals from the darker matte blue as seen in the MOD2, to a shiny dark-blue anodized color (See Photo 16b - next page).

Est. Date 2002 to Present
M865 TPCSDS-T MOD4

To the best of my knowledge, this is the last and final modification of the M865 TPCSDS-T round to date. This



Photo 15b. Side by side comparison between M865 MOD1 & MOD2 projectiles



variation is almost identical to the MOD3 variant with the exception of the color of its sabot petals, which were changed from a dark-blue anodized color to a light-blue anodized color (See Photo 17b). Many years ago, I read on a tank forum, that this color change may have something to do with different color dyes added to an improved hardening process of the aluminum sabot petals that improved sabot separation, but to date, I have not been able to validate this. Like the MOD3, the MOD4 utilizes the shortened, single banded sabot system, a fluted cone stabilizer with a tracer element, and is designed to snap into its CCC with the rear aft ramp seams of its sabot petals sealed with a heavy bead of rubbery silicone type of sealant.

I have read that some future generations of M865 TPCSDS-T rounds may be partially



fabricated from cannibalized components salvaged from unused and antiquated stockpiles of tactical use M829 APFSDS-T rounds, discussed next, such as their propellant charge and combustible, cartridge cases as a way to reduce production costs. I am not sure if this has happened yet or if that idea was scrubbed.

The M829 Series of Tactical Wartime Use APFSDS-T Ammunition

1984
M829 APFSDS-T

The M829 APFSDS-T is the first in a series of US-developed 120mm APFSDS-T ammunition with the designation M829 and was originally type classified at the end of 1984. Manufactured by ATK and GD-OTS, the M829 utilizes a longer one-piece, DU-cored, 6-finned, sub-projectile dart penetrator than the XM827, as well as a completely newly designed, aluminum, short 4-petal compressed sabot (See Photos 19e & 19f). Inside the fin assembly is a tracer element that burns for approximately 2.5 seconds. The complete projectile assembly snaps into its combustible cartridge case via a specialized nylon obturating band. Production of this first generation M829 APFSDS-T round was stopped when it became outdated and out-performed by the improved M829A1 variant.

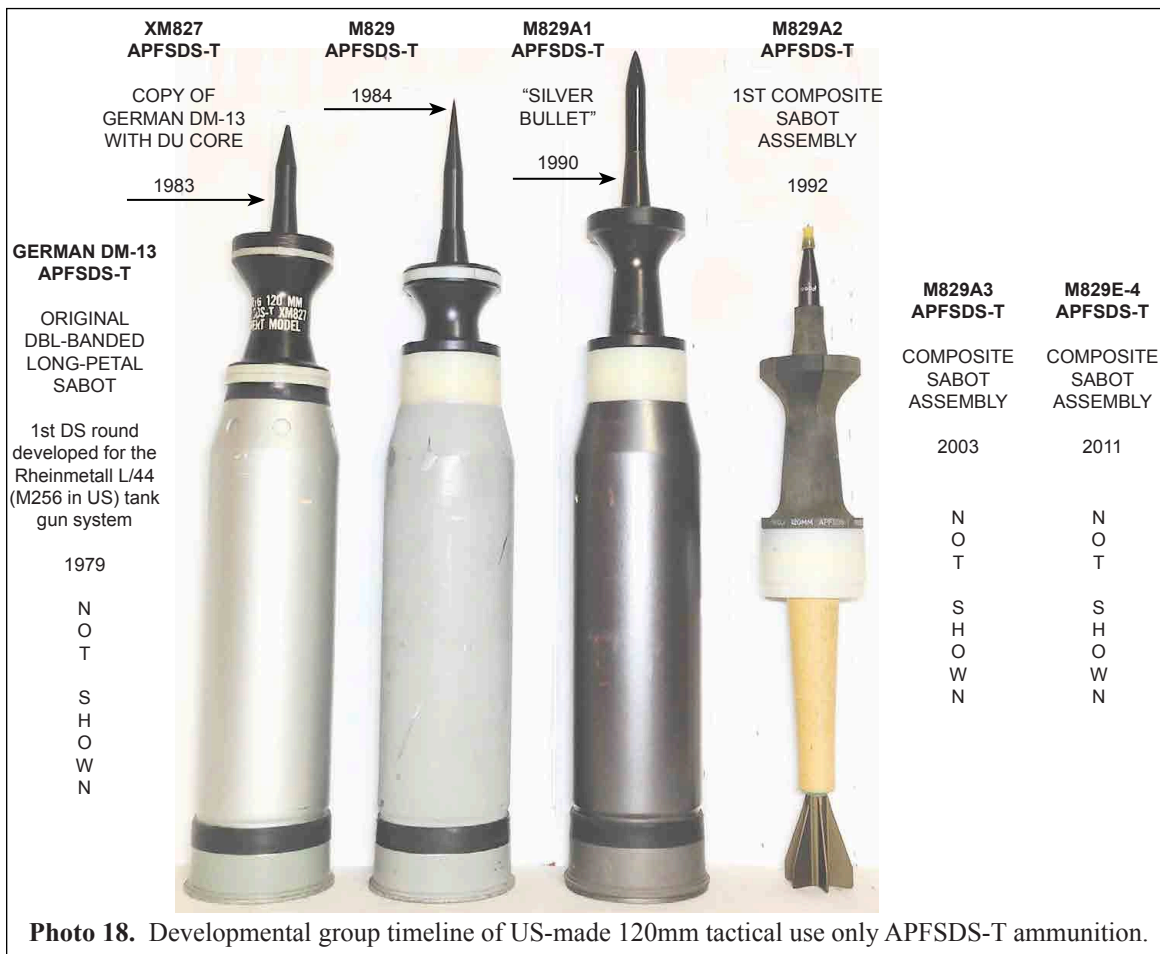


Photo 19a. M829 APFSDS-T round type classified in 1984



Photos 19e & 19f. Side-by-side comparison between the XM827 APFSDS-T round and the M829 APFSDS-T round using a newly-adopted short sabot, detailing sabot design changes and differences in the sub-projectile dart.



Photos 19c & 19d. Detail view of the M829 APFSDS-T projectile assembly (Photos courtesy of Jeff Osborne)

1990
M829A1 APFSDS-T

The M829A1 is the second-generation round in the M829 APFSDS-T series of ammunition. It was first used in Operation Desert Storm in 1990, where it was given the nickname of “The Silver Bullet” by M1A1 tank crews because it was so accurate, effective and flew like a laser beam to its target. At the time, the M829A1 was regarded as the best of the best of all APFSDS-T tank-fired, armor-defeating ammunition. Like its predecessor, the M829, the A1 version also contains a DU-cored sub-projectile dart, which is longer and heavier than the M829’s (See Photo 20b). In order to support this longer and heavier sub-projectile dart, the

4-petal, wasp-waisted, aluminum sabot assembly had to be elongated.

I have read “stories” that this round was so effective that in one case a US M1A1 Abrams tank crew fired at and hit an Iraqi T72 tank; it went right through the first tank, hitting and destroying a second tank. Another “story” I have heard more than once was that in one case, a US tank crew fired a M829A1 round at a enemy tank that was partially entrenched in a sand berm and that its dart went right threw the berm and into the tank’s hull causing stored main-gun ammunition to ignite resulting in the tank’s turret being blown completely off, landing on top of it.

US and coalition tank crews decimated the Iraqi armored tank forces quickly in Operation Desert Storm when engaged in tank-on-tank battles and the credit goes to their extreme bravery, training, high-tech equipment and the quality of their ammunition. I believe the M829A1 APFSDS-T round was responsible for destroying the majority of enemy tanks via direct tank-on-tank engagements in that war. The “Silver Bullet” was known for having a very high “First Round Kill Rate,” as well as having the ability to reach out and destroy the enemy at far greater distances than enemy ammunition could be returned. In many cases, Abrams and coalition tank crews engaged and destroyed enemy tanks at distances so far that the Iraqi forces could not even see them, including engagements at night in almost complete darkness. Due to the M1A1’s hi-tech laser range finder, thermal imaging sights, and advanced fire control technology, the tank crew could even engage the enemy in dust storms, through chemical smoke screens, heavy rain, as well as in darkness.

As good as the M829A1 APFSDS-T “Silver Bullet” was and performed during Operation Desert Storm, ammunition engineers within the military and at companies like GD-OTS and ATK were and still are, constantly trying to improve performance and they developed a third generation M829 round, the A2. I admire these two companies so much for their never-ending drive to constantly improve the ammunition of all bore sizes in order to provide better equipment for our soldiers who volunteer to put themselves in harms way.

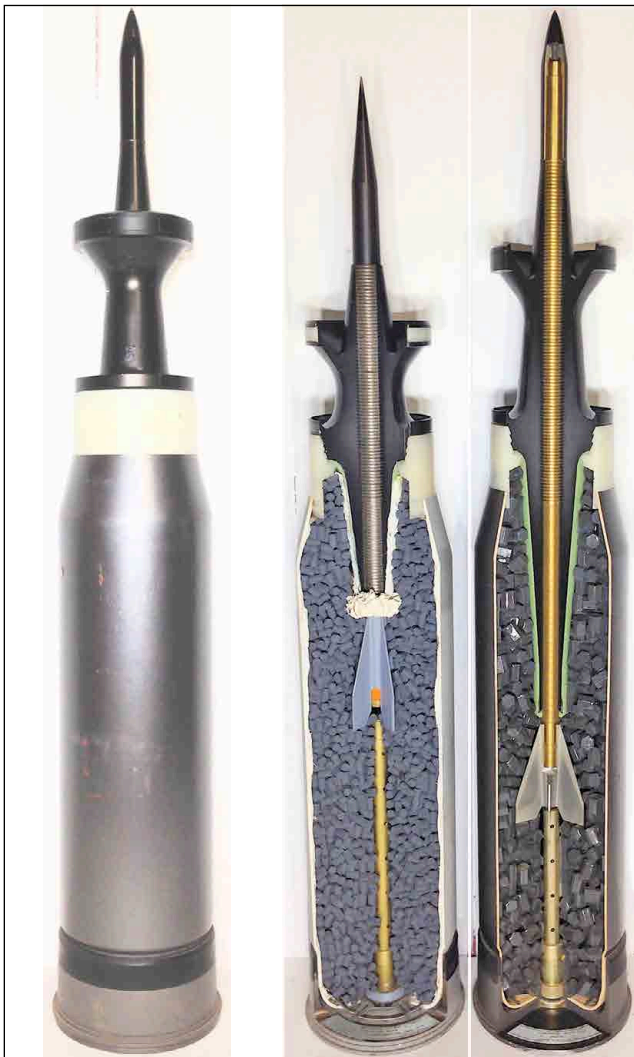


Photo 20a. M829A1 APFSDS-T round, known as the “silver bullet” during Operation Desert Storm, type classified in 1990.

Photo 20b. Side-by-side comparison between the 1st Generation M829 round (left) and the 2nd Generation M829A1 round (right)



Photos 21a & 21b. M829A2 projectile assembly type classified in 1992 is the 1st world-wide use of a carbon-expoxy composite sabot used on a 120mm DS tank round.

1992
M829A2 APFSDS-T

Type classified as the M829A2 on September 29th, 1992, this third-generation APFSDS-T round incorporates some breakthrough design innovations. In particular, the A2 is best known for its unique sabot design innovation. Unlike its predecessors that all utilize aluminum sabot petals, the M829A2 APFSDS-T is the first, worldwide, large bore APFSDS-T tank round equipped with a sabot assembly manufactured completely of an all-new carbon-epoxy composite material (See Photos 21a & 21b). This new composite sabot not only maintains a very high degree of strength but also significantly lowered the parasitic weight of the sabot. As a result, the M829A2 variant has increased range, velocity, accuracy and armor penetration performance than both of its predecessors.

2003
M829A3 APFSDS-T

Like the earlier M829A2, the fourth generation M829A3 manufactured by ATK also uses a carbon-epoxy composite sabot assembly. This assembly again reduces parasitic weight by an additional 20% from the A2 variant. Engineers also designed slots on each of the sabot petals, but I have been unable to learn if these slots are incorporated on the exterior or interior side of the sabot petals. Either way, it is claimed that this new slotted design results in a smoother sabot separation from the sub-projectile dart after exiting the barrel.



Photo 22. Two views of the M829A3 APFSDS-T round type-classified in 2003 – note the increased length of the DU-cored sub-projectile dart.

The A3 was type classified in March of 2003; it uses a longer DU sub-projectile than the M829A2 variant with a further increase in overall range, velocity and target penetration performance. The M829A3's sub-projectile dart was enlarged to the point that its aluminum fin assembly extends through the combustible case almost touching the bottom of the Aft Cap, stopping just above the shortened primer tube (See Photo 22).

2011
M829E4 APFSDS-T

I was unable to find a lot of information on the M829E4 APFSDS-T round. I believe it may still be in the experimental stage, thus the "E" in M829E4. From what I have learned, the contract to produce this fifth-generation M829 round was awarded to ATK in 2011 with full production anticipated in 2014. They apparently made changes to the composition of the DU alloy calling the new 120mm APFSDS-T the "Advanced Energy Round." Like the M829A2 and A3, the E4 also uses a sabot assembly utilizing carbon-epoxy composite technology to reduce parasitic weight while maintaining sufficient strength to accomplish its job.

Possible Future Advances

While I am certain that the effort to engineer and manufacture continually more advanced, better performing and safer to use ammunition is a never ending goal of all manufacturers, this goal can not be overstated when it comes to arms and ammunition made specifically for the military. From what I have learned in studying tank-fired APFSDS-T ammunition, military and private ammunition developers have scientists and engineers constantly working on ways to improve all aspects of ammunition issued to our Armed Forces. As good as current 120mm APFSDS-T & TPCSDS-T ammunition is at this time, I am sure that the brilliant designers at companies like GD-OTS and ATK, as well as those working within the military are currently working on the next improvements. It is well known that even the second generation 120mm M829A1 APFSDS-T round can defeat all known tank armor in service today, and it was still improved upon by the A2, A3 variations. The upcoming E4 under current development is anticipated for a 2014 debut. I have no doubt that they are probably working on an A5 or an even better round, possibly with a totally new type designation. Advances in tungsten alloys are also continuing to improve and it would not surprise me if tungsten-cored penetrators completely replace DU in years to come.

In Summary

One possible new design change that I have read about concerns the future design of all US 120mm M1A1 and M1A2 MBT ammunition using CCC technology. This includes not only APFSDS-T and TPCSDS-T ammunition, but also HEAT (High Explosive Anti Tank) rounds, MPAT-T (Multi Purpose Anti Tank) rounds, canister rounds and any other that utilize combustible cartridge cases. This design change was designated the “Advanced Case System” or ACS. The ACS design changed the location of the attachment joint, called the “Skive Joint,” between the “Case Adaptor” and the combustible cartridge case body from the top to the rear of the round (See Photo 23). The reason for this design change to the manufacturing process is due to some bad accidents that took place at Fort Hood in 2002 and in 2003. Apparently, on very rare occasions, a tear in the CCC can occur as a result of friction during the loading of a round into the M256 gun while sliding across its loading tray. In some cases, solvent from the powder charge exposed by a tear combined with this friction can cause actual unintended ignition. These tears typically took place at the skive joint located at the forward end of the case just under the projectile assembly where the case adaptor attaches to the CCC body. As a result of these two accidents, the loader trays on both the M1A1 and M1A2 tanks are being replaced with trays that are designed to reduce friction during loading. To date, I have not seen any photographic examples of the ACS in use on any 120mm tank-fired rounds but believe it is in the works.

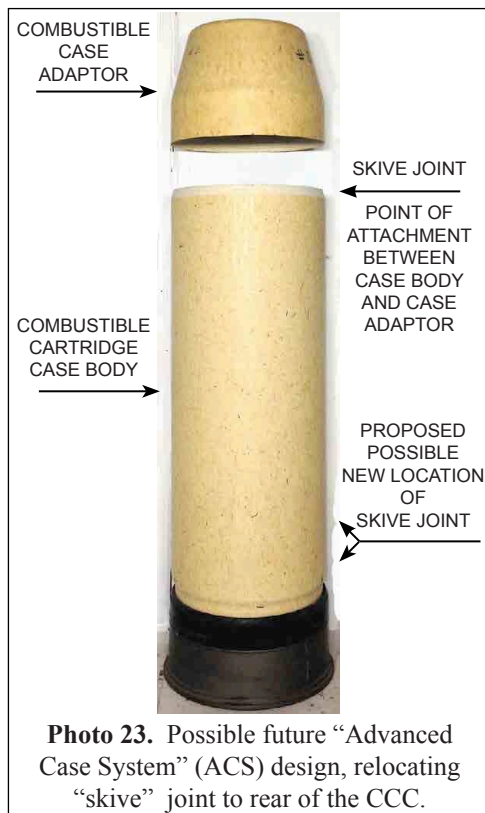


Photo 23. Possible future “Advanced Case System” (ACS) design, relocating “skive” joint to rear of the CCC.

In conclusion, from my understanding, there is a long and interesting history of tank-fired APFSDS-T, TPFSDS-T and TPCSDS-T 120mm ammunition development in the United States. Starting around 1979, with Germany’s desire to upgrade their Leopard 1 MBT to the Leopard 2 MBT fitted with Rheinmetall’s newly invented 120mm smoothbore L/44 Gun System. This new gun system was so good that an arrangement was made for the United States to adopt and utilize it, as well, on our M1A1 Abrams MBT’s where we designated it as the M256 Gun.

During the gun’s development, Rheinmetall created the very first purpose-built APFSDS-T round for the 120mm L/44 smooth bore gun: the DM13 that was also accepted for use in 1979. When the US adopted the L/44 as the M256 Gun a few years later for use on the M1A1 MBT, it obviously needed to create ammunition for its use. It appears obvious that another arrangement was made for the US to make and modify the German DM13 APFSDS-T round, which they did as the XM866 TPFSDS-T round and the XM827 APFSDS-T round in 1982 and 1983. Using the same components and construction method, the US copied the DM13 in its manufacturing of the XM866 and XM827, only changing the TP round to use a solid steel cored dart and the AP version with a depleted-uranium-cored dart compared to the DM13’s tungsten cored dart. These two rounds were interim rounds and were barely used if at all because the M1A1 was not even adopted for service until 1986.

Then came the creation and adoption of a brand new target practice round, the M865 TPCSDS-T in 1984. It was also a direct copy of another German-made round, manufactured by Rheinmetall, designated the DM38 TPCSDS-T, which borrowed the long, double-banded sabot design from its predecessor, the DM13. The M865 is still in use today but has gone through many modifications. It has evolved over the years numerous times to the point that it barely resembles its original German, DM38 design model. It was followed by the M829 series of DU cored, tactical, wartime-use-only APFSDS-T ammunition, which has also evolved substantially from 1984 to the present day over five generations of significant design and performance improvements.

As enemy armor improves so will the technology to defeat it. I am sure as you read this, engineers within the military, GD-OTS, ATK and others are studying and developing even better and more hi-tech APFSDS-T ammunition. It is rumored that the M829E4 APFSDS-T round will even have the ability to penetrate tanks fitted with the latest and greatest explosive reactive armor. Nothing stays the same and I look forward to learning about the next developmental

advancements and innovations these companies design into future generations of tank fired APFSDS-T ammunition.

I would like to thank all of my IAA & BOCN friends from around the globe that I have made over the years. Without your help and friendship my inert collection and understanding of it would not be near as extensive. I am truly grateful to all of you that have so generously shared your time and knowledge with me. I would like to give a special thank you shout-out to Pepper Burruss and Jim Stallard, whose help has been truly invaluable. More than anything,

I would like to say how grateful I am to all of the men and women in our Armed Forces, past and present, who protect our freedom and the freedom of others around the world. You are all true heroes to me for which I will forever admire and respect to the extreme!


I am always interested in inert tank-fired APFSDS-T specimens, photos and related literature.
Contact me at jabels@mindspring.com



From the late John Witzel, British Columbia.
A Kynoch .30/30 box with a Hudson's Bay overlabel.
[Editor's note: does this overlabel appear on other calibers?]



From Terry Warnock, Australia. This is an empty Alex Henry box. "303" is handwritten on the flap on the back. It's about for 303 size, or perhaps something smaller.



East Coast Cartridge Show

41st Annual Show

June 19-20, 2015

**Woodward Twp Firehall, 4147 North Rt. 220 Hwy,
Linden, PA (Williamsport School District)**

**Set up 7:30a.m. Friday. Close 6pm
Saturday, 8am - 12 noon**

**12 noon: John Hintlian Memorial Strawberry Sundae
8-ft tables \$35**

**Contact: Victor Engel, 1815 Ginny Lane, Williamsport, PA 17701
Tel: 570-322-4283; e-mail: vicengel@gmail.com**



NEW VENUE

NEW VENUE

Industry News - Scott Logue

ATK has received \$65 million in contracts for medium- and large-caliber ammunition.

The contracts comprise of both domestic and international orders for 25mm, 30mm and 120mm ammunition. These contracts provide training and tactical ammunition for air, land and sea platforms.



