

Pre-Metallic Cartridges for Pistols and Revolvers

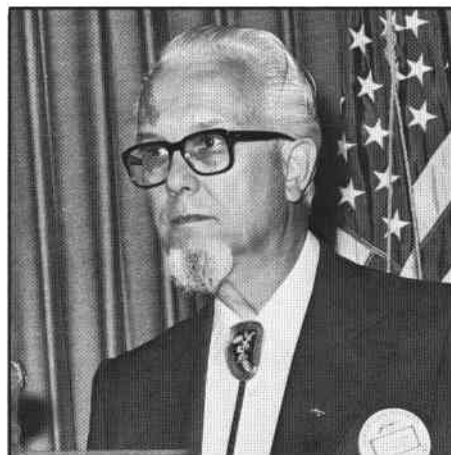
by C.R. Suydam

Good afternoon. I am happy to see that so many of you have given up the delights of a post-luncheon nap, or a stroll through beautiful Santa Barbara, to come to this presentation. I will try not to take too much of your time, and yet to make your sacrifice worthwhile.

I became a cartridge collector many years ago, when we had a rifle range at home which was semi-public. Dad was a hunter and target shooter and he made a 100 yard range so that he and his friends could shoot 50 and 100 yard smallbore matches. Members of other clubs asked to use the range, and it became quite popular. Much of the shooting was, of course, .22 calibre, and at one time I had two 10-quart pails full of empty .22 shells. This was my first cartridge collection! Eventually the collection grew to about 8,000 specimens of a wide variety of cases and calibres and then became smaller again as interests changed. I still have two parts of it; pre-metallic cartridges of the period 1799-1890 and some pinfire pistol cartridges.

I thought it might be interesting to show those of you who collect flintlock and percussion pistols and revolvers some of the cartridges used in those guns. Most gun collectors have an inborn feeling of horror at the thought of shooting one of their treasured pieces, which effectively conditions them against even the thought of combining gun and cartridge. I can assure you that cartridge collectors return the feeling, equally fearing that one of those mad gun collectors might want to shoot one of their rare cartridges! This, incidentally, was the basis of some rather testy conversation between the good Harry Knode and myself, perhaps 25 years ago, at a Dallas meeting of the Texas Gun Collectors. At that time I was an active cartridge collector and I took several boxes of trading stock to the show. Harry was bound and determined that they should be kept closed up, under glass, and forever banished from the possibility of getting near a gun—and I was equally determined to have 'em out. So it was a great satisfaction to me, a year or so later, when Harry wrote to ask if I could find for *him* a certain rather rare cartridge for the Colt Theurs' conversion. I still treasure the note he wrote thanking me for finding it, but he never did say in so many words that maybe guns and cartridges were related.

Well, enough reminiscing, and down to work. In the beginning, there was light—and smoke—from the explosion of a gun. Before there could be more of the same, the bore had to be swabbed, powder put in from flask or horn, a ball taken from a pouch and rammed down, and more powder put into the priming pan. Later, individual powder charges were loaded into wooden containers, tied to a leather sash and hung from the shoulder, as shown in the picture in Jacob de Geyn's 1607 book, *The Exercise of Arms*. The ball was still carried in a pouch, and a small priming horn or flask used. Our friend Herschel Logan, in his pioneering book, *Cartridges*, says, "It seems likely that paper cartridges were developed during the matchlock period. It is believed that they were used by

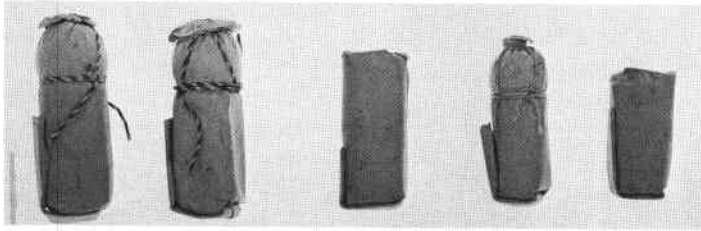


mounted troops during the second half of the 16th Century. These cartridges contained only the charge of powder, to expedite loading on horseback. Later the powder and ball were combined into one unit." Time passed—about 250 years of it—and we come to the pistols and pistol ammunition of the United States.

