

The Luger Carbine III

A Brief Note on 7.65mm Ammunition for the Luger Carbines of 1902 and 1920

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Having recently acquired a Luger Carbine, I naturally became curious about what ammunition would be appropriate for it. As is so often the case, attempting to reconstruct the reasons for manufacturing (and marketing) decisions made in a different cultural milieu of more than a century ago begs for a disappointing outcome. What I will do here is to present a brief background on the development of the Luger Carbine and the need for a cartridge with characteristics different from those of the 7.65mm ammunition commonly available at the time.

For clarification, a carbine is a long gun - specifically a type of rifle - defined by having a shorter barrel (typically under 20 inches) and a lighter, more compact design compared to a standard rifle.



Background: Why the Carbine in the first place?

The Luger carbines of 1902 and the later commercial carbines of the 1920 period represent an interesting attempt to extend a finely tuned pistol system into a shoulder-fired platform without fundamentally redesigning its mechanics.

The most objective reasons for development were the fact that it used existing technology and parts and was a reasonably natural line extension of an existing product which leveraged a well known brand name. It was an efficient way to enter a new market.

The Luger carbine anticipated an entry by Dreyse, that used the basic design of their semi-auto pistol, by a few years. Certainly there must have been awareness among interested parties that the "Pistol Caliber Carbine" was a coming thing.



Lightweight, using a relatively inexpensive ammunition and with proven mechanics. It must have seemed like a no-brainer to management.

There might have been other considerations.

Kaiser Wilhelm II (1859 - 1941, pictured) was an avid hunter. However he was born with a withered left arm, a condition likely resulting from Erb's palsy, making it significantly shorter and weaker than his right. This disability made it difficult for him to handle, cycle, and fire conventional, full-sized hunting rifles.



This was commonly known and was certainly known to Georg Luger. Whether this contributed to the decision to develop the carbine version of the Luger pistol is a question that remains unanswered but, come on folks, Luger was no fool.

As it turns out, because of this impairment, the Kaiser became a big fan of the self-loading Luger carbine as a hunting arm because the light design was easier for him to manage.

Let us conclude by simply observing that the Kaiser's deformity AND love of hunting did not militate against development of the carbine.

Background: Why the ammunition is an issue

In a Luger, When a cartridge is fired, the pressurized gas pushes the bullet forward and the barrel/toggle assembly backward simultaneously for a short distance.

- Unlock: The toggle assembly hits a cam (ramp) on the frame, causing the "knee joint" of the toggle to break upward and unlock the breech.



- Extraction & Ejection: The barrel hits the frame, stopping its movement, but the toggle continues rearward, extracting and ejecting the spent casing.

The heart of the issue is the toggle-lock action developed by Georg Luger, a system that operates beautifully within a narrow band of recoil energy but becomes increasingly sensitive as the physical characteristics of the firearm change.

In the standard pistol configuration, the Luger's mechanism is carefully balanced around the recoil impulse generated by cartridges such as the 7.65×21mm and, later, the 9×19mm Parabellum. The toggle joint must be driven sharply upward to unlock, and this requires a very specific pressure curve — one that delivers sufficient force quickly enough to overcome the inertia of the moving parts and the resistance of the recoil spring. When everything is properly matched, the system cycles with remarkable precision.

When this same mechanism is incorporated into a carbine configuration, several important variables shift. The addition of a longer barrel, typically around twelve inches, and a shoulder stock increases the overall mass of the firearm. This added weight changes how recoil energy is transmitted through the system. Although the longer barrel can increase muzzle velocity, the operating mechanism does not respond to bullet velocity alone; it depends on the timing and intensity of the recoil impulse. In a heavier firearm, more of that impulse is effectively absorbed before it can act upon the toggle, and the altered timing of pressure drop in the longer barrel can further complicate the unlocking sequence.

The nature of the recoil/cycle process in the Luger requires that the entire upper



(barrel and barrel extension) move backward.

The photo shows the difference in the parts of the carbine being driven backward during a cycle compared to the pistol configuration. The increase of weight is approximately 10 oz.

With the carbine, the handguard "floats" under the barrel and is anchored to the frame,



not the barrel. The picture shows the opening for the wedge that locks the foregrip in place.

The foregrip also contains a "forward assist" spring loaded plunger which aids the upper



to come back into battery.

This spring mechanism requires about 2.5 lbs. to be fully depressed. Therefore it, too, retards the backward motion of the upper assembly.