L-R: 25mm M792; 25mm PGU-25 HEI; 30mm M310; 120mm and cutaway

The large-caliber ammunition award included funding to deliver 120mm, M1002 Multi-Purpose Anti-Tank, Target Practice with Tracer, designed for use with the M1A1/A2 Abrams Main Battle tank.

Medium caliber orders include the MK310 Programmable Air Bursting Munition (ABM) with Tracer from the Belgian Army. This round is for use with their Piranha III combat vehicles outfitted with ATK-produced MK44 cannons that feature the ABM fuse setting capability.

Also included in the orders are the 30mm PGU-13 High Explosive Incendiary (HEI) cartridge; the LW30mm M788 Target Practice and M789 High Explosive Dual Purpose tactical round; the 25mm M792 HEI-T using the ATK-developed self-destruct fuse; and the 25mm PGU-23 untraced target practice cartridge.

These munitions are manufactured at ATK-managed facilities located within Allegany Ballistics Laboratory in Rocket Center, West Virginia; Lake City Army Ammunition Plant in Independence, Missouri; and New River Energetics in Radford, Virginia.

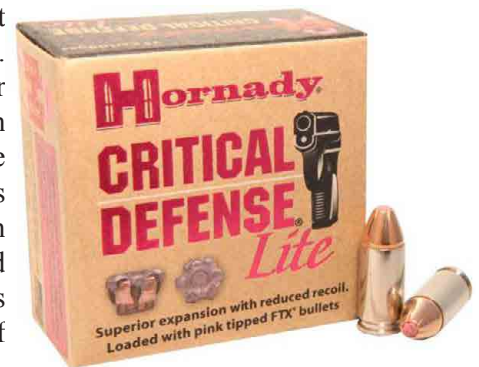
New York State still does not have the information technology infrastructure in place to enable retailers to perform the mandatory background checks. These checks on ammunition purchases are required by the state's SAFE Act, signed into law early in 2013.

The **Colorado Parks and Wildlife Commission** voted on November 15, 2014 to deny a citizen petition with a 5-1 vote. This petition requested a regulation to prohibit the use of traditional ammunition for hunting all game wildlife within the state. Commission members opposed the ban citing a lack of credible scientific evidence on a large enough sample size. The members also expressed interest in the potential economic impact on hunters and the state. This negative impact to Colorado's economy could significantly decrease the Parks and Wildlife budget. Commissioners also had concerns regarding alternative ammunition availability.

On a similar note, the **International Convention on Migratory Species** approved a resolution backing a "rapid phase out" of the use of traditional ammunition in all habitats. During its meeting in Ecuador, countries that have signed on to the 35-year old United Nation's Convention for the Conservation of Migratory Species (CMS) agreed to phase out traditional ammunition over the next three years.

SAAMI (Sporting Arms and Ammunition Manufacturers' Institute) and European partners were able to insert a change to the resolution, stating that, "it is for each Party to determine whether or how to implement the phase out of lead ammunition."

Hornady's Critical Defense Lite 9mmP features a 100 grain FTX bullet with a unique PINK Flex Tip. The pink bullet tips and pink ribbon packaging help signify that a portion of the proceeds from the sale of Critical Defense Lite will go to help fund breast cancer research. The manufacturer claims "The 9mm Critical Defense Lite load features a 27% reduction in recoil compared to standard loads and provides 10" of penetration in ballistic gelatin through heavy clothing."



Hornady has introduced another new line of cartridges. "The American Gunner, this line of ammunition is a collection of tried-and-true, versatile loads that are popular with



shooters for their target shooting, hunting or self-defense needs.”

Hornady advertises that propellants are matched to each load. This step is to ensure optimal pressure, velocity, volume and consistency. Preliminary offerings feature the tried and tested XTP (eXtreme Terminal Performance) bullets. The initial offerings: .380 Auto 90gr.; 9mmP +P 124gr.; 9mmP 115gr.; .38 Special 125gr.; .357 Magnum 125gr.; .40 S&W 180gr. & .45 Auto 185gr.



Glenn Jackson Sept. 10, 1949 - Oct. 24, 2014

Glenn Jackson of Calgary, Alberta passed away October 24, 2014 at the age of sixty-five years. Glenn was born and raised in the province of Quebec and moved to Alberta in his twenties to work in the oilfield. He was a gunsmith for many years which led him to a close association with the shooting community in Calgary. Glenn had a lifelong interest in firearms as well as an encyclopaedic knowledge of everything related. He was a generous and gregarious man which led him to know people in all walks of life. Glenn leaves behind a loving brother as well as many friends and acquaintances made over the years. Glenn was known as “Stonewall” to his friends. Take a breath and look around you at the world in all its natural beauty. Have a good thought for Stonewall today. Enjoy life and remember the man well.

.... Peter Jackson

From Jim Buchanan.

Three views of a tin of Eley No. 11 caps showing the graphics.



Coming Events

Feb. 26 - Mar. 1, 2015. Prescott Show (Western States Cartridge Collectors Association). Frontier Days Rodeo Grounds, Prescott, Arizona. Contact Pete deCoux, 14940 N. Brenda Rd., Prescott, AZ 86305 (928-776-8285)

March 21 & 22, 2015, Castle Rock Cartridge Collectors Show, Castle Rock Elementary School Cafeteria, Castle Rock, Washington. Contact Tom Quigley (tlqmlq@q.com) or 414 Studebaker, Spur 2, Castle Rock, WA 98611

March, 2015. Ohio Cartridge Collectors Show.
**** Canceled due to emergency renovations at the hotel

April 1-4, 2015. St. Louis International Cartridge Show.
Contact: Vic Engel, 1815 Ginny lane, Williamsport, PA 17701 (570-322-4283) vicengel@gmail.com

June 19-20, 2015, East Coast Cartridge Show (Williamsport). **Woodward Twp Firehall**, 4147 North Rt. 220 Hwy, Linden, PA (Williamsport School District). Contact; Vic Engel, 1815 Ginny Lane, Williamsport, PA 17701 (Tel: 570-322-4283, Fax: 570-326-9811) vicengel@gmail.com

* * * * **NEW VENUE** * * * *

September 25-26, 2015. ECRA International Meeting at Hessisch Oldendorf in Germany. Details to follow

And beyond.....

March 23-26, 2016

St. Louis International Cartridge Show.

Sept. 23-24, 2016. ECRA International Meeting, Landhorst, The Netherlands

April 12-15, 2017

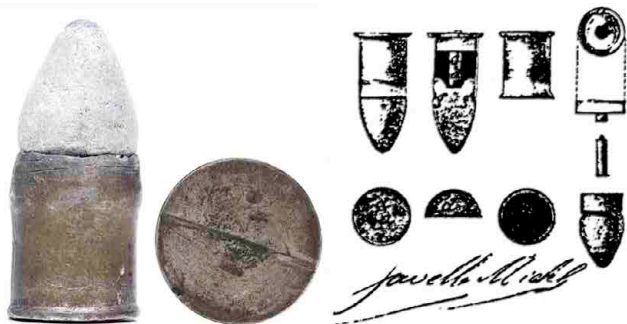
St. Louis International Cartridge Show.

Sept. 22-23 2017. ECRA International Meeting, Walenstadt, Switzerland

The Pinfire Page, by Aaron Newcomer

In this issue we will take a look at a few horizontal pinfire cartridges. Just like typical pinfire cartridges these have a pin that is inside the cartridge and rests inside a percussion cap. However with these, the pin travels the length of the cartridge to a cap resting right below the bullet. One of the main reasons cartridge makers experimented with this type of system was so the explosion would first travel backward, allowing more time for the powder to burn before creating enough pressure to propel the bullet. This allowed less burning powder to travel out the barrel, creating less of a muzzle flash and more pressure to better propel the bullet.

First up is one of the very few known examples of the 13.5x57 Lenoir horizontal pinfire cartridges. August L. Lenoir took out three French patents on this system. The first was in 1849. The second was dated August 9th, 1855 on patent number 24,051 and the third was dated November 11th, 1861 on patent number 51,850. This cartridge dates closest to the second patent. The case is made out of rolled brass foil in a green cardboard tube; both of which are somehow fastened down to the bottom of the drawn brass base shell. The pin goes from the bottom of the base all the way through the inside of the cartridge up to the base of the bullet where a pointed end rests in a primer cup.



Next is an early French cartridge made by Michel Javelle. There were three variations of this cartridge that were patented and made in the late 1850s to early 1860s. This is the third variation. Both of the earlier versions had

the base of the pin holder visible and flush with the bottom of the case. As seen in the patent images, this lead-cased cartridge has a pin that is fixed to the inside of the base and goes up to a percussion cap that sits in the base of the bullet. There is also a hard-to-see raised "J" headstamp on these.

Here is an 8mm Horizontal Pinfire by an unknown manufacturer. The cartridge is a paper case with a glued seam. There is an iron washer at the bottom to close it all together. The iron base is riveted to a metal bar (probably iron) which is magnetic and appears to go into a 4mm percussion cap resting against the base of the bullet. The overall length is 38.6mm. The diameter of the bullet with the paper case is 8.3mm. The base diameter is 8.6mm and the weight: 8 grams.



The next three are thought to have been made by Jules Joseph Chaudun for some of the first centerfire (horizontal pinfire) guns Jean-Louis François Devisme made or converted. They were made somewhere around the late 1840s to 1850s. There are two 11mm and one 9mm cartridges pictured.



It is unknown who manufactured these last two but they are interesting because they are made similar to other cartridges. The first is 12mm but is made similar to a Flobert cartridge. The second one is made exactly like a 9mm Perrin cartridge. Maybe some of the 9mm Perrin revolvers were modified to take these.

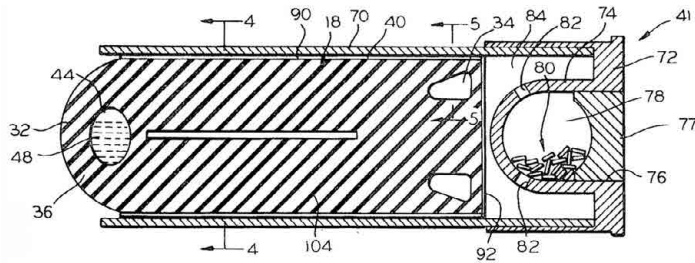


Patents and Trademarks, John Kuntz

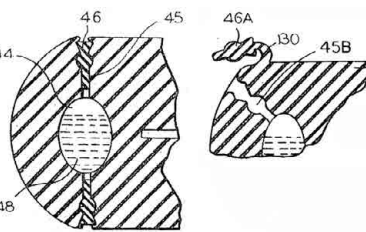
Patent 3,782,286

Jan. 1, 1974

K.W. Jones & E.H. Richie, both of Illinois
Non-Lethal Projectile and Launcher



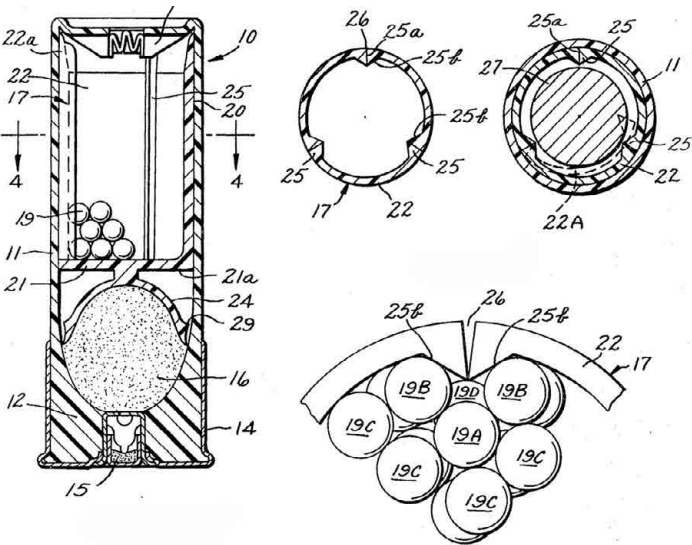
This patent provides a non-lethal projectile and launcher for riot control. Constructed of a soft, pliant latex material that will allow law enforcement to stun and/or mark individuals for further identification, without hurting them.



Patent 3,835,783

Sept. 17, 1974

R.J. Curran Stratford, Conn.
Assigned to Remington Arms Company, Inc.
Shot container wad for hard shot



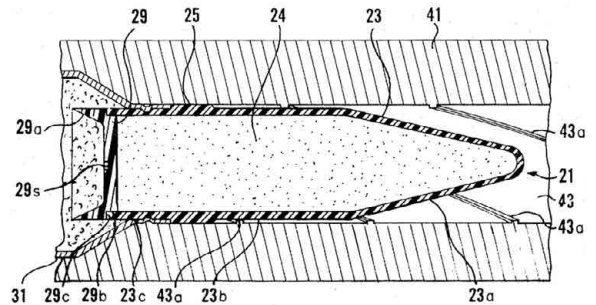
This patent is for a steel shot cup/wad that has a thickened wall and cup thickness to prevent scoring of the shotgun bore upon firing.

Patent 3,785,293

Jan. 15, 1974

I.R. Barr, N.J. LaCosta & W.O. Davis,
all of Baltimore, MD

Assigned to AAI Corporation
Practice Ammunition



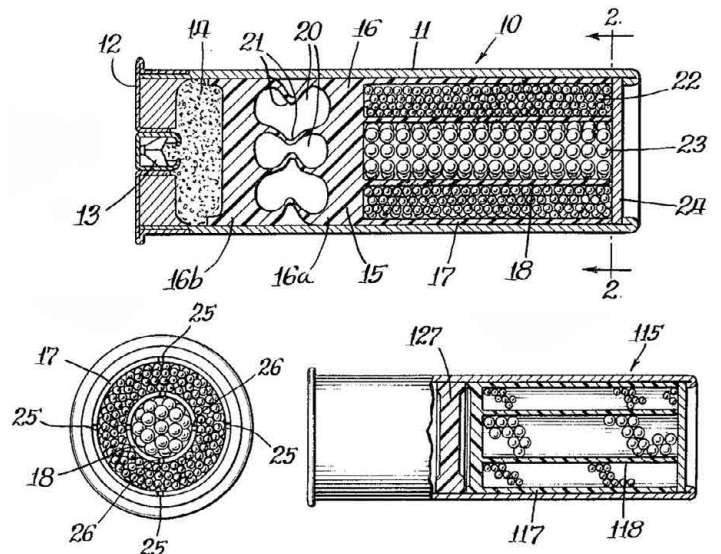
The idea here is to provide ammunition which is easily manufactured by molding the case components to simulate the shape and mass of a standard projectile. It uses a thin-walled plastic projectile filled with particles (such as small lead shot) that fragments shortly after leaving the barrel.

Patent 3,796,157

March 12, 1974

R.C. Anderson Tulsa, OK
Shotgun Shell

Here is an improved shotgun shell including a plastic insert constructed to provide an inner and outer tubular arrangement for retaining two different sizes of shot in one shell.



Following the Headstamp Trail, Part 2

(An Assessment of Small-calibre Ammunition Documented in Syria)

by N.R. Jenzen-Jones

© Small Arms Survey, Graduate Institute of International and Development Studies, Geneva 2014.

This is an extract of a larger document published in April 2014. [Part 1 of this extract appeared in IAA Journal 500]

Technical Characteristics of the Identified Ammunition (cont'd)

12.7 × 108 mm Ammunition

Although 12.7 × 108 mm ammunition is in widespread use in Syria, sources provided only four headstamps³⁷ and limited images of packaging.³⁸ This type of ammunition is used with DShKM, NSV, and W85 heavy machine guns, as well as later-model OSV-96 and Chinese M99 anti-materiel rifles (Jenzen-Jones, 2013). Video documentation of several wooden crates of 12.7 × 108 mm ammunition indicated the presence of B-32 API (armour-piercing incendiary) and BZT API-T (armour-piercing incendiary tracer) cartridges produced at the Novosibirsk Low Voltage Equipment Plant in the Soviet Union, in 1970.³⁹ Both types were packaged in typical wooden crates containing 160 cartridges each. A headstamp photograph of one such cartridge, from Aleppo in December 2012, showed a brass alloy case with red sealant



Photo 28 Soviet 12.7 × 108 mm cartridge case produced in 1970 by the Novosibirsk Low Voltage Equipment Plant. © C.J. Chivers/The New York Times



Photo 29 Wooden outer packaging containing 160 12.7 × 108 mm B-32 armour-piercing incendiary (API) cartridges produced in 1970 by the Novosibirsk Low Voltage Equipment Plant. © Ugarit News

at the primer annulus.⁴⁰ Headstamps of identical cartridges from 1971, taken in Ibleen in September 2012, were also provided to the author.⁴¹

Chinese-made API-T cartridges were also documented in Aleppo, in December 2012.⁴² The example photographed, with a brown lacquered steel case and black sealant at the primer annulus, was produced in 1972 at State Factory 631.⁴³ The projectile had a GMCS jacket with black sealant at the case mouth, and a dark purple painted tip, indicating an API-T loading. As is typical with such cartridges, the purple marking colour is very dark, and is often confused with the black tip marking indicating API. Another Chinese 12.7 × 108 mm cartridge headstamp from 2010 was also documented by sources. Although the factory marking was damaged during extraction of the fired case, it appeared to have been produced by State Factory 41.⁴⁴

14.5 × 114 mm Ammunition

As with 12.7 × 108 mm cartridges, 14.5 × 114 mm ammunition is seen often and throughout Syria, although only one headstamp was documented in the course of researching this report.⁴⁵ That single example was produced in China (in 1982) and marked with the factory code '9631'.⁴⁶ The cartridge was identified from a fired, olive-green lacquered steel case; the projectile type is unknown.

Sources observed other examples of such ammunition in Syria, although the headstamps were not documented. Sources have documented Iraqi 14.5 × 114 mm cartridges, with packaging indicating that they were produced at the Al Yarmouk State Establishment. Each



Photo 30 Chinese 14.5 × 114 mm cartridge case produced in 1982 by State Factory 9631. © Damien Spleeters



Photo 31/32 Chinese 14.5 × 114 mm BZT armour-piercing incendiary tracer (API-T) cartridge produced in 1972 by State Factory 631. © C.J. Chivers/The New York Times



cardboard box indicated that it originally contained eight API cartridges. Each box was packaged in black polyethylene bags, with a single bag containing 18 boxes or 144 total cartridges. Other cartridges of B-32 (API), BZT (API-T), and MDZ (high-explosive incendiary; HEI) type (Photo 33) were identified, as well as a B-32 projectile.⁴⁷ The headstamps and provenance of these cartridges is unknown.



Photo 33 14.5 × 114 mm MDZ high-explosive incendiary (HEI) cartridges of unknown provenance. © Abkhazian Network News Agency



Photo 35 Cardboard packaging originally containing Turkish shotshells produced by Turaç Dış Ticaret Ltd. Şti. under its 'Sterling' brand. © C.J. Chivers/The New York Times

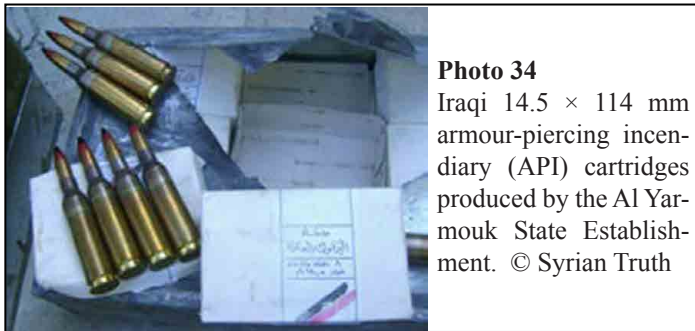


Photo 34 Iraqi 14.5 × 114 mm armour-piercing incendiary (API) cartridges produced by the Al Yarmouk State Establishment. © Syrian Truth



Photo 36 Turkish .410 bore slug cartridge produced by Yavaşçalar. © C.J. Chivers/The New York Times

Shotshells

Several varieties of shotgun shells (shotshells) were identified within Syria. Sources noted at least two varieties of Sterling brand 12 gauge shotshells. The Sterling brand, owned by Turkish ammunition manufacturer Turaç Dış Ticaret Ltd. Şti., is relatively new, having been produced as hunting ammunition only from 2002. The first example documented was a box of 25 shotshells from Sterling's 'Exclusive' series. Each shell contained 34g of number 5 antimony-hardened lead shot.⁴⁸ This loading thus constitutes about 200 pellets of approximately 3.05 mm in diameter (Bussard, 2012, p. 925) and is thus better suited for hunting waterfowl and upland birds than for combat.⁴⁹ The other shotshell packaging observed contained 10 cartridges each (box) of Sterling's 'Big Game Series', loaded with 1oz (28.35g) of double-aught buckshot (9 pellets).⁵⁰ This loading is far more suitable for combat, with similar loadings used worldwide for military, home defence, and large-game hunting purposes.

Two further types of 12 gauge shotshells were observed for sale in Syria, both produced by Yavaşçalar A.Ş. and

marketed under its 'YAF' brand.⁵¹ The first type contained 28g of number 8 shot, or roughly 407 pellets of 2.29 mm in diameter (Bussard, 2012, p. 925).⁵² Such a loading would have even less combat utility than the Sterling cartridge described above. The second identified YAF load was of their 'Gold Slug' type, featuring a 30g gilding metal-jacketed lead slug. These were packed ten rounds to each cardboard box, and would constitute an effective combat loading.

