

Survival Files #6

History, Rarity and Survival of the Manhattan and Massachusetts Arms Percussion Revolvers

By Jeff Goodson and Philip Boulton

The Survival Files series examines the rarity and survival of American percussion revolvers. The analysis is based on data collected by British antique arms collector Philip Boulton, who has recorded serial numbers on over 85,000 percussion revolvers since 1970.

Survival Files #6 examines the rarity and survival of the pocket and navy percussion revolvers made by the Manhattan Fire Arms Manufacturing Co., and the Maynard-primed and Adams revolvers made by the Massachusetts Arms Co.. We calculate their known survival rates, and discuss the major factors affecting the survival and rarity of these guns (Table 1).

A stability index is calculated for each model, based on the number of new serial numbers added to the Boulton database in the three year period from June 1, 2018 to May 31, 2021. The stability value is an indicator of how fast guns are being added to the database, how many are still 'out there' unrecorded, and how closely the *known* survival rate approximates the *true* survival rate of the model (Goodson and Boulton). Table 2 includes a rackup of stability index values and what they mean, along with production and survival rate data, for 36 models of percussion revolvers analyzed in *Survival Files #1-#6*.

THE MANHATTAN REVOLVERS

In 1857 Samuel Colt's patent (#9430X) for a revolving multi-chamber gun finally expired after twenty-one years. Colt had made excellent use of the time, building a virtual monopoly over production and sales of this extremely popular type of gun.

With expiration of Colt's patent, competition flooded in. One company which successfully competed—albeit mostly on the commercial market—was the Manhattan Fire Arms Manufacturing Co. It was formed in 1855 by a group of New York and New Jersey businessmen to “manufacture and deal in fire arms, ammunition, and other articles pertaining to the fire arms business.” With little or no experience in arms manufacturing, the backers hired Thomas K. Bacon of Norwich, Connecticut to get things off the ground. Bacon was with the company about 14 months before he left to create his own company (Nutter).

The early arms that Manhattan made in Norwich were almost entirely single shot and pepperbox pistols. But they began developing a .31 caliber revolver in 1858 to compete with Colt, and in March 1859 the company moved manufacturing operations to Newark, New Jersey where they made .31 caliber pocket and .36 caliber Navy-type revolvers. These were very similar to Colt's pocket and Navy revolvers, but used patent features considered improvements over Colt's guns. A patent for a side plate revolver was widely copied or used under license, but arguably the most important patent was for intermediate cylinder stops that allowed the hammer to be secured in a safe position (Nutter).

Manhattan produced revolvers until after the Civil War, competing with Colt, Remington, Whitney, Smith & Wesson and others. From 1858-1868, we estimate that Manhattan made about 5,550 pocket revolvers and 79,000 Navy-type revolvers (Table 1). Nutter attributes the much lower production of .31 caliber guns to their weaker sales, and to the greater profitability of the Navy revolver. The company's success, in spite of fierce competition, was attributable to lower cost and appealing features like hand engraving, silver plating and fancy grips.

In 1868 Manhattan re-organized as the American Standard Tool Co., with the same address and stockholders. Emphasis shifted away from firearms, and the last percussion revolvers were produced that year. American Standard Tool was forced out of business during the financial panic of 1873.

In 1958, in his epic tome *Manhattan Firearms*, Nutter noted the scarcity of Manhattan guns on the 1950s collectors market and attributed it to three factors that may be of historical interest to the collecting fraternity. First was the low production of some models and variations. Today this still applies, but primarily to the Series I Pocket Revolver (see below). Second was “the continuing constriction of the antique arms market, brought about by the entry of thousands of new collectors into the field.” This 1950s trend, needless to say, hardly applies today. Third was “the fact that these arms were, originally, relatively low in cost and received no special care or preservation, with a resultant survival rate somewhat below average.”

Manhattan Pocket Revolvers. Manhattan's .31 caliber pocket revolvers were made from about 1858-1862 in Newark, New Jersey. Although less popular than the Manhattan .36 (Garavaglia and Worman), they were apparently copied in part by Bacon, Nepperhan and others. There are two generally recognized models, manufactured sequentially and serial numbered in their own respective ranges. They came in barrel lengths of 4, 5 and 6 inches; Boulton data on barrel lengths for guns in the database are found in the footnotes of Table 1.

