Historic Munitions In Texas
A Reference Guide

by

Tom Nuckols

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Front Cover: Top left: A .41 caliber rimfire Short cartridge.
Top right: A .45-70 caliber center-fire cartridge.
Center: A selection of the brass shot gun shell cups.
Bottom left: The "No 12. US Romax ." headstamp.
Bottom right: A .40-82 caliber Winchester center-fire rifle cartridge.

Editor's Foreword

The ***Houston Archeological Society Report No. 32*** is a publication of the Society. Our Mission is to foster enthusiastic interest and active participation in the discovery, documentation, and preservation of cultural resources (prehistoric and historic properties) of the city of Houston, the Houston metropolitan area, and the Upper Texas Gulf Coast Region.

The Houston Archeological Society holds monthly membership meetings with invited lecturers who speak on various topics of archeology and history. All meetings are free and open to the public.

Membership is easy! As a nonprofit organization, membership in the Houston Archeological Society is open to all persons who are interested in the diverse cultural history of Houston and surrounding areas, as well as the unique cultural heritage of the Upper Texas Gulf Coast Region. To become a member, you must agree with the mission and ethics set forth by the Society, pay annual dues and sign a Code of Ethics agreement and Release and Waiver of Liability Form.

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INTRODUCTION

Tom Nuckols

This report consists of several articles on munitions that have been written for the Houston Archeological Society newsletter over approximately the past four years. The articles reflect the analysis and interpretation of artifacts found during various excavations and survey projects while working as a member of the Houston Archeological Society, of the Texas Historical Commission Archeological Stewards Network, and as a contractor working for a Cultural Resource Management company.

It has been my good fortune to have been able to pursue my interest in history and munitions under the auspices of the Houston Archeological Society for so many years. Everyone begins such a long endeavor in their own and "at the beginning," so I would like to explain how I started on this path in my life. My story is not unique in many ways, but on the other hand, it is how my experiences in archeology began. The following article first appeared in the Houston Archeological Society Newsletter of November, 2014.

Beginnings

For quite a while now, I've been telling people that I joined the Houston Archeological Society (HAS) in 1974. However, a recent perusing through back issues of the Newsletter, via the HAS website (Historical Newsletters and Journals) has caused me to amend that date. In the HAS Newsletter #54, dated December 1976, and listed under "Activities" is this:

> **Activities**
> **Liberty County Sites**
>
> *Margie Lohse is planning test excavations of sites in Liberty County during the first part of January, weather permitting. Volunteers from HAS are invited to participate. Proposed dates for this project are January 5-14, including the weekend of January 8-9. The area where this work will be done is in the Trinity River Valley approximately 12 miles east of Cleveland, Texas. Participants are asked to bring their personal excavation equipment and food and water. Group housing is not available at this time, although Cleveland has four motels and a trailer park (all on Hwy. 59).*

Remembering having joined the HAS shortly before the above mentioned Liberty County test excavations, I looked at the Newsletters previous to #54, hoping to find some mention of my name. This endeavor was successful. Attached to the September, 1976 Newsletter,

#53, is a typed two page list of HAS members along with their addresses and telephone numbers. The names Mike Johnson and Tom Nuchols [sic] appear handwritten at the bottom of page one. So, if asked, now I can state unequivocally that I joined the society in 1976.

My First Dig

On a cold Saturday morning on January 8th, 1977, I left my single bedroom apartment in Channelview and drove (in my circa 1975 lime green/white vinyl top, Ford Mustang Ghia II) to Liberty, to participate in the Liberty County test excavations. I previously obtained directions that led me to an oil field equipment shack just north of Liberty on the east side of State highway 146. The shack was temporary housing for the test excavation crew. The crew consisted of HAS members Margie Lohse, Barbara Burger and local college students majoring in anthropology. When I arrived at the shack it was still dark outside. Knocking at the door, I was met by Barbara. She and Margie had been up for a while and had coffee brewing. The students were asleep. We three sat down to a cup of coffee and conversed. Eventually, the students got up and began to stir. I don't recall being introduced to any of the students. And the only one that I remember is HAS member Roger Moore. One of the female students was holding a book entitled *Zen and the Art of Motorcycle Maintenance***,** by Pirsig. Owning a motorcycle and being very naïve at the time I asked the student: "Oh, do you own a motorcycle?" The response to my query was a blank stare followed by the comment: "It isn't that kind of book."

Her response left me mystified. Later, and much to my chagrin, I learned that *Zen* is philosophical fiction in which the author explores his metaphysics of quality. I never read *Zen***.** However, a few years ago, I purchased the 2007 book *Legendary Motorcycles, The Stories and Bikes Made Famous by Elvis, Peter Fonda, Kenny Roberts, and Other Motorcycling Greats* by Wasef. The author devotes a chapter to Pirsig, who in the summer of 1968, accompanied by his twelve year old son Chris, traveled the northwest United States on a 1964 Honda CB77 Superhawk. This trip was Pirsig's inspiration for his book.

Back to the story. Everyone assembled; we left the shack, caravanning in a northerly direction, arriving at a location that to this day remains elusive in my memory. However, I vaguely remember being on high ground above the Trinity River valley. I was assigned to excavate a one meter square test unit. I was given some digging equipment and a screen and left to my own devices without any instructions what so ever. I was terrified! I didn't have any archeological experience! Nor, was there anybody nearby to assist me. All the test units were spread far apart, causing me to lose sight of everyone else. Fortunately, I had enough sense not to dig a hole, but to keep the floor of my unit level. I uncovered a few shards of undecorated prehistoric ceramics (Goose Creek Plain?). After quite a while of digging and having reached a depth that I later learned enabled an experienced person to "read" the wall profiles, Barbara appeared to check on my progress. She looked down at my excavation; a frown developed on her face and she began shaking her head back and forth as if silently saying "No, no, no!" She turned around, walked off and began muttering something under her breath. I was devastated! What was I doing wrong? I don't remember much after that, but I was glad when the day ended and I could go home. Driving home, I was in a fog of depression, thinking that the chances of ever being asked to participate in another archeological project were doomed. However, I didn't give up and worked with the HAS on projects, and in the process learned proper archeological techniques.

A few years later, I got up the courage to ask Barbara what I had done wrong that had caused her to get so upset. "Wrong?" she asked. "You didn't do anything wrong." "I was upset because your wall profiles weren't revealing any stratigraphy."

One of the students participating in the Liberty County test excavations was Anne Sullivan (University of Houston). We got acquainted in the spring of 1984, during archaeological investigation of the Lafitte Site (41GV140) on Galveston Island. We began dating that fall and married, January 1986. I eventually found out that Anne had been at Liberty. It occurred to me that she might have been the female student that was reading *Zen.*

I never talked to her about it because I didn't want her to think that she had married a dummy. Finally, one night while Anne was cooking dinner and I was working on this article I asked her: "Anne, have you ever read *Zen and the Art of Motorcycle Maintenance*?" "No, why do you ask?" I said: "Never mind, I'll explain later."

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Pistol

THREE RIMFIRE CARTRIDGE CASES FROM SAN FELIPE DE AUSTIN (41AU2)

Tom Nuckols

Using grant funding from the Texas Preservation Trust Fund, archaeologist Marianne Marek with lots of volunteer help, conducted several seasons (2002 thru 2006) of archeological excavations at San Felipe de Austin (Boyd and Burden 2017: 34-35). Marek's work was conducted on private property in two places, east and south of the San Felipe de Austin State Historic Site. The property east of the Historic Site has since been acquired by the State of Texas, where a new Visitor Center/Museum is being built, with a rumored completion date of April 2018.

During Marek's excavations, 141 munitions artifacts were recovered. Of these, 103 post-date the Colonial occupation (c.1824-1836) of San Felipe de Austin. Three of these post-dated artifacts recovered on Town Lot 50, are .22 caliber rimfire Short copper cartridge cases with the impressed headstamps of "D", "EP" and "N". Cartridge cases with these headstamps are not commonly found on historic archaeological sites in the Houston area.

The Three Cartridges Cases

Catalog # 50-103-1

Headstamp: "D".
Headstamp interpretation: Dominion Cartridge Company, LTD, Brownsburg, Quebec.

Since Canada had no ammunition production, Arthur L. Howard, a former Winchester Repeating Arms Co. foreman, persuaded the Honorable J.C.C. Abbot, a subsequent Canadian Prime Minister, and Dr. Thomas C. Brainerd, President of the Hamilton Powder Co., to start a new cartridge company, the Dominion Cartridge Company, Ltd. Dominion was Incorporated in May 1886 under the Canada Joint Stock Act of 1877. In October 1886, rimfire cartridge production began. It was not until the 1890s that the impressed "D" headstamp came into general use. In 1910 Canadian Explosives Limited (CIL) purchased Dominion and operated it as a Subsidiary. In 1976, Valcartier Industries Inc. acquired CIL. The purchase included all the equipment at Brownsburg related to the production of sporting ammunition (Barber 1987: 59, 78). In addition to .22 Short cartridges, Dominion manufactured twenty-five different calibers of rimfire ammunition with the cases having the impressed "D" headstamp (Barber 1987: 62).

Catalog #50-30

Headstamp: "EP".
Headstamp interpretation: Montgomery Ward Incorporated, Chicago, IL.

In the 1930s, Federal Cartridge Corporation of Minneapolis, MN, acquired contracts to supply .22 rimfire ammunition to retailers such as Sears Roebuck & Co., Montgomery Ward, Western Auto Stores, Gambles and a few others. Ammunition supplied to Montgomery Ward was headstamped "EP". This stood for Ward's "Extra Power" brand of ammunition. Federal's contract with Ward ended in the early 1960s (Barber 1987: 80-81, Hogg 1982: 87).

Catalog # 50-148

Headstamp: "N".
Headstamp interpretation: National Cartridge Company, Belleville, IL., or Sears, Roebuck & Company.

In hopes of getting an exclusive contract with Sears, Roebuck & Co., J.B. Warren, S. Rousseau, A.P. Preuss, E. Winans and M. Swope left the employ of Western Cartridge Company and found the National Cartridge Company. The Company was incorporated March 31, 1908 and shortly after, the contract with Sears came to fruition. National began manufacturing millions of rimfire cartridges in caliber .22 Short for Sears. Contract boxes of .22 rimfire Short ammunition sold by Sears had a box labeling of Meridian Firearms Company and the cartridge cases were impressed with either an "M" or an "N" headstamp. Since National's rimfire production was more than adequate for the Sears contract, it began selling ammunition under its own label with an impressed "N" headstamp. National also manufactured rimfire ammunition in calibers .22 Long and .22 Long rifle with an impressed "N" headstamp. In 1909, Western Cartridge Company purchased National along with the Sears contract. Rimfire ammunition manufactured by Western for Sears was un-headstamped (Barber 1987: 70-71).

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A .38 LONG COLT CENTER-FIRE CARTRIDGE FROM FROST TOWN (41HR982)

Tom Nuckols

Recently, while conducting excavations at the historic site of Frost Town (41HR982) near downtown Houston, archaeologists with Prewitt and Associates, Inc., uncovered a brick cistern (Feature #33) in Block "C". One of the numerous artifacts found inside the cistern was a center-fire, brass-cased cartridge containing a lead bullet. The cartridge was so degraded that shortly after recovery, the bullet separated from the case, taking part of the case mouth with it. After cleaning, only a partial headstamp was discernable on the base of the case: "8 LO". This stands for ".38 Long Colt."

The .38 caliber Long Colt (38 Long) center-fire was introduced in 1875 as one of several cartridges used in the Colt's Patent Fire Arms Manufacturing Company, New Line, New Police and New House revolvers. The 38 Long was also the official United States Army and Navy revolver cartridge from 1892 to 1911 along with the gun that fired it, the Colt Model 1892, double action 6-shot revolver[1]. During the Spanish-American War and the Philippine insurrection, the Army found that the 38 Long had insufficient stopping power for combat use (Suydam 1979, 160). Both the cartridge and revolver were replaced in 1911 by the .45 ACP (Automatic Colt Pistol) caliber cartridge and the Colt Model 1911 semi-automatic pistol (Barnes 2006: 298, Flayderman 1998: 99).

The .38 Long Colt cartridge found at the Frost Town site.

The 38 Long became obsolete circa 1899 with the introduction of the .38 caliber Smith & Wesson Special center-fire cartridge (Suydam 1979: 160). The Black Hills Ammunition Company of Rapid City, South Dakota, currently manufactures the 38 Long for Cowboy Action Shooters or CAS (Black Hills Ammunition 2014). CAS is a type of contest that uses a combination of handgun(s), rifle, and/or shotgun in a variety of "Old West-themed" courses of fire for time and accuracy. CAS participants must dress in appropriate Old West costumes as well as use gear and accessories as mandated by the CAS sanctioning group rules.

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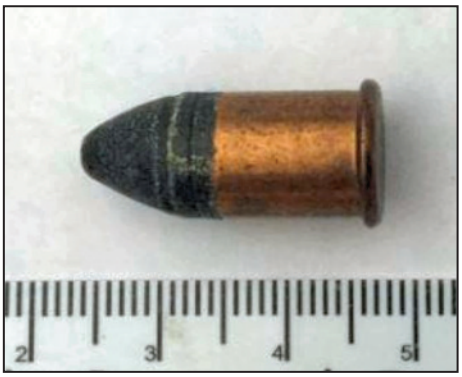
Footnotes

1 Preceding these, the United States Army used the .45 Colt center-fire revolver cartridge and the Colt's Patent Firearms Manufacturing Company six shot Single Action Army revolver, officially adapting both in 1875. The Single Action Revolver, aka "Peacemaker", "Model P" and "Colt 45" was used by just about every character yielding a revolver in TV westerns and Hollywood western movies. Another center-fire cartridge and revolver officially used at the time as the Colt, was the .45 caliber Smith & Wesson Schofield and the Smith & Wesson Schofield revolver. Some authorities believe that General George Custer used a Schofield revolver at the Battle of the Little Bighorn (Barnes 2006: 310-311).

A .41 CALIBER RIMFIRE SHORT CARTRIDGE CASE FROM BERNARDO PLANTATION (41WL28)

Tom Nuckols

This article is the 2nd in a series that will discuss the munitions artifacts recovered during archeological excavations at Bernardo Plantation (41WL28) near Hempstead, Texas, in 2009 and 2010. The Houston Archaeological Society participated in the excavations. Of the sixty munitions artifacts recovered, eight are rimfire cartridge cases. This month's article will discuss one of those cases, a .41 caliber rimfire Short cartridge case.