Turkish Zuber Chamber of Industry .410 bore shotshells were also noted by sources as available for purchase.⁵³ These .410 bore cartridges are marked and marketed by Zuber as '36 gauge', a misleading description used by some producers in parts of Europe (Fiocchi, 2001). The shotshells contain 12g of number 4 shot, or approximately 57 pellets of 3.30 mm diameter (Bussard, 2012, p. 925), and were packed 25 cartridges to a box.⁵⁴

They would be almost completely useless in a combat scenario. On the other hand, Yavaşçalar brand .410 bore slug cartridges, observed in Aleppo in December 2012 (see Photo 36), feature a single self-stabilizing lead slug of considerably more weight than each shot pellet in other .410 cartridges, and would thus be of some use in combat.⁵⁵ A



Photo 38 Unidentified 12-gauge shotshell case documented in Ibleen, in 2012. © Damien Spleeters

Photo 37 A range of shotshells and blank ammunition for handguns displayed at a firearms and sporting goods store in al-Bab.

© Damien Spleeters



third, unidentified, brand of .410 bore shotshells was also documented. Marked simply '36' and either 'SV' or 'KR', the provenance is unknown.⁵⁶

Finally, sources noted another unidentified shotshell. One example was documented in Ibleen, in September 2012. This shell featured a blue plastic hull with faded white-printed markings, a brass case head, and indications of a petal-crimped closure.

The shotshells documented in Syria may be used with the wide variety of civilian and military-type shotguns seen in the country, including many produced in neighbouring Turkey (Jenzen-Jones, 2013).⁵⁷ Sterling, Cheddite, and Zuber-brand shotshells are readily available in Turkey, and may have been sold either legitimately or semi-legitimately to an arms dealer or smuggled across the border by other parties.⁵⁸ It is important to note that shotshells are particularly difficult to identify from headstamps alone, as a range of third-party producers can be involved in supplying cases and, less commonly, their components (hulls and brass heads) to the manufacturers of complete cartridges. Many shotgun cartridges supplied on military contracts also follow commercial marking practices, making them difficult to distinguish from cartridges manufactured and/or used for civilian purposes.

blanks, marked with either 'P.A.' or 'P.A.K.', were observed. Although the brands are Turkish, some are manufactured under contract by factories elsewhere. The samples recorded represented a mix of brass alloy and brass-clad steel (BCS) cases, generally with brass or nicked brass primers. The specific cartridges observed by sources are noted below, with the manufacturer and/or distributor listed in parentheses:⁵⁹

- Özkursan 9 mm P.A. (Özkursan)
- Apacı 9 mm P.A.K. (Avrasya)
- V.I.P. 9 mm P.A. (Turan)
- Özkursan 8 mm P.A.K. (Özkursan)



Photo 39 Özkursan, YAS 'Iron', and King brand 8 mm blanks (produced by Özkursan, Yavaşalar, and Çıfsan, respectively) displayed at a firearms and sporting goods store in al-Bab. © Damien Spleeters

8 mm and 9 mm Blanks

A range of PAK (Pistole Automatische Knall) blank cartridges was also documented in Syria. These cartridges are used in blank-firing handguns (so called 'gas alarm guns') and are primarily of Turkish origin. The ammunition and their associated arms are both produced and widely available (without a firearms license) in Turkey. Both 8 mm and 9 mm



Photo 40 Turkish Apacı and V.I.P. brand 9 mm blanks (produced by Avrasya and Turan, respectively) displayed at a firearms and sporting goods store in al-Bab.

© Damien Spleeters

- YAS ‘Iron’ 8 mm P.A.K. (Yavaşalar)
- King 8 mm P.A.K. (Çıfsan)

Other Ammunition

Limited quantities of 7.62 × 45 mm ammunition were observed by a source alongside a Czech vz. 52 rifle in Aleppo, in December 2012.⁶⁰ The cartridges were produced at Považské Strojárne, A.S. in Czechoslovakia, in 1952, and featured brass alloy cases and cupronickel-clad steel (CNCS) jacketed projectiles.⁶¹ They had a three-entry headstamp with a blackened primer.

One 5.45 × 39 mm cartridge was observed in Syria.⁶² Produced by the Russian Barnaul Machine Tool Plant JSC in 1998, it featured a green lacquered steel case, a GMCS projectile, and purple sealant at both the case mouth and primer annulus.⁶³ This cartridge was likely to have been used with an AK-74 or AK-74M rifle, both of which are known to be used in Syria (Jenzen-Jones, 2013).

Two 7.62 × 25 mm pistol-calibre cartridges were documented by sources. Produced by Sellier & Bellot in the Czech Republic, they were seen alongside a Yugoslavian M57 pistol.⁶⁴

A Syrian pistol cartridge, produced in 1984 by EID in Damascus, was also documented.⁶⁶ It was marked ‘9 × 17’ though it is believed that Syrian cartridges marked in such a manner and produced around this period are in fact 9 × 18mm cartridges with an incorrect case length marked on the headstamp.⁶⁷ The cartridge was observed alongside a Russian PM pistol, which is chambered for the 9 × 18 mm cartridge, supporting this theory. The round featured a brass alloy case with a crudely applied red sealant covering the primer and primer annulus.

Likely Existence of Cartridges not yet Observed

Several calibres of ammunition are known to be present and used in Syria, but have not been documented either in this report or by other researchers.⁶⁸ For example, calibres that are frequently visible in news footage and images of the conflict—in particular 5.56 × 45 mm NATO—have had no headstamps recorded and/or otherwise documented for this report. Bearing in mind the difficulty of gathering information from the conflict zone, the following list of SAA calibres known or strongly suspected to be present in Syria at the time of publication is offered, with the relevant weapon/s in brackets (Jenzen-Jones, 2013):⁶⁹

- 5.56 × 45 mm (various M16 and AR-15 type weapons; FAMAS; Steyr AUG)



Photo 41 Russian 5.45 × 39 mm FMJ cartridge produced in 1998 by Barnaul Machine Tool Plant JSC. © Damien Spleeters



Photo 42 Czechoslovakian 7.62 × 45 mm cartridge produced in 1952 by Považské Strojárne, A.S. © C.J. Chivers/The New York Times



Photo 43 Czech 7.62 × 25 mm cartridge produced by Sellier & Bellot. © C.J. Chivers/The New York Times

- .50 BMG (Browning M2)
- 9 × 19 mm Parabellum (FN Browning Hi-Power; Glock 17; Sterling L2A3 Mk 4; Heckler & Koch MP5; Port Said submachine gun)
- .30-06 (Browning M1919A4)
- 7.5 × 54 mm French (MAS-36)⁷⁰
- 7.92 × 33 mm Kurz (MP 43; MP 44)
- various calibres primarily used for hunting/civilian purposes (hunting rifles in undetermined calibres).

Box 2 Syrian 9 × 18 mm Cartridge Marking Practices

It appears that at least some Syrian 9 × 18 mm Makarov cartridges which were produced by Établissement Industriel de la Défense (EID) in Damascus are marked with the Arabic characters for ‘9 × 17’ (٩ × ١٧). This has led to some confusion, with these cartridges having been described variously as 9 × 18 mm and 9 × 17 mm (.380 ACP). Measurements of the cartridge case by several small arms ammunition specialists, as well as anecdotal evidence on the use of the cartridges with PM pistols and copies chambered for 9 × 18 mm, suggests that the case length (‘17’) marked on these headstamps is incorrect. It is not known whether this was an intentional decision by EID, or an error on their part. Examples of cartridges marked in this way are known to exist from 1981, 1984, and 1987.⁶⁵



Photo 44 Syrian 9 × 18 mm cartridge produced in 1984 by the Industrial Establishment of Defence (EID). Note Arabic characters reading ‘9 × 17’. © C.J. Chivers/The New York Times

Annexe 1. Small Calibre Ammunition Identified in Syria

Calibre	Production facility	Year of production	Country of manufacture	Headstamp information ⁷²	Headstamp diagram or photograph	
5.45 x 39 mm	Barnaul Machine Tool Plant JSC	1998	Russian Federation	17 98		
	State Factory 31 ⁷⁴	1964	China (PRC)	31 64		
7.62 x 39 mm	State Factory 61 ⁷⁵	1991	China (PRC)	61 91		
	State Factory 81 ⁷⁶	1982	China (PRC)	81 82		
	State Factory 821 ⁷⁷	1982	China (PRC)	821 82		
	State Factory 61	1992	China (PRC)	61 92		
	State Factory 71 ⁷⁸	1997	China (PRC)	71 97		
	State Factory 61	2008	China (PRC)	61 08		
	State Factory 71	2008	China (PRC)	71 08		
	7.62 x 39 mm	State Factory 821 ⁷⁹	2008	China (PRC)	811 08	
		State Factory 811	2011	China (PRC)	811 11	
VFB Mechanische Werkstätten Königswartha		1982	East Germany (now Germany)	04 82		
Mátravidéki Fémművek ⁸⁰		1984	Hungary	23 84		
DIO AMIG ⁸¹		1970	Iran	Sazman Sanaye Defa (نامزاس عیان صن عافد)		
DIO AMIG		1999	Iran	7.62x39 99		
DIO AMIG		2001	Iran	7.62x39 2001		
DIO AMIG		2011	Iran	7.62x39 7 11		
Unknown Iranian or Syrian production facility		2003	Iran or Syria ⁸²	7.62x39 7 2003 7		

Calibre	Production facility	Year of production	Country of manufacture	Headstamp information ⁷²	Headstamp diagram or photograph
7.62 × 39 mm	Unknown Iranian or Syrian production facility	2004	Iran or Syria	7.62x39 6 2004 6	
	Unknown Iranian or Syrian production facility	2004	Iran or Syria	7.62x39 7 2004 7	
	Unknown Iranian or Syrian production facility	2005	Iran or Syria	7.62x39 7 2005 7	
	Unknown Iranian or Syrian production facility	2006	Iran or Syria ⁸³	7.62x39 6 2006 6	
	Unknown Iranian or Syrian production facility	2008	Iran or Syria	7.62x39 7 2008 1	
	Unknown Iranian or Syrian production facility	2009	Iran or Syria	7.62x39 7 2009 7	
	Unknown Iranian or Syrian production facility	2009	Iran or Syria	7.62x39 7 2009 1	
	Unknown Iranian or Syrian production facility	2010	Iran or Syria	7.62x39 7 2010 7	
	Bishkek Machine-building Plant (BMZ)	2000	Kyrgyzstan	60 00	

Calibre	Production facility	Year of production	Country of manufacture	Headstamp information ⁷²	Headstamp diagram or photograph
7.62 × 39 mm	Uzina Mecanică Sadu S.A.	1992	Romania	322 92	
	Uzina Mecanică Sadu S.A.	1996	Romania	321 96	
	Unknown	2012	Romania	7.62x39 12	
	WOLF Performance Ammunition	Unknown	Russian Federation ⁸⁴	7.62x39 WOLF.	
	Barnaul Machine Tool Plant JSC	1998	Russian Federation	17 98	
	Military Industry Corporation ⁸⁵	2009	Sudan	39 09 * ⁸⁶	
	Military Industry Corporation ⁸⁷	2010	Sudan	39 10 1	
	Military Industry Corporation ⁸⁸	2011	Sudan	39 011 2	
	Military Industry Corporation ⁸⁹	2012	Sudan	39 12 1	
	Military Industry Corporation ⁹⁰	2012	Sudan	39 012 1	

Calibre	Production facility	Year of production	Country of manufacture	Headstamp information ⁷²	Headstamp diagram or photograph
7.62 × 39 mm	Industrial Establishment of Defense (EID)	1982	Syria	٧٩ × ٧,٦٢ ٨٢	
	Industrial Establishment of Defense (EID)	1984	Syria	٧٩ × ٧,٦٢ ٨٤	
	Unknown Syrian production facility	1996	Syria	7.62x39 96	
	Unknown Syrian production facility	1998	Syria	7.62x39 98	
	Unknown Syrian production facility	2000	Syria	7.62x39 2000	
	Unknown Syrian production facility	2001	Syria (presumed) ⁹¹	7.62x39 7 2001 7	
	Unknown Syrian production facility	2003	Syria (presumed)	7.62x39 7 2003 7	
	Unknown Syrian production facility	2009	Syria (presumed)	7.62x39 7 2009 7	
	Unknown Syrian production facility	1997	Syria (presumed)	7.62x39 97	
	Lugansk Cartridge Works	2010	Ukraine	LCW 10 7.62x39	

Calibre	Production facility	Year of production	Country of manufacture	Headstamp information ⁷²	Headstamp diagram or photograph
7.62 × 39 mm	Tula Cartridge Works	1985	USSR (now Russian Federation)	539 85	
7.62 × 4.5 mm	Považské Strojárne, A.S. ⁹²	1952	Czechoslovakia (now Slovakia)	aym - 52	
7.62 × 51 mm & .308 Winchester	Sellier & Bellot JSC	1986	Czechoslovakia (now Czech Republic)	308W 86	
	Sellier & Bellot JSC	1987	Czechoslovakia (now Czech Republic)	308W 87	
	Unknown (unmarked cartridge)	Unknown	Unknown	None	
7.62 × 54R mm	State Factory 61	2006	China (PRC)	61 06	
	State Factory 61	2008	China (PRC)	61 08	
	State Factory 945 ⁹³	2011	China (PRC)	945 11	
	Soviet State Factory, Frunze ⁹⁴	1987	USSR (now Kyrgyzstan)	60 87	

Calibre	Production facility	Year of production	Country of manufacture	Headstamp information ⁷²	Headstamp diagram or photograph
7.62 × 54R mm	Barnaul Machine Tool Plant, JSC ⁹⁵	1976	USSR (now Russian Federation)	17 76	
	Barnaul Machine Tool Plant, JSC	1983	USSR (now Russian Federation)	17 83	
	Novosibirsk Low Voltage Equipment Plant ⁹⁶	1990	USSR (now Russian Federation)	188 90	
12.7 × 108 mm	State Factory 631 ⁹⁷	1972	China (PRC)	631 72	
	State Factory 41 ⁹⁸	2010	China (PRC)	41 10	
	Novosibirsk Low Voltage Equipment Plant	1970	USSR (now Russian Federation)	188 70	
	Novosibirsk Low Voltage Equipment Plant	1971	USSR (now Russian Federation)	188 71	

Calibre	Production facility	Year of production	Country of manufacture	Headstamp information ⁷²	Headstamp diagram or photograph
14.5 × 114 mm	State Factory 9631 ¹⁰⁰	1982	China (PRC)	9631 82	
	Al Yarmouk State Establishment	Unknown	Iraq	Not sighted	N/A
7.62 × 25 mm	Sellier & Bellot	Unknown	Czech Republic	S & B 7.62×25	
9×18 (marked 9×17)	Industrial Establishment of Defense	1984	Syria	9 × 17 Aε	
.410 bore	Yavaşçalar A.Ş.	Unknown	Turkey	CAL 36 CAL 36	
	Yavaşçalar A.Ş.	Unknown	Turkey	CHEDDITE 12 ¹⁰²	
12 gauge ¹⁰¹	Unknown	Unknown	Unknown	12 12 12	

Conclusion

This is an initial report on the small arms ammunition present in Syria and documents 70 different headstamps from around the country, with dates of manufacture ranging from the 1950s to the present day. The report is based on a combination of open-source information and material provided by NGO workers, journalists, and others, including a variety of confidential sources. Several cartridges recorded were manufactured after the outbreak of hostilities in Syria, indicating an ongoing supply of ammunition from abroad. The primary countries of manufacture for the cartridges documented in this report are China, Iran, and Syria, as well

as several former Eastern Bloc countries. Both domestic manufacture and the likelihood of notable supply from Iran are significant sources of ammunition for the Syrian government and, in turn, for the many rebel groups who capture military stockpiles.⁷¹

This report also provides initial information regarding the pricing and availability of different calibres. In general, cartridges in Eastern Bloc calibres are more common and widely available than those in NATO calibres. A shortage of NATO calibre cartridges, and of cartridges made to military specifications (as opposed to their commercial equivalents), has caused issues in several documented instances.

While the data-collection effort forming the basis of this report remains ad hoc and necessarily limited in scope by conditions on the ground, the Survey hopes that the report will provide an important baseline assessment of ammunition observed to date, and a first step for future work in documenting ammunition in Syria and the broader region.

Abbreviations and Acronyms

ACP	Automatic Colt Pistol
AK	Avtomat Kalashnikova ('Kalashnikov automatic rifle')
AKM	Avtomat Kalashnikova Modernizirovanny ('Kalashnikov automatic rifle, modernized') AK-74 Avtomat Kalashnikova Obraztsa 1974 ('Kalashnikov automatic rifle, model 1974')
AK-74M	Avtomat Kalashnikova Obraztsa 1974 Modernizirovanny ('Kalashnikov automatic rifle, model 1974, modernized')
API	Armour-Piercing Incendiary
API-T	Armour-Piercing Incendiary Tracer
B-32	Broneboyno zazhigatelny ('armour-piercing incendiary')
BCS	Brass-Clad Steel
BMG	Browning machine gun
BMZ	Bishkekkiy Mashinostroitelny Zavod ('Bishkek Machine-Building Plant')
BZT	Broneboyno Zazhigatelno Trassiruyushchiy ('armour-piercing incendiary tracer')
CCS	Copper-Clad Steel (often incorrectly referred to as 'copper washed steel')
CNCS	Cupronickel-Clad Steel
DShKM	Degtyareva-Shpagina Krupnokalibernyy ('Degtyareva-Shpagina large calibre')
EID	Établissement Industriel de la Défense ('Industrial Establishment of Defense')
FAL	Fusil Automatique Léger ('Light automatic rifle')
FMJ	Full Metal Jacket
FN	Fabrique Nationale d'Herstal ('National Factory of Herstal')
GMCS	Gilding Metal-Clad Steel
HEI	High-Explosive Incendiary
KPV	Krupnokalibernyy Pulemet Vladimirova ('Vladimirova large calibre machine gun')
KPVT	Krupnokalibernyy Pulemet Vladimirova Tankovyy ('Vladimirova large calibre tank machine gun')
MAG	Mitrailleuse d'Appui Général ('General-purpose machine gun')
MDZ	Mnogovennogo Deystviya Zazhigatelny ('instantaneous incendiary'; HEI)
MANPADS	Man Portable Air Defence System
NSV	Nikitina-Sokolova-Volkova (designers' names)
OSV-96	Obshchetakticheskaya Snayperskaya Vintovka ('General tactical sniper rifle')
PAK	Pistole Automatische Knall ('Automatic pistol blank')
PK	Pulemet Kalashnikova ('Kalashnikov machine gun')
PKM	Pulemet Kalashnikova Modernizirovanny ('Modernized Kalashnikov machine gun')
PKT	Pulemet Kalashnikova Tankovyy ('Kalashnikov tank machine gun'; vehicle mounted, solenoid-fired variant of the PK machine gun)
PSL	Puşcă Semiautomată cu Lunetă ('Semi-automatic sniper rifle')

RPD	Ruchnoy Pulemyot Degtyaryova ('Degtyarev light machine gun')
SKS	Samozaryadnyy Karabin Simonova ('Simonov self-loading carbine')
SSG 69	Scharfschützengewehr 69 ('Sniper rifle 69')
SVD	Snayperskaya Vintovka Dragunova ('Dragunov sniper rifle')
TCW	Tula Cartridge Works
VEB	Volkseigener Betrieb ('Nationally owned enterprise')

Acknowledgements

The author expresses his sincere gratitude to all of those who assisted with the production of this report. C.J. Chivers and Damien Spleeters, both tireless in their efforts to document the matériel used in conflict zones around the world, provided the bulk of the images upon which this analysis is based. Russ Cornell, Alexander Diehl, Federico Graziano, Ron Merchant, Hans Migielski, John Moss, and Jack Wells (SGM USA, Ret.) shared their considerable technical expertise, and continue to do so. Thanks are also due to Jonathan Ferguson, Nicolas Florquin, Nicholas Marsh, Neil Marshall, Reza Nazari, Michael Weber (SGM USA, Ret.), and several confidential sources who are not named for privacy or security reasons.

About the Author

N.R. Jenzen-Jones is a military arms and munitions specialist and security analyst focusing on current and recent conflicts. He is the director of Armament Research Services (ARES), a specialist consultancy providing technical expertise and analysis to a range of government and non-governmental entities. He has produced extensive research and analysis on a range of small arms and small arms ammunition issues, and has also provided technical assessments of incendiary weapons, cluster munitions, and arms proliferation. His other research fields include counter-piracy, counter-narcotics, and the exploitation of technical intelligence. He is a certified armourer and an ammunition collector.

Notes

- 37 HP02-32, HP02-36, HP02-36, and HP01-19.
- 38 PP03-02 and PP03-03.
- 39 Now LVE Novosibirsk Cartridge Plant JSC in the Russian Federation.
- 40 HP02-36.
- 41 HP01-19.
- 42 CP02-08, HP02-32.
- 43 Unknown state manufacturer in China.
- 44 HP02-36. Unknown state manufacturer in China.
- 45 The 14.5x114mm cartridge is used with KPV, KPVT, and Type 75 heavy machine guns (Jenzen-Jones, 2013).