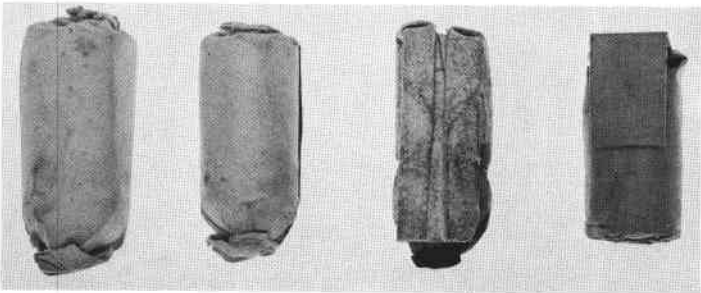
From 1799, when the first U.S. pistol was adopted, until 1816, U.S. pistols were bored to the musket calibre of .69 inch, with the exception of the Model 1805 Harper's Ferry, which was of rifle calibre. From 1816 through the last of the single shot percussion pistols, the Model 1842, they were reduced to rifle calibre, which was .54 inch. In 1855 a pistol-carbine was made for the cavalry in the then-new rifle calibre, .58 inch. Paper cartridges were made for all of them, from the Model 1799 through the Model 1842, and were of the same round-ball-and-powder-in-a-paper-wrapper style previously used for muskets for over 200 years. The only exception was the Model 1855 pistol carbine, which used a hollow base Minie ball, or the special Williams clean-out bullet, both of which were cylindro-conoidal.



I have no specimens of the 1799-1816 cartridge: presumably it would have a round ball of about 390 grains, about 75 grains of powder, and a soft tan, white, or grey paper case, and would have looked much like this .54 calibre Model 1834 U.S. military cartridge. This is typical of the cartridges for the flint and percussion pistols from the Model 1816 through the Model 1842, although the latter would have had about ten grains less powder, since no extra for priming is needed.



On the left in this photo are two look-alikes: what may be the calibre .69 Hall carbine of 1839, with 75 grains of powder, and the Model 1847 pistol cartridge for converted flint pistols, with 65 grains. The next one is a .58 calibre blank, ca. 1850-60, then a calibre .54 cartridge, Model 1842, for the Model 1842 percussion pistols, and a blank for the same. Cartridges of this type were used as long as muzzle-loading single shot pistols were issued.



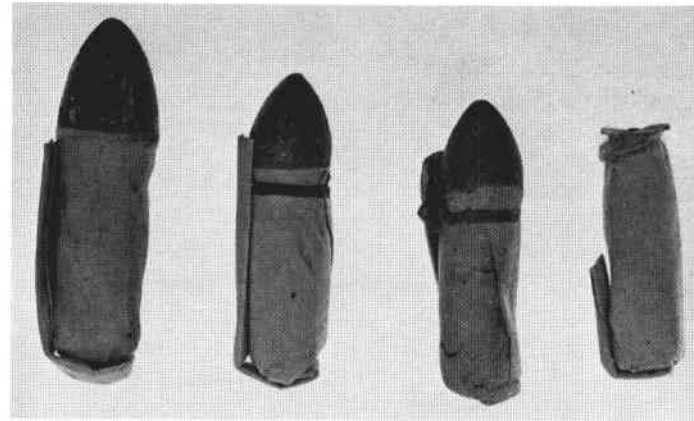
Similar cartridges were used in other countries: here are some British specimens. It is thought that the one on the left is for the Pattern 1842 Lancer's percussion pistol, calibre .753 inch, the next two for the calibre .653 East India Company pistols, and the last for the .653 inch, 6 inch barrelled constable's pistol (yes, there is a ball in it), but these identifications are tentative. In any event, the three add to the illustration of the types of cartridges used in single shot flint and percussion pistols.



The first American revolver cartridges were very similar in construction to those of the percussion pistols, except that they had conical bullets. Here is the rare yellow paper cartridge for the Colt Dragoon revolver, circa 1856, with 232 grain bullet and 30 grains black powder. The latter is a considerable reduction from the 50 grain charge for the Walker, and the 40 grain dragoon charge of 1850.



This tan paper specimen looks like a typical musket cartridge, but is another long calibre .44 cartridge for the Colt Dragoon.