The .41 caliber rimfire Short cartridge. Author's collection.

A rimfire cartridge is a complete unit of ammunition consisting of a case, priming compound, gunpowder and bullet. After someone shoots a rimfire cartridge in his gun, the only remaining part of the cartridge is the non-reloadable case; hence, the shooter usually discards the case where he is standing.

The .41 caliber rimfire Short (.41 Short) cartridge was introduced by the National Arms Company of Brooklyn, NY, for their Model #2 single shot breech-loading derringer, manufactured c. early 1860s to 1870, with an estimated quantity produced at 12,000.

Between 1865 and 1935, approximately twenty American Gun Companies' manufactured derringers, pistols and revolvers in the tens of thousands that chambered the .41 Short. The Double Derringer, a.k.a. Model 95 Double Derringer or Over Under Derringer, manufactured by the Remington Arms Company of Ilion, NY, is considered the most famous and popular gun that shot the .41 Short (Barnes 2006: 483, Flayderman 1998).

The Remington Double Deringer. Photo: Wikimedia Commons.

Although the .41 Short and the guns that fired it were popular, the cartridge was rather anemic. Barnes (2006: 483) has this to say:

> *The .41 rimfire Short is so underpowered as to be worthless for anything but rats, mice and sparrows at short range. Fired from the average derringer at a tree or hard object 15 to 25 yards away, the bullet will often bounce back and land at your feet. Nevertheless, it was a popular self-defense cartridge and at point blank range*

could inflict a severe wound or kill a human being. These 41 derringer pistols were more of a threat or morale builder than anything else. Original load was a 130-grain, outside-lubricated lead bullet and 13 grains of black powder. Later loads used smokeless powder.

The .41 Short became obsolete in the 1940's.

The Bernardo Plantation .41 Short Cartridge Case

Due to corrosion, the case material, either brass or copper, cannot be determined. The base of the case has two firing pin imprints. This is an indication that the cartridge misfired once. A misfire is the failure of a cartridge to fire. A rimfire cartridge can be re-chambered (rotated in the chamber by hand, so that the firing pin strikes the primer at a different location) in an attempt to get the cartridge to fire. This endeavor is usually successful. As the Bernardo case lacks a headstamp, its manufacturer cannot be identified. The following is a list of the thirteen companies that produced .41 Short cartridges without a headstamp, the years those companies were in business, their location and the material used in their cartridge cases (Barber 1987):

1. Allen & Wheelock, Worchester, MA, 1858 to 1864, copper.
2. C.D. Leet & Company, Springfield, MA, 1862 to 1864, brass or copper.
3. C.D. Leet, Springfield, MA, 1864 to 1869, brass or copper.
4. Derrick N. Goff, Brooklyn, NY, c. 1863 to 1865, copper.
5. E. Allen, 1864, Worchester, MA, copper.
6. E. Allen & Company, 1865 to 1871, Worchester, MA, copper.
7. Forehand & Wadsworth, Worchester, MA, 1871 to 1874, copper.
8. Leet, Goff & Company, Springfield, MA, 1860 to 1862, brass or copper.
9. Phoenix Metallic Cartridge Company, South Coventry, CT, 1874 to 1891, copper (cartridges were stamped with "P", beginning in 1878).
10. Smith, Hall & Farmer, Springfield, MA, 1865 to 1866, copper.
11. Smith, Hall & Buckland, Springfield, MA, 1866 to 1869, copper.
12. Union Metallic Cartridge Company, Bridgeport, CT, 1867 to 1911, copper (cartridges cases were headstamped with "U" beginning in 1877).
13. United States Cartridge Company, Lowell, MA, copper, 1869 to 1926 (cartridge cases were headstamped with "US" beginning c. 1885).

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POWELL SITE AMMUNITION

Tom Nuckols

In the mid 1990s HAS conducted excavations at the supposed 1830s home site (41FB269) of Austin colonist, Elizabeth Powell near Kendelton, Texas. Although the site yielded period artifacts, the exact location of her house was never satisfactorily confirmed.

Twice in the spring of 2004, HAS members revisited the site (1) to correct errors on the site map generated in the 1990's, (2) to acclimate people to the site who had never been there but are working on the site report, (3) to further excavate in an area that was thought to be a trash pit, and (4) to conduct metal detecting surveys to define the limits of the site.

Although the success of the above endeavor is unknown as of yet, numerous artifacts were found including a horse bit, one small gun flint, lead bullets, cast iron stove parts, and numerous ceramic shards. One artifact in particular that caught my attention and post dates the Powell occupation is an unfired .44 caliber lead rebated base conical bullet.

Conical bullets were a type of ammunition used in cap and ball revolvers. The term "cap and ball" refers to the fact that percussion caps were the ignition source for this type of revolver, while lead balls were the first type of ammunition used. Later conical shaped bullets were adapted for use n the cap and ball revolver due to their superior ballistics.

The cap and ball revolver was invented by the American Samuel Colt, while at sea in route to England in 1835. It was patented in England on December 13, 1835, and in the United States on February 25, 1836**.** Most cap and ball revolvers had a six shot cylinder. Some brands had more or less. The .36 and .44 were the most common caliber with others being .25, .27, .31, .33, .41, and .42.

To load a cap and ball revolver, a measured amount of black powder was poured into the front of each of th**e** cylinder chambers of the revolver. An integral under-barrel loading lever was used to force the bullet into each chamber. The bullet was oversized so that when forced into the front of the chamber, a circumferential ring of lead was sheared off. This insured a tight fit so the bullet remained in the chamber and upon firing, engaged the barrels rifling. A percussion cap was inserted on a nipple at the back of each chamber and the gun was ready to fire.

Millions of cap and ball revolvers were produced by U.S. and foreign companies before becoming obsolete in the mid-1870's. They were replaced by metallic cartridge firing revolvers. Approximately 500 cap and ball revolvers in both .36 and .44 caliber were manufactured by the J. H. Dance & Brothers of Columbia, Brazoria County, Texas in 1862/63, for the Confederacy. A Dance Brothers' revolver in good condition is currently valued at $50,000.

Two of history's better know cap and ball revolvers are the Colt .36 caliber Navy and .44 caliber Army. The names "Army" and "Navy" had no military meaning; they were designated by a Colt Firearms Company salesman as a sales gimmick. One revolver made famous by

the American Civil War was the two barrel LeMat. It was invented by Dr. Jean Alexander Francois LeMat of New Orleans. Two thousand nine hundred were manufactured in Belgium, France, and England and purchased by the Confederacy. The revolver had a .42 caliber, seven-shot cylinder that rotated around a barrel of .62 caliber for firing buckshot.

Since the 1960's, millions of shootable reproduction cap and ball revolvers have been produced in America and Europe for gun enthusiasts and American Civil War battle re-enactors. A reproduction Dance Brothers' revolver costs $300.

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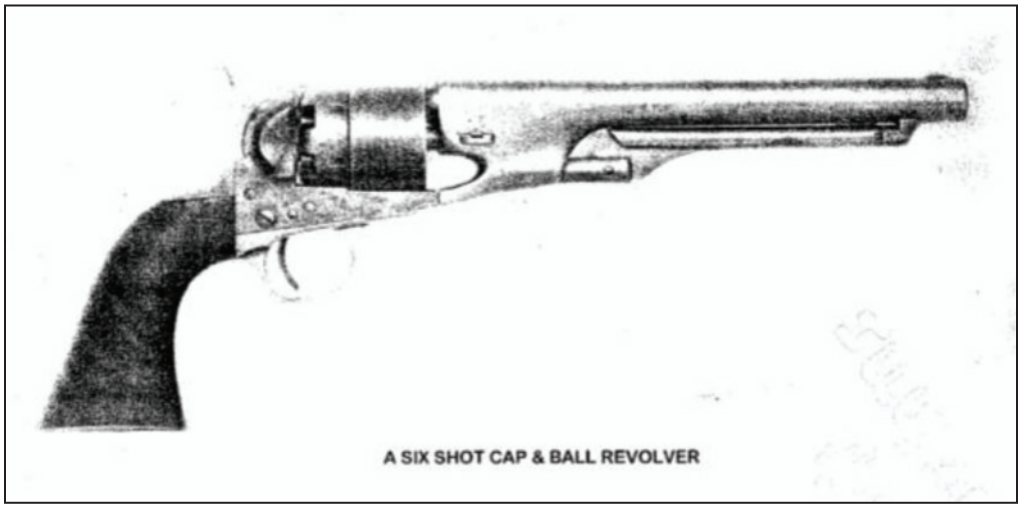
THE PERCUSSION REVOLVER

Tom Nuckols

The percussion revolver, often called the cap and ball revolver, was a gun invented by Samuel Colt (1814-1862) of Hartford Connecticut in the early 1830s. He patented his invention in England in 1835 and in the United States in 1836.

The percussion revolver used black gunpowder as propellant and percussion caps as an ignition source. The revolver fired either round lead balls or conical lead bullets and had an integral loading lever and rammer to seat bullets in each of its cylinder chambers (usually six).

When Colt's patent expired in 1857, arms manufacturers in the United States and Europe began manufacturing percussion revolvers in numerous styles and calibers, with .36 and .44 being the most predominate. Shortly after the American Civil War, percussion revolvers became obsolete.



A six shot cap and ball revolver.

For a description on how percussion revolvers worked, see Nuckols (2014: 68-70). [Available for download here: http://www.txhas.org/PDF/reports/powell/The%20Elizabeth%20Powell%20Site%20Report%20Number%2025%20Part%203%20Indexed.pdf]

Peter Tumlinson Bell (1869-1956) was born in Atascosa, Texas. His family moved to Carrizo Springs, Dimmit County, Texas in 1871. Bell tells this story concerning a percussion revolver (Bell 1980: 95):

"I remember an old cap and ball pistol that father had one time that was also brass mounted but held only six shots. The old gun finally got plum wore out from so much use. The gun got to where after you fired three or four chambers the other two or three would go off by themselves and father got scared that he would kill himself accidently with it so he practically gave the old gun away. The bullet molds also went with the deal as the gun wasn't any good if you couldn't mold any bullets for it".

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THE DANCE REVOLVER

Tom Nuckols

In 1862-1863, approximately 500 cap and ball revolvers in both .36 and .44 caliber were manufactured by J. H. Dance & Brothers of Columbia, Brazoria County, Texas, for the Confederacy. The need for small arms was so great that the Governor of Texas granted exemption for the company's workforce from military service. Sometime in 1863, the Dance Brothers operation was moved to a new location a few miles away to prevent shelling by Union gunboats. It is unknown if production continued after the move. Depending on condition, Dance revolvers are worth $16,000 to $47,000.

Last month, I received this letter from Gunnels Gun Shop in Ore City, Texas, via the HAS mail:

> *Attn., Mr. Tommy Nuckols or Mr. Dick Gregg,*
>
> *Upon contacting Michael Bailey, curator of The Brazoria County Historical Museum in Angleton, he gave me your name to contact concerning a possible Dance revolver. I am looking for someone that can verify that is this or is not a Dance. If you can help contact me at the gun shop.*
>
> *Thanks,*
> *Jack.*

I contacted Jack at the gun shop and told him that the distinguishing feature of a Dance revolver was the absence of a recoil shield. He stated that his particular revolver was minus the shield. I then suggested that he take the revolver to a professional firearms appraiser because unscrupulous people have taken Colt revolvers, filed off the recoil shield and passed them off as a Dance. He is going to let me know the results when he gets his revolver appraised.

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Rifle

A .22 CALIBER SHORT

Tom Nuckols

The Kellum-Noble House (41HR425) Emergency Salvage Archeology Screening Project (fall 2014/winter 2015) recovered five munitions artifacts; two lead spherical muzzle- loading bullets, a fired .38 caliber lead, flat base, button nose wad cutter revolver bullet, a lead rimfire or center-fire cartridge bullet and a .22 Short rimfire cartridge case. The .22 Short rimfire cartridge case is discussed below.

Item: #29 (recovered 1-16-2015).
Provenience: Room #3.
Artifact: .22 caliber Short cartridge case.
Case material: Brass or copper (difficult to discern due to corrosion).
Head stamp: U
Firearms signature: A single circular firing pin imprint, indicating that this cartridge was fired in a rifle.

Manufacturer (one of the following three): The Remington Arms Co., Inc. (1816 to present), the Union Metallic Cartridge Company (founded 1867) or the Remington-Union Metallic Cartridge Co., Inc. (Remington-UMC). On March 8, 1887, the Union Metallic Cartridge Company registered the "U" trademark (US #14,134) citing in its application that it had been in constant use since October, 1885. In 1911, Remington Arms and the Union Metallic Cartridge Company merged forming Remington-UMC. (Defunct 1970?) The two companies operated separately until incorporation in 1916. After the merger, rimfire cartridge cases continued to be head-stamped "U" as a tribute to the former Union Metallic Cartridge Company. The "U" head-stamp was replaced by the script "*Rem* " headstamp in the early 1980's. All three companies used brass or copper as a rimfire cartridge case material.

.22 Short history: Daniel Baird Wesson (1825-1906) was a United States firearms designer. He was the cofounder of Smith & Wesson and responsible for helping develop several influential firearm designs over the course of his life. In 1857, Wesson designed a rimfire cartridge based on Nicholas Flobert's, circa 1845 BB cap. Wesson's design called for a conical shaped bullet in a lengthened case that held a charge of black gun powder.

The new cartridge was called the No.1 or 22/100's pistol cartridge. It was renamed .22 Short with the introduction of the .22 Long in 1871. It is the oldest rimfire cartridge in constant manufacture in the United States. Companies began making rifles chambered for the .22 Short circa 1901.