46 Unknown state manufacturer in China.
 47 CP04-02, CP05-01.
 48 PP01-01.
 49 Estimate based on 4% antimony content.
 50 PP02-02 and PP02-03.
 51 PP01-02 and PP01-04.
 52 Estimate based on 2% antimony content.
 53 PP01-02.
 54 Estimate based on 4% antimony content.
 55 HP02-24 and CP02-06.
 56 PP01-02.
 57 The distinction between the two is very slight, as some observers consider many 'home defence' weapons as 'military-style' shotguns. The author makes no distinction in most cases.
 58 Small Arms Survey Working Paper 18
 59 'Semi-legitimate' sales are defined herein as sales where the seller believes that the products will be smuggled out of the country in violation of the law, but make the sale regardless. CO99-01, CO08-01.
 60 PP01-02, PP01-03, PP01-4.
 61 This weapon is often (incorrectly) referred to as the 'CZ 52'. HP02-33 and CP02-05.
 62 Most recently known as 'PS-Grand a.s.', of Povážská Bystrica, located in what is now Slovakia.
 63 HP01-24.
 64 Most recently known as Barnaul Cartridge Plant CJSC. HP01-24 and CP01-02.
 65 HP02-35.
 66 CO99-02.
 67 HP02-40.
 68 CO99-02.
 69 Should you be able to assist by providing images of headstamps not included in this report, please contact the Small Arms Survey at: weaponsid@smallarmssurvey.org.
 70 These are given as a guide only of expected calibre, and may not represent exact models or account for possible calibre conversions.
 71 This calibre has been produced in Syria, featuring an Arabic script headstamp.
 72 As noted above, the use of captured ammunition by rebel forces is not without its dangers, as some stockpiles appear to be salted with booby-trapped cartridges.
 73 Clockwise from top, with a ']' separating each portion. Symbols (such as stars) are not included.
 74 Codes marked with a superscript '#' symbol refer to information where the precise location and date of the photo is not known or verifiable.
 75 Unknown state manufacturer in China.
 76 Unknown state manufacturer in China.
 77 Unknown state manufacturer in China.
 78 Unknown state manufacturer in China.
 79 Unknown state manufacturer in China.
 80 Mátavidéki Féművek is now known as 'RUAG Hungarian Ammotec Inc.', a component factory of RUAG Ammotec AG, based in Switzerland.
 81 Iran's Defence Industries Organization's Ammunition & Metallurgy Industries Group is the organization responsible for small arms ammunition production in Iran. It is believed

to operate multiple subsidiary factories. It is unknown at which specific factory this cartridge was manufactured.
 82 See Box 2.
 83 See Box 2.
 84 WOLF contract several production plants. This example is likely to be from either Tula Cartridge Works or Ulyanovsk Machinery Plant, both situated in the Russian Federation.
 85 Likely 'Alshagara Industrial Complex'.
 86 This may have been deliberate or accidental. See discussion in the text.
 87 Likely 'Alshagara Industrial Complex'.
 88 Likely 'Alshagara Industrial Complex'.
 89 Likely 'Alshagara Industrial Complex'.
 90 Likely 'Alshagara Industrial Complex'.
 91 See Box 2.
 92 Now PS-Grand a.s.
 93 Unknown state manufacturer in China.
 94 Now Bishkek Machine-Building Plant.
 95 Now Barnaul Cartridge Plant CJSC.
 96 Now LVE Novosibirsk Cartridge Plant JSC.
 97 Unknown state manufacturer in China.
 98 The factory code is obscured by an extractor mark, but is likely '41'. Unknown state manufacturer in China.
 99 Headstamp not sighted; extrapolated from packaging.
 100 Unknown state manufacturer in China.
 101 Please see note on shotshell identification under Shotshells.
 102 'Cheddite' headstamp is due to use of Cheddite brass heads by Yavaşalar.
 103 Headstamp not sighted; taken from packaging image.

Editor's Note: We'd like to thank Nic Jenzen-Jones and the Small Arms Survey for allowing us to use an extract from the report. Other clubs please note: This is copyrighted material and anyone wishing to use part or all of it is asked to contact the author at

nic@armamentresearch.com

Paul J. Vaverchak December 1935 – May 2014

Paul Vaverchak was a member of the IAA in the early 1960's and some of our older members may recall that he ran the early (1964-1967) original East Coast Cartridge Show in New Jersey. This show eventually moved to Pennsylvania and is now known, more familiarly, as the Williamsport Show. He was a collector of guns, ammunition, bottles, insulators, telephones and padlocks. Born and raised in Pennsylvania he moved to New Jersey in 1960. In 1970 he retired (at the age of 35!) and returned to Pennsylvania to pursue collecting full time. He passed away in Berwick, PA, after an undisclosed illness.

Thanks to Russ Cornell for providing some of the information.



Clip Art Item Identification

This issue of Clip Art shows many unusual, scarce, and rare clips and chargers from the Steven Fox Collection.

Steven is also an IAA member. Many thanks to Steven for allowing access to his unique clip collection and providing much of the information cited below, including several references.

COMMENTS - In general, of the Prideaux revolver speed loaders 1-4, their order (ascending) of rarity/scarcity is as follows: 3, 1, 2, 4. Of the flat, brass revolver cartridge adapters, 7 is rarer than 14; both are rarer than any of the Prideaux speed loaders. However, the Watson revolver loader, 5, is arguably the rarest of all, albeit virtually unknown to most clip collectors.

1. **BRITAIN**^{5,6,7} - Prideaux's .455 caliber commercial revolver loader, brass body (blued steel cartridge holders or fingers), tarnished brass, for the Webley-Fosbery No. 2 (model 1902), semi-automatic revolver. Information on the folded lips: PRIDEAUX'S PATENT No. 22633/14, REVOLVER MAGAZINE. Additional information provided on the imprint.
2. **BRITAIN**^{6,7} - Prideaux's .455 caliber commercial revolver loader, nickel-plated brass body (nickel-plated steel fingers), for the Webley-Fosbery No. 2 (model 1902), semi-automatic revolver. Information on the folded lips: PRIDEAUX'S PATENT No. 22633/14, REVOLVER MAGAZINE. Additional information provided on the imprint.
3. **BRITAIN**^{6,7} - Prideaux's military contract .455 caliber revolver loader, all steel, blackened. It is the steel version of number one. Marked (but not well shown): Broad-Arrow over P-LQ over 1919 over Crown over 4 (all on the right-hand side).
4. **BRITAIN**^{5,6,7} - Prideaux's .38 caliber revolver loader, all steel, blackened finish, for any Webley revolver in .38 caliber. The clip was manufactured at the Bisley Works. Additional information provided on the imprint.
5. **BRITAIN** - Major Watson's .455 caliber revolver speed loader, patent 5420 issued on 13 March 1893. Inscription on the back plate reads: MAJOR WATSON'S PATENT 211 P. WEBLEY & SONS BIRMINGHAM. (why two different patents?) The two opposing studs and the non-fluted chambers shown by the red arrow are unknown features. The back plate, six chambers, and center connecting bolt form the clip assembly: rotating the back plate in one direction allows the cartridge rims to fully seat in the chamber recesses at the bottom of the chambers; rotating the back plate in the other direction locks the cartridge rims into the recesses; placing the loader, bullets first, at the rear of the empty revolver cylinder and rotating the back plate once more, but in the other direction, allows the cartridges to free-fall into the revolver's cylinder chambers. Apparently it was not popular, probably due to its awkward use (need three hands).
6. **AUSTRIA**^{1,3} - Mannlicher chargers for the Model 1894 pistol. Two chargers are shown: the left one is for the 6.5 x 23R cartridge and the one on the right is for the 7.6 x 24R cartridge. The two chargers are not identical; their dimensions are 46 x 12 mm and 50 x 13 mm, respectively. There are slight manufacturer's design differences - by Georg Roth and Keller & Co., as an example.
7. **BRITAIN**^{5,6,7} - Webley & Scott revolver clip for the Webley-Fosbery semi-automatic revolver, eight-round capacity, reusable, .38 ACP caliber, brass, cartridges are snapped into position. The W&S registered trade mark is shown on the left - a winged bullet over W&S. This clip, specifically in .38 ACP caliber, may have been invented by W.J. Whiting, the works manager, at Webley and Scott.
8. **AUSTRIA**³ - Laumann clip, 8 x 22.5R cartridge, for the Laumann-Schoenberg Model 1894-I manual-repeating pistol, one-piece construction, unfinished steel. Additional views of this clip are shown in Clip Art (Item 7) in IAA *Journal* Issue 490.
9. **GERMANY**? - Purported to be an early Bergmann 2 clip [if so- then most likely for the 5 x 15 mm, model 1896, No. 2, hidden trigger model]. Nothing else known. This clip is very similar to the clip shown in Clip Art (number 3) in IAA *Journal* Issue 492.
10. **AUSTRIA**³ - Roth-Sauer charger, two-piece charger, all blued steel, 7.65 x 12.8 mm cartridge, for the Roth-Sauer model 1903 automatic pistol. The pusher on the charger differs slightly from those cited in Clip Art (Items 2 and 4) in IAA *Journal* Issue 490.
11. Not shown
12. **GERMANY** - Bergmann clip, one-way insert only, 6.5 x 21.5 mm rimless, grooved cartridge, for the Bergmann's pocket pistol model 1896, No. 3.
13. **GERMANY** - Bergmann clip, one-way insert only, 5 x 15 mm rimless, grooved cartridge, for the Bergmann pocket pistol model 1896, No. 2.
14. **BRITAIN**^{2,4,5,6,7} - Webley patented revolver "adapter" (throw-away), brass, made only for use with the Webley-Fosbery semi-automatic revolver. The Webley .455 (.921 case) AUTO., thin-rimmed ammunition was inserted into the clips at the factory - four to a box. This adapter was invented by W.J. Whiting, Webley's work manager, patent 18294, 13 September 1904; he may also have invented the .38 caliber, eight-round adapter #7 above. Additional information regarding the securing of thin-rimmed cartridges into similar revolver adapters can be found in the IAA *Journal* Issue 438, page 30 and Issue 441, page 44). A similar adapter in .38 Auto semi-rimmed exists for use with the Webley-Fosbery in .38 caliber.
15. **SPAIN** - Charola y Anitua charger, 7 x 18 mm (Charola) cartridge, six-round capacity, two-piece, 0.60 mm thick unfinished steel, approximate size 52 x 12 x 3 mm, for the Charola y Anitua semi-automatic pistol. This ammunition and presumably the charger were manufactured from about 1903 - 1912. Its scaled-town cousin, 5 x 18 mm cartridge, is show in Clip Art in IAA *Journal* Issue 485.
16. **AUSTRIA**³ - Mannlicher charger for the Model 1897 pistol, 7.65 x 25 mm, bottle-neck cartridge, seven-round capacity, one-piece construction, chrome finish, approximate size 69.9 x 12.6 mm. The M1896, marked on the charger, refers to the ammunition model,

not the complementing pistol model. (The M1896 pistol existed perhaps in prototype form, and according to the patent drawings is of the simple blowback breech design suitable only for the weak 7.63 x 21 mm straight-cased Mannlicher ammunition; conversely, the Model 1897 pistol, has a locked breech and can safely accommodate the more powerful 7.65 x 25 mm ammunition.) This charger is very rare. The M1897-I pistol utilizes a Mannlicher-Pieper (two piece) charger, six-round capacity due to the pistol's reduced magazine capacity; this charger is not shown.

17. **AUSTRIA** - Mannlicher-Pieper charger, 7.63 x 21 mm, two-piece (tinned steel body/blued steel spring), eight-round capacity, 77mm long, for the Mannlicher semi-automatic pistol models 1900, 1901, and their variations, and the model 1905-I pistol. The model 1905 pistol uses a ten-round capacity charger of the Roth-type (three-piece) design; however, the loading slot in the slide still accommodates (a deliberate production/tactical holdover) the model 1900, eight-round charger in the event the correct ten-round charger is not available.
18. **AUSTRIA** - Mannlicher-Pieper charger, 7.63 x 21 mm, two-piece (tinned steel body/blued steel spring), eight-round capacity, 72 mm long, for the Mannlicher semi-automatic "pocket" pistol models 1901 and 1905-I. Aside from length differences, this charger is identical to the one in 17. This charger is often displayed along with presentation model pistols and the shortened or pocket model pistols (Taschenpistolen).
19. **GERMANY**^{1,5} - Bergmann clip (12-hole loader), reversible, for the model 1896, No. 2, folding trigger, pocket pistol. This pistol uses the rimless, grooved 5 x 15 mm caliber cartridge manufactured until about 1930. It is a thin-steel, fragile clip.
20. **GERMANY**^{1,5} - Bergmann clip (12-hole loader), reversible, for the model 1896, No. 3 pocket pistol. This pistol used the 6.5 x 21.5 mm caliber cartridge manufactured until about 1930. The position of the hole pattern is slightly different from the hole pattern of the 5mm version.

-
1. Erlmeier, Hans, und Jacob Brandt. *Manual of Pistol and Revolver Cartridges, Metric Calibers*. 2nd ed. Vol. 1. Schwaebish Hall: E. Schwend, GmbH, Germany, 1967. 35; 58; 62; 69; 90; 100; 108; 112.
 2. Erlmeier, Hans, und Jacob Brandt. *Manual of Pistol and Revolver Cartridges, Inch Calibers*. Vol. 11. Schwaebish Hall: E. Schwend, GmbH, Germany, 1980. 93; 236-237.
 3. Moetz, Joseph, und Joschi Schuy. *Vom Ursprung Der Selbstladepistole*. Band I. Wien, Oesterreich: Peter Dornier GmbH, 2007. 262-370 (as applicable to various calibers, chargers and pistol designations).
 4. Smith, W.H.B. *Book of Pistols & Revolvers*. 4th ed. Harrisburg, Pennsylvania: Stackpole Co., 1960. 528.
 5. Boothroyd, Geoffrey. *The Handgun*. N.Y.: Crown Publishers, 1970. 362-365(Webley-Fosbery); 398-401 (Bergmann); 402-405 (Roth-Sauer).
 6. Bruce, Gordon. *Webley and Scott Automatic Pistols*. Verlag Stocker-Schmid, Switzerland, 1992. 44-47.
 7. Maze, Robert J. *Howdah to High Power*. Tucson, Arizona: Excalibur Publications, 2002. 49-50.
-

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Keith Lampear (248) 797-1992



From Mark Newcomer, Maine.

.300 Sherwood made for Westley Richards by Kynoch

Company Histories, by George Kass

H.W. Mason & Company, New York, NY / South Coventry, CT.

Jim Sones in an article, "Notes on Fitch, Van Vechten & Successor Companies," in the November-December, 1991 issue of *The Rocky Mountain Bullet*, states: "In 1870, Henry W. Mason appears to have taken over the operation on 52nd Street and the company was renamed H.W. Mason. During the next year it was moved to South Coventry, Connecticut where it remained until it was absorbed into the Phoenix Metallic Cartridge Company in 1874. It appears from box labels that Mason's production was limited to exclusively Ballard (Merwin & Hulbert) rifle calibers such as the .38 and .44 Extra Long Ballard and a selection of paper and combustible cartridges."⁴



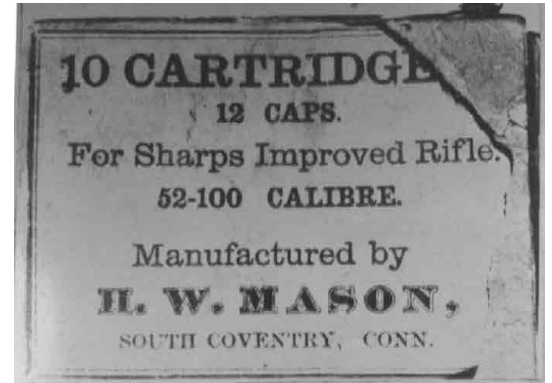
Photograph of H.W. Mason.³

When Henry W. Mason was in South Coventry, Connecticut, he produced both Sharps percussion ammunition¹, as well as rimfire cartridges. It is reported that he had been employed by Crittenden & Tibbals until they were purchased. In 1874 a restructuring of the business resulted in the Phoenix Metallic Cartridge Corporation.² It is believed upon the death of Mason the firm changed names from Phoenix Metallic Cartridge Company to American Metallic Cartridge Company.

The American Metallic Cartridge Company price list for 1889 lists rimfire and centerfire cartridges as well as shot loads in both types.⁵ One of the major assets of the firm was H.W. Mason's patent number 219,491 of September 9, 1878. This patent was for the paper sabot for use in loading shot and multiball.⁴

Bibliography & References

- (1) Packet - Terry White collection.
- (2) Barber, John L. - *The Rimfire Cartridge in the United States and Canada* - Armory Publications; Tacoma, WA; 1987, page 27.
- (3) Photograph - courtesy of Frank Krasnickas.
- (4) Price list - American Metallic Cartridge Co. 1889.
- (5) United States Patent #219,491; H.W. Mason; September 9, 1878.
- (6) Sones, James - "Notes on Fitch, Van Vechten & Successor Companies," *Rocky Mountain Bullet*; November-December, 1991; pages 1-4.



Packet from the Terry White collection.



Collector Cartridge Prices

Robert F. Cameron
14597 Glendale Ave., S.E.
Prior Lake, MN 55372

Dale J. Hedlund
Monticello, MN

John F. Kuntz
132 Balsam Dr.,
Miles City, MT 59301

British C.F. Rifle

Rifle or paradox type loadings in shotgun style cases (12 bore, 10 bore, etc.) have not been included. Those items may be found in the sections on Brass or Paper Shotgun Shells.

Early black powder versions of many cartridges were made with coiled or rolled brass or iron cases. We have used "coiled" to indicate this case type. Later versions with drawn brass cases were usually loaded as "Black Powder" (BP), "Nitro" or "Nitro For Black Powder" (NFBP). The case type and loading can affect the value of the cartridge and we have tried to show the differences when appropriate.

Proprietary headstamps or special loadings will often command a premium price as compared to the "standard" cartridge. In some cases, the price difference can be significant. The list contains some examples.

With the exception of the .700 Nitro, prices are for original loadings by Eley, Kynoch and other British companies. The Kynoch brand was the last to be loaded in Britain, and production of components for sporting rifle cartridges stopped about 1963. Modern cartridges are currently being produced by Kynamco (England), Wolfgang Romey (Germany) and others in many of the calibers listed here. All such loadings use current non-British components and value to collectors may be lower.

We recommend *The History and Development of Small Arms Ammunition*, Volume Three, by George A. Hoyem, *British Sporting Rifle Cartridges* by Bill Fleming and *Kynoch* by Dale J. Hedlund. All from Armory Publications, as excellent reference sources on British rifle cartridges.

We would like to thank Doug Binau who reviewed this list with the goal of keeping the prices current.