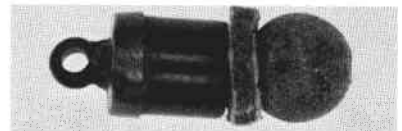
Here is another Dragoon cartridge, with glued-on bullet; the maker is unknown. Next are two cartridges of the .36 "Navy" calibre, makers unknown, and a tiny .31 calibre specimen in the pattern of the large musket cartridge. These are not combustible—in the later cartridge sense—had to be broken open, powder poured into the cylinder, and the bullet rammed in after. The inconvenience of loading them, compared to the use of a powder flask and loose ball, makes one wonder as to why they were made—but that is the basic query about guns, too, in their early days. Maybe there was some magic involved.



Before leaving the "plain" paper cartridges—that is, ones wrapped in untreated paper—I have one more of unusual interest. Normally the collector is suspicious of cartridges with a "homemade" look, but this one has a proven history. John Pederson came to Ashby, Minnesota, from Norway about 1900. En route, he bought a Colt revolver—probably an 1860 Army—and when he got to Ashby, made some loads for it from pages of the *Dakota Posten*, a Norwegian language newspaper. He died many years later of old age, never having used his cartridges. This is one of them.

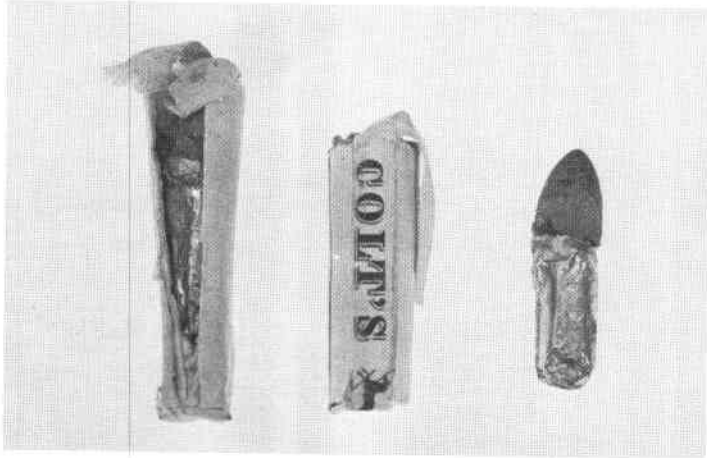
As I said before, these "plain" paper cartridges must have been very inconvenient when trying to load a revolver, and attempts were soon made to eliminate the problem by making ones that could be loaded whole, which would be completely burned when the gun was fired.

Most of the development of the new type of cartridge was done in England, in part with the help of Sam Colt or persons working in his name. Among the first of these inventions is one which doesn't properly fit amongst the cartridges being discussed here, because it is really a metallic cartridge, but since it contributed much to the later combustible types, here it is.

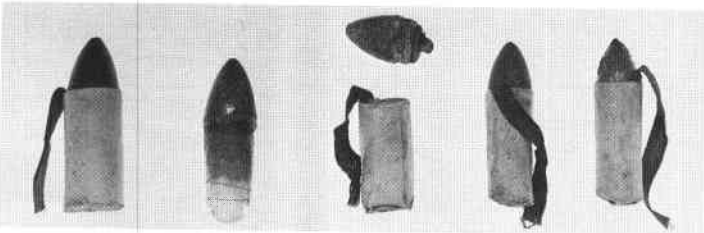


This is Robert Adams' British patent no. 1 of 1852. It has a number of interesting features: a tang or pin is cast on the ball

on this is placed a lubricated felt or leather washer, and over that a copper case. All are riveted together. The case is filled with powder, and sealed with tissue paper. Over this is placed a protective brass cap with a ring soldered to its base. I've never learned the purpose of this ring: possibly the cartridges were to be fastened to a chain or cord, and pulled therefrom when it was time to reload. In any event, case, washer, and bullet were all rammed into the cylinder—and all came out again! I've often wished for replicas to shoot—I wonder what they sound like, flying toward their target. For some reason this copper case did not last long, but Adams continued the use of the washer, and the tang was used in later developments.