Series I Pocket Revolvers (Fig. 1). Series I Manhattan pocket revolvers were 5-shot with ten cylinder stop slots. They were numbered from #1 on up. In 1958 Nutter estimated total production at 900-1,000, all of them made prior to January 30, 1860. The Boulton database includes 184 specimens, with serial numbers ranging from #2 to #1030. Based on the high of 1030, and serial numbers #1008 and #1025 in the database, we estimate total production of the Series I at about 1,050.



Figure 1

This model has a known survival rate (KSR) of 17.5%—one of the highest we have seen (Table 2). This suggests that the model saw little use in the Civil War. A total of 25 new specimens were entered in the database during the 36 months from June 1, 2018- May 31, 2021, generating a very high stability index of 5.2%. In spite of the limited production of just over 1,000 guns, a substantial number of specimens remain to be recorded and the known survival rate should grow rapidly.

Series II Pocket Revolvers. Series II Manhattan pocket revolvers are very similar to the Series I, except they are 6-shot with twelve cylinder stop slots. Nutter estimated that a total of about 3,600-3,800 Series II revolvers were made. He describes a period of transition between the Series I and Series II, with transition guns falling in the low Series II serial number range starting with 1 and running to about 200.

The Boulton database includes 132 specimens of Series II revolvers, with serial numbers ranging from #7 to #4411. Based on the high of 4411, we estimate total production at about 4,500. The Type II has a relatively low known survival rate (KSR) of 2.9%, likely reflecting greater use of this .36 caliber revolver in the Civil War. The model has a very high stability index of 5.6%; many specimens remain to be recorded, and the known survival rate should grow quickly.

London Pistol Company Revolvers. A variation of the Manhattan pocket revolver, and an enigma since 1927, is the London Pistol Company revolver. Stamped only with LONDON PISTOL COMPANY, these have historically been described as 5-shot revolvers with ten cylinder slots that are presumed to have been made by Manhattan because they carry the Manhattan patent date of December 27, 1859. Nutter notes that the rarity of these guns makes them both interesting and desirable.

Smith concluded in 1946 that they were made by Manhattan under the London Pistol Company trade name. Nutter, who in 1958 recounted the long history of the guns, opined instead that they were basically substandard Manhattan arms with defects that include casting pits, engraving imperfections, irregular grip frame shapes, and a cylinder bolt screw that extends through the right side of the frame. He writes that they only number a few hundred, with serial numbers intermingled with Manhattan Series I and early Series II pocket revolvers.

The Boulton database includes the most extensive record of London Pistol Co. guns ever compiled. A total of 107 specimens are recorded, with serial numbers ranging from #5 to #3318. Ninety-six guns (89.7%) are Series I revolvers; the other eleven (10.3%) are Series II revolvers with serial numbers ranging from #716 to #3318. The Series II are easily distinguished with their 6-shot cylinder and longer frame.

The database numbers have led us to consider the possibility that the London revolvers are not substandard arms or 'seconds' at all, but rather that they constitute a model in their own right. The dramatically disproportionate number of Series I vs. Series II revolvers in the database, however, argues against them being numbered in their own range. The reason is that one would expect the statistical distribution of surviving serial numbers to be roughly proportional to the total production level of each respective type. A conceivable explanation is that they were numbered in *two* separate ranges, but that would require that they had wildly varying known survival rates—Series I with a 9.1% survival rate, and Series II with a 0.2% rate.

At the same time, the very large relative number of duplicate London serial numbers (12) for Series I guns argues strongly in favor of the hypothesis that the London guns were indeed numbered in their own range, and that they constitute a model—or perhaps even two models—in their own right.

In the absence of a consensus opinion on this, we have declined to estimate a total production figure or calculate a known survival rate for these guns. It is worth noting, however, that with a very high stability index of 4.2% there remain many London Co. specimens yet to be recorded. Further research and closer hands-on examination of London Co. revolver specimens can therefore hopefully resolve this issue.

Manhattan Navy Revolvers. The Manhattan Navy revolvers in .36 caliber closely resemble Colt's 1851 Navy. Because of their significant success on the civilian market, the Navy model dominated the manufacturing output of the Manhattan Fire Arms Company (Nutter). We estimate that 79,000 were made from about 1859-1868 (Table 1).