700 Nitro Express (various headstamps)...	125.00
600 Nitro Express (no h/s)	300.00
600 Nitro Express (Eley h/s)	100.00
600 Nitro Express (Jeffery h/s)	400.00
600 Nitro Express (various h/s)	50.00
577 Rewa (Holland's 600/577)	
(Caution-see note)	100.00
20/577 Alexander Henry ("20/577" h/s) ...	225.00
20/577 Alexander Henry	
(no 20/577 h/s)	100.00

20/577 Alexander Henry NFBP	
(Kynoch 20/577 C h/s)	150.00
577-2 1/4"	100.00
577-2 1/2"	100.00
577-2 3/4" (coiled)	30.00
577-2 3/4" (BP or NFBP)	20.00
577-2 3/4" (BP - Holland & Holland h/s)	35.00
577-2 3/4" (BP - N.A.&A.Co. h/s)	100.00
577-2 3/4" (Nitro)	20.00
577-3" (coiled)	75.00
577-3" (BP or NFBP)	25.00
577-3" (BP - Holland & Holland h/s)	35.00
577-3" (Nitro)	20.00
577-3 1/4" (Nitro, BP or NFBP)	
(Caution-see note)	200.00
577-3 1/4" (NPE case)	35.00
577 Snider (coiled MK1)	50.00
577 Snider (coiled)	8.00
577 Snider (drawn)	10.00
57 Snider (DCCo)	15.00
505 Gibbs	15.00
577/500 No. 2 Express, 2 13/16" (BP)	15.00
577/500 No. 2 Express, 2 13/16" (NFBP) ...	25.00
577/500 No. 2 Express	
(Rodda Calcutta h/s)	40.00
577/500 No. 2 Express (Henry h/s)	85.00
577/500 Magnum Express, 3 1/8" (BP)	20.00
577/500 Magnum Express, 3 1/8" (NFBP) .	30.00
577/500 Magnum Express, 3 1/8"	
(Rodda Calcutta h/s)	75.00
577/500 Magnum Nitro Express, 3 1/8" ...	150.00
500-1 1/2" (coiled)	60.00
500-2" (coiled)	60.00
500-2 1/4" (coiled)	75.00
500-2 1/2" (coiled)	75.00
500-2 5/8" (coiled)	60.00
500-3" (coiled)	30.00
500-3" (Nitro)	15.00
500-3" (Nitro - Fraser's Ratchet Bullet)	75.00
500-3" (BP, NFBP)	20.00
500-3" (BP - Henry h/s)	50.00
500-3" (BP - Holland & Holland h/s)	20.00
500-3" (BP - N.A.&A.Co. h/s)	50.00
500-3" (BP - Rodda Calcutta h/s)	35.00
500-3" (BP - Westley Richards h/s)	200.00
500-3" (BP - Rigby Dublin raised h/s)	75.00
500-3 1/4" (BP, NFBP, Nitro)	20.00
500-3 1/4" (BP - Holland & Holland h/s)	20.00
500 Jeffery ("500" h/s)	125.00
490 BSA, 2 7/8" (drawn)	120.00
490 BSA, 2 7/8" Shot	120.00
476 India Police (coiled)	15.00
476 Nitro Express (476 W.R.), 3"	20.00
475 No. 2 Nitro Express, 3 1/2"	15.00

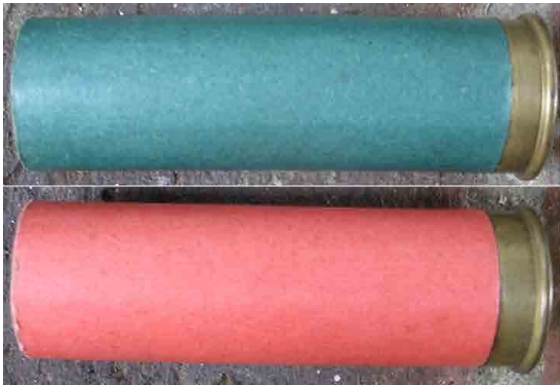
475 No. 2 N.E., 3 1/2"	
(CORDITE EXPRESS h/s)	85.00
475 No. 2 J. Nitro Express, 3 1/2"	
(Jeffery)	25.00
475-3 1/4" Nitro Express	20.00
475-3 1/4" Nitro Express (Eley h/s)	35.00
475-3 1/4" N.E.	
(Cogswell & Harrison h/s)	40.00
470 Nitro Express, 3 1/4"	15.00
500/465 Nitro Express (465 India), 3 1/4" ..	15.00
500/465 N.E. (Holland & Holland h/s)	20.00
461 No. 1 Gibbs, 2 11/32"	50.00
461 T.Turner No. 8, 2 11/32"	3000.00
461 No. 2 Gibbs, 2 3/4"	45.00
461 No. 2 Gibbs (Eley No 1 Express h/s)	90.00
577/450 Martini-Henry (coiled)	12.00
577/450 Martini-Henry (coiled carbine)	15.00
577/450 Martini-Henry (drawn)	10.00
577/450 Martini-Henry	
(Mach.Gun, Orange PPL)	30.00
500/450 Webley Carbine, 1 11/16"	125.00
500/450 No. 1 Express, 2 3/4" (BP)	15.00
500/450 No. 1 Express, 2 3/4" (NFBP)	20.00
500/450 Webley Military Breech-Loader,	
2 1/2"	300.00
500/450-2 1/2" (coiled)	75.00
500/450-3 1/4" Magnum Express (coiled) .	45.00
500/450-3 1/4" Magnum Express (Nitro) ...	20.00
500/450-3 1/4" Magnum Express (BP)	20.00
500/450-3 1/4" Magnum Express (NFBP) .	25.00
500/450-3 1/4" (BP - Henry h/s)	75.00
500/450-3 3/8" (coiled iron)	85.00
500/450-3 1/2" (BP by NA&A Co)	425.00
45 Turkish Peabody-Martini	20.00
450 No. 2 Nitro Express, 3 1/2"	25.00
450 No. 1 Musket (500/450 No. 1),	
2 1/4" (coiled)	75.00
450 No. 1 Musket (500/450 No. 1),	
2 1/4" (drawn)	40.00
450 No. 2 Musket (500/450 No. 2),	
2 11/32"	25.00
450 No. 1, 1 1/2" (coiled)	35.00
450 No. 1, 1 1/2" (drawn)	25.00
450-2 1/2" (coiled)	30.00
450-2 9/16" (coiled)	100.00
450-3" (coiled)	50.00
450-3 1/16" (coiled)	75.00
450-3 1/4" (coiled)	15.00
450-3 1/4" (BP, Nitro or NFBP)	15.00
450-3 1/4" (Henry h/s)	40.00
450-3 1/4" (S.G. & Sons h/s)	40.00
450-3 1/4" (Rodda Calcutta h/s)	50.00
450-3 1/4" (RIGBY'S NITRO .450 K h/s) .	25.00
450-3 1/4" (Certus)	175.00

450 Boxer Henry Long Chamber	100.00	400/360 Westly Richards Rimless Nitro Express, 2 3/4"	300.00	275 No. 2 Magnum (7mm Rigby Magnum Flanged)	20.00
450 No. 1 Carbine (500/450 No. 1), 1 9/16"	10.00	450/360-2 3/8" Purdey	250.00	275 Belted Magnum (Holland's 275 Rimless)	6.00
450 No. 1 Carbine, 1 9/16" (Braendlin Cadet h/s)	20.00	360 Westley Richards No. 3 Express, 1 29/32"	100.00	275 Flanged Magnum (Holland's 275 Flanged)	6.00
450-2 6/10" Match	150.00	360 No. 3 Gibbs, 1 29/32"	160.00	275 Bland Maximum	200.00
450 Soper, 2 1/2"	250.00	360 No. 2 Nitro Express, 3"	25.00	275 Bland (BLAND .275 h/s)	90.00
450 Soper, 2 1/2" (coiled case)	475.00	360 No. 5 (Rifle), 1.05"	2.00	28 Ross (280 Roosevelt)	125.00
450 New South Wales Police, 2 1/4"	45.00	354 Ross (354 Rimless)	200.00	350/7mm Rigby, 2 3/4"	60.00
450 Long Rifle, 3/4"	12.00	350 Rigby Magnum	5.00	275 Rifle (J. 275)	3.00
450 Needham	125.00	350 Rigby No. 2, 2 3/4" (Rigby h/s)	8.00	375/279 Match	85.00
442 Carbine, 1.025"	20.00	400/350 Nitro 2 3/4"	5.00	7mm BSA Auto Rifle	150.00
430 Long Rifle	35.00	333 Jeffery (333 Rimless Nitro Express)	6.00	26 BSA (26 Rimless N.E.) (see note)	85.00
425 Westley Richards Magnum	10.00	333 Jeffery Flanged (333 Flanged Nitro Expr.)	25.00	256 Gibbs Magnum	15.00
425 Webley, 1 5/16"	45.00	33 BSA (33 Belted Rimless N.E.) (see note)	40.00	256 Fraser Match (6.5mm High Velocity Rimless)	100.00
416 Rigby	12.00	404/330 Rimless Experimental	300.00	6.5mm High Velocity Flanged	75.00
410 India Police, 2.18" (410 Musket)	45.00	322 Swift	75.00	255 Jeffery Rook, 1.16"	3.00
404 Jeffery (404 Rimless Nitro Express)	10.00	322 Swift (with .322 Match h/s)	150.00	300/250 Rook, .85"	4.00
400 Kynoch 2", 2 1/2", 3 3/16" (KYNOCHE'S 400 BORE h/s)	20.00	322 Rigby	250.00	297/250 Rook, .80"50
400-3 1/4" Boxer (coiled)	45.00	500/320 High Velocity (320 Swift)	100.00	246 Purdey	300.00
400-3 1/4" Straight BPE	50.00	321 Greener (Single Bullet SP)	65.00	244 Magnum (Holland's 244 Magnum)	15.00
400-3" Straight (400 Purdey) (BP)	20.00	321 Greener (Single Bullet) (Greener .321 h/s)	100.00	242 Rimless Nitro Express (Vickers)	10.00
400-3" Straight (400 Purdey) (NFBP)	12.00	321 Greener (Multi-ball)	75.00	240 Flanged Magnum	10.00
400-3" Straight (BP or NFBP - Purdey London h/s)	25.00	32 - 1 3/16"	5.00	240 Rimless Magnum (240 H&H Apex) (belted)	10.00
450/400-2 3/8" (BP)	10.00	320 Long Rifle, 1 25/32"	2.00	320/230 Rook, .80"	50.00
450/400-2 3/8" (NFBP)	15.00	318 Nitro (Fraser's Ratchet Bullet)	25.00	297/230 Lancaster Sporting Copper Case ..	90.00
450/400-2 3/8" (Nitro) (ELEY 450/400 NITRO h/s)	25.00	318 Westley Richards (318 Nitro)	2.00	297/230 Morris Short	1.00
450/400-2 7/8" (BP)	20.00	318 Westley Richards Square Shoulder	850.00	297/230 Morris Short Shot, raised Morris & Co. h/s	125.00
450/400 T.Turner No. 2, 2 19/32"	3000.00	310 Cadet (310 Greener), 1.08"	2.00	297/230 Morris Long	1.00
400 Westley Richards, 2 3/4"	550.00	310/300 Rook (305 or 300 Rook Special), 1.16"	15.00	220 Rook (.22 Long CF)	45.00
450/400-3" Nitro Express (400 S Jeffery) ..	12.00	375/303 W.Richards Accelerated Express ..	10.00	220 Rook (.22 Short CF)	45.00
450/400-3 1/4" (BP, NFBP)	15.00	375/303 W.Richards Accelerated Express (KNMCo)	30.00		
450/400-3 1/4" (Nitro)	12.00	375/303 (Birmingham Metal & Munitions Co. h/s)	25.00		
450/400-3 1/4" (Fraser's Ratchet Bullet)	25.00	303 British (303 Lee-Enfield)50		
450/400-3 1/4" (Certus)	30.00	303 Mid-Range (Adder), 1 1/2"	50.00		
40 BSA Magnum (see note)	800.00	303 Magnum (Rimless)	70.00		
380-2 1/4" Rigby	75.00	303 Magnum (Semi-Rimmed)	20.00		
380 Long Rifle, 31/32"	2.00	303 Rimless Lee-Enfield (303 Rimless Fraser)	75.00		
375-2 1/2" (375 or 370 Flanged Nitro Express)	5.00	300 Belted Rimless Magnum (H&H 30 Super)	3.00		
375-2 1/2" Flanged (Fraser's Ratchet Bullet)	25.00	300 Flanged Magnum (H&H 30 Super Flanged)	10.00		
400/375 Belted Nitro Express (400/375 H&H)	5.00	30 Purdey (30 Flanged) (30-220 h/s)	50.00		
375 Rimless Nitro Express	5.00	30 Purdey (30 Flanged) (30-P h/s)	60.00		
375 Belted Rimless Magnum (Holland's)	5.00	300 Rook (295 Rook), 1/16"	1.00		
375 Flanged Magnum (375 H&H Flanged) ..	7.00	300 Sherwood, 1.54"	2.00		
369 Purdey	20.00	360/300 Fraser, .95"	240.00		
360-2 3/4" Boxer	75.00	298 Minex (298 W.R. Miniature Expr.), 1 3/8"	8.00		
360-2 7/16"	65.00	280 Jeffery (33/280 Jeffery)	30.00		
360-2 1/4" Express (360 Miniature Expr) (coiled)	12.00	280 Ross (280 Rimless)	3.00		
360-2 1/4" Express (Nitro, BP or NFBP)	12.00	280 Flanged (280 Lancaster), 2 5/8"	3.00		
400/360 Nitro Express, 2 3/4"	12.00	280 Westley Richards (rebated rim)	90.00		
400/360 Nitro Express, 2 3/4" (W.Evans.London h/s)	30.00	7mm Eley (7mm High Velocity)	85.00		
400/360 Nitro Express, 2 3/4" (Fraser bullet)	20.00	7mm Holland's Flanged Magnum	25.00		

CAUTION: You may encounter loadings in 577-3 1/4", 577 Rewa, 450 Henry and other expensive rounds that are represented as original factory loads, but have actually been created by combining an empty case, powder charge or other filler, and a typical bullet. Value of such a loading would usually be much less than for a factory load. For example, an authentic factory load in 577-3 1/4" is very scarce but we have seen a relatively large number of the primed empty cases. There is nothing unusual about the bullets so it is not too difficult to create "factory loads" if you have the correct case. That could mean a difference of \$150.00 or more for 577-3 1/4" cartridges. We advise that you use caution when dealing on the more expensive cartridges.

Note - Kynamco produced some .40 BSA, .33 BSA and .26 BSA replica cartridges in early 2000. We believe those cartridges are inert and value would be less than factory originals.

Jim Bits - by Jim Buchanan



H. VOILLIOT Limited.
The Companies Act, 1929.

NOTICE is hereby given that a General Meeting of the Members of H. Voilliot Ltd. will be held at 10, Long Lane, Aldersgate Street, E.C., on Friday, 22nd day of June, 1934, at 12 o'clock noon precisely, for the purpose of having an account laid before them by the Liquidator (pursuant to section 236 of the Companies Act, 1929), showing the manner in which the winding-up of the said Company has been conducted and the property of the Company disposed of, and of hearing any explanation that may be given by the Liquidator; and also of determining, by Extraordinary Resolution, the manner in which the books, accounts and documents of the Company, and of the Liquidator, shall be disposed of.

—Dated 17th May, 1934.

(025) T. P. GEOFFROY, Liquidator.

Above: Not come across this name VOILLIOT before so I don't know what sort of company it was, but see the text bit (found on Google) they went out of business in 1934. The two 12-gauge cases appear to be cheap European - Gevelot/Gaupillat.

Right: "Fulmar Coated Cartridge Embossed" ????? Did some research and it appears that Kilbagie Mill was a paper mill owned by J.A. Weir. Aerial photos on Google date from 1938 and I cannot see anything more recent which implies no website and probably not now in business. The cartridge headstamp is post 1963. I think the text on the CWP is some sort of advertising gimmick for their papers!!!



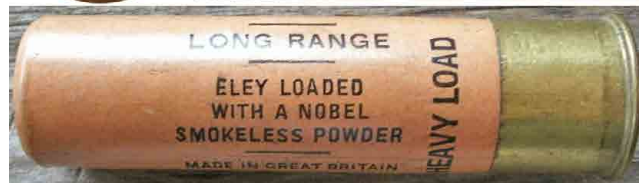
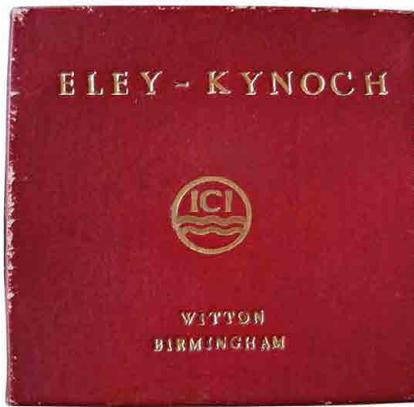
Here is a nice air gun pellets tin from 1905. Nice clean tin, considering it is over 100 years old.



Strongly Recommended for Club Shooting.

"The Turbite Bullet may be regarded as a very satisfactory projectile" — *Field*, Jan. 28, 1905.

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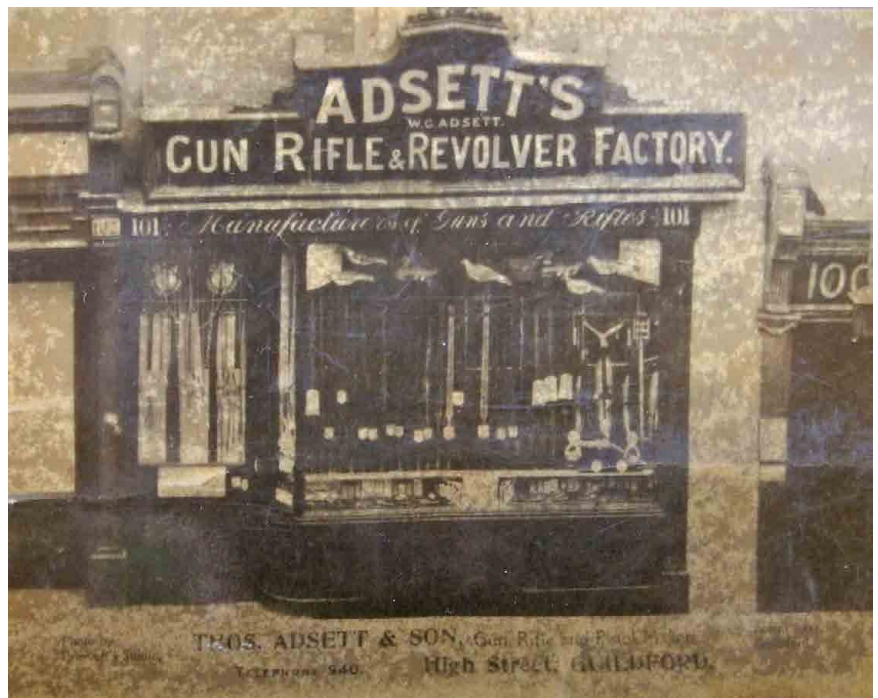


Above: Just found these two all-plastics. Date and maker unknown to me, but European?

A nice clean Alphamax sample set and close-up of one of the shells.

Latest advices from Bombay state that the new Lee-Metford bullet, invented by the Indian Ordnance Department, is proving all that can be desired. The experiments on carcasses of bullocks at various ranges shew that the bullet "sets up" and makes a severe wound even when big bones are not struck. It had already been established that the sporting .303 bullet, as now prepared by gunmakers, was effective even against the biggest game; but it was found that this form of pellet could not be used for military purposes, as it was practically an "express," and, moreover, that it would not carry accurately to long ranges. What was needed by our soldiers was a missile that would stop men at all distances and yet have a long flight, without too high a trajectory. This is claimed to have been secured at the Dum Dum factory by the modification of the cupro-nickel envelope, which has been given a solid base, while at the point the lead is slightly exposed. This bullet, at 1,000 yards' range, gives an excellent target, a few grains more of cordite being all that is required to make it correspond to that of the pellet now in use. There is thus no change of sighting necessary as regards the rifle, and the person firing can rest satisfied that, whatever the range, he will be able to hit the enemy. The new bullet will, of course, have less power of penetration than the old one; but, on the other hand, it will effectually stop men and horses, which is a more important matter.

A contemporary (1914) newspaper report of the .303 Dum-Dum bullet.



Picture of Adsett's shop in Guildford, Surrey (South west of London). Sorry about poor quality of pic, the original is a small 2x3 inch business card in poor condition. Topwad from Adsett to go with the picture of his shop.

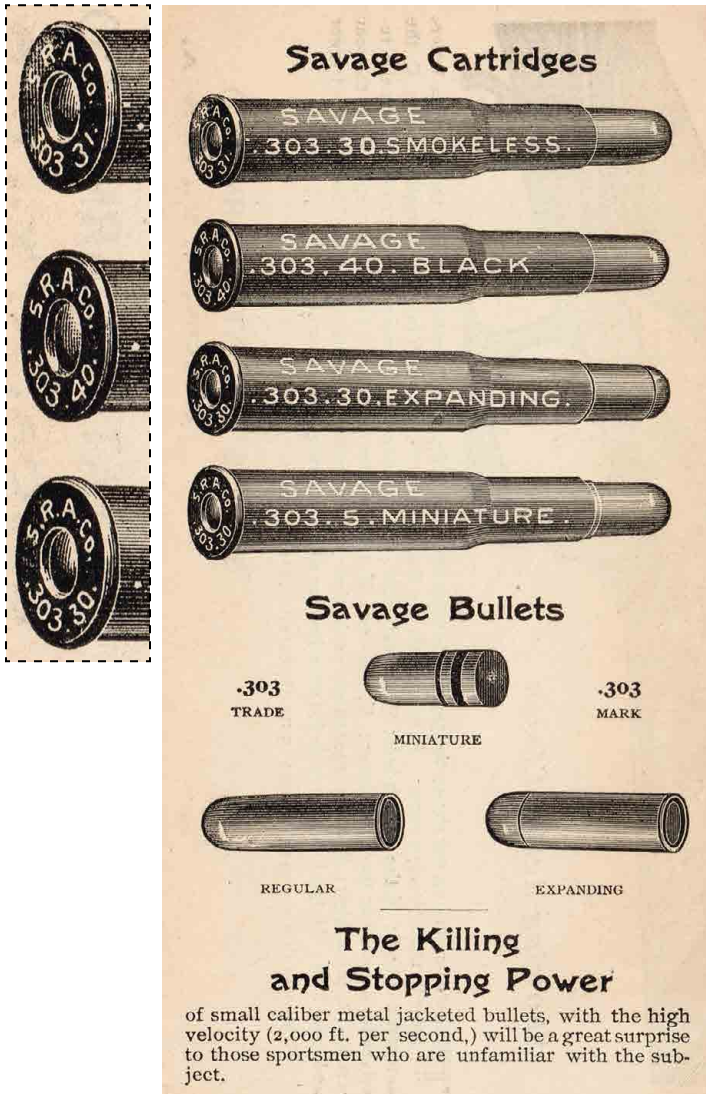


Letters to the Editor

From Will Adye-White, Ontario

Ref: *Journal* #500, Pg. 42, “.303 Savage by Dominion”

In the last issue, Don Blyth pictured an early Savage box made by Dominion which depicted a headstamp of “S.R.A.Co. .303.30” and Don asked if anyone had seen the headstamp. I haven’t but did come across an undated flyer/insert from Savage which describes some of their guns and Savage cartridges (one page shown below, with enlargement). Of interest are the headstamps on the cartridge engravings: along with the “S.R.A.Co. .303.30” headstamp they show “S.R.A.Co. .303.31” and “S.R.A.Co. .303.40”. Anyone seen these?