The next invention, in point of time, was a joint effort of Samuel Colt and William T. Eley, who, with brother Charles, founded Eley Brothers, later England's largest ammunition manufactory. The invention was the famous "Colt" tinfoil cartridge, which was granted British patent no. 1324 of 1855. The powder container was shaped from tinfoil, had the lap joint sealed with waterproof cement. After it was filled with powder, the end of the tinfoil case was crimped into the base groove of the bullet, which was then greased: this produced a waterproof cartridge. Flame from a cap pierced the foil and ignited the powder with no trouble, but an undesirable residue was left in the cylinder, since the foil was not entirely consumed by the explosion. The right specimen in the picture is .31 calibre; its outer protective case is to the left. The left one, in a sectioned case, is .28 calibre. The protective case, with a tape to pull the cartridge out, was an additional part of the same patent, later became almost universally used by British makers. You may be able to see part of the "rampant colt" trademark at the base of the top case; the other side says "PATENT."

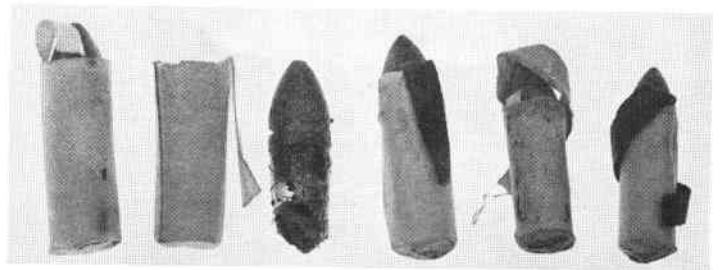


Here are some other Colt-Eley cartridges and envelopes. At the top is a further development of Adams' ball-tang: now a

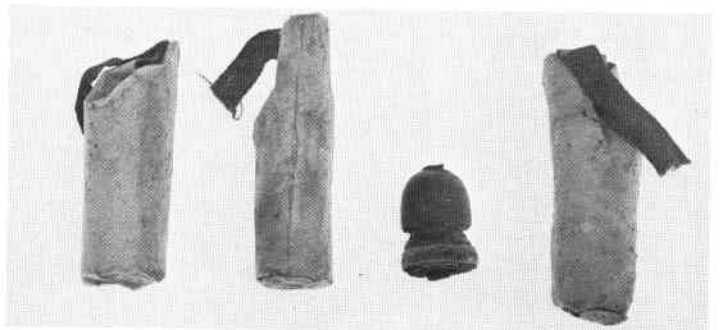
paper case is placed on the tang, then an iron washer riveted in place to hold the paper, which is then filled with powder and sealed. Calibres shown are .44 and .36; the uncased cartridge is a remnant of a glued-on-bullet skin cartridge, of which more in a moment.



A third major contribution of percussion cartridge construction was made by Captain John Montagu Hayes, R.N., in his patent no. 2059 of 1856: this was the "skin" cartridge. The patent specification reads, in part, "A skin or membrane (prepared from the gut of animals, as pigs, or birds, or reptiles) is used instead of paper for cartridges, which are made without a seam. A covering or network of thread may be used to strengthen the cartridge." The outside wrapper of Capt. Hayes' cartridge is made under the Colt-Eley patent. We'll get a look at one of the skin cartridges in the next picture.



Here are Eley cartridges of .36 and .31 calibre. The remnant of one of them shows clearly the structure of the thread-wound skin cartridge. When fresh, they are quite strong, but age makes them extremely fragile.

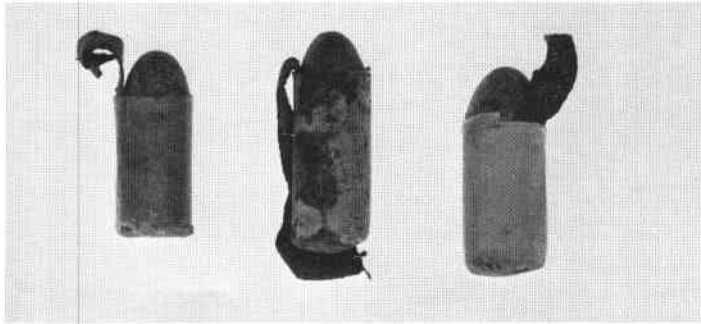


We might as well stay on the subject of British cartridges for a while: their patents predate American ones, and lead to them. This picture shows two 44 bore Adams' cartridges in their