Garavaglia and Worman write that in the Civil War, .36-caliber Manhattan revolvers "sold especially well. Members of at least five Kansas regiments purchased such guns, as did individuals of the 5th Missouri and 18th Iowa." They were also in heavy use out west:

"During the Civil War Manhattans were on the frontier in some quantity: In October of 1863, S.B. Shaw of St. Louis listed no fewer than 1500 Manhattan Navy revolvers with 6-1/2" barrels and another 500 with 4" and 5" barrels. By the summer of 1864 another dealer, John Biringer of Leavenworth, was doing a brisk business in Manhattans, especially those with 6-1/2" barrels."



Figure 2

Manhattan Navy revolvers are normally classified into Series I, II, III, IV and V. The first four Series (Fig. 2) are 5-shot with ten cylinder stop slots. Numbered sequentially, they are distinguished on the basis of the shape of the slots, patent dates, cylinder markings, barrel lengths, and the later presence of a spring plate mounted on the recoil shield (Nutter). The Series I and II carry a New York City address, and the Series III and IV a Newark address. Because of this, and differences in the lug dimensions that suggest a lack of interchangeability, we believe that these could be considered as two separate models and urge further research on the point. The Series V Manhattan Navy (Fig. 3), also numbered in its own series, is a 6-shot revolver with twelve cylinder stop slots.

The Boulton database of Manhattan Navy revolvers is large: A total of 2,345 serial numbers had been recorded as of May 31, 2021. For Series I-IV inclusive, made about 1859-1868, a total of 2,101 had been recorded ranging from #1 to #69318. These data support an upward revision in total estimated production (TEP) to about 69,500. The known survival rate (KSR) is 3.0% and the stability index is a very high 4.4% (Table 1). The KSR, well below the true survival rate, is growing rapidly for Series I-IV guns and many specimens remain to be recorded (Table 2).

For Series V Navy revolvers, made 1867-1868, 244 are recorded. Serial numbers range from #6 to #9472. This supports an increase in total estimated production (TEP) of from 9,000 to about 9,500. Based on a TEP of 9,500, the known survival rate

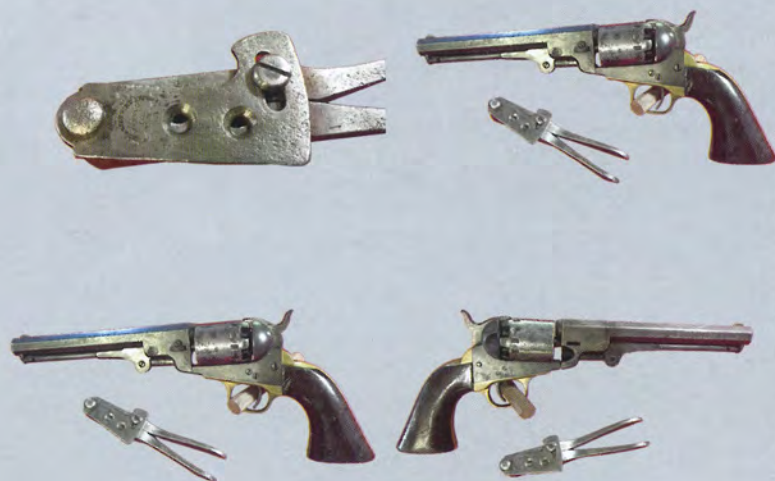


Figure 3

(KSR) is 2.6% and the stability index is a very high 5.0%. The KSR, well below the true survival rate for this model as well, is growing rapidly with many specimens still to be recorded.



Figure 4

THE MASSACHUSETTS ARMS REVOLVERS

The Massachusetts Arms Company has a longer history (~1850-1866) than Manhattan, and it played a more significant role in mid-19th century firearms evolution. It developed, patented and produced about 800 Wesson & Leavitt .40 caliber dragoons (Fig. 4) and about 1,000 belt revolvers (Fig. 5) in .31 caliber from 1850-1851 (Flayderman).



Figure 5

These popular guns used Edwin Wesson's design for a rotating bevel gear, an invention which presented a clear and present threat to Sam Colt's near-monopoly over the revolving handgun market. Colt sued, winning a famous patent infringement lawsuit against Massachusetts Arms in 1851. That success, along with extension of his patent for seven years until 1857, allowed Colt to consolidate his market dominance.