From Pat Burns, Ohio

Ref: Info requested on a couple of 37mm items

Item 1 is a 37mm “Barbed Wire cutter”. No markings, 2 spring-loaded arms, provenance unknown.



Item 2 is approximately 37mm and has been described as a “Mortar” round. It also has no markings on the case or projectile. The case has a percussion primer (sorry no photo of the head). No driving bands on projectile. The screw-in fuse appears to be a 6-9 second powder-train fuse, ignited by main powder charge.



Does anyone have any further information on either of these items.

[Editor's note: Is there a part missing, such as a driving band, as I don't see how the projectile could provide a gas seal with the deep grooves for fragmentation running almost the full length of the irregular sides? Is it normal for such projectiles to have no place into which the case is crimped or are they normally a "push fit"? Your editor is revealing how little he knows about larger caliber munitions!]



From Larry Tanzer, Idaho

Ref: ".45 Smoke Tracer"

I bought a number of items at the Mick McLaughlin auction. One has me puzzled. Hopefully, one of the members can shed some light on the subject.

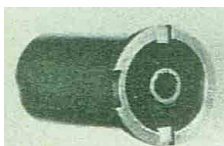


The item was listed as a 45 Smoke Tracer. However, it is a bit unusual, to me. At first, I thought it was a .45 ACP case. However, in actuality, it is a .284 Winchester case, (so headstamped) rebated rim, and all. It is shortened to 1". The projectile, appearing to be a copper jacketed and pointed one, is quite long, resulting in a loaded length of 1.78". I can see a "step" right at the case mouth, where it is reduced to an o/d of 0.440". The o/d of the neck is 0.495", so I would estimate the diameter of the rear portion of the projectile to be about 0.450". Any thoughts, anyone?

From Wayne Morgan, Australia

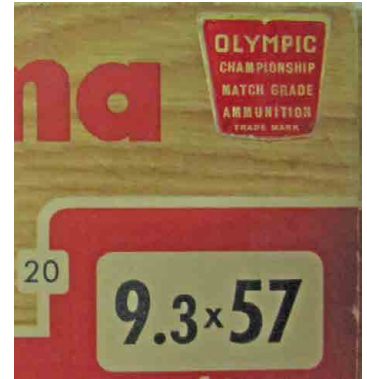
Ref: Journal #497, Pg. 44, Henry Rifle Adaptor.

I have one that came with a collection I bought back in the 1980s. The chap I bought it from was a friend of the late Frank Wheeler who, apparently, came out to Aus just after the war. So I guess that is how it landed here. There is a story that when Frank left Australia he took back a ton weight of ammo!?!? Try and do that today!



Ref: Journal #499, Pg. 18, Norma Olympic Stickers

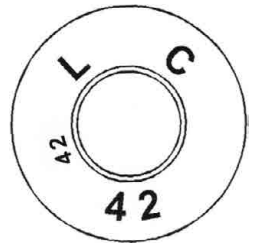
I have the identical box but without the Olympic sticker. Others in my collection of the red Norma packets like the 270W, 30-30 Win, 6.5x55, 7x57 and 250 Savage all have these stickers. Apart from the 6.5 and 7x57, I can't see the others in any match. Could these stickers be promotional?



Ref: 8mm Mauser on 30-06 case.

I have an 8mm Mauser with the L C 42 headstamp but at 8 o'clock there is another "42" - half the size and reversed.

Anyone have an explanation?



From Bill Hindin, Pennsylvania

Ref: Cut-down .45 Auto?

This is the headstamp of a cut-down unknown round. It is slightly shorter than a regular 45 Auto.

Bill Woodin and I want to know if anyone has this headstamp on any cartridge or if anyone knows what it means, what country it is from or has any information on it?



From Tom Haley, Montana.

Ref: 12mm Perrin

I recently cut into the 12 mm Perrin inside-primed to see the priming components. Powder has corroded the upper iron surfaces.



Vertical anvil is crimped to round disk

Fluted copper cup with raised "G"

Iron ring, disk and vertical anvil

Help!! “S&W .45 Special”

Does anyone know if any commercial manufacture of the “S&W .45 Special” cartridge ever took place?

The “.45 S&W” is apparently the same cartridge as the rimmed version of the M1906 round but made to support the commercial issue of the S&W First Model Hand Ejector (aka the Triple Lock) in calibre “.45 S&W Special” in and after 1908.

Following a close reading of the following portions of two letters from S&W historian Roy Jinks, it may be that this cartridge was never produced commercially:

“The .45 Special is a cartridge which is similar to the .455, but was originally designed by the Frankford Arsenal and is an experimental cartridge. The factory did produce several of these models in the .45 Special caliber and actually manufactured boxes for the guns . . . I have in my collection and have seen two other handguns which are chambered for the experimental cartridge, and neither of these guns will accept the .455 Mark II cartridge.

“This is the third original box of this type that I know of. The box is for a gun designed to fire a Frankford Arsenal Experimental Cartridge which is somewhat similar to the .455 Mark II except it has a thinner rim. In fact the cartridge is between the .45 Auto Rim and the .455 Mark II.”

Attached is a photo of the S&W box marked as described. In keeping with their parsimonious practice of using earlier leftover boxes for later shipments, the gun in the box is a 2nd Model Hand Ejector in calibre .455, serial no 35938, which was shipped to the Canadian government on January 28, 1916. A white end label reading “Government Model/.455 Mark II”. has been pasted on over the original green .45 Special box label.

If anyone has any information, please contact me.

Help!! “.45 M1906” Boxes

I am looking for photos of the Frankford Arsenal boxes for the “.45 M1906”, both the rimmed and rimless versions, for a forthcoming publication. Full credit given.

R. Blake Stevens, Collector Grade Publications
PO Box 1046, Cobourg, Ontario K9A 4W5
Canada (905) 342-3434
email: info@collectorgrade.com

SLICS 2015 Notice Board

IAA Members are reminded of the importance of mentioning the show when you book your room at the show hotel. This hotel is one of the best in the area and they provide much to support the show including additional space, significantly reduced room rates and the show room itself. This depends almost entirely on the number of room/nights the show generates for them. So, please mention you are with the show when you book. The show’s continued success depends on you!

We have been asked when room trading starts in the run-up to the show. The answer is: as early as 10am on the Monday.

Note: for overseas show attendees (including non-members), the IAA will provide free advertising in the *Journal* (subject to space limitations) on specific items or categories that you are hoping to find at the show. This is particularly useful for first-time attendees as many of the table holders do not bring everything they have to the show. Contact the IAA Editor for more details.

Wayne Morgan, from Australia, is making his first visit to SLICS in 2015. He’s looking for .30-06, especially Hollifield Dotters and empty .30-06 packets - both military and sporting, and empty NORMA boxes of all types.





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1 - 4 April, 2015

Renaissance St. Louis Hotel, Airport
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Reservations: (888) 340-2594 or (314) 429-1100. Fax (314) 429-3625
Show web site: <http://cartridgecollectors.org/slics>



Monday, 30 March through Wednesday 1 April: pre-show in-hotel room trading

Wednesday, 1 April: 10 am - 2 pm: Table-holder check-in outside the main ballroom
12 - 2 pm: Set up of **pre-registered displays** only.
2 pm - 6 pm: Table holder set up
2 pm - 6pm: "Early Bird" Silent Auction outside ballroom
6 pm: Ballroom CLOSED.

Thursday, 2 April: 8 am - 6 pm: Show OPEN
8 am - 6 pm: Engel's Collectibles Bin Sale - Reduction Style - begins
11 am - 6 pm: Live auction lots available for inspection
1 pm - 6 pm: IAA Benefit Silent Auction.
7:30 pm: Display Awards, IAA Annual Meeting, and Cartridge Seminars in the Penthouse Ballroom (with snacks & drinks).

Friday, 3 April: 7 am: IAA Board of Directors' Meeting
8 am - 5 pm: Show OPEN
8 am - 5 pm: Bin Sale - Reduction Style - continues
9 am - 4 pm: Live auction lots available for inspection.
2 pm: .22 Box Collectors Association annual meeting.
5:15 pm: Pre-Banquet Reception, Penthouse Ballroom
6 pm: Banquet
7:15 pm: Live Auction.

Saturday, 4 April: 8 am - 1 pm: Show OPEN

Early booking special hotel room rate: \$99 + taxes
6'x30" tables are \$55 each, paid in advance.
Admission is free to IAA and all other cartridge club members.



Vic Engel, 1815 Ginny Lane, Williamsport, PA 17701
570-322-4283, vicengel@gmail.com



Welcome New Members (October-November)

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580-254-3059 hkrwpd@yahoo.com
Jacob McKimm, PO Box 903, Yulee, FL 32041
904-225-2565 rickdias@gmail.com Specialty: 70, 41, 43, 8
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630-456-6312 qaletaqa@yahoo.com Specialty: 1, 49, 23, 30
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ON M4J 4Y9 Canada 416-461-2769
mrjirc45@yahoo.com Specialty: 16, 31
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402-873-7002 Specialty: 16
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707-744-1261
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816-836-3436 bob.colin1@gmail.com
John Kindred, PO Box 3191, Clontarf, Queensland 3019
Australia jakindred@iinet.net.au
Denny Graham, 5101 S 74th St., Lincoln, NE 68516
402-460-0031 archery.graham@gmail.com
Specialty: 57, 58, 34
Robert Osborn, 1167 Casa Blanca Ct., Minden, NV 89423
mobo574@aol.com
A. Todd Carswell, 101-A Carbon City Rd., Morganton, NC 28655
828-437-2555 acpa@bellsouth.net Specialty: 74, 45, 22, 28
Tyrone Backhouse, 482 Koatanui Road, RD 1, Wanganui,
Manawatu 4571, New Zealand. 64 6 9276808
tyroneib@hotmail.com Specialty: 23, 16, 72, 1
Dr. Erik Windisch, Gloeckstr. 5, 74538 Rosengarten, Germany
0791 53306 erik.windisch@web.de Specialty: 52
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John Weber: jowds@wat.midco.net
Ed Rauch: edrau65@sbcglobal.net
Jeffrey D. Manske: 414-915-4269
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From John Kuntz, Montana.

Winchester "Five Star" .22. Used in the 1932 Olympics

The Super Speed boxes were introduced in 1935. Pictured below is the 1939 (or 1945 ?) version with a 180-grain soft-point loading.



During the same period, the Silver-tip bullet came on the market. These were first offered in the famous Grizzly box. Of this box, two versions exists. A 180-grain and a 220-grain loading.



In 1946, the design of the Silver-tip boxes was changed and the red-yellow style box was introduced.



The 1946-design box was superseded in 1959 by the yellow box with red 'W'. A design used until the mid 70's. The box pictured below is post-1962 when the child warning came on the boxes.



The introduction date of the Super-X series is not 100% clear to me. I have noted down 1971 but if this is not correct, please inform me.




The horse & rider were added to the Super-X series around 1982 for which see below.



Recommended literature: Winchester boxes 1856-1956 by Ray Giles and Daniel Shuey.

For questions and comments please contact me at 30-06cartridges@web.de



1. 5mm Remington Magnum dummy. Chromed case. Headstamp is U with small dot in centre.
 2. .17 Hornady Rimfire Magnum (HMR). Hollow point with frangible core. Headstamp is C
 3. .17 HMR. Brown plastic tip. Core is a frangible material. Headstamp is stylized W
- The above 2 rounds are lead-free.*
4. .17 HMR. Grey plastic tip and lead core. Headstamp is stylized W
 5. .17 Winchester Super Magnum (WSM). Based on a tool cartridge. Note the heavier case compared to the .17 HMR. Headstamp is 17 WSM in a box overtop a large W
 6. .22 Long Rifle dummy. Hole in base. Headstamp is C
 7. .22 Long Rifle shot. Headstamp is Super X monogram
 8. .22 Magnum. Wood rod dummy. Blackened case. Headstamp is Super X monogram
 9. .22 Magnum. FMJ. Headstamp is Super X monogram
 10. .22 Magnum. Hollow point. Headstamp is Super X monogram
 11. .22 Magnum. Jacketed hollow point. Headstamp is Super X monogram
 12. .22 Magnum Shot. Headstamp is Super X monogram
 13. .22 Long Rifle tracer. French. Nickered case, red tip. Headstamp is 
 14. .22 Long Rifle tracer. English. Copper case, red tip. Headstamp is 'ICI inside diamond'
 15. .41 Swiss shot by UMC. Orange paper shot container. Headstamp is U
 16. .41 Swiss shot by Winchester. Black or dark purple shot container. Headstamp is H
 17. .22 Smith & Wesson. Copper case. Inside lubricated. Headstamp is U
 18. .22 Teleshot. A small bird scaring round by Colt. Note the pyrotechnic train. Headstamp is C



Collectible ammunition, hard-to-find and rare ammunition, .22 boxes, rifle & pistol cartridges, European, British & military cartridges, rimfires & shotshells, books on foreign and domestic firearms and ammunition, and books for collectors.



700 Nitro Express

The 700 NE is a completely new design developed by two Americans - Jim Bell and William Feldstein - in the mid to late 1980s. Only a very few rifles were made by Holland & Holland. The 700 NE uses a 1,000-grain projectile at 2,000 fps generating almost 9,000 ft lb of muzzle energy.

The specimen at left uses a 3½" case made by Bertram Bullets in Australia loaded with a Woodleigh 1,000-grain FMJ projectile.

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March 21 & 22, 2015

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700 Huntington Ave., South, Castle Rock, WA 98611

Exit 48 or 49 on I-5 North of Portland, Oregon

Set-up: 8:00am to 10:00am, Saturday (Vendors only)

Show Open: Saturday, 10:00am to 5:00pm, Sunday, 8:00am to 1:00pm

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Trade tables: \$25.00. Free admission to the public

**Show Chairman: Tom Quigley, 414 Studebaker Rd., Spur #2,
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Send payment with your table reservation payable to Tom Quigley.

The 38 Special in US Service, by Jim Frigiola

Way back in the 1890s the US Army adopted and fielded 38 caliber Colt revolvers. Using the 38 Long Colt round these revolvers were double action and were very popular with the troops. Unfortunately when it came to close quarters battle in the Philippine Islands facing a determined enemy the 38 Long Colt with its 150-gr. bullet proved to be short on stopping power, indeed by some accounts woefully inadequate. By 1906 the Army decided to move up toward more powerful handguns. A board of ordnance and medical officers was formed and tasked to conduct a quest for a handgun with greater knock-down power. After conducting extensive wound ballistic tests using cadavers and live animals the board concluded that returning to the 45 caliber

was both worthwhile and desirable. After much deliberation the venerable Model of 1911 45 Auto pistol became service standard and remained in service for many decades.

Recognizing the 38 Colt Long as somewhat under powered the firm of Smith & Wesson introduced the 38 Special as an improvement just before 1900. The 38 Special used a 158-gr. bullet and at 870 fps offered considerably more kinetic energy. There was no military interest in the 38 Special at that time but by the 1920s it had become a widely accepted standard for law enforcement use and remained universally popular with police departments until the general changeover to semi-auto pistols in the 1980s. That's a respectably long run for any firearm. However during WW

- 1) Typical 158-gr. lead bullet (REM-UMC 38 SPL) commercial load purchased and used in 38 Spl revolvers during WW II for training and limited service issue.
- 2) 158-gr. Steel Jacket Bullet (REM UMC 38 SPL) developed for service use in 1943. Bullet has no crimp groove.
- 3) M41 Ball (RA 58) 130-gr. FMC
- 4) M41 Ball (FC 63) 130-gr. FMC with unusual case cannellure
- 5) XM142 Ball, (WCC 60) 158-gr. Full MC Bullet
- 6) PGU-12/B (LC 78), 130-gr. FMC, Air Force High Velocity load
- 7) 120-gr. Tracer, (REM UMC 38 SPL) loaded during WW II
- 8) Navy MK 140 Signal Cartridge (RA 69), dual color green/red display
- 9) XM667 Shot (WESTERN 38 SPECIAL), Tunnel Rat load
- 10) Dummy, tinned case and bullet (REM-UMC 38 S&W SPL), believed to be military issue
- 11) Experimental M41E1 Ball (WCC 73), jacketed semi wadcutter with shortened case.
- 12) Experimental M41E2 Ball (WCC 73), 130-gr. FMJ bullet with shortened case.
- 13) M41E2 Ball, long case (WCC 73), became PGU-12/B



Quasi Military Special Purpose Ammunition

- 14) Teflon coated Metal Piercing (KTW 38 SPL)
- 15) Salvo Squeeze Bore multi projectile (R-P 38 SPL)
- 16) Steel Tubular by Guilford Engineering (R-P 38 SPL)
- 17) Brass Tubular by PMC (PMC 38 SPL +P)
- 18) Less Than Lethal Bean Bag load (W-W 38 SPECIAL), by MBA
- 19) Sky Marshall Load (Geco 38 Special), with blunt aluminum bullet
- 20) Multi Ball 3 pellet buckshot Janay Riesling Anti-Terrorist, J-RAT (W-W 38 SPECIAL)



If the US military purchased large numbers of commercial Colt and S&W Victory Model revolvers for supplementary issue. Many were chambered for the shorter 38 S&W cartridge (or 38/200 as the British call it) and were provided to allied countries under the lend lease program. Many others were chambered for 38 Special and were used by US forces, primarily the Navy, as secondary handguns. These remained in service long after WW II. They were particularly popular with aviators and some remained in use, with the Navy, Marine Corps and Air Force, well into the 1980s. Some say the 38 caliber revolver was preferred by aviators because they were lighter in weight than the M1911 45 caliber pistol but it is also true that a revolver can be drawn and fired with only one hand, an important consideration for downed air crew members who may be injured.

During WW II there was no military grade (Mil Spec) 38 Special ammunition available. Like the revolvers themselves the ammunition was purchased from commercial sources and loaded in accordance with industrial practice for sporting ammunition. A great deal of commercial grade or civilian ammo was immediately purchased with 158-gr. lead bullets and used for training, security guard use and various other purposes. Army technical manuals on small arms ammunition of the 1940s show illustrations of 38 Special ammunition with lead bullets as commercial grade items. In keeping with international military conventions for service bullet design a 158-gr. full metal jacket bullet was requested by the Navy and readily developed by Remington in 1943. These cartridges used a copper plated steel jacket without a crimp groove. They were packed and issued in commercial civilian style red and green Remington cartons (see Fig. 1). It is presumed that these FMJ rounds were generally issued

when 38 Special revolvers were used in combat zones in the European and Pacific theaters of operations. Substantial quantities of this steel jacket ammunition (REM UMC 38 SPL) were purchased but no military nomenclature was ever assigned.

The Navy also had a requirement for a tracer round for use by downed aviators as a signal cartridge. A contract was issued to Remington for development of a 38 Special tracer providing a red trace to a distance of at least 300 yds. Remington delivered many of the tracer rounds with 120-gr. red-tipped bullets and some work was reportedly done later on a 158-gr. tracer bullet. The red tipped tracer cartridges are noted as having REM UMC 38 SPL headstamp and no military nomenclature was ever assigned.



Figure 2. A WW II box of 38 Special Tracer ammunition (REM UMC 38 SPL). These 120-gr. red-tipped tracer loads, intended for signaling purposes, were produced only one time and were never standardized.

Figure 1. WW II packaging of 158-gr. steel-jacket loads with commercial headstamps (REM UMC 38 SPL). This was the first 38 Spl. ammunition to be issued with FMJ bullets.



During the early 1950s the Air Force took an interest in short barreled and light weight 38 Special revolvers. A limited number of “Aircrewman” revolvers were made with aluminum cylinders which proved to be unsatisfactory with high velocity ammunition. At the same time certain Army components were using 2-inch barreled revolvers. In order to reduce felt recoil in these lighter and smaller revolvers Remington developed a 130-gr. FMJ load at 950 fps. This 130-gr. load was eventually standardized by Army Ordnance about 1957 as the M41 Ball. Since that time M41 has been produced by many contractors including Federal (FC), Remington (RA), Olin (WCC), Valcartier (IVI), and Israel Military Industries (TZZ).

Work was also done on a military loading of a 38 Special with 158-gr. FMJ bullet having the designation XM142, circa 1960. According to specifications the XM142 was loaded to achieve a muzzle velocity of 925 fps. This work was discontinued and the XM142 was never standardized. Cartridges fitting this description have been seen loaded by both Remington (RA 60) and Olin (WCC 60) in military style

white cartons indicating 158-gr. Metal Case bullet. However the nomenclature of "XM142" was not included in the printed label (see Fig. 6.).