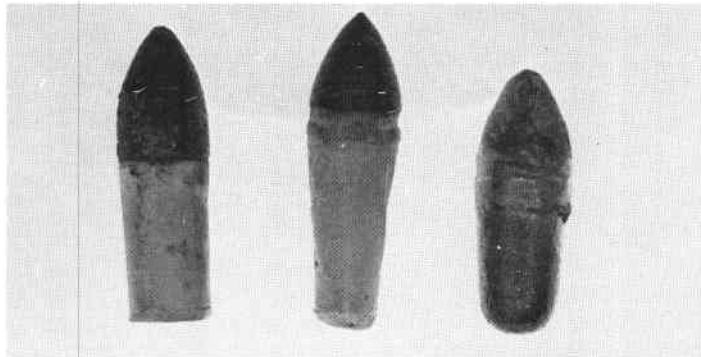
wrappers, and one of his bullets with the riveted washer. The case on the right is for a 50 bore (.455 calibre) Tranter revolver.



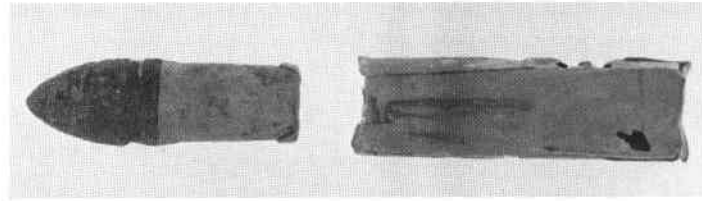
On the left are three 38 bore (.50 calibre) cartridges, the open specimen with a glued-on skin case; the others are 54 bore.



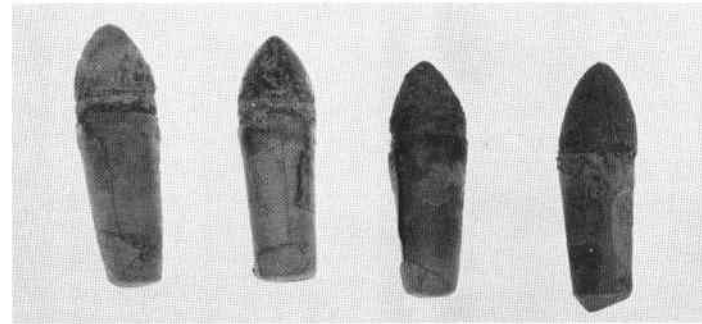
These three small cartridges complete the Eley series. They are, from left, 28, 31 and 36 calibres, for pocket pistols. They are made in the same manner as the larger ones.



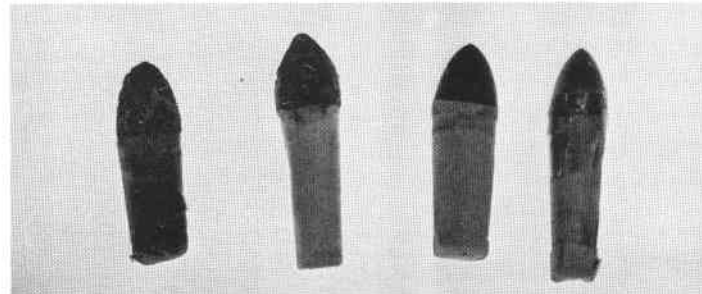
Now back to America. Here are three types of cartridges for percussion revolvers, all .44 calibre. On the left, one of nitrated paper (paper treated with nitric and sulphuric acid, which aids combustion, reduces residual ash and sparks) which was made by Colt's Cartridge Works, Hartford. In the center, a late (1875-85) commercial specimen, made of tissue paper. Percussion pistols and their cartridges didn't disappear overnight with the introduction of cartridge handguns in quantity circa 1873: percussion pistols were used well into the 1890s, and cartridges for them were available at least until 1890. Packets of these late cartridges are far less common than the earlier Colt and other proprietary makes, or Civil War military ones. The cartridge on the right is one made by the Hazard Powder Company, Hazardville, Conn. This was made under Doremus and Budd's U.S. patent no. 34,744 of March 25, 1862, for powder pressed into a cake, attached to the base of the bullet, and coated with collodion. It is possible to see an additional band of collodion at the juncture of bullet and powder.