Massachusetts Arms survived by diversifying, and by making less popular .28 and .31 caliber revolvers with hand-rotated cylinders until the Colt patent expired. It also made high quality English-patent Adams revolvers under license from about 1857-1861, as well as Maynard, Smith and Greene carbines that were heavily used in the Civil War. Production of handguns ended when its factory burned down in January 1861, even though it continued making long arms until about 1866. Some of these revolvers saw use both prior to and during the Civil War. Sellers and Smith write that "a shipment of 200 of these revolvers"—likely the early .31 caliber Massachusetts Arms belt model—was made to abolitionist John Brown in 1857.

The Boulton database does not include the early Wesson & Leavitt revolvers. It focuses instead on Maynard-primed revolvers in .28 caliber, and two models of Adams patent revolvers of English design that Massachusetts Arms made under license to the Adams Revolving Arms Co. of New York.

Maynard-Primed Revolvers. There is great variation in the Maynard-primed revolvers, leading to historical confusion in both the terminology describing them and their classification. The most complete treatment is by Sellers and Smith. Flayderman largely summarizes this work in his final 2007 edition, describing a .31 caliber "belt" revolver made from about 1851-1857, and .28 and .31 caliber "pocket" revolvers made from about 1851-1860. He divides the pocket revolvers into an early type that is manually revolved and a later type that is revolved when the trigger is pulled, but notes the existence of numerous 'intriguing variations, some quite rare.'



Figure 6

The Boulton database records only the small .28 caliber Maynard-primed revolvers (Fig. 6). The historical confusion applies to these as well as the larger .31 caliber guns. Much of the variation is internal, greatly complicating the ability to accurately and consistently differentiate between them when only photos and descriptions are available. Further confusing their classification is the fact that there was wholesale conversion of some guns by the factory before their release on the market. Moreover, double and even triple numbers are reported on these guns—a frame/gate number that we take to be the serial number, a number under the top strap, and sometimes an arbor number.

Based on 153 recorded specimens, the Boulton database differentiates three primary types of Maynard-primed, 6-shot, .28-caliber revolvers. These are all small guns, about 6" in length overall, with 2-1/2"-3-1/2" barrels. The three types are:

- **Type I:** Manually-Rotated Button Lock Revolver
- **Type II:** Trigger-Rotated Pre-Colt Expiry Revolver
- **Type III:** Hammer-Rotated, Post-Colt Expiry Revolver

As these three types are not consistent with Flayderman's classification, we have declined to assign Flayderman ID numbers to them in Table 1. Also, because of the impossibility of consistently and accurately differentiating the guns from published photos and descriptions of limited quality over the years—especially the Type II and Type III revolvers (see below)—39 of the 153 specimens (25.53%) cannot be classified even by primary type. These limitations have precluded estimation of a TEP and calculation of a known survival rate for Type II and Type III as described below.

Type I Manually Revolved Revolver. Type I revolvers were made from about 1851-1857. The Boulton database records a total of 65 specimens, with serial numbers ranging from #21 to #1148. Based on the high number, we estimate total production at 1,200 versus the previous TEP of about 1,000 by Sellers and Smith. This generates a known survival rate (KSR) of about 5.4%. The biggest factors affecting the survival and rarity of the Type I revolvers are very limited production and lack of popularity. Sellers and Smith write that there was "little demand" for this inferior hand-turned product. Ten specimens were identified in the previous three years, generating a very high stability index of 6.05%. Although total production is limited at only about 1,200 guns, the KSR is growing rapidly, it's well below the true survival rate, and many Type I guns still remain to be recorded.

Type II Trigger-Rotated Revolver. Type II revolvers were made from about 1853-1857 when the Colt patent expired. They used a rather complicated yet improved revolving mechanism patented by Joshua Stevens in 1853. The Boulton database records a total of 32 specimens of the Type II revolver, with serial numbers ranging from #75 to #919. Sellers and Smith, however, write that only about 250 were made and "the serial numbers are not an accurate guide to the number produced. Most, probably 75%, were converted to the later revolving mechanism before leaving the factory."

For this reason, we decline to estimate total production or calculate a known survival rate for the Type II revolver. Three specimens were identified in the previous three years, however, generating a stability index of 3.45%, so the KSR is growing moderately and a significant number remain to be recorded. The biggest factors affecting the survival and rarity of these guns in their original configuration are limited production, conversion of most of them to Type III revolvers, and lack of popularity.

Type III Hammer-Rotated Revolver. After Colt's patent expired in 1857, Massachusetts Arms was free to make a revolver that rotated when the hammer was pulled. These hammer-rotated revolvers were made circa 1858-1860. Except for internal differences, they are effectively the same as the Type II trigger-rotated revolver (Sellers and Smith). This makes them almost impossible to accurately differentiate from photos and descriptions alone.