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THE .22 CALIBER LONG AND THE .22 CALIBER LONG RIFLE RIMFIRE CARTRIDGES

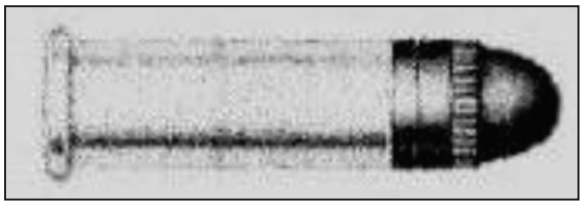
Tom Nuckols

Some of the munitions artifacts that I have analyzed from archaeological sites in the past few years consist of .22 caliber rimfire cartridges cases that have a length of approximately 0.600". All that I can say about the cases is that they originated from a .22 caliber Long or Long Rifle rimfire cartridge. The inability to choose one or the other is that both cartridges share the same case length. A longer and heavier bullet in the .22 Long Rifle rimfire cartridge differentiates the two.

.22 Long Cartridge

I have yet to understand who invented or developed the .22 Long cartridge. I'll quote three references so you'll understand my confusion.

1) Barnes (2006: 477): "The .22 Long is listed in the 1871 Great Western Gun Works catalog for the seven-shot Standard revolver. A few years later, it is listed in the Remington and Stevens catalogs as a rifle cartridge."
2) Suydam (1960: 52): "Not until 1871 was there any modification of the No. 1 Pistol Cartridge (.22 Short). In that year the "Standard" pistol was chambered for the .22 Long cartridge, holding an additional grain of powder in a case .2" longer than the No. 1 (0.423")."
3) Walter (1999: 245) "The earliest listing is for a Standard revolver of the early 1870s, but Remington, Stevens and others had announced rifles chambering [the] .22 Long by 1875."



The .22 Long cartridge.

The .22 Long cartridge particulars:

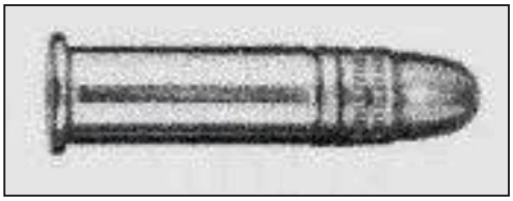
Overall cartridge length is 0.800"
Lead bullet weight is approximately 29 grains.
Originally loaded with 5.0 grains of very fine black gun powder (FFFFg).

Currently loaded with smokeless gunpowder in two variations; the "standard velocity" and "high velocity" charge. Bullet speed when the cartridge is fired in a gun (depending on manufacturer and powder charge and whether fired in a pistol or rifle) is approximately 1,000 to 1,250 feet per second.

As far as I can determine, Cascade Cartridges, Inc. of Lewiston, Idaho, is currently the only manufacturer of .22 Long ammunition.

.22 Long Rifle Cartridge

"Information available indicates that the .22 Long Rifle was developed by the J. Stevens Arms & Tool Co. in 1887" (Barnes 2006: 477).



The .22 Long Rifle cartridge.

The .22 Long Rifle cartridge particulars:

Overall cartridge length is 0.975".
Lead bullet weight is approximately 40 grains.
Originally loading was the same as the .22 caliber Long.
Currently loaded with modern blends of smokeless gunpowder that
generates enough power to cycle semi-automatic pistol actions.
Bullet speed when the cartridge is fired in a gun (depending on manufacturer and powder charge and whether fired in a pistol or rifle) is approximately 1,200 to 1,400 feet per second.
Currently, the .22 Long Rifle cartridge is manufactured by numerous ammunition companies.

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THREE WINCHESTER CENTER-FIRE BRASS CARTRIDGE CASES FROM BERNARDO PLANTATION (41WL28)

Tom Nuckols

This article is the 4th in a series that will discuss the munitions artifacts recovered during archaeological excavations at Bernardo Plantation (41WL28) near Hempstead, Texas, in 2009 and 2010. HAS participated in these excavations.

The .22 Caliber Winchester Center-fire Cartridge

The .22 caliber Winchester center-fire cartridge (22 WCF) containing a rimmed bottleneck case, was introduced in 1885 as one of the original cartridges for the Winchester Model 1885 single shot rifle. It was also used in the Remington No. 7 Rolling Block rifle beginning in 1904. The 22 WCF was a popular target, small game and varmint cartridge. The cartridge became obsolete circa 1936 (Barnes 2006: 108).

The .22 Caliber Winchester Center-fire Cartridge. Photo: Courtesy of www.ammo-one.com

The Bernardo Plantation 22 WCF Cases

The firing pin imprints on the primers of all three of these cartridge cases appear similar, an indication that all three cartridges were probably fired in the same rifle.

Lot #218 & Lot #265
Headstamp: W.R.A. Co. .22 W.C.F.

This cartridge (case) was manufactured by the Winchester Repeating Arms Company of New Haven, Connecticut. The company was founded in 1866. In 1981, it was sold to the U.S. Repeating Arms Company also of New Haven. The headstamp decimal point before "22" identifies this cartridge as variant "B" in Shuey (Shuey 1999: 110-111). Cartridges with this headstamp were manufactured circa 1885 –1937. The cartridge contained an oval copper primer, a 45 grain lead flat nose bullet and loaded with either 13 grains of black gunpowder or smokeless gunpowder. Smokeless powder loading began circa 1896.

Lot #313
Headstamp: U.M.C. SH .22 C.F.

This cartridge (case) was manufactured by the Union Metallic Cartridge Company of Bridgeport, Connecticut. The company was founded in 1867 and merged with Remington Arms in 1912. The headstamp "SH" means solid head, a type of case construction where the head is comparatively thick for reinforcement, to withstand the higher pressures of smokeless powder. T.G. Bennett of Winchester held Patent No. 224,765, covering solid head drawn cartridge cases. The patent was issued on February 24, 1880 (Shuey 1999: 19). Nearly all modern cartridges cases are made in this manner.

UMC's products have not been documented historically. However, a 1910 UMC catalogue reproduction (Remington Arms Co. and the Union Metallic Cartridge Co.) lists the .22 Winchester Center-fire cartridge as being available loaded with 20 grains of black gunpowder, a #1 primer and a 45 grain lead flat nose bullet.

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THE MODEL 1896 KRAG–JØRGENSEN RIFLE AND CARBINE

Tom Nuckols

On February 1, 1859, William Menger opened the Menger Hotel on Alamo Square in San Antonio, Texas. The hotels popularity was immediate, and between the year of its founding and 1881, it was enlarged several times. The year 1887 saw the installation of a new bar room inside the hotel that was a replica of the taproom in the House of Lords Club in London.

In May of 1898 at the Menger bar room, Lieutenant Colonel Theodore Roosevelt began recruiting volunteers for the cavalry that he was appointed to command in a war that was then in progress and would last just a little over three months, the Spanish-American War. Roosevelt's recruitment occurred less than a month after President William McKinley signed a law that formed volunteer military regiments in the western United States and its territories. At the time, the regular United States army was too small to undertake a foreign military engagement. Roosevelt's Calvary command would become known as the "Rough Riders" and it would participate in two important battles in Cuba.

In October 2018, I attended the 89th Texas Archeological Society annual meeting held in San Antonio at the Menger Hotel. Near the lobby of the hotel was a glass display case containing artifacts dedicated to Roosevelt and his "Rough Riders". Included in the display was a U. S. weapon used in the Spanish-American War, a Model 1896 Krag–Jørgensen carbine. The display brought to my mind a Nuckols family genealogical scrapbook containing the photograph (see below) of my paternal Great Uncle, Oscar Calhoun Miller (1873-1937). Other than the scrapbook's caption "Oscar Calhoun Miller Served in the US Army. During the Spanish American War", I know very little about Oscar. In the photograph, Oscar is standing second from the right. He is holding a bayonet equipped Model 1896 Krag–Jørgensen rifle.

The U.S. Krag–Jørgensen Rifle and Carbine

In 1890, the U.S. Army realized that its standard issue, Model 1873 Trapdoor Springfield, .45-70 caliber, center-fire rifle and carbine were obsolete. In 1892, A competition was held comparing approximately 50 different rifle designs. The three finalists were all of foreign manufacture, the Lee (British), Mauser (German) and the Krag–Jørgensen. The Krag–Jørgensen was a bolt-action rifle designed by the Norwegians Ole Herman, Johannes Krag and Erik Jørgensen in 1886. It was adapted as a standard arm by the Danish military in 1889 and the Norwegian Army in 1894.

In August 1892, the Krag–Jørgensen (Krag) rifle design was chosen, and it would be the U.S. Government's first small caliber bolt-action rifle. Approximately 500,000 Krag, .30 caliber rifles and carbines would be manufactured at the Springfield Armory in Massachusetts from 1894 to 1904. Although the Krag was replaced by the Model 1903 Springfield .30-06

U. S. Army soldiers holding a bayonet equipped Model 1896 Krag–Jørgensen rifles, circa 1898. Oscar C. Miller is standing, second from the right. Photo: Tom Nuckols.

caliber (.30 caliber Government cartridge of 1906) bolt-action rifle in 1906, it became and still is popular among civilian hunters and gun collectors.

Krag Ammunition

Krag rifles and carbines used a .30 caliber, rimmed bottleneck, center-fire cartridge known as the .30 Army. The brass cartridge consisted of a 220-grain, lead, cupro-nickel jacketed, round nose bullet and contained 40 grains of smokeless gunpowder. Civilians incorrectly assumed that the Krag cartridge was originally loaded with black gunpowder and began calling it the .30-40 Krag. The use of this black gunpowder nomenclature also had an effect on the .30-30 cartridge.

It was in the Winchester Repeating Arms Company's catalog No. 55, dated August 1895 that the .30 caliber Winchester's smokeless cartridge was first offered for sale to the public for use in their new Model 1894 lever action rifle and carbine. The cartridge was also known as the .30 Winchester Center Fire or .30 WCF. When Winchester's rival, Marlin Firearms Company chambered the cartridge for their Model 1893 lever action rifle, they designated it the .30-30. Although the added 30 stood for the cartridge's load of 30 grains of smokeless gun powder, it also stood for America's naming convention for black gunpowder filled cartridges. It was also a technique that Marlin and companies that manufactured ammunition used to avoid putting the Winchester name on their products.

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A .40-82 WINCHESTER CENTER FIRE CARTRIDGE

Tom Nuckols

The in depth analysis of the artifacts from the former Town of San Jacinto, Larry Golden Collection continues. Here's the latest, a .40-82 caliber, Winchester center-fire rifle cartridge. This cartridge was also known as the .40-82 Winchester or the .40-82 W.C.F.

Barnes (2006: 141) states that the .40-82 was introduced in 1885 and was popular enough to make the transition from black gunpowder to the smokeless gunpowder era, circa 1895. It was loaded up to 1935.

My first impression upon seeing this cartridge was that it was a misfire. However, the primer is not firing pin imprinted. Someone made an unsuccessful attempt to remove the bullet from the case by using two pairs of pliers; one pair gripping the case, the other gripping the bullet. This endeavor exposed a portion of the bullet below the crimp groove. The crimp groove is just below the knurled cannelure.

The .40-82 caliber, Winchester center-fire rifle cartridge (left) and headstamp (right). Photo: Tom Nuckols.

Catalog #: 026.
Case material: Brass.
Case type: Rimmed, bottleneck.
Bullet type: 265 grain, lead round nose with two knurled cannelures.
Primer type: #1 oval (surface shape) brass.
Headstamp: W.R.A. Co .40-82 W.C.F . (note that the final period is offset)
Manufacturer: The Winchester Repeating Arms Company, Hew Haven, Connecticut.
Loading variant[1]: Winchester offered the .40-82 cartridge in two loading variants, "A" or "B". Based on the headstamp's lettering size and configuration and illustrations in

Shuey (2003: 35), this particular cartridge is variant "B". "B" was offered in eight loading configurations; "A", twenty-seven.

Used in these firearms: The Winchester Model 1885 High Wall Single Shot Rifle (1885-1920) and the Winchester Model 1886 Lever Action Repeating Rifle (1886-1935).

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Footnotes

[1] Variant - Loading variations in the components that make up a particular caliber of center-fire cartridge, such as bullet style or weight, gunpowder charge or powder type (black or smokeless) primer size, etc. Variants are identified by the manufacturer in several ways, especially via the headstamp; the size of letters or numbers, punctuation, periods, or the placement of periods or hyphens.

A .40-82 WINCHESTER CENTER FIRE CARTRIDGE: ADDITIONAL INFORMATION

Tom Nuckols

In a rush to meet the Editor's deadline and keep the previous article within the bounds of a single page, I failed to explain what the .40-82 means. The notation ".40" indicates a .40 caliber bullet (the actual diameter was 0.406"). The notation "82" meant the amount of grains of black gunpowder contained within the cartridge case. The "82" part of the moniker was retained even when the cartridge was loaded with smokeless gunpowder beginning about 1889. Smokeless gunpowder didn't occupy as much space inside the case as black gunpowder.

Even with the advent of smokeless gunpowder the .40-82 cartridge was still manufactured containing black gunpowder. This gave consumers a choice between cartridges loaded with either black or smokeless gunpowder. Shuey (Shuey 2003: 35) states that the Winchester Repeating Arms Company manufactured this cartridge loaded with black gunpowder until 1925.

Although the Winchester Repeating Arms Company developed the .40-82 cartridge, it was not proprietary; other companies manufactured the cartridge and rifles that chambered it.

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DAVY CROCKETT RIFLE

Tom Nuckols

I recently acquired a copy of the January 23, 1914, issue of the Carrizo Springs[1] *Javelin*[2], "The Oldest Weekly Newspaper in Southwest Texas." This is one of the front page articles:

Davy Crockett Rifle

Jake Bell of Bermuda[3] was in the City on Wednesday and while here was the whole attraction from the fact that he had in his possession the "Old Blue Whistler," an old cap and ball rifle that belonged to the immortal Davy Crockett during his lifetime. The rifle is unlike anything made this day and time, but in the days of Crockett was considered the best shooting iron made. The stock is short and the barrel long and the wood work used in its construction is beautifully inlaid with silver stars, half moons and various figures that make it highly attractive. It shoots a ball about the size of a .45 caliber Winchester bullet and even at this age it is said to carry with perfect accuracy. The rifle was presented to Davy Crockett by Jas. M. Graham at Nashville, Tenn. in March 1822, and is said to have been used by him only on hunting expeditions. The rifle was secured by Mr. Bell in a trade with B. P. Thorpe of the Carla Ranch and who is a great-grandson of Crockett's. "Old Betsy," the famous rifle that Crockett had with him at the time of his heroic death at the Alamo, is owned by a cousin of Mr. Thorpe. Asherton[4] News.