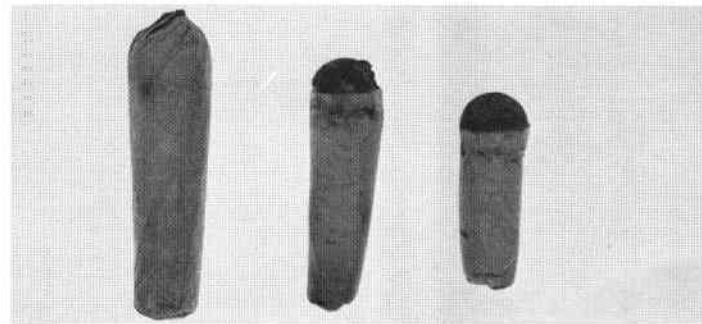
Here is another .44 calibre by Colt's Cartridge Works, complete with an English-type envelope. This is quite rare: most American cartridges were bound in paper packets of five or six, with caps enclosed, or in wooden blocks, again five or six, with the caps in an extra hole. Incidentally, some very good reproductions of these packets (spell that F - A - K - E - S) are being made today. Be careful!



These are .36 calibre nitrated paper cartridges. The first three are of tan paper and of the pattern used by the Colt works—note the folds at the bottom. The fourth was made at Watervliet Arsenal, New York: it has a reddish-brown color.

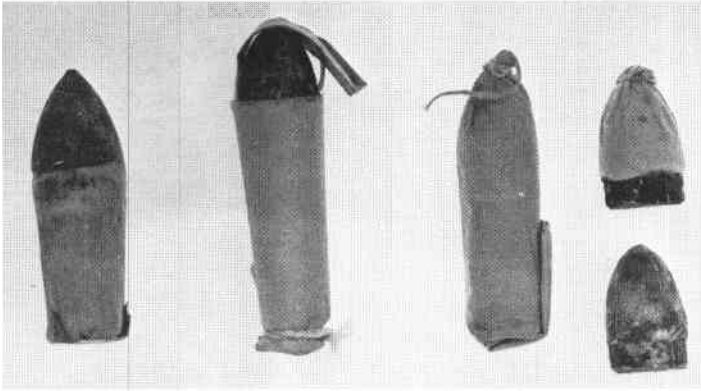


The smallest of the nitrated paper cartridges were for the .31 and .28 calibre pocket pistols. These are representative samples. The band at the bullet of the .28 calibre is a bit of scotch tape someone put there.

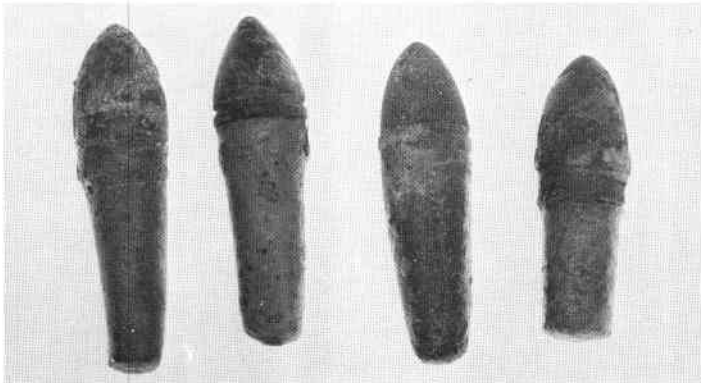


These three are unidentified paper cartridges. They may be

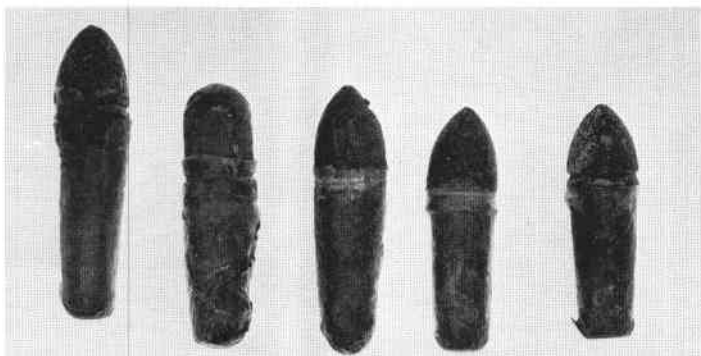
homemade, and not too old, but they are typical of what nonfactory paper cartridges can look like.