(Note in the picture the small screw in the wood all the way to the left. It retains the locking wedge. With Lugers, it is the small things that delight.)

The result of all this is that ammunition which performs reliably in a pistol may prove marginal in a carbine. With loads designed for the pistol configuration, the toggle may fail to fully articulate, leading to incomplete cycling. This manifests as short-stroking, weak ejection, or failures to extract and eject. The system is not forgiving; it requires a decisive impulse to function correctly.

This raises an interesting question: when did they at DWM know and what was their response? Certainly the designers at DWM would have looked at a drawing and thought "the old ammo ain't gonna make it". Did they begin production hoping that it "might" work out? Or that the performance would be acceptable? My guess is that they began loading some rounds hotter from the outset. But it sure seems like an afterthought. The mix of headstamps supports this notion. Between the ammo, the forward assist and the floating forend, the term "Rube Goldberg" does suggest itself.

In all events, the need for higher-powered rounds became clear.

Another Possible Cause

"Limp wristing" occurs when a shooter provides insufficient resistance to a firearm's recoil thus allowing the the entire weapon to move backward rather than holding it in such a way as to cause the slide to move backward independently of the frame. This resistance is necessary for the the weapon to cycle correctly.

One might argue that a weapon as light the Luger carbine is, with a feel very much like that of a pistol, could well encourage a somewhat devil-may-care stance whilst shooting it.

Given the weight and design of the carbine it might well be argued that any stance other than an optimal one could well result in the erratic performance that led to the provision of more powerful ammunition.

The Teddy Roosevelt Connection

Theodore Roosevelt was gifted a carbine before June 6, 1902 by Georg Luger (see Roosevelt Connection in Appendix IV).

Roosevelt sent it to the Springfield Armory for a sight adjustment and overall evaluation. In the course of this, cycling failures were noted and attributed to the lack of power in the ammunition. Obtaining the correct ammunition became the subject of a series of communications and with the President (with some asperity) stating:

Is it possible to have Mr. Luger written that the carbine is absolutely worthless to me unless I can get ammunition for it, and recapitulate to him the difficulties in this way? It is really foolish to have sent me a carbine unless there is a chance to buy ammunition for it.

This does underscore the lack of awareness at DWM of the problem. It also supports the idea that DWM, rather than having a well oiled ammunition production process in hand, was operating reactively. Think about it: not providing the President of the United States with the ammunition necessary to make your present work? Somehow a range of headstamps makes some sense in this situation as DWM struggled to provide ammunition that would work.