Footnotes

[1] The Dimmit County seat

[2] In circulation since 1880

[3] A Dimmit County agricultural community, 1904-1918

[4] Dimmit County city, 1909-present

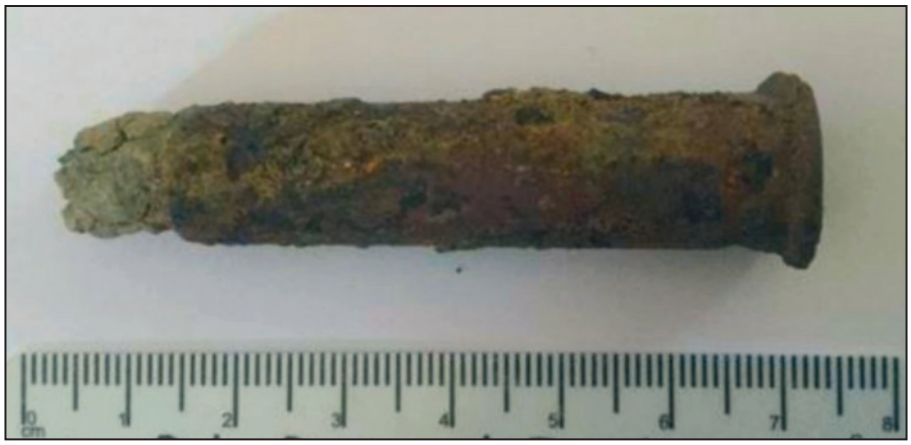
A .45-70 CALIBER, CENTER-FIRE CARTRIDGE FROM FROST TOWN

Tom Nuckols, Douglas K. Boyd, and Jason W. Barrett

An intensive archeological data recovery project is currently underway at the Frost Town site (41HR982), located in a prominent bend of Buffalo Bayou just north of downtown Houston. The work is a collaborative effort being undertaken by Texas Department of Transportation (Archeological Studies Program, Environmental Affairs Division) and Prewitt and Associates, Inc. (Austin, Texas) archeologists, with the assistance of volunteers from the Houston Archeological Society. On April 27, 2017, a large, oval-shaped, brick-lined cistern was discovered there during excavation monitoring of a deep trench for a new storm sewer line. Recorded as Feature 865 in what was once Block G of the 19th-century neighborhood, the oval shape of the cistern is so far unique among those discovered at the site. The cistern's neck and upper shoulder were gone, having been bladed away and then buried by about 5 feet of artificial fill. Two ceramic pipe inflow lines were observed during excavation; one entered the cistern's east wall and the other through the south wall. The cistern's upper cavity was filled with mixed sediments that may represent fill introduced soon after the cistern was abandoned as well as fill introduced at the time the feature was truncated and buried. Due to the depth of the excavation, archeologists were not able to enter the trench and record precise measurements. However, based on observations made from the surface, the cistern is estimated to measure approximately 15 feet across its long axis (east-west), and 12 feet across its short axis (north-south).

Beneath the mottled fill, archeologists identified a thick layer of dark sediment accumulated at the base of the cistern. This zone represents a post-abandonment deposit that accumulated after the cistern ceased to function as a water storage container but before it was truncated and buried. Using the track hoe, a sample of the dark lower sediment was removed and set aside, and volunteers from the Houston Archeological Society assisted in investigating this lower fill.

On Saturday, May 20, 2017, HAS members examining the dark cistern fill found a .45-70 caliber Benet-primed center-fire, copper-cased rifle cartridge containing a lead bullet. The cartridge was badly degraded and the headstamp on the bottom was illegible. After cleaning, three out of four headstamp characters were discernable:"R F 5". For the following discussion on the headstamp arrangement, think of the bottom of the cartridge case as the face of a clock The letter "R" is at the 12 o'clock position, which indicates that the cartridge was intended for use in a rifle. The letter "F" at the 6 o'clock position indicates that the cartridge was manufactured by Frankford Arsenal (1816-1977). The number "5" at the 9 o'clock position stands for May, and it denotes the month the cartridge was manufactured. What cannot be seen is the two-digit number at the 3 o'clock position, which represents the two last digits of the year that the cartridge was manufactured (Nuckols 2016).



The .45-70 caliber Benet-primed center-fire, copper-cased rifle cartridge containing a lead bullet found at Frost Town.

In March 1877, Frankford Arsenal began the use of dated headstamps. This was done so that cartridges could be identified by manufacturer and date of fabrication when removed from their original packing containers (Hackley, et al 1998: 197). In August, 1882, Frankford Arsenal abandoned the use of Benet-primed cartridges in favor of the reloadable Boxer-primed cartridge (Hackley, et. al. 1998:198; The Cartridge Collector's Exchange 2004).

In conclusion, it is probably safe to say that this particular cartridge was manufactured sometime in the years 1877 to 1883. The dating of this cartridge is consistent with the period of manufacture for many other late 19th-and early 20th-century artifacts recovered from the lower fill of Feature 865. This cistern sits at the back of a lot marked as 102 Spruce Street on the 1907 Sanborn map. This cartridge could indicate that the owner of that lot once owned and used a rifle that fired a .45-70 caliber round.

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A .45-70 CALIBER CENTER-FIRE CARTRIDGE CASE FROM BERNARDO PLANTATION (41WL28)

Tom Nuckols

This article is the 3rd in a series that will discuss the munitions artifacts recovered during archaeological excavations at Bernardo Plantation (41WL28) near Hempstead, Texas, in 2009 and 2010. The HAS participated in the excavations.

Of the sixty munitions artifacts recovered, nine are center-fire brass cartridge cases:

- .22 caliber Center-fire Winchester (n=3),
- .38 caliber Smith & Wesson (n=3),
- .45 caliber Colt (n=2),
- .45-70 caliber Government, the subject of this article.

A center-fire cartridge is a complete unit of ammunition consisting of a case, primer, gunpowder and bullet. After someone shoots a center-fire cartridge in his gun, the only remaining part of the cartridge is the firing pin imprinted primer and the case. Center-fire cartridges are reloadable, however most shooters discard the case where they are standing after it is ejected from the gun.

The .50-70 center-fire rifle cartridge was the predecessor to the .45-70. Adopted in 1866, the .50-70 was used until 1873 in a variety of rifles, many of them Civil War era percussion rifled muskets converted to trapdoor action breechloaders. The conversion consisted of milling out the rear of the barrel for the tilting breechblock, and placing a .50 caliber "liner" barrel inside the .58 caliber barrel (Wikipedia 2016).

The .45-70 caliber center-fire cartridge. From the author's collection.

The .45-70 caliber center-fire cartridge was adopted by the U.S. military in 1873 along with the single shot "Trapdoor" Springfield rifle and carbine. The cartridge contained 70 grains of black gunpowder and a .45 caliber lead bullet. A reduced-power load of 55 grains of black gunpowder along with a paper wad to take up the empty space inside the case was manufactured for use in the carbine to lighten recoil for mounted cavalry soldiers (The Cartridges Collectors Exchange 2004).

The Springfield carbine and rifle were replaced in 1892 by the Norwegian designed U.S., .30-40 caliber Krag center-fire cartridge and the U.S. Krag-Jørgensen bolt action magazine rifle.

As is usual with military ammunitions, the .45-70 was an immediate hit among sportsmen. The gun companies' Marlin, Winchester, Remington and others have and continue to chamber rifles for the .45-70 cartridge. Ammunition manufacturers still offer the cartridge for sale. (Barnes 2006: 59, 97, Flayderman 1998: 478).

The Bernardo Plantation .45-70 Center-fire Cartridge Case

This case has a solid, stepped ring head containing a copper primer. However, the primer is not firing pin imprinted; this cartridge is unfired, however, the bullet is missing.

The headstamp on the bottom of the case is "R F 2 86". The headstamp indicates that this was a rifle cartridge ("R" for rifle as opposed to "C" for carbine) manufactured by the Frankfort Arsenal, Philadelphia, PA., in February of 1886.

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THE BURNSIDE CARBINE AND ITS EXTERNALLY PRIMED .54 CALIBER CARTRIDGE

Tom Nuckols

In 1853, Ambrose Everett Burnside (1824-1881) resigned his commission in the United States Army and organized the Bristol Rifle Works. Burnside devoted himself full time to the invention of a breech loading percussion carbine. By 1855, Burnside had perfected and patented what would be called the "Burnside Carbine." The ammunition used in the carbine, also invented by Burnside, was an externally primed, cone shaped brass cartridge with a lead bullet.

The breech loading mechanism of the Burnside carbine was opened by lowering the operating lever that also served as the carbine's trigger guard. The breech, once opened, tilted up and exposed a rectangular steel block that contained a cone shaped cavity, the same shape as the cartridge. Closing the lever caused the block to move forward placing the cartridge's bullet into the chamber.

The Burnside Carbine Cartridge. From the author's collection.

The carbine was equipped with an external nipple that used a standard musket size percussion cap. Pulling the carbine's trigger dropped its external hammer that struck the cap, causing it to ignite. This ignition sent fire into a small hole in the back of the cartridge, exploding its internal black gunpowder charge. Unlike other breech loading guns of the time, the cone shaped cartridge sealed the joint between the barrel and the breech, eliminating the problem of leaking hot, exploding black gunpowder gasses when fired.

From the years 1857 to 1865, approximately 54,000 Burnside carbines were manufactured by the Bristol Rifle Works or its successor, the Burnside Rifle Company.

During the American Civil War, the U.S. government purchased and issued Burnside carbines to its troops. Captured Burnside carbines were popular with Confederate cavalry.

Near the end of the Civil War, the Burnside Rifle Company Works ceased production of the Burnside carbine after the company received a contract by the U.S. government to

manufacture Spencer carbines. The Spencer carbine used a .56 caliber rimfire cartridge. Firearms that used externally primed cartridges were coming to an end[1].

The Burnside Carbine Cartridge:

TYPE: Externally primed. In an externally primed cartridge, only the black gunpowder and the bullet are contained within the cartridge case. The primer (what fires the cartridge) is a percussion cap on a nipple with the flame conducted to the base of the cartridge by internal channeling within the gun.

CALIBER: 0.54” (.54 caliber).
CASE MATERIAL: brass.
BLACK GUNPOWDER LOAD: 65 grains.
BULLET MATERIAL: Lead.
BULLET WEIGHT: Approximately 350 grains.
BULLET MUZZZLE VELOCITY: 950 feet per second.
BULLET EFFECTIVE FIRING RANGE: 200 yards.

Footnotes

1 Other Civil War era firearms that used externally primed metallic cartridge were the .50 caliber Gallager carbine and the .50 caliber Maynard carbine. There were other breech loading Civil War firearms. However, they used cartridges made of paper or rubber.

A 56-50 SPENCER RIMFIRE CARTRIDGE

Tom Nuckols

I do not actively collect cartridges. However, if I am out and about, and I find one for sale that is unusual or rare, I will buy it. I also have cartridges that friends have given me over the years. So, starting this month, I am going to do a series of articles about cartridges in my collection. This first article is about a 56-50 Spencer rimfire cartridge that I bought at the First Monday Trade Days in Canton, Texas years ago.

The cartridge case of the 56-50 Spencer rimfire is made of copper. The lead bullet is a pointed nose type and is secured to the case by a turned case crimp (a turning-in of the case mouth into the bullet). Located 5/16" below the case mouth and 90° apart are four stab crimps (indentions made in the case as an additional way to hold the bullet in the case). The base of the cartridge is headstamped "J.G." for Joseph Goldmark.

The 56-50 Spencer rimfire cartridge (left) and headstamp (right). Photo: Tom Nuckols.

The 56-50 cartridge was designed by the Springfield Armory in late 1861, and it was used in various models of the Spencer repeating carbines from 1865 to 1867 (Flayderman 1998: 513). Barnes (2006: 486) states that the 56-50 cartridge was loaded with a 350-grain bullet and 45 grains of black gunpowder. The 56 in 56-50 refers to the case's base diameter of 0.56", and the 50 indicates a 50-caliber bullet.

Besides the 56-50, there were three other Spencer rimfire cartridges used in Spencer rifles and carbines: the 56-46 (introduced 1866, and obsolete about 1919), the 56-52 (introduced 1866, obsolete about 1920), and the 56-56. The 56-56 is considered the original Spencer rifle cartridge, and it was patented on March 6, 1860. Both the rifles and the cartridges were used

by the Union Army during the American Civil War. The cartridge became obsolete about 1920 (Barnes 2006: 486-487).

The basic information about Joseph Goldmark and the Spencer rimfire cartridges that he manufactured is below:

Joseph Goldmark
Brooklyn, NY
Business structure: Proprietorship of Joseph Goldmark
Rimfire Production Years: 1864 to 1866
Rimfire Production Range: 56-50 & 56-56 Spencer & .58 Musket (used in the 1867 Miller breech-loading conversion system of the muzzle-loading Springfield rifle musket).
Headstamps: Impressed "J.G." or "J.G." on 56-50 Spencer, "J.G." on .58 Musket. None on 56-56 Spencer.

Although Goldmark's first name is often erroneously given as Jacob, or sometimes as Julius, Goldmark's proper baptismal name was Joseph, as attested in the pages of both the Brooklyn and the New York City directories from 1859 to 1881. He was primarily a manufacturer of percussion caps, operating his business under the name of J. Goldmark & Co. from 1859 to 1862, and simply as J. Goldmark thereafter.

From 1865 until his death in 1881, Goldmark was described as a manufacturer of percussion caps and fixed (meaning metallic) ammunition. That may be so, but there is no evidence today that he made rimfire ammunition after his last delivery of 56-50 Spencer rounds to the United States government on December 31, 1866. It is possible, however, that he accepted contracts for Spencer ammunition from France for use in the Franco-Prussian War of 1870-71, and later for export to Central and South America from which the only headstamped round of 56-56 Spencer came. Until further data shows otherwise, the year end of 1866 remains the tentative date of his last rimfire cartridge production (Barber: 1987: 33).