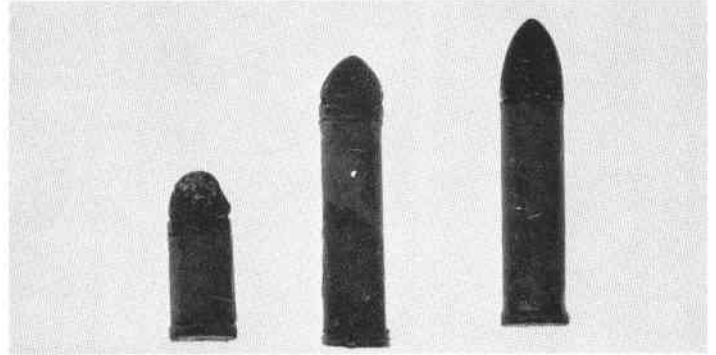
Last of the paper cartridges—not nitrated, but far from least—are these three Confederate specimens. On the left, calibre .44 from C.S. Laboratories, Richmond, Virginia. Center, calibre .36 from Augusta Arsenal, Augusta, Georgia, and on the right, a cartridge and two bullets from a packet marked in pencil, "SAVANA (sic) GEORGIA C.S.A. 0.36".



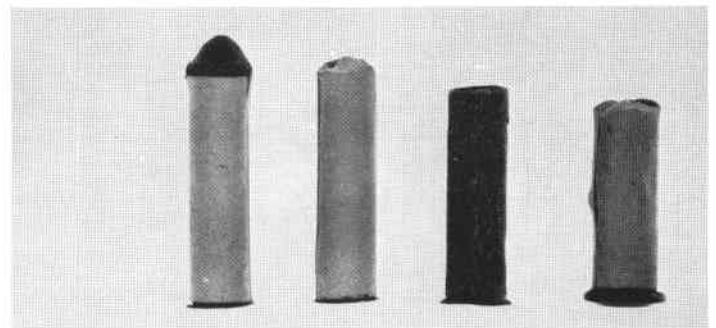
Skin cartridges were made in America, of course, and in some quantity. There is a supposedly complete list of makers and patentees in Appendix I of *U.S. Cartridges and Their Handguns*, so I won't take time to list them here. This photo shows .44 calibre Johnson & Dow cartridges for the Remington New Model Army revolver, and the Colt 1860 Army; a Sage Ammunition Works cartridge for the Colt, and an unknown Johnson & Dow, perhaps for an Adams or Tranter revolver.



Below, left, are five skin cartridges for .36 calibre revolvers: Remington, Savage, Colt Navy (2), and Colt Pocket. With them ends this summary of standard pistol and revolver cartridges; there were paper cartridges for Sharps single shot percussion pistols, and there are other old paper and combustible cartridges of which I do not have specimens, but those shown are typical and representative of those used here and in Europe.



There are two pictures left which are of interesting, if only slightly related, items. The first are these Marston .36 calibre cartridges. From the left, they are the pistol cartridge, a rifle cartridge with a pistol bullet, and the rifle cartridge with a rifle bullet. Doug Eberhart is the expert on William W. Marston, so I will only say that they were made under his U.S. patent no. 8,956 of May 18, 1852, for "a shell of paper or metal, with a leather or paper base." These have a leather base and a heavy cardboard tube. The leather base is supposed to be pushed ahead of the next round, to clean out the bore. I don't know what happened to the case, which doesn't seem to be combustible.



This final picture is of paper cartridges for French—or at least European—cane guns. The three on the left are for an interesting version which had a penumatic firing pin: the holder of the gun *blew* against the pin to ignite the cartridge. Neither accuracy nor front teeth are guaranteed.

Thanks to Photographer Ed Prentiss of Whittier, California, who made the slides and photos used to illustrate this presentation.