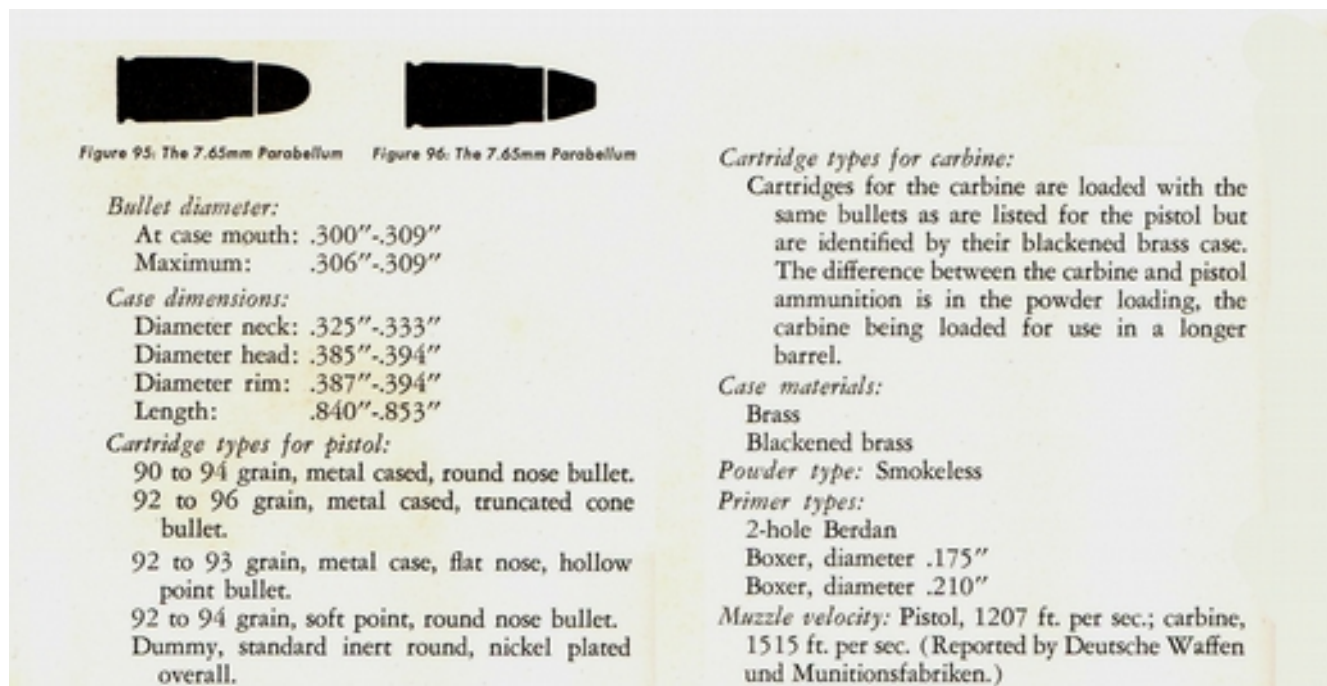
The Ammunition

A casual examination of the literature yields the fact that ammunition for the carbine is

Patronenhülsen für Selbstlade-Pistolen								
Mauser			Parabellum					
		Kal. 9 mm	Kal. 7,63 mm	Kal. 9 mm		Kal. 7,63 mm		Kal. 7,63 mm
				Für Karabiner geschwächt		Für Karabiner geschwächt		
								
Durch- messer mm	Geschoßraum innen	9,08	7,80	9,0	9,0	7,80	7,80	7,80
	vor dem Boden	10,0	10,0	10,0	10,0	10,0	10,0	8,85
	des Bodens	10,0	10,0	10,0	10,0	10,0	10,0	8,85
Gewicht pro 1000 Stück kg		4,4	4,4	4,0	4,0	4,2	4,2	3,6

easily identified. The DWM catalog of 1904 shows it (471A) next to the non-carbine round (471).

Item 471A is identified as being "For the Carbine: Blackened". Number 471 shares the same specifications (Inner neck diameter, Diameter ahead of the rim, Rim diameter and weight/1000 units).



A description from White (1948) is above.

These ballistics imply an approximate muzzle energy for the carbine round of 380 ft/lbs. as opposed to about 340 ft/lbs for the pistol loading. They state that the ammunition was made only in Germany and that it "has been out of production for many years due to the short lived popularity of that particular model". Note also that they specify a larger diameter primer for the carbine loads.

Datig (1962) reports similar ballistics and characteristics of the round.

	7.65m/m Luger	9m/m Luger	7.65m/m Luger Carbine
Year			
Model	1900	1902	1903
Caliber in inches	.301	.354	.301
Bullet Weight	92grains	124grains	92grains(blackened)
Case Length	.850"	.750"	.850"
Case Material	brass	brass	brass
Powder Type	smokeless	smokeless	smokeless†
Velocity‡	1150	1250	1500
Headstamp Marking	DWM 471	DWM 480 C	DWM 471 A

†Luger Carbine cartridges have approximately 1/7th more powder charge than normal Luger cartridge.
‡All velocities given are in feet per second.
Note: All figure in the above graphs are average and approximate in most cases.

Datig p. 198 (1962)

The table to the right illustrates the difference in velocities for different types of modern ammunition fired in both a standard P. 08 and a Carbine.

It is worth observing that standard cartridge references such as Barns (1965), Johnson (1943) and Logan (1959) make no mention of the carbine ammunition and that Datig (1956) only identifies the 471A headstamp as being associated with the carbine in DWM headstamp identification material in his reference section.

The Confusion

It has been taken as an article of faith in some circles that the the 471A headstamp is the only one associated with carbine ammunition. This assumption had arisen, perhaps, because of two factors: the identification of the 471A case being for the carbine in the DWM catalog (Für Karabiner) and "blackened" (geschwärzt) as well as the identification of carbine use on 471A marked boxes of ammunition.