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A POSSIBLE 577/450 MARTINI-HENRY CARTRIDGE CASE FROM FROST TOWN (41HR982)

Tom Nuckols

In October, archaeologists with Prewitt and Associates working the historic site of Frost Town excavated a wooden barrel cistern (Feature #805). One of the artifacts inside the cistern was a badly corroded center-fire bottleneck cartridge case. I did a cursory examination, and it appears to me that this cartridge case is from a 577/450 Martini-Henry center-fire rifle cartridge.

The cartridge name 577/450, pronounced "five seventy seven forty five," is short for 577 Snider and 450 Martini-Henry. The 577/45 was Great Britain's first bottlenecked center-fire military rifle cartridge (Logan 1959: 93). The 577/450 evolved from the 577 Snider; the 577 cartridge necked down to .45 caliber.

577 Snider

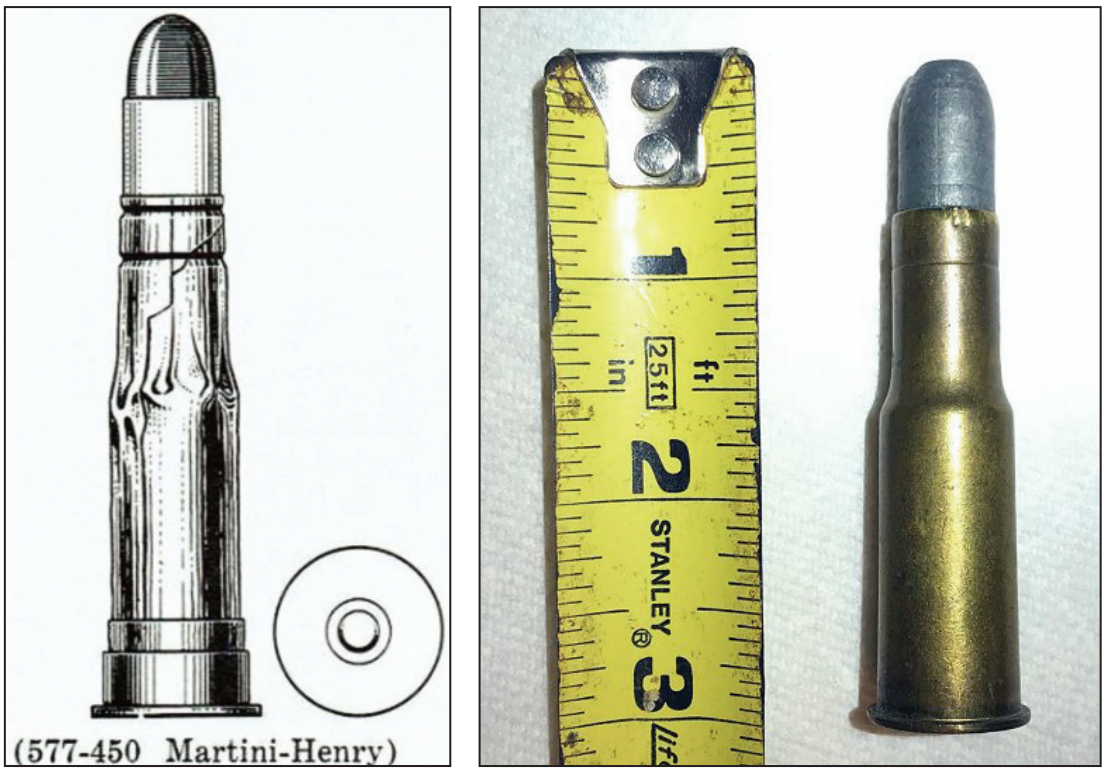
The 577 Snider was a straight wall center-fire cartridge containing a .577 caliber lead bullet and loaded with black gunpowder. It was adapted by the British military in 1867 and used in the breech-loading "Snider System" conversion of the muzzle-loading Enfield rifle. The Snider System was invented by Joseph Snider an American who was turned down when offered his system to his home country. Originally, the 577 Snider cartridges were made similar to that of a paper hulled shotgun shell. It had a paper body and a metal base. Later, the case was made of brass.

Snider Enfield rifles were sold in the U.S. by the seller of military surplus, Francis Bannerman & Sons at Bannerman's Castle, Pollepel Island, New York. In the 1950's, surplus arms dealers also imported the rifles. The 577 Snider cartridges became obsolete circa 1930 (Barnes 2006: 374).

577/450 Martini-Henry

The 577/450 Martini-Henry center-fire rifle cartridge replaced the 577 Snider as a British military cartridge in 1871. The cartridge had a brass case, a .45 caliber lead bullet and was loaded with black and later smokeless gunpowder. The cartridge was used in the Martini-Henry falling block single shot rifle, designed by Swiss engineer Frederich Martini in the 1860's (Miller 2011: 252). Both gun and cartridge made history by 140 men of the 24th Regiment, B Company of the British Army in January 1879. Approximately 20,000 of the 577/450 cartridges were fired successfully defending the mission station of Rorke's Drift in South Africa against 4,000 Zulu warriors.

Martini-Henry rifles became popular as sporting guns and were imported into the U.S. (Barnes 2006: 371, Miller 2011: 252). The .303 British center-fire rifle cartridge replaced the 577/450 in 1888. However, the 577/450 was commercially sold by the British ammunition manufacturer Kynoch until the late 1950's (Kynoch 2016, Wikipedia 2016).



The 577/450 Martini-Henry center-fire rifle cartridge with a paper patched bullet, sketch (left), and cartridge (right) with headstamp "KYNOCK 577/450". From the author's collection. Photo: Jake Nuckols.

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Shot Gun

LARRY GOLDEN COLLECTION: NOTES ON MUNITIONS

Tom Nuckols

I am currently in the process of analyzing the approximately 53 munitions artifacts that comprise the former Town of San Jacinto, Larry Golden Collection. Twenty-four of these artifacts consist of the badly corroded brass cups from shot shells (shot gun shells). Although the paper hulls once attached to the cups have disintegrated, some of the cups still retain their internal cardboard base wads.

One shot shell in particular, has this headstamp[1]: “No 12. US ROMAX .”. Translated, this means a Romax brand 12 gauge shot shell manufactured by the United States Cartridge Company (USC) of Lowell, MA. Former Union Army General Benjamin F. Butler and a group of associates founded USC; incorporation was on June 14, 1869. Ajax, Climax and Romax were three brands of shot shells sold to the public by USC. The company advertised the three brands as the "Black Shells" because their paper hulls were painted black (instead of Winchester's red or Remington's green, etc.). The Romax trademark was first used in commerce on April 25, 1911. So far, research has failed to ascertain the trademark dates for Ajax and Climax shot shells. Romax shot shells were loaded with black (gun) powder. Ajax and Climax shot shells were loaded with smokeless (gun) powder. By the early 1920’s, “Black Shells” ceased to appear in USC advertising.

The “No 12. US ROMAX .” headstamp.

In the 1920’s, USC introduced the shot shell brands Ajax Heavies, Climax Heavies and Defiance Heavies. Climax Heavies and Defiance Heavies were manufactured with red painted paper hulls. USC was reincorporated in 1905. A 50% interest was sold to the National Lead Company in 1909. National Lead Co. sold all of USC’s machinery and equipment to Winchester Repeating Arms Company in 1926. In 1931, Western Cartridge Company bought Winchester and continued to market USC ammunition until 1936.

In 1940 USC won a substantial federal government contract to build and operate a St. Louis, MO, ordinance plant to make and store munitions during World War II. Notice in the photograph, the headstamp includes an offset period (“No 12. US Romax .”). This period is

a variant[2] indicator. Also notice the small circle in the center of the cup with the concavity. That is the primer[3]. The concavity was caused by the firing pin of a shotgun.

Footnotes

[1] Headstamp - The marking impressed upon the base of the cartridge by the manufacturer. It can indicate who made the cartridge, the caliber, when it was made, the brand, a decoration, or as much information as space allows and the manufacturer decides to put there. The headstamp consists of letters, numerals or symbols, or combinations of any or all of these arranged in some manner on the base of a cartridge.

[2] Variant - A loading variation(s) in the components that make up a particular caliber of a center-fire cartridge or gauge in a shot shell (also a “center-fire” cartridge). These include bullet style or weight, shot or buckshot size, powder charge or type (black or smokeless), primer size, etc. Variants allow the manufacturer to identify his product. Variants are expressed in different ways via the headstamp: the size of letters or numbers, punctuation, periods, the number or placement of periods, and hyphens. As far as this author can determine only center-fire cartridge variants manufactured by the Winchester Repeating Arms Company are documented in Daniel L. Shuey’s book, *W.R.A. Co., Headstamped Cartridges and their Variations*, *Volume 1*. 1999, WCF Publications, Rockford, IL.

[3] Primer - The small cup fitted in the pocket of the base of a center-fire cartridge case. The primer contains a sensitive explosive compound which, when struck by a guns firing pin ignites the gunpowder contained within the cartridge case.

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LARRY GOLDEN COLLECTION: THE MYSTERY SHOT SHELL

Tom Nuckols

As stated in last month's article, I am in the process of analyzing the munitions artifacts that comprise the former Town of San Jacinto, Larry Golden Collection. I've almost completed the analysis and the munitions artifact count is now 54.

One artifact thought to be a lead muzzle-loading bullet, turned out to be an ovoid shaped rock. It was discarded. Two additional munitions artifacts were found while the HAS was preparing the artifacts for display at the Battle of San Jacinto Symposium held in April.

The 54 munitions artifacts divided by categories are:
Lead buckshot (n=5),
Spherical muzzle-loading lead bullets (n=9),
Lead musket balls (n=4), Lead minié balls[1] (n=5),
Center-fire cartridges (n=2),
Lead cartridge bullets (n=3),
Shot shells (n=24),
Battery cup primer[2] (n=1)

One artifact in the shot shell category, consists of only the brass base of what was probably once a 12 gauge, brass cupped, paper hulled shot shell (see photo). I cannot identify the manufacturer. The headstamp consists of a patent date only:

"PATENTED SEPT 16 1862".

The headstamp of the "mystery shot shell." Photo: Tom Nuckols.

This headstamp is giving me two problems:

1. I have never seen this type of headstamp; a patent date only. As far as I can determine, manufactures' either excluded a headstamp or, if a headstamp was used, it included some form of manufacturers' identification, such as the company name. My reference library dealing with books identifying shot shells hasn't helped, and I've searched the internet, using sites such as International Ammunition Association (http://www.cartridgecollectors.org) and Headstamp Database - Turtlefoot

Headstamp Project (http://www.headstamps.x10.mx/ database.html). An internet search for patent dates has not yielded anything.

2. The patent date is too early for a Boxer[3] primed center-fire shot shell.

If anyone can help me identify this shot shell, my email address is tlnuckols58@att.net.

Footnotes

[1] Minié ball -- A type of muzzle-loading spin-stabilized rifle bullet named after its co-developer, Claude-Étienne Minié. It came to prominence in the Crimean War and American Civil War.

[2] Battery Cup -- A flanged metallic cup used in a shot shells primer assembly that provides a rigid support for the primer cup and anvil. The battery cup primer was patented (US 1541437 A) June 9, 1925 by George W. Schauerte and John Olin and assigned to the Western Cartridge Company of East Alton, IL.

[3] The center-fire cartridge evolved with the invention of the Berdan and Boxer primers. The Berdan primer, patented on March 20, 1866, is named after its American Inventor, Hiram Berdan. The Berdan primer's anvil is formed internally from the case in the bottom of the primer pocket. The Boxer primer was invented by Edward Boxer of the Royal Arsenal, Woolwich, England, and patented on October 13, 1866, and in the U.S. on June 29, 1869. The Boxer primer contains its own anvil pressed into the cup. The two primer systems are not interchangeable, and only Boxer primed cartridges are reloadable. In England and throughout most of the world, center-fire cartridges use Berdan primers. In the U.S., Boxer primers are used.

Thanks to HAS member Charles E. Aulbach, the case of the "Mystery Shot Shell" (The Profile, May 2015, Vol. 4 Number 5) might be solved. What I thought was the cup base from a 12 gauge, paper hulled shot shell is possibly part of the wick adjustment knob of a hand held or hurricane lamp manufactured by Holmes, Booth & Haydens Manufacturing Company. See http://www.thelampworks.com/lw_companies_hb&h.htm

THE WANDA CARTRIDGE COMPANY PLASTIC SHOTGUN SHELLS

Tom Nuckols

In 1967, the Wanda Cartridge Company of Manvel, Texas began manufacturing reloadable red clear (see through) plastic shot gun shells in 12 gauge. In 1968, a yellow clear plastic 20 gauge shot gun shell was introduced. In 1970, the 20 gauge yellows were changed to green. Pictured is a green clear plastic Wanda 20 gauge shot gun shell. It has a battery cup primer and a cone shaped black plastic overshot plug. The headstamp reads:
"WANDA PAT. PEND. 20".
The white lettering on the tube reads: "2¾-1-9 20 GA. ONLY".

A green clear plastic Wanda 20 gauge shot gun shell. From the author's collection.

The meaning of 2¾-1-9:

2¾ – Refers to the length of a shot gun chamber in inches that this shot gun shell can be fired in. The length of the shot gun shell pictured is 2½".

1 – Indicates that this shot gun shell contains 1 ounce of lead shot.

9 – Indicates shot size, 0.08" diameter. There are approximately 585 pellets of shot inside this shot gun shell; #9 shot is generally used for skeet shooting.

The Wanda Cartridge Company ceased operations in 1971. Why the cessation? I'm not sure. According to blogs by cartridge collectors, there is general consensus that Wanda's plastic shot gun shells "never sold well, that there was something wrong with them, due to

the perception that the lack of a brass head made them weaker or that the unsupported all-plastic rims caused extraction/ejection problems in usually reliable guns."

A PINFIRE SHOT GUN SHELL FROM BERNARDO PLANTATION (41WL28)

Tom Nuckols

In 2009 and 2010, the Houston Archeological Society participated in excavations at the Bernardo Plantation site (41WL28) near Hempstead, Texas.

Of the 7,113 artifacts recovered (Bruseth, et al. 2011: 369), munitions constitute sixty of these artifacts. These sixty consist of twelve categories:

- spherical muzzle-loading lead bullets (n=4),
- nondescript pieces of lead (n=4),
- lead shot (n=2),
- lead buckshot (n=10),
- rimfire cartridge cases (n=8),
- center-fire cartridge cases (n=9),
- lead cartridge bullets (n=2),
- shot gun shells (n=16),
- lead sprue,
- percussion cap,
- 16 gauge pinfire shot gun shell,
- semi-jacketed pistol bullet,
- brass butt plate.