In search of a "tell" to visually distinguish Type II and Type III revolvers photographically, we note a small button-like screw or protrusion that appears immediately behind the trigger at the top of the frame of certain specimens. Examples

include the middle photo on page 288 of the Locke Collection, and the top photo on page 289. Our conjecture is that this may be an extra stop for the trigger rotation mechanism to disengage so that the trigger can release the hammer, or that it could connect the trigger to the hammer in the single action hammer-revolved system. Collectors with examples of both Type II and Type III guns in their collection are requested to contact Phil Boulton directly to help clarify this.

The Boulton database records 56 specimens of Type III revolvers, with serial numbers ranging from #8 to #988. The high number suggests a total production of about 1,000. Sellers and Smith write that about 2,000 were made, however, half with convex cylinders and half with flat cylinders. This, coupled with conversion of most Type II guns to Type III, precludes us from estimating total production, calculating a known survival rate, or calculating a stability index value for Type III revolvers. Much work remains to be done on both the Type II and Type III .28 caliber revolvers before conclusions can be drawn or inferred about the survival and rarity of these guns.

Adams Patent Revolvers. The Adams .31 and .36 caliber revolvers made by Massachusetts Arms are English patent guns that were made in America under license from about 1857-1861. The British revolvers were nominally in .50 and .44 caliber (Garvaglia and Worman); American revolvers were made in .31 caliber pocket and .36 caliber Navy, each model numbered in its own range.

Adams Pocket Model Revolvers (Fig. 7).

The Boulton database records 126 Adams pocket revolvers. Serial numbers range from #23 to #4991. These data support upward revision of the historical production estimate of about 4,500 (Flayderman; Jones) to about 5,000. The known survival rate (KSR) is just 2.5%, probably reflecting high attrition during the Civil War. Twelve specimens were added during the previous three years, generating a stability index of 3.5%. The KSR is growing moderately, with a significant number of surviving guns yet to be recorded.



Figure 7

Adams Navy Model Revolvers (Fig. 8).

The Boulton database records 167 Navy model specimens, ranging from #7 to #2961. Based on the high number, and nineteen serial numbers over #1000 that are fairly evenly distributed between #1000 and #3000, we feel confident in revising the total production estimate for Adams Navy revolvers made by Massachusetts Arms from the historically reported level of 1,000 to 3,000. The known survival rate (KSR) is 5.6%, probably reflecting high attrition during the Civil War. Seven specimens were added during the previous three years, generating a stability index value of 3.5%. The KSR for the Navy is growing moderately, with a significant number of surviving guns yet to be recorded.

The Boulton data on Navy revolvers expose an enigma: the KSR of guns under #1000 (14.8%) far exceeds the survival rate of guns over #1000 (0.95%). Why is there such a large disparity in the survival rates of the early third vs. later two-thirds of Adams Navy revolvers?

The history of the Navy Adams is convoluted at best. Many English Adams revolvers were also sold to the U.S. government before, during and after the Civil War, and historical procurement, storage and disposal records don't often differentiate between English .44 caliber and American .36 caliber Adams revolvers. As far as the circa 3,000 Navy guns made by Massachusetts Arms, we know that the U.S. government bought 500 directly (McAulay 1992); all were ordered in April 1857 and delivered in 1858. That leaves about 2,500 sold on the commercial market.

The Boulton database confirms that the 500 Ordnance-procured guns had low serial numbers; 41 revolvers with cartouches (24.5%) all had serial numbers under 1000 (#15-#916). The balance of 126 (75.5%), with no cartouche, had serial numbers dispersed throughout the range of production (#7-#2961). While Ordnance bought another 1,075



Figure 8

Adams revolvers on the commercial market—including 795 from Schuyler, Harley & Graham from 1861-1862—McAulay believed all of them to have been English guns in .44 caliber.

We think the much higher KSR for the Navy Adams made by Massachusetts Arms in part reflects storage or limited use of most of the 500 procured by Ordnance before the Civil War. Demarco notes that just 98 were issued to Army and militia posts from 1857-1859; McAulay writes that 41 were also sent to Pennsylvania in 1859-1860 under the Militia Appropriation Act, but that fully half—250—were still in storage at the St. Louis Arsenal at the start of the war.