VELOCITY RESULTS			
9 mm Luger Cartridge	Vel. @ 15' Luger 4" Barrel	Vel. @ 15' Carbine 11.8" Barrel	Velocity Difference (f.p.s.)
Remington R9MM1 115-gr. JHP	1089	1348	259
Remington R9MM2 124-gr. FMJ	1050	1277	227
Federal 9AP 123-gr. FMJ	1036	1203	167
Federal 9BP 115-gr. JHP	1028	1263	235
Speer 3620 125-gr. JSP	1007	1189	182
Speer 3610 100-gr. JHP	1249	1496	247
Dynamit- Nobel (Geco) 123-gr. FMJ	1178	1371	193
PMC 9A 115-gr. FMJ	1022	1264	242
Canadian Military 1943 121-gr. FMJ	1185	1412	227
Czech Military 100-gr. FMJ	1238	1435	197

70 AMERICAN RIFLEMAN
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A typical box of 471A ammunition for Carbine:



And the round contained therein:



Note the powder charge is 0.40 grams. The charge for regular 7.65mm ammunition is 0.35 grams and is so indicated on the box.

In any event, the fact is that three headstamps have been associated with carbine ammunition. The table shows them along with the loadings that have been observed. Note that the "K" in a DWM (Deutsche Waffen- und Munitionsfabriken) headstamp

stands for "Karlsruhe", the location of the primary DWM manufacturing plant in Germany not "Karabiner".

Bullet	Headstamp		
	* D.M. * K	K DWM K 471	K DWM K 471A
Round nose (RN)	X	X	X
Truncated (T)	X	X	
Hollow Point (HP)	X	X	X
Soft Nose (SN)			X
SN has a copper primer. All other are brass			

Blackened rounds in boxes labeled "Karabiner" are quite common and are found in boxes with the carbine designation and the 471A case identification. This cuts across all observed headstamps.

One might well wonder how a casing with a corporate designation "D. M." (Deutsche Metallpatronenfabrik), that was obsolete in 1896, found its way to be loaded for a firearm not sold until 1902. The only thought that I have on that subject is that the management and employees of DWM had as their prime objective to make a profit. If pallets of old casings with antique inscriptions were to be had, they would be used before they were discarded. Thrift. And the fact that these loadings were somewhat special and were designated by case coloring somewhat lessened the importance of the actual headstamp.

Bear in mind, too, that it is possible that a problem was not really anticipated by DWM. So when early examples of the carbine were released and ejection issues were reported, it is likely that they "hopped to" and loaded cases (that were at hand) with a hotter load to address the problem. It is rather a stretch to believe that they knew of a problem and knowingly had a carbine delivered to the President of the United States without the proper ammunition.

That the DWM casebook did not reflect all of the inscriptions found on carbine ammunition is a fact that is not terribly difficult to understand. Catalogs of the time (and today) might not be truly reflective of product offerings found in the market place. That does not appear to trouble expert collectors of these type of cartridges. Not an explanation (which is lost in the mists of time) but reassurance for a neophyte cartridge

collector such as myself.

Basic Identification of Carbine Rounds

So given the foregoing, how does one identify a carbine round. What might distinguish it from the more common pistol loading?

A round that is blackened, comes from a box labeled "Karabiner" and has the 471A headstamp is for a carbine and few would argue with that appraisal. Are they for the carbine? The answer is "yes". The primary "Tell" is the blackening.

Further, based on reports from various collector sites, all three headstamps with blackened casings have been reported in boxes with the 471A/Karabiner designation though they have not been reported as being contained in a box with other markings..

Sturgess (2005 pp. 13-14) unequivocally states that the early carbine loads were headstamped 471 NOT 471a. I think that there is no question that carbine loads had at least three headstamp configurations. Why though?

About 2,500 1902 Luger Carbines were made (Davis 2006). This number is not large and it might well be that DWM saw no need to create new dies for the, presumed, small volume of ammunition that was being manufactured for it. They might, understandably, have felt that the blackened cases provided sufficient identification. Using existing cases provided a cost savings. As time went on, the 471A designation superseded other markings.

It is worth noting that the DWM catalog, that is often used as the means of identifying carbine ammunition, lists a case used for the ammunition, not completed rounds. "A" case, not all cases that DWM might load to carbine specification. A fine point and a narrow interpretation but one that is necessary to bear in mind. DWM is not implying that the 471A headstamp is the only one associated with carbine ammunition.

Black Cases

It is thought that DWM used copper carbonate and ammonia to darken the casings. The coloring survived in a rather spotty way. Some cases found today are almost brass colored and the blackening can only be seen in crevices. One must be careful in dismissing a round as being for the carbine if the coloring is not readily apparent. It seems that there is no non-destructive method of testing the coloring on a casing.

The picture shows a series of 7.65mm rounds. Rightmost is a carbine round with the 471A headstamp. Leftmost is an unblackened round. Between are blackened rounds that demonstrate the variation in surviving color. An uncolored groove around the head is the clearest way to identify a non-carbine round.