This article is the first in a series that will discuss each category of munitions, beginning with the pinfire shot gun shell.

The pinfire shot gun shell had a paper hull and a brass cup with a pin protruding from the side of the cup. A percussion cap is positioned inside the cup and hidden from view. The pin, when struck by the shot guns hammer strikes the cap causing the shot gun shell to fire. The pinfire shot gun shell was invented by Frenchman Casimir Lefaucheaux in 1836, a year after his introduction of a pinfire pistol cartridge. The gun that fired the pinfire shot gun shell was usually a side-by-side, double barreled hinge framed shot gun. Pinfire shot gun shells were in regular production until at least the late 1800's while 12 and 16 gauge were manufactured as late as 1930.

There were several drawbacks to pinfire shot gun shells. They were difficult to box and they could not be carried in the pockets as the pins soon destroyed the linings of pockets. Care had to be taken when inserting the cartridges in the breech as the pin had to be firmly positioned in a slot in the back of the barrel prior to closing the shot gun.

The 16 gauge pinfire shot gun shell of the Eley Brothers, London. Photo: Houston Archeological Society.

All that remains of the Bernardo specimen is the brass cup. It was manufactured by Eley Brothers. Eley Brothers, was established by Charles and William Eley in London in the 1820's. Their products were firearms, cartridges, percussion caps and smokeless powder. During World War I, the company produced 209 million British .303 rifle cartridges. The company is still in business.

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FORMER TOWN OF SAN JACINTO SHOT GUN SHELLS

Tom Nuckols

Shot gun shells (n=24) are one of seven categories of munition artifacts from the former Town of San Jacinto Larry Golden collection currently being analyzed by this author. The shot gun shells in this collection once had paper tubes with brass cups[1]. The paper tubes have disintegrated and the remaining brass cups are in various stages of deterioration.

The gauges of these shot gun shells are: 10 (n=5), 12 (n=18) and 16 (n=1). With five exceptions (catalog #s 030, 031, 039, 044 and 045) all of the shot gun shells in this collection were fired, i.e., the primers are firing pin imprinted. Under ideal storage conditions, ammunition will last a lifetime; these shot gun shells could have been used years after a brand was discontinued by a manufacturer and deposited on this site.

The following is a list of the shotgun shells by Catalog #[2]. The Catalog # is followed by the gauge, the manufacturer, the headstamp, and the date range (circa years) The date range indicates when the manufacturer began to offer the particular brand name of shot gun shell for sale to the public, and when that brand was discontinued. Comment(s) where applicable, follow the date range. With a few exceptions, the manufacturers' shot gun shell brand name was included in the headstamp. Example: Catalog #030; NEW CLUB is the brand name.

030, 10, Remington-Union Metallic Cartridge Company, REM-UMC No 10 NEW CLUB, 1911-1914, The headstamp includes an eight pointed star around the primer pocket and a broken circle outside the headstamp lettering. Unlike other shot gun shells, both letters in the word "No" are underscored on this shot gun shell's headstamp. The underscoring is connected to the broken circle outside of the headstamp and is referred to as a "backwards G". See *Remington UMC and REM-UMC HEADSTAMPS* at: http://www.headstamps.x10.mx/ remingtonUMC.html.

031, 10, Union Metallic Cartridge Company, U.M.C. Co. No 10 CLUB, 1885-1891, The headstamp includes two concentric circles around the primer pocket.

032, 10, Winchester Repeating Arms Company, 1901 No 10 NEW RIVAL, 1901-1919, the headstamp includes a circle around the primer pocket.

033, 10, Winchester Repeating Arms Company, WINCHESTER No 10 NUBLACK, 1905-1938, the headstamp includes a circle around the primer pocket.

034, 10, Union Metallic Cartridge Company, U.M.C. CO. No 10 BLACK CLUB, 1894-1896.

035, 12, Union Metallic Cartridge Company, U.M.C. Co. No 12 CLUB, 1885-1891, the headstamp includes two concentric circles around the primer pocket.

036, 12, Union Metallic Cartridge Company, U.M.C. Co. No 12 NEW CLUB, 1895-1902.

037, 12, Union Metallic Cartridge Company, U.M.C. Co. No 12 NEW CLUB, 1902-1910, the headstamp includes an eight pointed star around the primer pocket.

038, Same as Catalog #037.
038A, Same as Catalog #037.

039, Same as Catalog #037.

040, 12, Remington Arms-Union Metallic Cartridge Company (Remington merged with UMC in 1912), REM-UMC No 12 ARROW, 1915-1940's, the headstamp includes a circle around the primer pocket and a circle outside the headstamp lettering.

041, 12, Remington Arms-Union Metallic Cartridge Company, REMINGTON UMC No 12 NEW CLUB, 1911-1914, the headstamp includes an eight pointed star around the primer pocket.

042, 12, United States Cartridge Company, No (the 'No' is not underscored in this example) 12 US ROMAX, 1911-1920, See Larry Golden Collection: Notes on Munitions by this author in the April 2015 Houston Archaeological Society Newsletter, Volume 4, Issue 4.

043, 12, Winchester Repeating Arms Company, WINCHESTER No 12 NUBLACK, 1904-1938, the headstamp includes a circle around the primer pocket.

044, 12, Winchester Repeating arms Company, WINCHESTER No 12 NEW RIVAL, 1897-1929, the headstamp includes a circle around the primer pocket.

045, 12, Winchester Repeating Arms Company, WINCHESTER No 12 REPEATER, 1904-1927, the headstamp includes a circle around the primer pocket.

045A, 12, Same as Catalog #045, 1920-1922, The primer on this shot gun shell is headstamped W.R.A. Co. NEW No. 4. This primer, used in shot gun shells loaded with smokeless gunpowder, was introduced in 1904 and discontinued in 1933.

046, 12, Same as Catalog #030, 1915-1937.

047, 12, Illegible due to corrosion. The primer is missing.

048, 12, Winchester Repeating Arms Company, WINCHESTER No 12 LEADER, 1894-1932, the headstamp includes a circle around the primer pocket.

049, 12, Union Metallic Cartridge Company, illegible due to corrosion. There are two concentric rings around the primer pocket.

050, 12, Union Metallic Cartridge Company, U.M.C. CO. No 12, 1873-1890.

053, 16, Winchester Repeating Arms Company, WINCHESTER No 12 LEADER, 1894-1933, the headstamp includes a circle around the primer pocket. The primer on this shot gun shell is headstamped "W.R.A. Co. NEW No. 4".

Under magnification, unique variations in firing pin imprints on a shot guns shell's primer allow identification of shot gun shells' fired in the same shot gun. The following are shot gun shells that were possibly fired in the same shot gun: 032, 034, and 041 (10 gauge) and 035A, 036, and 049 (12 gauge). Corrosion prohibited the possibility of identifying additional matches, if any.

A selection of the brass shot gun shell cups being analyzed. Larry Golden Collection.

Footnotes

[1] Shot gun shells were invented in the 2nd half of the 1860s. Most early shotgun shells had a brass case, just like rifle and pistol cartridges. Beginning circa 1870, manufacturers began offering shot gun shells with paper tubes and a brass cup. However, the early paper tubes

swelled when wet and shot gun shells with paper tubes could not be reloaded as many times as brass cases. Paper tubes were later impregnated with wax, to make them water resistant. In 1960, Remington Arms Company introduced shot gun shells with plastic tubes, and soon other ammunition companies followed suit.

[2] The Catalog #s used here are abbreviated. All munitions artifacts have a prefix of 41SJT01 (41=Harris County [for lack of a site trinomial], SJT=San Jacinto Town, 01=the first type (munitions) of artifacts from this site to be analyzed. Future plans of The Houston Archeological Society include writing a report for this site that will include the entire categories of artifacts', hence this catalog numbering system.

Collections

LOT 566, SAN FELIPE DE AUSTIN (41AU2)

Tom Nuckols

In 1824, Steven F. Austin founded the town of San Felipe de Austin. The town served as the unofficial capitol of Austin's colony. Sometime in 1829 or 1830, Joseph White built the Farmer's hotel on Town Lot 566 in San Felipe.

While semi-finished, the Farmer's Hotel served as the town hall. After 1833, the building served as a dwelling for Joseph Urban, but was large enough that the Urban family took in boarders. In 1836, Urban described the building as being thirty-two feet square with a brick walled cellar six feet deep.

On March 30, 1836, a small Texas army force led by Mosley Baker set fire to San Felipe de Austin to keep it from falling into the hands of the advancing Mexican army during the Texas Revolution.

Recently, archaeological excavations were conducted on Lot 566 by Coastal Environments Inc. (CEI) under contract by the Texas Historical Commission, Historic Sites Division. Cox McClain Environmental Consulting (CMEC), was CEI's sub-contract partner overseeing the excavations with Missy Green (CMEC) acting as the Project Archeologist. Archeologist Jon Lohse (CEI) served as Principal Investigator. The Houston Archeological Society and members of the Texas Historical Commission Archeological Stewards Network assisted with the excavations.

Typical mold-produced lead shot recovered from San Felipe de Austin. Photo: Bob Sewell.

Analysis of the artifacts excavated on Lot 566 yielded seventy-five munitions artifacts. These artifacts were sub-divided into twelve categories:

- Lead shot, both mold and shot tower made (n=34).
- Lead buckshot, both mold and shot tower made (n=8).
- Unfired lead spherical muzzle-loading rifle or pistol bullet, mold made (n=4).
- Fired (severe impact damage) lead spherical muzzle-loading rifle bullet, pistol bullet or musket ball (n=2).
- Lead sprue.
- Muzzle-loading gun part (a broken piece of gun lock side plate).
- Ribbed percussion cap (n=2).
- Nondescript pieces of lead (n=18).
- .22 caliber rimfire lead cartridge bullet, fired and impacted.
- .22 caliber rimfire Short cartridge case (n=2).
- .38 caliber (badly degraded) rimfire or center-fire cartridge (brass or copper?) containing a lead bullet.
- Unknown caliber (possibly .30 or .32) rimfire or center-fire lead cartridge bullet, fired and impacted.

MAVERICK COUNTY COLLECTION

Tom Nuckols

I have just completed the analysis of eleven artifacts, surface collected by an individual along Elm Creek north of Eagle Pass between Fort Clark & Fort Duncan in Maverick County. To adequately document the collection, I have assigned numbers to the artifacts. All of the cartridges cases in this collection are firing pin imprinted, indicating that they were fired.

Maverick County Collection. Photo: Linda Gorski.

Here are the results of my analysis (Left to right, top to bottom).

1. Brass button. Waterbury Button Company. Decoration: Great Seal of the United States.

2. Rimless bottleneck brass center-fire cartridge case. Caliber: difficult to determine due to deformation, but probably 7.62 × 39 mm. Headstamp: "05 87". Manufactured by the Spreewerke, Lübben Munitions Company (05) in East Germany in 1987. The "05" in the headstamp comes from the "05" in the corporate name.

3. Rimless bottleneck brass center-fire cartridge case. Caliber: .30 Remington. Headstamp: "PETERS 30 REM". Manufactured by the Peters Cartridge Company.

4. .44 Henry rimfire copper cartridge case. Headstamp: raised "H" in an impressed circle. The presence of two vertical, triangular shaped firing pin imprints 180° apart on this case indicate that it was fired in a Henry rifle or a Winchester Model 1866 rifle or carbine. Manufactured by the New Haven Arms Company or the Winchester Repeating Arms Company.

5 and 6. Rimmed bottleneck brass center-fire cartridge case. Caliber: .44-40 (40 grains of black powder). Headstamp: "W.R.A. Co. 44 W.C.F". (Winchester Center Fire). Manufactured by the Winchester Repeating Firearms Company.

7. Rimmed straight copper center-fire (Benet primed) cartridge case. Caliber: .45-70. Manufactured by Frankfort Arsenal. The .45-70 black powder (70 grains) rifle cartridge, also known as .45-70 Government, was developed at the U.S. Army's Springfield Armory for use in the Springfield Model 1873, which is known as the "Trapdoor Springfield." The new cartridge was a replacement for the .50-70 Government cartridge which had been adopted in 1866, one year after the end of the American Civil War. The .30-40 Krag (also called the .30 U.S., or .30 Army) replaced the .45-70, circa 1900.

8. Rimmed straight brass center-fire cartridge case. Caliber: .45-70. Headstamp: "R F 11 86" (Rifle, manufactured by Frankfort Arsenal in November, 1886).

9. Rimmed straight brass center-fire cartridge case. Caliber: .45-70. Headstamp: "R W 2 79" (Rifle, manufactured by the Winchester Repeating Arms Company in February, 1879) Winchester began headstamping military contract .45-70 ammunition in October of 1878).

10. Rimmed straight copper center-fire (Benet primed) cartridge case. Caliber: .50-70. The .50-70 was the United States' first center-fire military rifle cartridge. It was used in the Trapdoor Springfield Model 1866. The cartridge was developed after the unsatisfactory results of the .58 caliber rim fire cartridge. The .50-70 cartridge was also known as the .50-70-450 (caliber-grains of black powder-bullet weight in grains).

11. Round nose lead bullet. Unfired. Caliber: .45. This bullet originated in a 45-70 cartridge. When this bullet was contained in a cartridge case, the assembly (case, powder, primer and bullet) was known as the 45-70-405 (caliber-grains of black powder-bullet weight

in grains) or .45 Government cartridge. This bullet is slightly deformed at the base and may have lost some of its original mass of 405 grains. Actual weight is 396.2 grains.