During the post war decades much 38 Special 148-gr. Mid Range wadcutter ammunition was also purchased for training and marksmanship competition. In addition blank ammunition was also purchased and used as revolvers without modification were found to be well suited for K-9 training. Since the 38 caliber revolvers were generally regarded as secondary sidearms, neither the wadcutter, nor blank ammunition were ever standardized or covered by military specifications. When found these rounds will have undated commercial headstamps.

There was a peculiar variation of the 38 Special 148-gr. Mid Range Wadcutter using semi rimmed cases referred to as the 38 AMU. These were made exclusively for the Army Marksmanship Unit at Ft. Benning for competition use in

accurized M1911 type target pistols. The pistols were based on 38 Super Auto pistols rechambered for 38 Special. Ballistics were the same as standard 38 Special Mid Range ammunition, 148-gr. lead wadcutter bullet at 770 fps. Although purchased by the Army the 38 AMU was never fielded as a service round. The 38 AMU rounds were loaded commercially by Western, Remington and Federal.

During the Vietnam War the Air Force was issuing newer S&W revolvers, the M15 Combat Masterpiece, for use by Air Policemen and security forces. The standard M41 Ball ammo of that era with its 130-gr. bullet was officially loaded to a muzzle velocity of 950 fps in a six-inch test barrel. However it was found that velocities actually measured in the field from four-inch barrel revolvers were markedly lower and some lots of M41 suffered from poor quality and erratic ballistic performance. There were numerous reported cases of bullets lodged in the bore thereby disabling the re-

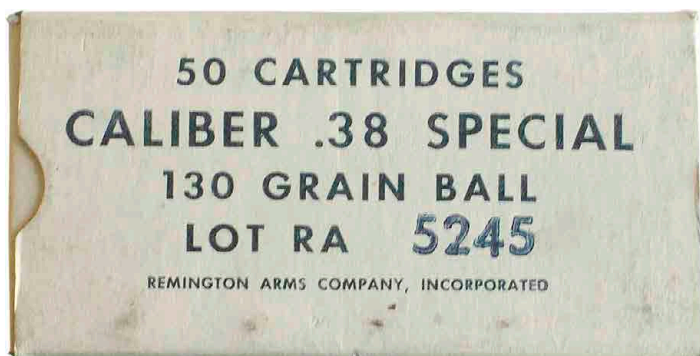


Figure 3. Remington developed the 130 gr Ball to give less recoil in lightweight and short barrel revolvers (RA 56). This loading was then standardized as M41 Ball.



Figure 4. A very early lot of M41 Ball made by Federal Cartridge (FC 57). The wording on the side seems to warn against any non-military use.



Figure 5. A seldom seen box of M41 Ball made under contract by Israel Military Industries (TZZ 84).



Figure 6. Two scarce boxes of 158-gr. Metal-Case ammunition (RA 60 and WCC 60). This loading was never standardized and is believed to be XM142 Ball.



Figure 7. A box of 38 AMU ammunition with nickel-plated, semi-rimmed cases (REM-UMC 38 AMU). This load was a mid-range 148-gr. lead wadcutter target load. The 38 AMU was also made by Western and Federal.

volver. Based on known discrepancies of the M41 Ball the Air Force sought an improved performance high velocity or +P loading. What emerged from this effort was the PGU-12/B 38 Special HV load. The new cartridge used the same 130-gr. bullet, although seated deeper in the case, and was specified to achieve 1125 fps. Ballistic performance of the PGU-12 was essentially 9mm Parabellum equivalent while operating at much lower chamber pressures. The high velocity PGU-12 round was Air Force unique and not adopted by any other service. Interestingly, the PGU-12 was initially loaded, circa 1977-80, in large numbers by Lake City Army Ammunition Plant and is noted as the only pistol cartridge ever produced at that plant. PGU-12 ammunition was subsequently produced by Olin (WCC).

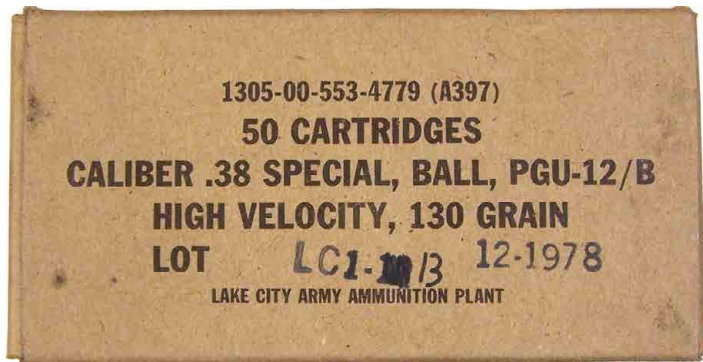


Figure 8. A box of High Velocity 38 Special PGU-12/B ammunition made by Lake City (LC 78). This ammunition was used only by the US Air Force.

In the late 1960s 38 Special and 45 Auto shot cartridges were developed by AAI Corp for close range use in clearing enemy tunnels in Vietnam. The 38 Special shot loads included both lead pellets and heavy tungsten pellets encased in a yellow plastic capsule. These carried the designations Caliber 38, Lead Shot, XM667 and Heavy Shot, XM260 respectively. These cartridges which were assembled in nickel

plated commercial cases were issued on a limited basis by the Army and never standardized. Volunteers who undertook this dangerous work equipped with a flashlight and armed with a handgun were referred to as “tunnel rats”.

It is worthy of note that the Navy developed and issued some peculiar 38 Special tracer cartridges for used for signaling purposes. These signal rounds, made in several colors, were intended to be fired up through overhead jungle canopies and could also be used against personnel at close range. The projectile of the signal cartridge reached a height of 1700 ft. and burned to produce a colored display for 6 to 7 seconds. Designations and colors for these cartridges were MK 130, red signal; MK 138, yellow signal; MK 139, green signal; and MK 140, dual color green-red signal. These signal cartridges are rather obscure and seldom encountered by collectors.

Currently 38 Special revolvers have been superseded in military service by more modern auto loading pistols in 9mm NATO having high capacity magazines. However it is fair to say that the home grown 38 Special provided reliable service for US forces at home and around the world for many decades. It is worthy of recognition as a significant American handgun cartridge of the 20th Century.



Figure 9. Reloaded ammunition was issued at one time for training as an economy measure as can be seen from this box dated 1965. This ammunition proved to be unsatisfactory in the field and most of it had to be destroyed.

Acknowledgments:

Many thanks are due to Pete deCoux for providing technical information and access to his reference collection.

Thanks are also due to Woodin Lab for technical and historical information on 38 Special cartridges.

Some discussion and history of 38 caliber military ammunition during the WW II period, covering both 38 S&W and 38 Special, can be found in Hackley, Woodin & Scranton, History of Modern US Military Small Arms Ammunition, Vol II. Additional info on military 38 Special cartridges is anticipated to be in Vol III.

Hibbard, Spencer & Bartlett & Co. Salesman's Sample Set FOR SALE OR/WITH PARTIAL TRADE (40%)

1880's vintage Hibbard, Spencer & Bartlett & Co. salesman's sample set showcasing some Winchester lines of paper and brass shot shells, including primers and wads for reloading. There is a blue fold-out fly sheet in the lid covering **FIRST QUALITY** Paper and Brass shells, the **RIVAL** line of paper & brass shells, plus Gun Wads & Primer prices. This fold-out is in excellent condition with no rips or tears.

The interior of the case has 3 trays:

The first (top tray) has 5 glass-top primer tins. One showing percussion caps and the others with primers. Four groups of different wads are shown.

The second tray, contains 8 brass shells with the **Winchester** headstamp at the top of the head in the following gauges, two 20 ga., one with a flat head and one with a ringed head, two 16 ga., one a board dummy, the other not, one 14 ga., one 12 ga., one 10 ga., and one 8 ga. These last 5 gauges have ringed heads. One wad is displayed.

The third tray has 9 specimens of the paper shells with the colored labels on them: one 20 ga. Black shell with a blue label; one 16 ga. Black shell with a blue label; one 14 ga. Black shell with a scuffed blue label, all these have the Winchester & gauge-number headstamp; two 10 ga. Black shells, one with a white label and a **W.R.A.Co STAR** headstamp, the other with a blue label, **Winchester No 10** headstamp; two 10 ga **RIVAL** brown shells with red labels, both with the **W.R.A.Co.** headstamps; and two 8 ga shells, one black with a blue label and one a dark grey with a blue label, both have the **WINCHESTER No 8** headstamp.

The case is 3³/₄" front to back, 3¹/₄" high and 8³/₄" long. It is of the trunk-style design with the top hinged at the back and the front folding down (hinged at the bottom) to show, in gold lettering, the Hibbard, Spencer & Bartlett Company building and their address in Chicago accompanied by the fact they also handle Hardware, Cutlery, Guns and Fishing Tackle. They covered addresses of 22, 24, 26, 28, 30 & 32 on Lake Street at the time. The gold lettering on the outside of the lid, proclaims **SAMPLES, WINCHESTER SHOT SHELLS, WADS AND PRIMERS, HIBBARD, SPENCER & BARTLETT Co, CHICAGO, ILLINOIS**. This information has faded into the material covering the lid and can be seen against a light shown at an angle. The case has lightened a bit from its original black color, but remains in excellent condition with strong corners.

Please call John Kuntz at 406-234-8973 or e-mail at yamrf2@midrivers.com for answers to your questions, pictures, price and partial trade suggestions including specimens I don't have in early ignition types, horizontal pinfire pistol, rifle and shotshells, large caliber inch and metric rimfire calibers and headstamps and reloadable screw-off-head-type specimens).



I will have this item at the next St. Louis Show, if it's not sold before then.



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John Kuntz, Montana

By the Numbers - a Membership Report

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It is only \$10 more to add the eJournal with your current Journal subscription. Why not add the ej with your annual renewal!

Your dues are due if you are one of 507 Journal members or 131 eJournal members that have not yet paid for 2015 as of Dec 1. Thank you for paying early.

The DVD update is still available. This covers 1955-2005. If you had purchased the previous DVD or CD the

update is only \$10 USA (\$12 Canada, \$14 overseas). First time buyers cost is \$50 USA (\$52 Canada, \$56 overseas).

Remember: keep recruiting new members, the larger membership base enables better IAA member services. We added 147 new members in 2014 which is very good growth. Thank you to the many recruiters

All payments can be posted to:
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Gary Muckel, IAA Membership Secretary

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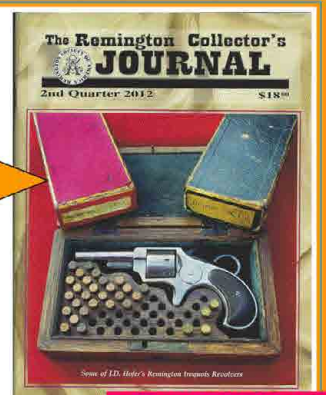
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Military Rifle Cartridge Data, by Vidar Andresen

7.62 mm Russian Model 1943

Bullet diameter: 7.92 mm = .312 inch

Source: Official drawing reproduced in *Technical Ammunition Guide 3/6*, by Peter Labbett

Maximum case length: 38.7 mm = 1.523 inch

Source: *Reloading manual Vihtavuori*, 1995

Bullet shape: Pointed, boattailed, PS

Source: Official Soviet AKM manual, 1964

Bullet weight: 7.9 g = 122 grains

Source: Official Soviet AKM manual, 1964

Chamber pressure: 3050 kg/cm² = 299 MPa

Source: Official drawing reproduced in *Technical Ammunition Guide 3/6 (TAG)*, by Peter Labbett and official data reproduced in the book *Der Volkseigene Betrieb (VEB) Mechanische Werkstätten Königswartha*, by Gerd Mischinger (East German ammunition factory)

Barrel length: 415 mm = 16.3 inches

Source: Official Soviet AKM manual, 1964

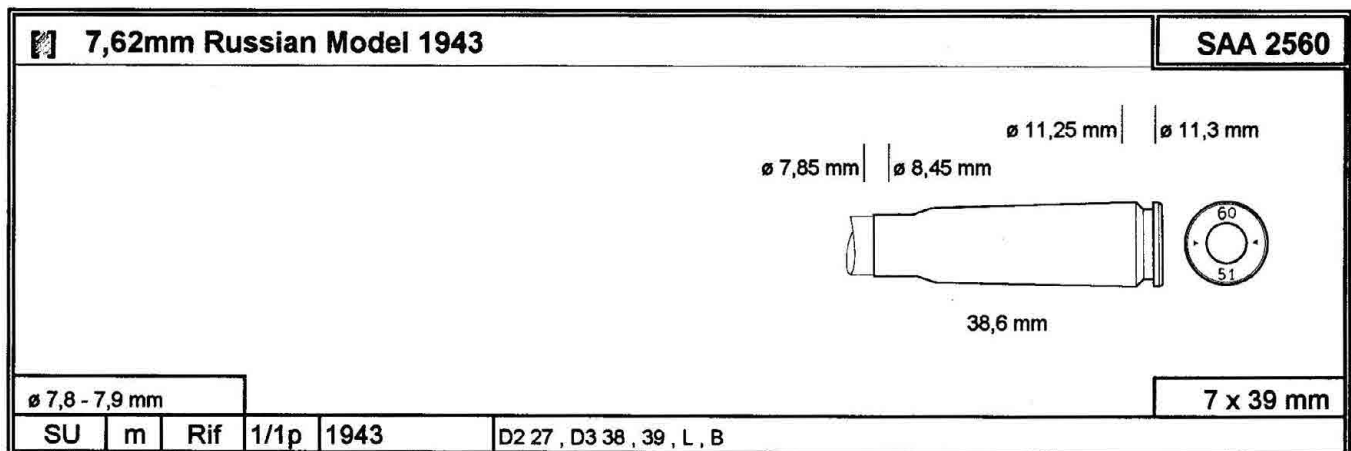
Muzzle velocity: V₂₅ 715 m/s = 2346 fps

Source: Official Soviet AKM manual, 1964

Comments: The official drawings reproduced by Peter Labbett don't show case lengths. I have therefore chosen information from the Finnish reloading manual, since Finnish factories have manufactured the 7.62x39 for many years. Interestingly, CIP also says 38.7 mm, but SAAMI says 38.8 mm.

In the Soviet drawing reproduced by Labbett and the DDR factory figures reproduced by Mischinger, three different pressure levels are stated. P_{max} average less or equal to 275 MPa. P_{max} maximum less or equal to 299 MPa. P_{max} average more or equal to 220 MPa. It should be noted that the maximum CIP pressure is 320 MPa and SAAMI 45,000 psi (310 MPa).

Earlier Soviet AK manuals say the "muzzle velocity" is 710 m/s, whereas later ones say 715 m/s. Measuring distance isn't mentioned, but the TAG drawings mention V₂₅ for rifle cartridges and V₁₀ for handgun cartridges. The 7.62x39 drawing in the TAG mentions 740-755 m/s, but I wonder if these figures apply to V₀ or a longer barrel than 415 mm.



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Regional & Specialist Clubs & Associations

The following is a list of cartridge collectors' organizations with information as current as possible. If your organization isn't listed here or the information is incorrect or incomplete then please contact the IAA Editor.

Kansas Cartridge Collectors' Association. Contact: Vic Suelter, 2185 E. Iron Dr., Lincoln, KS 67455. Newsletter (10-page): bi-monthly. Show: annual.

Nebraska Cartridge Collectors. Contact: Gary Muckel, (gmuckel@neb.rr.com) 6531 Carlsbad Drive, Lincoln, NE 68510. Newsletter (10-page): bi-monthly.

The Rocky Mountain Cartridge Collector Association. Contact: RMCCA 7954 S. Wagon Wheel Rd., Morrison, CO 80465. Newsletter: ? Show: Annual

Sioux Empire Cartridge Collector Association. Contact: Vesta Hobbs, PO Box 212, Norton, KS 67654. Newsletter (8-page): Bi-annual. Show: annual

Western States Cartridge Collectors. Contact: Rick Montgomery, 924 Little Joe Lane, Hamilton, MT 59840. Newsletter (20-page): bi-monthly. Show: 2/year

Asociación Argentina Coleccionistas de Armas y Municiones. Casilla de Correo N°. 28 - Suc. 1° B - 1401 Buenos Aires, Argentina. Weekly meetings

Australian Cartridge Collectors' Association. Contact: Warren Brown, 13 McCudden St., Griffith, NSW 2680, Australia. Newsletter (28-page): quarterly. Shows: annual and regional

Aguila (Danish Shotgun Club), contact: Lars Malte, Årøsundvej 29, DK-6100 Haderslev, Denmark. (lm@hhs.dk). Newsletter: quarterly. Show/Meeting: quarterly.

European Cartridge Research Association (English group) Contact: Martin Golland, Chapel House, Deepdale, Barton-on-Humber, N.Lincs, DN18 6ED UK. Bulletin (16-page): monthly. Ctg meeting: 2/year



From Bob Leindecker, Virginia.

8x60R Kropatschek. Wood bullet. Headstamp /F.A./*/1902/*

New Zealand Cartridge Collectors Contact: Kevan Walsh, 4 Milton Road, Northcote, Auckland 9, NZ. Newsletter (16-page): bi-monthly. Show: Annual and regional

Scandinavian Ammunition Research Association. Contact: Morten Støen, Ånnerudstubben 3, N-1383 Asker, Norway, (mstoen@online.no). Newsletter: 3/year. Show/meeting: annual.

Slovak Cartridge Club. Contact: Mr. Jan Franzen, Brancska 7, 851 01 Bratislava, Slovak Republik. Newsletter (32-page): 2/year.

Society for the Study of Cartridges, Czech Republic (Spolecnost pro Studium Náboju CSFR), Contact: JUDr Jaroslav Bubák, Na Kréte 117, 26706 Hýskov, Czech Republic. Newsletter (32 page): quarterly. Show/Meeting: Annual

South African Cartridge Collectors Association. Contact: Will Reuter, PO Box 3356, Cramerview 2060 R.S.A. Newsletter (20-page): Quarterly

Association for the Study & Research of .22 Cal. Rimfire Cartridges. Contact: Richard Rains, S 4321 Bluff Road, Spokane, WA 99224. Newsletter (10-page): bi-monthly.

Antique Reloading Tool Collector's Association. Contact: Tom Quigley, PO Box 1567, Castle Rock, WA 98611. Newsletter (30-page): 2/year.



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The number in square brackets after your ad is the last issue in which it will appear unless you let us know that you wish to continue it.

Wanted CUBA 45 & date in 45 Colt revolver & 45 Auto. Will buy or trade. Bill Hindin, 610-664-4867 or billhindin@gmail.com [504]

Kynoch - Have about 20 variations of calibres of empty, mostly red & yellow Kynoch metallic packets/boxes, to trade for similar items in any calibre or variation. Also willing to buy small accumulations. Also any Eley or Nobel boxes.