Heavy use of these guns by the Confederacy and higher attrition in Confederate hands may also help explain the disparity. The Adams revolvers “ranked next to the Colt in the estimation of Southern ordnance officers” (McAulay). While the South imported .44 caliber Adams revolvers directly from England, it also bought a large number American .36 caliber Adams from Northern commercial dealers. Very early in the war, 300 Adams revolvers were bought by Alabama—also through Schuyler, Hartley and Graham (McAulay). Schiffers writes that about 513,000 percussion revolvers were sold to private purchasers during the war, and Fuller and Steuart note “the large number of Tranter and Adams revolvers... made in the North, bearing the names of Southern firms.”

The Confederacy also captured massive numbers of small arms on the battlefield. The number of Adams Navy revolvers recovered is unknown, but General Robert E. Lee’s battle report estimated that 139,500 small arms were obtained from battlefields between June 1862-May 1863 alone (Knott). Another 45,000 were captured in the year ending September 30, 1864 (Fuller and Steuart).

FINDINGS AND REVISIONS OF HISTORICAL DATA

Survival Files #6 reviews production data, calculates survival rates, estimates the level of unrecorded guns, and examines rarity factors for the pocket and Navy revolvers made by Manhattan, and for the Maynard-primed .28-caliber and Adams Patent revolvers made by Massachusetts Arms. Data on barrel lengths are reported for some Manhattan pocket and all Manhattan Navy models (Table 1). Table 2 includes a rackup of stability index values and what they mean, along with associated production and survival rate data for 36 models of percussion revolver analyzed in *Survival Files #1-#6*. The models addressed here are in red.

Manhattan Pocket Revolvers: The Series I production estimate is increased to about 1,050 from the previous estimate of 900-1,000. The known survival rate (KSR) is 17.5%—one of the highest we’ve found so far—probably reflecting very limited use during the Civil War. The Series II production estimate is increased to about 4,500 from the previous estimate of 3,600-3,800. The KSR is a very low at 2.9%, probably reflecting significant use during the Civil War. For both the Series I and Series II pocket revolvers, the KSR is growing rapidly, it is well below the true survival rate, and many remain to be recorded.

London Pistol Company Revolvers: The Boulton database includes the most extensive records of these guns ever compiled, with 107 specimens recorded. About 90% are Series I revolvers, and about 10% are Series II. The long-running enigma surrounding them, however, remains. It is still unclear whether they are flawed seconds that were stamped with the London Pistol Co. name, or whether they constitute a model—or perhaps even two models—in their own right. With a stability index of 4.2%, many specimens remain to be identified. Greater hands-on examination of these guns can hopefully resolve this issue.

Manhattan Navy Revolvers: We believe the Series I-II and Series III-IV may constitute different models, and urge further research on the point. For Series I-IV inclusive, the total production estimate is increased to 69,500. For the Series V, the production estimate is revised to about 9,500 from the previous estimate of about 9,000. The known survival rates (KSR) for all Manhattan Navy revolvers are very low; for Series I-IV guns, this reflects heavy use during the Civil War and on the frontier. The KSRs are growing rapidly for these guns, they are well below the true survival rate, and many specimens remain to be recorded.

Massachusetts Arms Maynard-Primed .28-Caliber Revolvers. Historical information on the Maynard-primed revolvers are highly convoluted. The Boulton database only records data on the .28-caliber revolvers, and breaks them down into three types. Total production of the Type I is estimated at 1,200, up from the previous estimate of 1,000. These guns saw very limited production and low popularity. The known survival rate (KSR) of 5.4% is well below the true survival rate, and should grow rapidly as specimens are identified and added to the database. For Type II and Type III revolvers, we decline to estimate either total production or a known survival rate since they have proven almost impossible to consistently classify.