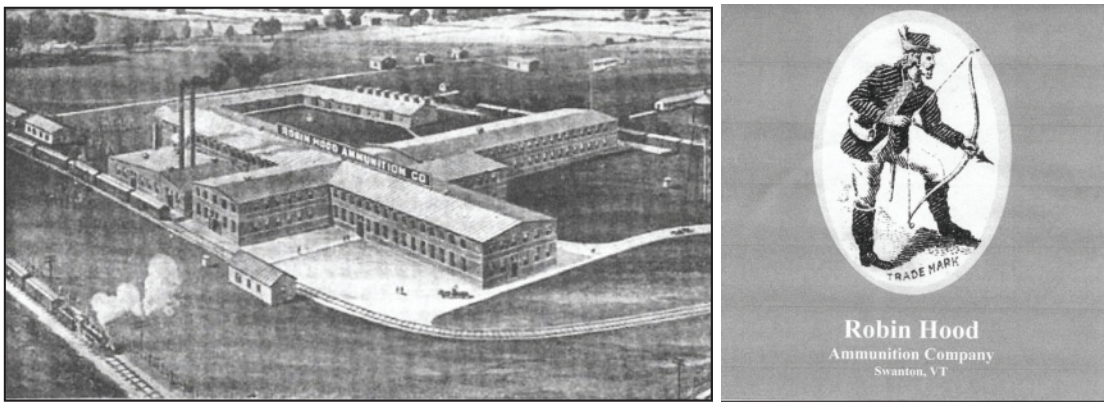
Other Topics

THE ROBIN HOOD POWDER AND AMMUNITION COMPANY

Tom Nuckols

The Robin Hood Powder Company (RHP) of Swanton, Vermont, was founded in 1898. The company manufactured gunpowder and shot gun shells. In 1906 the company was reorganized into the Robin Hood Ammunition Company (RHA). Also in that year, production of copper cased rimfire and brass cased center-fire cartridges began. In 1915 Robin Hood Ammunition Company was purchased by Remington Arms-Union Metallic Cartridge Company (Klinect 1984).

As far as I can determine, no artifact bearing RHA's headstamp[1] has ever been found on an archeological site in the Houston area. If a RHP/RHA shot gun shell is ever found, it will probably consist of only the brass cup. The paper tube will have disintegrated. All of the paper tubed shot gun shells analyzed by this author from archeological sites in the area have consisted of nothing but the cups. Amazingly, the cardboard base wad located inside the cup is usually extant. In 1960, Remington Firearms Company began selling shot gun shells with plastic tubes; other ammunition manufactures followed suit.



The Robin Hood Ammunition Company Factory, Swanton, Vermont (left) and the company logo (right).

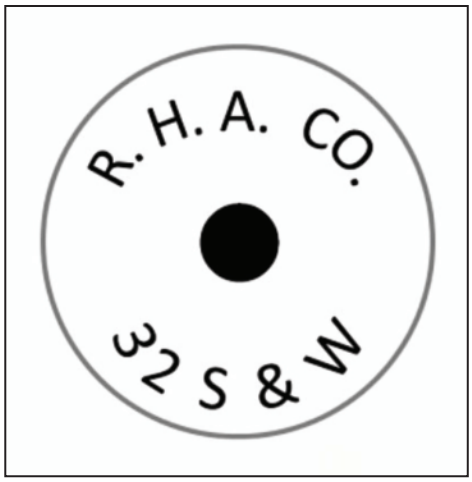
RHA Rimfire Cartridges

Rimfire cartridges manufactured by RHA and bearing the "R" headstamp were .22 BB[2], .22 CB[3], .22 Short, .22 Long and .22 Long Rifle (Barber 1987: 69).

RHA Center-fire Cartridges

Research by this author has failed to determine how many different calibers of center-fire cartridges RHA offered for sale. However, a single page from a RHA catalog (date unknown) and depicted in Klinect (1984: 12) advertises two calibers of center-fire revolver cartridges for sale: .32 caliber S & W (Smith & Wesson) and .38 caliber S & W.

Here is an example of a center-fire cartridge headstamp. The dot represents the location of the primer in relation to the lettering:

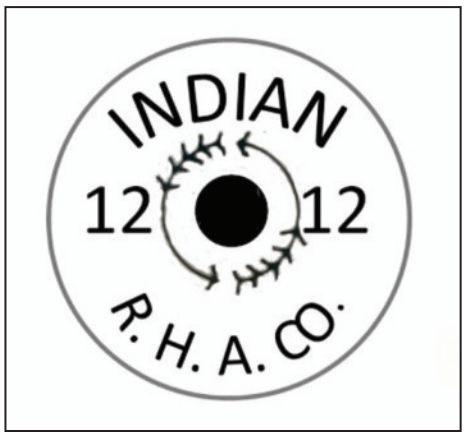


The headstamp of RHP/RHA Shot Gun Shells. Sketch by Bob Sewell.

RHP and RHA manufactured paper tubed; brass cupped shot gun shells in 10, 12, 16 and 20 gauge. The brand names of the shot gun shells were included in the headstamp.

Brands of RHP/RHA shot guns shells and the gauges (in parentheses) available in that brand name: AUTOCRAT[4] (12), AUTOMATIC (12), CAPITAL (12, 16), CHAMPION (10, 12), CLIPPER (12, 16, 20), COMET (12, 16), CRESCENT (12, 16), ECLIPSE (10, 12, 16, 20), INDIAN (10, 12, 16), ROBIN HOOD (10, 12, 16), TIGER (12, 16, 20).

An example of a RHA 12 gauge shot gun shell headstamp. The dot represents the location of the primer in relation to the lettering:



The RHA 12 gauge Shot Gun shell headstamp. Sketch by Bob Sewell.

The headstamp on most RHP/RHA shot gun shells included two or three fletched arrows encircling the primer.

References

Barber, John L.
1987 *The Rimfire Cartridge in the United States & Canada, 1857 1984*. Armory Publications, Tacoma, WA.

Huegel, Roger E.
2012 *Robin Hood Ammunition Co. 22 box ID*, http://22box-id.com/USA/RobinHood.pdf, accessed January, 2016.

Hogg, Ian V.
1982 *The Cartridge Guide, the Small Arms Ammunition Identification Manual*. Stackpole Books, Harrisburg, PA.

Klinect, Windy
1984 *Robin Hood & Their Merry Shot Shells*. Published by the Ohio Cartridge Collectors Club.

Footnotes

[1] Headstamp – The marking impressed upon the base of the cartridge by the maker. It can indicate who made the cartridge, the caliber, when it was made and – these are the basics – and, literally as much information as space allows and the maker fancies to put there (Hogg 1982: 35).

[2] BB – Bulleted breech cap (1845 – present) A rimfire cartridge containing a lead ball that travels at a lower velocity of around 700 ft/s and at a reduced noise level over the standard .22 cartridge. It was developed for indoor shooting galleries with special gallery guns. In Europe this cartridge is known as the 6 mm Flobert.

[3] CB – Conical Ball Cap (1888-1942) A rimfire cartridge containing a very small propellant charge (usually no gunpowder, just the primer), resulting in a low muzzle velocity of between 350 to 853 ft/s. This cartridge was used for indoor target practice, shooting galleries or pest shooting.

[4] Introduced and eventually withdrawn due to conflict with the Winchester Repeating Arm's Company registered trade mark AUTOMATIC of 1901. AUTOCRAT Replaced AUTOMATIC.

LEATHER SHOT POUCH

Tom Nuckols

In 1824 Stephen F. Austin founded the town of San Felipe de Austin. The town served as the unofficial capital of Austin's colony.

Sometime in 1829-1830, Joseph White built the Farmer's Hotel on Town Lot 566 in San Felipe. While semi-finished, this building served as the town hall. After 1833 the building served as a dwelling for Joseph Urban, but was large enough that the Urban family took in boarders. Urban described the building in 1836 as being 32 feet square with a brick cellar 6 feet deep (Moore 2014).

To keep it from falling into the hands of the advancing Mexican army during the Texas Revolution, on March 30, 1836, a small Texas army force led by Moseley Baker burned San Felipe de Austin, including the Farmer's Hotel.

In November 2015, a group of Texas Historical Commission (THC) Archeological Stewards and a group of volunteers conducted excavations at what is thought to be the site of the Farmer's Hotel. The Stewards were supervised by THC Region 4 Archaeologist Jeff Durst.

Stewards Steve Salyer and I were assigned to excavate a 1 x 1 meter unit within an area that was thought to be the Hotel's cellar. We were looking for brick cellar walls or possibly a cellar floor.

At a depth of approximately 50 centimeters, Steve and I began encountering lead shot amongst brick rubble and other artifacts. The shot was about 0.05" diameter, the modern equivalent to shot size #12. The shot was oxidized, making it easy to spot; akin to tiny snowballs lying in the tan colored sandy soil.

Along with the shot, I found four items lying in close proximity to each other: a brass tube, a brass button shaped object with rusty metal adhering to it and a thin rectangular shaped brass plate and a brass ring. I interpreted the shot and the brass items to be the remains of a leather shot pouch similar to a depiction in one of my gun books that was sold by the Enterprise Gun Works (Saterlee 1962).

A leather shot pouch (approximately 8.5" Long x 3" Wide) was a container for shot (approximately 5# maximum capacity). It was an accessory carried by a hunter using a muzzle-loading shotgun. A shot pouch was usually designed with metal clasps for hanging on a belt or strap to wear around a person's neck like a powder horn. The pouch had a pushbutton open/close spout that dispensed a measured amount of shot; equivalent to that contained within a modern 12 gauge shot gun shell.

In the right side of the depiction of the pouch (see below), the brass dispensing tube is at the top. On the right side of the tube is the brass buttoned metal double valve actuator. Attached to the actuator are two brass rectangular shaped valves. They are situated in the slots at the bottom and top of the dispensing tube. Below the dispenser is a brass ring, the

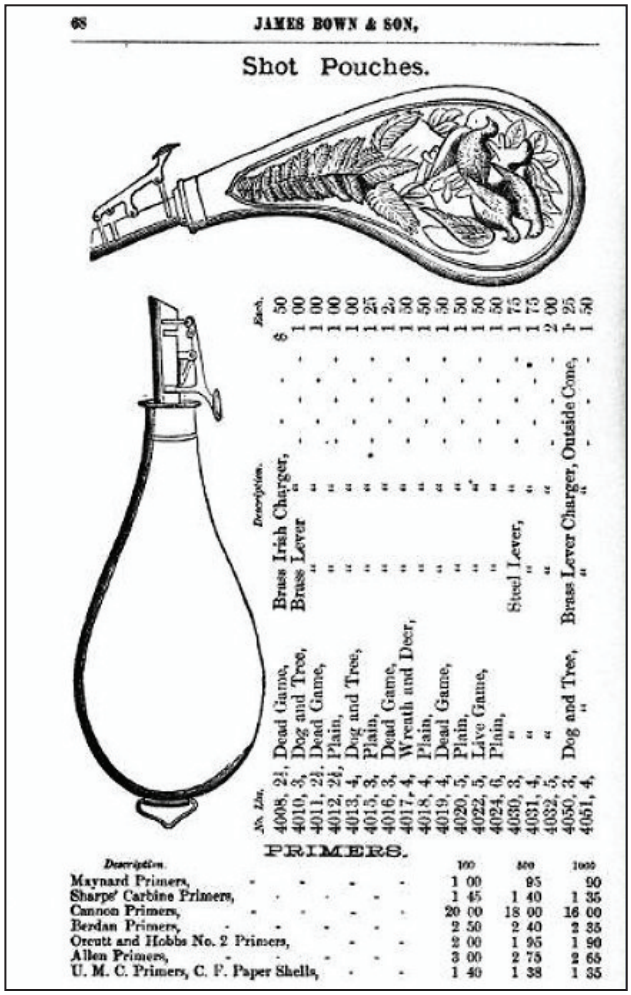
attachment point for the leather pouch. Shot pouches of this style were sold by numerous companies including the James Bown & Son for their business, the Enterprise Gun Works. Enterprise was established in 1848 and located at 136 & 138 Wood Street, Pittsburg, PA. The Enterprise catalog description for the shot pouch below is: No. 4008, Lb. 21/2, Description: Dead Game, Brass Irish Charger, Each $0.50.

I began carefully troweling the pit floor recovering the shot *in situ*. This became a one man operation, so Steve began excavating elsewhere. I excavated several more levels in the pit and continued finding shot. I didn't finish excavating my pit to the desired depth due to the project's time allotment and my slow progress. The pit was backfilled, and will probably be re-opened and completed next year.

References

Moore, Michael Rugeley
2014 "Regulation Double Log Cabin." *The Built Environment of Colonial San Felipe de Austin*. Self-Published.

Saterlee, L.D. (compiler)
1962 *10 Old Gun Catalogs, 1864-1880*. The Gun Digest Association, Inc. Chicago.

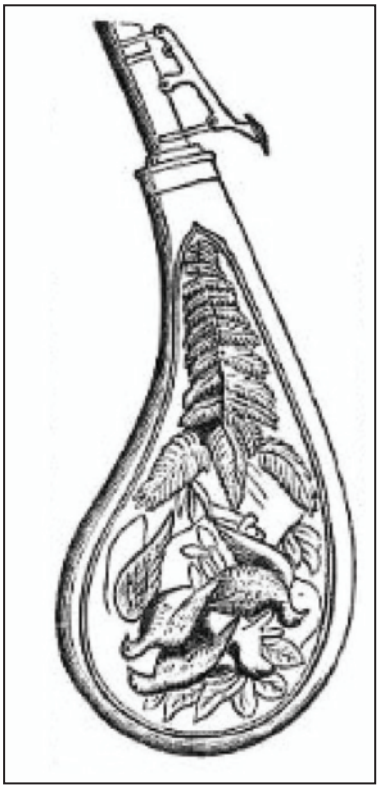

68 JAMES BOWN & SON,

Shot Pouches.

No.	Lbs.	Description.	Each.
4008,	2½,	Dead Game, Brass Irish Charger,	50
4010,	3,	Dog and Tree, " "	1 00
4011,	2½,	Dead Game, " "	1 00
4012,	2½,	Plain, " "	1 00
4013,	4,	Dog and Tree, " "	1 00
4015,	3,	Plain, " "	1 25
4016,	3,	Dead Game, " "	1 25
4017,	4,	Wreath and Deer, " "	1 50
4018,	4,	Plain, " "	1 50
4019,	4,	Dead Game, " "	1 50
4020,	5,	Plain, " "	1 50
4022,	5,	Live Game, " "	1 50
4024,	6,	Plain, " "	1 50
4030,	3,	" Steel Lever,	1 75
4031,	4,	" "	1 75
4032,	5,	" "	2 00
4050,	3,	Dog and Tree, Brass Lever Charger, Outside Cone,	1 25
4051,	4,	" " " "	1 50

PRIMERS.