Terry Warnock, Benalla, Victoria, Australia terry.warnock@ausnetservices.com.au [504]

Chinese Ammunition 1870 to the Present Day by Ken Elks. This 2012 book is 8.5"x11.5", 141 pages, wire spiral bound, with a soft-cover and is published by Solo Publications, Canterbury, Kent. ISBN 978-0-9568528-4-7. We offered to sell these for Ken as shipping from England adds a significant cost to the book, and we have a number of copies in-hand. This is an important book, with a very high percentage of 'life-size' (or larger) color photographs. It covers packaging, headstamps and individual rounds, such as the Spencer, Jingal, Snider, 1" Nordenfelt, 1" Gatling and a number of other uncommon / rare case types. It also covers modern small arms case types up to 14.5mm plus Pistol and Revolver types of Chinese manufacture. Plus it contains additional notes by Bin Shih. These are new and price is \$60.00 plus \$5.75 postage here in the US. For Canada the price is \$60.00 plus \$20.55 postage (in US funds). For other than the US or Canada, please contact Ken at: sp@elks98.wanadoo.co.uk Please make your funds payable to: Pete deCoux, 14940 N. Brenda Rd., Prescott AZ 86305-5619 [504]

Interesting Ammunition for Trade or Sale: Instead of dragging stuff around to shows and meetings, particularly those in Europe I have decided to show most of the new stuff I can bring on my website. If you are interested, contact me, and I will bring you the items you want. I can also ship via UPS in the US. I prefer to trade for items, but can give you a price on request. This is the price at the particular meeting. In the past, I have carried photos of box labels with me for those getting the cartridges. I have posted these box labels on the website so you can download them if you choose. If you are interested in any of the cartridges from these boxes, let me know. Most are still available. Check my website at:

<http://gigconceptsinc.com>

or go directly to the page listing the items <http://gigconceptsinc.com/Boxes-and-Items-Avail.html> Lew Curtis, 210-286-4470 or gigconceptsinc@gmail.com [504]

WANTED - Bill Dibbern's book: 45-70 Cartridge Variations. When I first collected cartridges in 1950 Bill was the only dealer that I knew that sold individual cartridges and I have many fond memories of him. Henry Hurley, New Hampshire, hurleybooks@myfairpoint.net [504]

Available at SLICS 2015: Posters with the cutaways of the 9 x 19 made by the German collector Reinhold Peschke. Each is 50x70cm and printed on thick paper. Part 1, 2 and 3 will be at the show, \$ 15.- each or a set of 3 for \$ 40.- For a pre order please contact Ronald van der Pluym at natosmurf@ziggo.nl [502]

Available at SLICS 2015: The book from the German collector Wilhelm Micke: *Patronen für hilfs und beutehandfeuerwaffen in der Deutschen Wehrmacht 1939 bis 1945.* 416 pages and the price is \$ 80.- For a pre order please contact Ronald van der Pluym at natosmurf@ziggo.nl [502]

Wanted: Military experimental ammunition. I'm looking for case types and variations of experimental calibers. Assault rifle, high-velocity neckdowns, R&D, flechette, lockless, folded, CAWS, etc (under 20mm). Please contact Paul Smith at 780-986-9631 or cartridgesmith@shaw.ca [503]

Wanted! 45 Brown Standard, 45 Holden, 45-70 Sharps steel gallery, 40-70 Sharps steel gallery, 45 Sharps R.M.C. 3. 2-4/10, 45 Sharps R.M.C. 3. 2-6/10, 45 Sharps 2-7/8 nickel case, 40-50 Sharps Necked nickel case, 40-50 Sharps Straight nickel case, 45-70 raised E-Remington+Sons. Ted Fisher, 305 W. Grant Street, Lostant, IL 61334. Phone: 815-368-3526 [503]

FOR SALE: Old European shot shells of pinfire, Collath horizontal pinfire and C.F., and European black powder sporting cartridges from approx. 1880 to 1925. Will bring over to St. Louis Cartridge Show in April 2015. Ask for a list by email werner.j.richter@t-online.de [502]

Clips, Chargers, Links: Will buy singles or entire collections with or without ammunition up to caliber 40mm. Please contact Claus Marzen 571-278-0544 (cell), 703-359-5351 (please leave message), cmarzen@cox.net. [501]

WANTED: SHOTSHELLS. Looking for some of the following shotshells for my collection: 20ga Forager F.A. headstamps, L C Smith or Hunter Arms headstamped, ACME G.I. Co., any 18ga., Rem-Umc Game Loads, Austin Cart Co, Western brush loads/thicket loads, metal snap caps. Contact Nick Korhnak: ngkorn@hotmail.com or 815-246-6300 evenings. [501]

Free British Cartridge List - Email dickfraser@att.net or send SASE to Dick Fraser, Box 116, Marion, CT 06444 [501]

Experimental Winchester, Remington and Colt ammunition for sale. Please see them at gunauction.com and Gunbroker.com by searching for seller RAMPANT1. Thank you, Dick Fraser [501]

For Sale: Life-time Collection of 22 bullet pencils from the 1920's - 1950's. Both round nose and pointed. Very colorful and all different! Bill Hindin: billhindin@gmail.com 610-664-4867 [502]

For Sale: Duplicate 38 specials. Call or email for particulars. Bill Hindin, billhindin@gmail.com 610-664-4867 (10am-5pm) EST. [502]

WANTED: I would like to buy a few specimens of 11 mm cartridges to display with my collection of Montenegro revolvers. Mike@MikeCarrick.com or 1-800-394-7797 or 8226 Enchanted Ridge Ct., Turner, OR 97392 [502]

Pistol Ammo Collection for sale! Over 145 rds - \$380.00 ppd (US only). Some duplication on some items. Call 406-293-9560 if interested. Greg Harrison, POB 574, Libby, MT 59923 [501]

WANTED 50BMG, 223/5.56, 9mm, 7.62x51,30-06,wildcats, flechettes, gyrojets, lockless, folded, DU ,or any experimental singles or collections. Contact Keith Lampear, 23748 Scott Drive, Farmington Hills, MI 48336 248-797-1992. klampear@sbcglobal.net Check out my website - www.collectibleammunition.com [501]

Clips & Chargers: Want to buy singles or collections of vintage clips and chargers for manual repeating pistols such as: Laumann, Bittner, Dormus, Rieger, Mannlicher, etc. Please contact Claus Marzen 571-278-0544 (cell), 703-359-5351 (please leave message), cmarzen@cox.net [501]

WANTED: "Special Purpose" .22 to .50 BMG "color tipped" rounds, (avoiding most blanks unless "special purpose") but to include anything specialized; the more specialized/odd the better. A/P, KTW Teflon variations (seek KTW rifle rounds), sabot rounds, tracers, incendiary variants, flechettes, all US flares, "less lethal" items including tear gas variations, EOD/disruptor rounds, launching cartridges, engine starters. Misc. items on "to find list"; military CADS (cartridge activated devices), Hollifield Dotter (seek .30 Krag, .38 short), odd tool/industrial rounds. I usually have some good special purpose trade stock. Pepper Burruss Cell 920-660-7704, e-photos appreciated, BurrussP@Packers.com [501]

Machine Gun Belts, Feed Strips (Trays): Will buy non-U.S. disintegrating and non-disintegrating metallic belts up to about 60 cal.. Particularly interested in German '08 cloth belt. Please contact Claus Marzen 571-278-0544 (cell), 703-359-5351 (please leave message), cmarzen@cox.net [501]

Daisy V/L items of any type wanted. Have V/L materials, including experimental cartridges with packaging for some, experimental Omark-V/L tool blanks (see my article in The International Cartridge Collector, Issue 295-296, July-August 1980, pp. 3-13), for trade. Ted Bradstreet (207)437-9378 tbstreet@midmaine.com [501]

Wanted "Tear Gas" Seek vintage tear gas items, primarily US. Seek cartridges larger than .38, (all shot shell calibers thru .410 and up to 37/40 mm). Interested in early "beer can" sized "grenade" canisters as well, "the earlier the better" Lake Erie, Federal, S & W, etc. Avoid "gun show" rounds. Reference material, instructions, packaging, and advertising. Also, interested in "pen gun" (billys & batons) launchers & rounds (both tear gas & flare). (buy, sell, trade) Pepper Burruss Cell 920-660-7704, e-photos appreciated, BurrussP@Packers.com [501]

For Sale/Trade: (a) Empty tin box 50 -31 Thuers Colt's Patent Firearms Mfg. Co. Hartford, Conn. U.S.A. (b) Collection of 69 different .44 S&W Russian Rev. Something for that "middle aged" collector to get his teeth into. Classic milestone rev. ctg. (c) 330 Eley Magnum (belted - 1921 - became the .33 BSA). Headstamp ELEY 330, FMK C-T, mint. (d) 8ga. x3¼. Four-piece case. Logan & Hart US Pat. 142,924 Sept. 16, 1873. Mint new unprimed empty case. NO SLOTS in head for percussion cap removal. John A. Belton, Box 425 Merrickville, Ontario, Canada K0G 1N0. Tel: 613-926-2469 jbeltonswilkes@sympatico.ca [501]

Wanted: 22-25-60 CF singles or boxes (full or partial but not empty). 8ga & 4ga loaded shotgun shells. Always buying & selling 1" Gatling Cartridges. Call Joe "Bronc" Brancato, Pennsylvania, 717-548-4042 [501]

Wanted: Winchester 2-pc boxes, especially M76, Hi-Wall Express, M86 and M73/92 calibers. Also early (pre-1900) boxes in Win, Sharps, Colt, M&H and Bullard calibers by other makers. Prefer full of orig rounds. Ray Giles, Box 670894, Dallas, TX 75367-0894. Tel: 214-361-6577. email: ray@rtgammo.com. Website: www.rtgammo.com [503]

Clips - Links - Cartridge Chargers wanted up to 50cal. Am interested in singles or collections and I offer very top price for any addition(s) to my project. Leave message 262-242-9767. Contact Peter Moucka - zorrywolf@aol.com [503]

Cartridge List: I now have enough new items to justify a new list of my duplicates and trading stock. Copy available by e-mail (in 2 different formats, to ensure you can open at least one of them). For a hard copy, by snail-mail, please send \$3, to help cover postage and copy costs. The list is over 60 pages. That should be enough so that there is sure to be something on it that you need, want, or just cannot live without. Larry Tanzer, 6509 West Coeur d'Alene Drive, Spirit Lake, ID 83869, Phone: 208-623-2618 E-mail: ltanzer@tds.net [502]

WANTED: 8" and larger projectiles made from aluminum, plastic, wood, fiberglass and/or etc. Thanks. Richard L. Lasco 281-448-4445 lasco08@comcast.net [504]

Wanted: Pigou, Wilkes & Laurence Powder sample that was in Buttweiler's Auction Vol. XI, Number 3, lot 851. Interested in purchasing or trading. Will Adye-White (905) 459-3080, powdertin@sympatico.ca [501]

Large quantity of single 45 ACP's and boxes or can sell as a large collection. Bill Hindin, billhindin@gmail.com 610-664-4867 [502]

Wanted: .44 Evans Cartridges and Boxes. New and Old Model Evans Cartridge Boxes be they full or empty. First and foremost I remain a .44 Henry Cartridge Collector and have yet to be introduced to one that I didn't like.....some more than others. Hal Ferguson, 213 Shore Road, Otisfield, Maine 04270. 207-627-7032 or twofergies@aol.com. [503]

For Sale: Large collection of MBA Gyrojets, Finjets, Lancejets, Javettes, etc. Many rare one-of-a-kind items from my collection. All items are listed at www.Gyrojet.net. For foreign collectors, delivery may be made at the St. Louis International Cartridge Show. Mel Carpenter, mel@gyrojet.net, (904) 272-5070 [504]

Wanted: .44 Henry, most any HS or no HS, need raised U or no HS to fill a box, need US impressed HS with belted bullet to fill a box, will consider all .44 Henrys. .44 Cal. Percussion Cartridge packs. .44 Colt, all early singles and all boxes with copper primers, also early Frankford Arsenal singles and cartridge packs. .45 Colt, all early singles and all boxes with copper primers, also early FA singles and cartridge packs. .36 Cal. percussion cartridge packs. .38 Colt, all early singles and all boxes with copper primers, also early FA singles and early cartridge packs. Also, early box that says .38 Colt Navy. Colt Thuer cartridges, .31, .36, .44 calibers. .50 caliber Smith, singles and cartridge packs, for Smith civil war era carbine. .50 caliber Morse, singles and cartridge packs, for Morse civil war era carbine. (a unique cartridge with a percussion cap for a primer, the cap is embedded in gutta-percha, with the rim having a "top hat" appearance. Otherwise it looks about the same as an early .50-70 cartridge.) Most any other early cartridges and boxes, that raise my interest. Most of the cartridge items I am interested in would be from the period of about 1860 to 1900. Some of the percussion cartridge packs could be earlier, i.e., for the 1851 Colt Navy, etc. I am also interested in early accoutrements, such as flasks and tools, etc.. Will buy outright or trade, I have a large collection of early cartridges, many rare. Paul Bennett, 216 Old Forge Rd., Chapin, SC 29036 803-799-4323 Bennettpz@aol.com [501]

WANTED: 7.62x25 Tokarev/Mausser Cartridges. I collect all lots, dates, variations, boxes, packets, and info. All responses answered. Jon Cohen, 25 Sara Ln., Royersford, PA 19468. 610-933-7318 cohenim@verizon.net or jcohen@ojrsd.com [503]

Wanted: Lifelong collector of Marlin Firearm Company items, interested in old catalogs, paper, cartridge boxes - anything marked "Marlin". Mike Luc 419-433-5136 mikeluc4335@aol.com [501]

LINKS: MG disintegrating belt links bought, sold, traded, identified, appraised. Ted Bradstreet, PO Box 182, Albion, ME 04910-0182 (207) 437-9378 tbstreet@midmaine.com [501]

.30 M1 Carbine Cartridges, hundreds of duplicates - will sell as singles or as a small collection. Bill Hindin: 610-664-4867 billhindin@gmail.com [502]

Shotshell List: I am helping a friend dispose of his shotshell collection. Recently, I held a successful auction of these shotshells, but still have quite a few left. To try another approach, I am taking offers on the remaining items. All offers will be considered and either accepted or counter-offered. Just let me know what a given item is worth to you; you have nothing to lose. The list is over 20 pages, with detailed descriptions. For a copy of the list by e-mail, please just request it. For a hard copy by snail mail, please send \$2, to help cover postage. Larry Tanzer, 6509 West Coeur d'Alene Drive, Spirit Lake, ID 83869. Phone: 208-623-2618 e-mail: ltanzer@tds.net [502]

Wanted Japanese ordnance, large mortar, large cannon rounds, fuzes, bombs, mines, unusual grenades, or what ever else you might have in Japanese military items. Contact Frank Lance, Michigan, at Cell 517-930-3471 or home 989-637-4385 or email Japense65@hotmail.com [503]

WANTED: fired cases in common Eastern Bloc calibres. Looking to build a headstamp/case reference library that can be easily transported internationally for training/education. Nic Jenzen-Jones. nic@jjagencies.com [503]

WANTED, I recently picked up 18 rounds of original .45/70 ammo, with the h/s of "W.R.A.Co. .45-70 Mar.", copper primer, flat nose lead, I would like to purchase a proper box for these rounds. Fred Butt, 50calfred@columbus.rr.com or 740-816-7759 [501]

Want to buy or trade for 9mmP pre 1919 steel cased rounds. Prefer loaded but will take empty, fired, dented, rusty etc. Bill Hindin, 123 Summit Lane, Bala Cynwyd, Pa. 19004, 610-664-4867 billhindin@gmail.com [502]

WANTED: Any Newton or Newton-Adolph items, cartridges, cases, bullets, paper, etc. Especially want .33 (.338" diameter) and .40 (.408" diameter) Newton or Newton-Reed bullets/bulleted rounds. Ted Bradstreet 207-437-9378 tbstreet@midmaine.com [501]

European Cartridge Research Association



The **European Cartridge Research Association** (E.C.R.A. for short) is not quite as old as the I.A.A., but runs it a close second, being now more than 45 years old. Its monthly bulletin *The Cartridge Researcher* is published in five languages, English, French, German, Dutch and Spanish and is sent by airmail to overseas members. It contains many *Questions and Answers*, plus articles and information. The annual dues are \$45 for overseas members for the English-language version and the subscription period is the calendar year. Those joining during the year will receive back-issues

of the bulletin from the start of the year.

Please contact Vic Engel, 1815 Ginny Lane, Williamsport, PA 17701, USA for a membership application form, or write the Secretary of the English Language Group of the E.C.R.A. - Martin Golland, Chapel House, Deepdale, Barton-on-Humber, N. Lincs DN18 6ED, UK.

IAA Website Advertising

IAA Members are encouraged to take advantage of FREE advertising on the IAA web site's "Buy/Sell/Trade" forum. See <http://cartridgecollectors.org/forum/index.php> to post or view ads where you can also include images.

WANTED: Rimfire Blank Boxes and Singles of all types and all periods, US and Canadian only. Larger calibers and earlier boxes are especially of interest. Bulk packaging is also of interest (.22 Blank bricks, larger caliber bricks, etc). I am also interested in any factory catalog or sales literature (salesman samples, posters, etc) which have blanks listed as being for sale. Contact: Brandon Luter, 1222 Falling Water Dr., Lewisville, TX, 75067. Tel: (469) 441-6306. Email: the_big_fuzz@yahoo.com. [502]

Wanted: U.S. Navy 1.1" AA ammunition, live, inert, dummy, fired cases, etc. Karl Schmidt, schmi42@verizon.net [504]

For Sale: Extensive US rimfire collection. The only list I have is for the raised headstamp rimfires. Call for more details. Bill Hindin 610-664-4867 billhindin@gmail.com [502]

For Sale: Hubel Wildcat cartridges, .458 Hubel Express, .499 Hubel Express, .585 Short Hubel Express, .585 Hubel Express, .585 Hubel Super Magnum, .700 Short Hubel Express, .700 Hubel, .700 Hubel Express, 28ga From Hell, 20ga. From Hell, 12ga. From Hell, 12ga. From Hell Belted, 8ga. From Hell, and 4 Bore. For a list of prices please send a S.A.S.E. to: Zachary Weighman, 3451 Brown Fire Lane, Williamsburg, MI 49690 or email me at cartguy@torchlake.com. [502]

50 Caliber military cartridge collector - buy, sell, or trade. Looking for singles, boxes, collections, etc. of .50 caliber BMG, BAT, Gyrojet, Lockless, Folded, Caseless, Tround, Telescoped etc., including issued rounds, experimentals, and derivatives (.30/.50, .60/.50, .50/20mm, etc). Send \$1.00 for latest Want and Duplicates lists. Finder's fee paid for tips leading to specimens for my collection. Keith Pagel, PO Box 305, Warsaw, IN 46581 (260-432-3515) Keith.R.Pagel@CenturyLink.com [501]

www.ammo-one.com, Our 15th year in business. Buy, Sell & Trade, 1,000's of calibers in stock. David Call & Matti Hurd-Call E-Mail: info@ammo-one.com or Phone: 207-642-7980. [504]

WANTED: any cartridge of any type or caliber with raised "St." headstamp. Ted Bradstreet (207)437-9378 tbstreet@midmaine.com [501]

450 Headstamps. I am looking specifically for the following headstamps on .450 Short revolver cartridges: Cyrillic headstamp by S&B; M [*in circle*].450; LBC-M 450; VFM 450 (not VFM CA); WILKINSON 450 (with the '450'); 450/*AK*/; GR (*logo*) /*450*/. Chris Punnett, 996248 RR#1, Mansfield, ON L0N1M0, Canada (705-435-3527) cpunnett@sympatico.ca [501]

For Sale or Trade: Lots of wildcat, commercial and military cartridges for sale or trade. For those outside U.S., many are available with inert filler or as dummies. Email Ed Reynolds edrey30@gmail.com for listing. [504]

For sale: Liquidation of cartridge collection spanning 60 years. List # 1 - Metric sporting cartridges. \$ 5.00. List # 2, Supplements # 1 & # 2 - Centerfire, Dominion, Imperial, Browning, Connecticut Ctg. Co., Hoffman, Newton, A-Square, Weatherby, Peters, and Remington headstamps. \$ 5.00. List # 2, Supplement # 3 - Centerfire, U.S.C.Co., U.M.C. Co., & Western headstamps. \$ 5.00 List # 2, Supplement # 4 - American centerfire of various manufacture. \$ 5.00. List # 2, Supplement # 5 - Centerfire, W.R.A.Co., headstamps. \$ 5.00. List # 3, Supplement # 1 - Foreign manufacture shotshells, excluding British and all 16 gauge. \$ 5.00 Color photos provided for \$ 10.00. List # 3, Supplement # 2 - Foreign Pinfire Shotshells \$ 5.00 List # 3, Supplement # 3 - Foreign Shotshells, Slugs, Balls, & Buckshot. \$ 5.00 Photos available on request. List # 4, Supplement # 1 - Metric pistol and revolver cartridges. \$ 5.00. List # 4, Supplement # 2 - British pistol and revolver cartridges. \$

5.00. All cartridges are single specimens Send check or money order to: John Heyman, 131 14th Street, Springfield, OR 97477 or call 541-747-6713 business days, email: hlock1@qwestoffice.net . [504]

For Sale: Continued liquidation of cartridge collection spanning 60 years. This is a new supplement to previously published lists. List #3, Supplement #5. 255 foreign brass/metal shotshells (excluding British) All different. \$ 5.00 Send check or money order to: John Heyman, 131 14th Street, Springfield, OR 97477. Email: hlock1@qwestoffice.net [504]

Wanted: .577 Snider Cartridges. Singles, boxes/packages - empty or full. Manufacturing tools etc. Want all loadings, variations, sporting, military, contractors, contemporary and modern. Excellent trades in most fields. John A. Belton, Box 425 Merrickville, Ontario, Canada K0G 1N0. Tel: 613-926-2469 jbeltonswilkes@sympatico.ca [504]

The .450 Short Revolver Cartridge, A History of Its Production and the Companies that Made it. Published in 2013 by Chris Punnett. It covers the .450 Short in its many variations in full-size color photographs and also giving some history of the makers in those countries along with examples of the packaging. Wire bound, 130 color pages on good quality paper, 8.5" x 11". Reserve your copy for SLICS 2015 by emailing the author at cpunnett@sympatico.ca If you can't wait until SLICS than email the author for shipping options and prices [502]

For Sale : Old European Center Fire and Pin Fire NPE shotshells. Delivery at the St. Louis show. Ask for a list by e-mail - JP Gagnolati - jpg06f@gmail.com [502]



From Bob Rudler, New York. Box of Winchester .32 Win. Special dummies.



From Rich Rains, Washington. Here is an RWS board that has labels of various companies that RWS produced cartridges for. I would guess that this board dates from the 1950's. The top two rows of labels and cartridges were made for ICI in England and the cartridges have various ICI headstamps. The first four boxes in the third row are made for Société Anonyme des Explosifs de Havre in Belgium and have "EH" headstamps. The last box in the row was made for Cartoucherie Française in France and has a CF headstamp. All the boxes in the last row are made for Fiocchi in Italy and have a ∇ F headstamp. Sometimes it is impossible to tell who made the cartridges boxes or where they were made.



From Eric Van Vracem, Argentina.
Cartucheria Orbea Argentina box.
Contents not known