Ofttimes there is almost no color on the head so this must not be taken as a serious



indicator of purpose of the round.

The picture of above shows a brass round (top) and a blackened round. The picture shows that the blackening is "spotty" and almost looks like paint that is chipping. Whereas the other round shows a fairly uniform coating of corrosion.



The spotty nature of the blackening is clearer in the close up. Note also the retention of the blackening in the extraction groove.

The Terminal Dot

The presence of a "Dot" after the numeric designation of a number of carbine rounds has been noted by collectors. This suggested that the Dot might have some significance



and be an aid in identifying carbine ammunition. How might the presence or absence of the dot in DWM headstamps be interpreted across ammunition that uses case code numbers?

Dot and "dot-less" variations appear across DWM's civilian headstamped cases, in both

rifle and handgun cartridges. In some instances, a single case type (for example, #471) is known with both variations, while others seem to exist only with one or the other.

Notably, for sporting rifle cartridges, DWM discontinued the use of the dot (e.g., "474A.") around 1925, coinciding with the introduction of date codes.

Since the dot is part of the bunter* engraving, its presence or absence must have been determined at the time a new bunter was produced. Variations in spacing between the number and the dot are also observed.

Given this, it is correct to conclude that the dot has no intrinsic meaning beyond identifying a particular bunter and, potentially by extension, a production period. Once date codes were introduced, this form of differentiation became unnecessary.

* A bunter is a hardened steel die (or punch) used to stamp the markings—called the headstamp—onto the base of a cartridge case during manufacture.

References

- Barnes, Frank C. **Cartridges of the World**. The Gun Digest Company, Chicago Illinois, 1965. no mention of the 7.65mm at all.
- Datig, Fred A. **Cartridges**. Borden Publishing Company. Alhambra, Cali. 1956 mention of DWM headstamp 471A in DWM listing
- Datig, Fred A. **The Luger Pistol**. Borden Publishing Company. Alhambra, Cali. 1962. p. 198.
- Davis, A. (2006). **Standard Catalog of Luger**. Gun Digest Books. p. 49.
- Dickey, Pete (1980). **The Kaiser's Karabiner**. American Rifleman. Vol.128, No. 8,. P. 37.
- DWM. **Munitions Catalog No. 4**. Karlsruhe, Baden. 1904.
- Johnson, M. M. & Haven, C.T. **Ammunition**. William Morrow and Co. New York, 1943
- Kenyon, C., Jr. (2003). **The Theodore Roosevelt Luger Carbine(?) Part 2**. The Gun Report, January, 12 - 13, 54.
- Logan, Herschel C. **Cartridges**. Bonanza Books, New York. 1959 Nothing
- Sturgess, G. L. **The Genesis of the 9 mm Parabellum Cartridge**
IAA Journal Issue 444, Jul/Aug 2005 pp. 4-15.
- White, H. P. & Munhall, B. D. **Center Fire Metric Pistol and Revolver Cartridges**. NRA Sportsman's Library. pp. 30-31. 1948.

Appendix I

Examples of Ammunition

The top row has the headstamp with a "K" in the 6 o'clock position. The middle row "471" and the bottom row "471A".



Appendix II
Boxes







Appendix III

Teddy Roosevelt Connection

Roosevelt became President on September, 1901. The earliest reference to his carbine is in a note from one Col. Phipps wherein he, the Colonel, references receiving the "Luger pistol-carbine" on June 6, 1902. In another note, from Roosevelt, he specifically states that the carbine was a present from George Luger. It stands to reason the the window of receipt was between these two dates. Though an earlier date is not impossible.

Roosevelt still owned it in 1913-1914 and took it on his famous Amazon/River of Doubt expedition (a photo from that trip shows his son Kermit holding it).



Note on the "Kaiser gift" story: Many secondary sources (forums, auction sites, etc.) claim it was a gift from Kaiser Wilhelm II given to Roosevelt during a visit to Germany.

That appears to be a mix-up or legend. Roosevelt's well-known meeting with the Kaiser was in 1910 (after his presidency), but the documented Army letters prove he already had the carbine no later than mid-1902. The early "presentation" carbines were special cased models, but Roosevelt's was almost certainly obtained through commercial/DWM channels in late 1901 rather than a direct imperial gift. The reference to Georg Luger, above, supports this. Though the Kaiser gifting Roosevelt with another carbine is possible.

The relevant documents concerning President's ammo problem (and other issues with his carbine) can be found in Appendix IV.