Table 2
Stability Index Values and Class Characteristics
American Percussion Revolvers
Data from The Survival Files #1-#6
(SF#6 Models in Red)

Model	Stability Index (%)	Total Estimated Production (TEP)	Known Survival Rate (KSR)	Class Characteristics
.45 National (Teatire)	0.00	25	32.00%	Very Low to Ultra Low Production Models Known Survival Rate (KSR) is Growing Very Slowly KSR is Close to the True Survival Rate Very Few Remain to be Recorded
.36 Savage & North 1st/1st Variation	0.00	10	10.00%	
.36 Savage & North 1st/2nd Variation	0.00	250	8.80%	
.36 Savage & North 2nd Model Navy	0.00	100	9.00%	
.36 Savage & North 3rd Model Navy	0.00	100	5.00%	
.36 Savage & North 4th Model Navy	0.00	50	12.00%	
.31 Cooper Pittsburgh 2nd/1st	0.00	100	9.00%	
.44 Colt Walker	0.38	1,100	19.82%	Low to Very Low Production Models Known Survival Rate (KSR) is Growing Slowly KSR is Approaching the True Survival Rate Relatively Few Remain to be Recorded
.28 Whitney New Model "Root"	1.76	1,950	2.05%	
.31 Pettengill	1.81	180	21.67%	
.34 Pettengill	1.85	900	6.51%	
.44 Freeman Army	2.12	2,000	12.55%	
.36 Metropolitan 1862 Police	2.34	2,750	6.11%	
.36 Cooper Philadelphia Navy	3.21	6,250+	<i>no data</i>	
.31 Cooper Pittsburgh 2nd/2nd	3.33	900	7.33%	
.28 Mass. Arms Trigger-Rotated	3.45	<i>no data</i>	<i>no data</i>	
.31 Mass. Arms Adams Patent	3.51	5,000	2.52%	
.36 Mass. Arms Adams Patent	3.53	3,000	5.57%	
.31 Whitney Pocket Model	3.55	32,500	1.24%	
.36 Whitney Navy & Eagle Co.	4.11	35,500	2.65%	
.31 London Pistol Co. Revolvers	4.21	<i>no data</i>	<i>no data</i>	Mostly High to Very High Production Models Known Survival Rate (KSR) is Growing Rapidly KSR is Well Below True Survival Rate Many Remain to be Recorded
.44 Single Action Starr	4.26	32,785	2.88%	
.36 Manhattan Navy Series I-IV	4.40	69,500	3.02%	
.44 Double Action Starr	4.44	23,140	5.59%	
.31 Cooper Philadelphia Pocket	4.46	8,750+	<i>no data</i>	
.36 Metropolitan 1851 Navy	4.68	6,300	4.13%	
.44 Rogers & Spencer	4.86	5,800	15.86%	
.36 Manhattan Navy Series V	5.03	9,500	2.57%	
.44 Pettengill	5.04	3,300	6.00%	
.36 Alsop Navy	5.13	500	9.00%	
.31 Manhattan Series I Pocket	5.24	1,050	17.52%	
.36 Double Action Starr	5.38	3,100	4.65%	
.31 Manhattan Series II Pocket	5.60	4,500	2.93%	
.31 Alsop Pocket	5.96	300	11.00%	
.28 Mass. Arms Manually-Rotated	6.05	1,200	5.42%	
.36 Savage Navy	6.36	20,000	2.84%	

Known Survival Rate (KSR) = Number recorded in Boulton database x 100/Total Estimated Production (TEP)
Stability Index = Average number recorded per year over recent three year period x (100)/Total recorded at start of period
SF#6 Models in Red

file: SF#6 Table 2 Data Rackup (7/16/2021)

Adams Pocket Revolvers: The Adams pocket model production estimate is increased to about 5,000 from the historically reported 4,500. The known survival rate (KSR) is a very low 2.5%, probably reflecting heavy use and high attrition during the Civil War. The KSR is growing modestly; it remains well below the true survival rate, and a significant number of specimens have yet to be recorded.

Adams Navy Revolvers: We estimate total production of the Adams Navy at about 3,000—triple the historically reported estimate of 1,000—based on nineteen serial numbers between #1000 and #3000 and a high of 2961. The known survival rate (KSR) of 5.6% is growing moderately; it is well below the true survival rate, and a significant number remain to be recorded. Like the Adams pocket revolvers, the Adams Navy probably saw heavy use and high attrition during the Civil War. A very large disparity between the very high survival rate of low-serial number guns and the very low survival rate of high-serial number guns is partly explained by their limited use by Union forces before the Civil War, and heavy Confederate use and attrition during the war.

Appeal to Collectors

Collectors are encouraged to send serial numbers of Manhattan and Massachusetts Arms percussion revolvers to Phil Boulton at philboultoncps@hotmail.com. Owners of London Pistol Co. guns are also asked to contact Phil directly. Other questions about this article, including on methodology, can be sent to Jeff Goodson at jugoodson@yahoo.com.

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