Description.	100	500	1000
Maynard Primers,	1 00	95	90
Sharpe' Carbine Primers,	1 45	1 40	1 35
Cannon Primers,	20 00	18 00	16 00
Berdan Primers,	2 50	2 40	2 35
Orcutt and Hobbs No. 2 Primers,	2 00	1 95	1 90
Allen Primers,	3 00	2 75	2 65
U. M. C. Primers, C. F. Paper Shells,	1 40	1 38	1 35



A depiction of a leather shot pouch (above) and its details (left). Adapted from the James Brown & Son Catalog, 1848.

WHAT IS IT?

Tom Nuckols

I'm having difficulty identifying the degraded remains (proximal end) of a metallic center-fire cartridge case (Lot #794) that was excavated at the historic Barnett Site (41FB326) near Rosenberg, Texas. The case lacks an identifying headstamp, it is Boxer primed and the primer is firing pin imprinted. The remaining case length is 0.598".

The Case's Particulars:
CASE SHAPE: Unknown (straight wall or bottleneck?).
CASE MATERIAL: Unknown (probably brass).
CASE WALL THICKNESS: Unknown. (Due to the degraded state of the case, i.e., bumps of corrosion, etc., different wall thicknesses were obtained ranging from 0.023" to 0.044". The original wall thickness was probably 0.025".
HEAD TYPE: Beveled.
MEAN BASE DIAMETER (slightly out of round): 0.5729".
RIM DIAMETER: 0.620".
RIM THICKNESS: 0.050".
PRIMER DIAMETER: 0.210" (A primer with this diameter is considered a large rifle primer. A 1910 UMC catalogue reproduction contains a Condensed List of Metallic Cartridges, Central-Fire [center-fire] Pistol and Rifle Cartridges. This list shows the Bullard (discussed below) as using a No. 2½ primer [Remington Arms Co. and the Union Metallic

The degraded proximal end of the metallic center-fire case.

Cartridge Co.]. No dimensional data is given for the primer, but the No. 2½ is considered a large rifle primer).

PRIMER MATERIAL: Unknown (brass or copper?).

At first, I thought that the case originated from a 32-Gauge shot gun shell. However, the dimensions won't work as the 32's base diameter is 0.580" with a rim diameter of 0.640". Another possibility is that the case is from a now obsolete .50-115 Bullard (Bullard) lever action repeating rifle cartridge. The Bullard cartridge held a .50 caliber lead bullet and contained 115 grains of black gun powder. The Bullard Repeating Arms Company of Springfield, Massachusetts manufactured single shot and lever action repeating rifles c. 1886 to 1890 (Flayderman 1998: 563, 571).

Both Barnes (2006: 116) and Hogg (1982: 21) state that the base diameter of the Bullard is 0.586", with a rim diameter of 0.619". Neither reference gives a rim thickness dimension. Another problem is that the case in question is rimmed, which is compatible with Hogg's data for the Bullard. Barnes however, states that the Bullard was semi-rimmed. I'm not convinced that this case is from a .50-115 Bullard cartridge.

What is it then? Can you help me with the identification? Any responses will be published in one of my future Notes on Munitions articles. Contact me at: tlnuckols58@att.net or cell 713-857-4350.

References

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2006 *Cartridges of the World*. 11th Edition. Gun Digest Books, Iola, WI.

Flayderman, Norm

1998 *Flayderman's Guide to Antique American Firearms and Their Values*. Krause Publications, Iola, WI.

Hogg, Ian V.

1982 *The Cartridge Guide, the Small Arms Ammunition Identification Manual*. Stackpole Books, Harrisburg, PA.

Remington Arms Co. and the Union Metallic Cartridge Co.

1962 *1910 Illustrated Catalog*. New York: M. Hartley Co., 1910. Reproduced by permission of Remington Arms Co., California: Jayco, 1962.

CHEWED MUSKET BALLS

Tom Nuckols

Thomas Barnett was born in 1798 in Kentucky. In 1823 he came to Texas as one of Steven F. Austin's Old Three Hundred colonists. Barnett took an active part in Texas Colonial and later Republic of Texas politics (Kemp 1952: 112). He built a log cabin home near what would later become the City of Rosenburg. During the Texas Revolution, Santa Anna's Mexican army burned his home to the ground. After the revolution, Barnett rebuilt his home and died there in 1843. He was buried in the family cemetery nearby.

About 2010, the Fort Bend Archaeological Society (FBAS) conducted excavations at the Barnett Site (41FB326). These excavations uncovered forty-four munitions artifacts including a lead musket ball (Catalog #926). The musket ball weighed 436.2 grains, had a mean diameter of 0.673", and its surface was covered in what appeared to be teeth marks. An FBAS member believed it had been chewed, as in "bite the bullet" chewed. The term "bite the bullet" originated from the era of muzzle-loading firearms when it was thought that wounded soldiers in field hospitals were given a lead bullet to bite on or chew to endure the pain of operational procedures, such as amputations.

A chewed musket ball. Photo: Jake Nuckols.

In the 1990s, archaeological investigations were conducted on the U.S.-Mexican-War (1846-1848) battlefield site (41CR92) of Palo Alto near Brownsville, Texas. Three lead balls of .30, .52 and .69 caliber with teeth marks were found in the area of the Mexican battle line.

> "Unlike all the other lead balls found at Palo Alto the one with teeth marks possesses a certain poignancy. Bitten and chewed musket balls are occasionally found at military encampments of the period. Several such bullets were found on a Revolutionary War site; their discovery theorized that they "were given to culprits in the army that they might chew them to ease their agony while being flogged." This particular lead ball, of Mexican caliber (.69) and found on the Mexican battle line, may have been bitten by a wounded Mexican soldier while he received some medical attention, or chewed on to relieve tension" (Haecker and Mauck 1997: 141-142).

I have never put much stock in the supposed reasons for the adage "biting the bullet". What then made the teeth marks on the Barnett site musket ball and the Palo Alto battlefield bullets? Based on what I've read in a recently purchased book by battlefield archeologist Daniel Silivich (2016), I'm going to say animals. In Chapter 7, "Chewed Musket Balls," Silivich states, in the sections below, that the culprit of many misidentified chewed musket balls are swine, large rodents or deer.

Swine-Chewed Musket Balls

> "Swine have very powerful mandibles and very strong teeth. They are one of the few species that can crush, eat and digest bone, including human bone. Why would pigs chew on musket balls? Pigs use their snout to root for food such as acorns, nuts, tubers, and other edibles that fall on or are buried in the ground. It could be days to decades after a military event occurred that either domestic swine of wild boars came through the area looking for food and could pick up and unintentionally chew a musket ball instead. Many conflict areas were farms and continued to be farmed long after a battle took place. Campsites or engagements in remote areas were also subject to wild boars roaming for food. The southern United States today has a severe problem with wild boars being a threat in rural populated areas (Sivilich 2016:102)."

Large-Rodent-Chewed Musket Balls

> "Rodent-chewed musket balls are another common type. Large rodents such as rats and squirrels use their front incisors to gnaw objects. Rats will gnaw on many different materials. Squirrels have also been known to specifically eat lead such as lead flashing around older vent pipes on roofs (Sivilich 2016: 105)".

Deer-Chewed Musket Balls

> "Pigs and rodents are not the only animals that chew on musket balls. Other animals (possibly deer) looking for food, such as acorns, can accidentally pick up a musket ball and chew on it (Sivilich 2016: 107)".

Further Evidence for Animal Chewed Musket Balls

Heavily chewed musket balls were excavated at the Smith's St. Leonard site, an early eighteenth-century plantation at Jefferson Patterson Park and museum in Maryland. The markings were identified as being from a swine. A pig tooth recovered from the site was split in half. Embedded into the crown of the tooth was a fragment of white metal that visual and X-ray examination determined was probably lead (Sivilich 2016: 104-105).

Dana Linck, a professional archaeologist has studied musket balls excavated in the 1960s at Fort Montgomery, New York. The site has several large oak trees and large quantities of acorns were noted during excavations. Linck noticed unusual curved dentition impressions on one of the musket balls. Suspecting that the marks might be from a deer, he used a deer jaw with a complete set of teeth, he impressed the teeth into clay balls. He successfully duplicated the horseshoe-shaped markings on the musket ball and concluded that it was possibly chewed by a deer (Sivilich 2016: 107-108).

Although Silivich's *Musket Ball And Small Shot Identification, A Guide* provides the reader with plenty of evidence for animal chewed musket balls, he doesn't completely discount the case for human chewed musket balls, devoting nine pages to the subject in Chapter 7. I encourage anyone with an interest in munitions to read this well illustrated book, $35 paperback.

References

Haecker, Charles M. and Jeffrey G. Mauck
1997 *On the Prairie of Palo Alto, Historical Archaeology of the U.S.-Mexican War Battlefield*. Texas A&M Press, College Station.

Kemp L.W.
1976 *Barnett, Thomas*. The Handbook of Texas, Volume 1. A-K. Fourth Edition. Edwards Brothers Incorporated, Ann Arbor, MI

Sivilich, Daniel M.
2016 *Musket Ball And Small Shot Identification, A Guide*. University of Oklahoma Press, Norman.

Footnotes

[1] Several times over the past few weeks and even while writing this article, a squirrel has been chewing on the lead flashing surrounding the master bathroom exhaust vent on the roof of my 1950's era house. The din created inside the house by this activity is quite annoying. It only requires that I go outside and look at the squirrel, and he runs off.

NOTES ON MUNITIONS AND ALLIGATORS

Tom Nuckols

On Friday, September 21, 2018, I met Stephanie Orisini and Dr. Gus Costa of Moore Archeological Consulting Inc., at an alligator farm in Anahuac, Texas. Hunters bring their alligators to the facility to have the meat and hides processed. Gus wanted to test Lawrence Aten's +30 year-old theory that Houston area Indians often sourced stone for tool making from alligator stomachs (Aten 1983). Alligators, like other reptiles and birds are known to swallow stones or "gastroliths" as an apparent aid to digestion. The alligator processor gave us the internal organs from seven alligators. The three of us took turns dissecting the stomachs. All stomach contents were given a cursory examination, placed in a plastic bag and transferred to an ice filled cooler. Altogether, the stomachs yielded the following: a few marble-sized stones, a fish vertebra, numerous partially digested small blue crabs, a small furry animal, three unfired plastic hulled shot gun shells and the brass case from a 9mm pistol cartridge.

Due to the conditions at the time, I was unable to read the headstamps on the shotgun shells or pistol cartridge case. However, two of the shotgun shells had red plastic hulls that I am assuming were manufactured by Winchester Ammunition Inc. The other shotgun shell had a green plastic hull that probably indicates manufacture by Remington Arms Co. The shotgun shells were in fairly good condition, and the brass pistol cartridge case was still bright and shiny, so I am assuming that they had not been in the alligator stomachs for very long. All but one of the alligator stomachs examined came from coastal marshlands from near the Sabine Pass and Sea Rim State Park area. These anecdotal findings may have significance for understanding the potential for post-depositional disturbance and transport of historic munitions or other items of archeological interest by alligators.

Gus Costa presented a paper detailing this research on "Alligator Gut Gravels and Prehistoric Lithic Economy in Southeast Texas" at the Texas Archaeological Society annual meeting in San Antonio in October, 2018.

Dr. Gus Costa, is Vice President of Moore Archeological Consulting Inc. Stephanie Orisini, M.A. is a project archeologist and zooarcheologist at Moore Archaeological Consulting Inc.

References

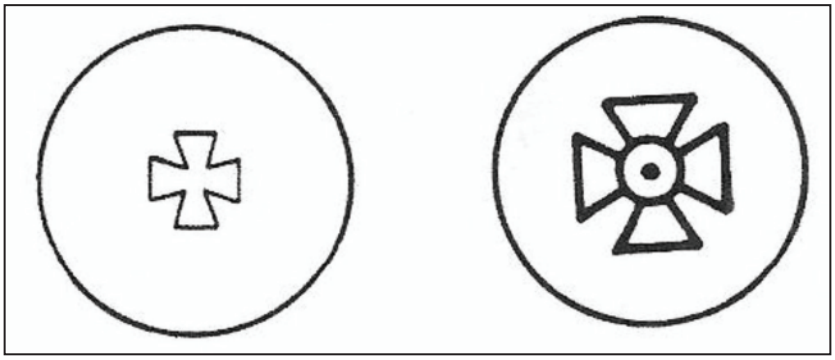
Aten, Lawrence E.
1983 *Indians of the Upper Texas Coast.* Academic Press, New York.

A MALTESE CROSS HEADSTAMP FROM FROST TOWN (41HR982)

Tom Nuckols

Last month while conducting excavations at the historic site of Frost Town near downtown Houston, archeologists with Prewitt and Associates, Inc., recovered a copper .22 caliber rimfire Short cartridge case with a Maltese cross headstamp.

Frank Walter Olin (1860-1951) founded the Western Cartridge Company (Western) of East Alton, Illinois in 1902. Western manufactured gunpowder and shotgun shells. The primers used in Western's shot gun shells were manufactured by other ammunition firms. Shortly after Western's founding, these firms raised the price of primers. To counter this price increase, Western formed the Union Cap and Chemical Company (UCC). UCC's product was priming mixture and primers. In 1905, UCC began manufacturing rimfire cartridges with copper cases and lead bullets in calibers .22 BB, .22 CB, .22 Short, .22 Long, .22 Long Rifle and .32 Short. The .22 caliber cartridge cases were headstamped with UCC's trademark, a Maltese Cross. The .32 Short cartridge cases were headstamped with a Maltese cross that included a center circle.



Examples of a .22 caliber (left) and .32 Short (right) headstamps.

In 1908, UCC merged with Western, and for a short period, Western continued to use the Maltese Cross headstamp. Eventually, Western began headstamping their rimfire cartridges with a diamond trademark: <> , since the Maltese cross became associated with World War I Germany (Barber 1987:71, Everipedia 2019).

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Barber, John L.
1987 *The Rimfire Cartridge in the United States & Canada, 1857 to 1984.* Armory Publications, Tacoma, WA.

Everipedia
2019 "Western Cartridge Company." Everipedia, https://everipedia.org/wiki/lang_en/Western_ Cartridge_Company/, accessed January 22, 2019.