Current Whereabouts of the Roosevelt Carbine

The latest documentary evidence of its whereabouts is in the July 18 letter which implies shipping back to Roosevelt on that date. At some later point, Charles Kenyon, Jr. visited the Roosevelt Birthplace Museum in NYC and personally viewed the President Roosevelt Luger hunting carbine presentation case and wooden stock with push-button



Photo 3
Case and buttstock of Luger carbine owned by Theodore Roosevelt in mid-1902. Print courtesy of U.S. National Park Service, Theodore Roosevelt Birthplace Collection.

attaching iron and noted no serial number. The carbine itself was not to be seen. The picture of the case is from Kenyon (2003).

A fuller treatment of the whereabouts of the carbine can be found in Dittus, 2026.

* <https://www.landofborchardt.com/1901c58.html#images>

Appendix IV

Carbine Problems

These documents concern themselves with problems that TR had with the sights of the carbine as well as with the inability of standard carbine ammunition to work the action. They are useful documents in the present context to establish the whereabouts of the weapon at given times.

The relevant documents concerning President's issues with his carbine follow:

- **June 24, 1902** - Letter from Tauscher attorney informing Chief of Ordnance that 50 rounds are forthcoming.
Graff, C. L., [1902, June 24]. Letter from C. L. Graff.
Library of Congress Manuscript Division. Theodore Roosevelt Digital Library. Dickinson State University.
Retrieved from <https://www.theodorerooseveltcenter.org/digital-library/o38330>.
- **July 2, 1902** - Explaining that lack of ammunition is holing up testing and informing Chief of Ordnance that 50 rounds are forthcoming.
Phipps, Frank H. (Frank Huntington), 1843-1925., [1902, July 2]. Letter from Frank H. Phipps to William Crozier.
Library of Congress Manuscript Division. Theodore Roosevelt Digital Library. Dickinson State University.
Retrieved from <https://www.theodorerooseveltcenter.org/digital-library/o38389>.
- **July 8, 1902** - Roosevelt requesting Col. Bingham contact G. Luger to obtain carbine ammunition. Characterizes the carbine as "worthless" without the proper ammunition.
Roosevelt, Theodore, 1858-1919., [1902, July 8]. Letter from Theodore Roosevelt to Theo. A. Bingham.
Library of Congress Manuscript Division. Theodore Roosevelt Digital Library. Dickinson State University.
Retrieved from <https://www.theodorerooseveltcenter.org/digital-library/o182710>.
- **July 10, 1902** - War Department responding to July 8 letter informing the President that a cable was sent requesting 500 rounds of carbine ammunition
Bingham, Theo. A. (Theodore Alfred), 1858-1934., [1902, July 10]. Letter from Theodore A. Bingham to Theodore Roosevelt.
Library of Congress Manuscript Division. Theodore Roosevelt Digital Library. Dickinson State University.
Retrieved from <https://www.theodorerooseveltcenter.org/digital-library/o38442>.
- **July 18, 1902** - Ordnance Department informing the President that his carbine is being returned with 500 rounds of ammunition. Also detailing the problem in obtaining ammunition for testing

from Tauscher. n.b. this document is from Kenyon, 2002.

- **July 19, 1902** - War Department to the President informing him that 500 rounds are on their way from Germany.
Bingham, Theo. A. (Theodore Alfred), 1858-1934., [1902, July 19]. *Letter from Theo. A. Bingham to Theodore Roosevelt*.
Library of Congress Manuscript Division. Theodore Roosevelt Digital Library. Dickinson State University.
Retrieved from <https://www.theodorerooseveltcenter.org/digital-library/o38532>.
- **July 23, 1902** - Announcing that a holster is being sent too.
Crozier, William, 1855-1942., [1902, July 23]. *Letter from William Crozier to Theodore Roosevelt*.
Library of Congress Manuscript Division. Theodore Roosevelt Digital Library. Dickinson State University.
Retrieved from <https://www.theodorerooseveltcenter.org/digital-library/o38568>.
- **August 12, 1902** - Asking how much to modify the front sight.
Bennett, Thomas Gray, 1845-1930., [1902, August 12]. *Letter from Thomas Gray Bennett to William Loeb*.
Library of Congress Manuscript Division. Theodore Roosevelt Digital Library. Dickinson State University.
Retrieved from <https://www.theodorerooseveltcenter.org/digital-library/o38795>.

All of these documents can be found here: www.theodorerooseveltcenter.org