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A Forensic and Historical Look at John Taylor’s Watch: Evidence of Divine Mercy

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In June 2023, the Church History Department of The Church of Jesus Christ of Latter-day Saints announced the public availability of forensic and historical research recently completed on the pocket watch of John Taylor. Taylor, an Apostle of the Church at the time, was present when Joseph Smith and his brother Hyrum were killed by a mob in the Hancock County Jail in Carthage, Illinois, on June 27, 1844. During the attack, Taylor was shot four times, and his watch was damaged. This artifact has long held a special place in the hearts of many members of the Church as a physical link to the last moments of the lives of the Prophet Joseph and Hyrum, the patriarch to the Church.

Generations of Latter-day Saints have heard the story of the watch and its possible involvement in preserving Taylor’s life. The consistent story for nearly one-hundred and fifty years was that the watch had stopped a bullet from entering Taylor’s chest, likely saving his life. However, after the watch was reexhibited at the Museum of Church History and Art in the 1990s, increased questioning and scrutiny led to scientific examinations of the watch in late 1998. One team of experts involved in this process advanced a new hypothesis: that the watch did not stop a musket ball but was damaged when Taylor was hit in the intense crossfire and fell against the windowsill, smashing the watch.
This new interpretation gained traction over the following years as influential historians included it in wide-reaching publications. By the 2010s, the windowsill explanation appeared in Church History Department products such as museum exhibit guides, signage, and in the first volume of the new official narrative history of the Church, Saints: The Story of the Church of Jesus Christ in the Latter Days, Volume 1: The Standard of Truth, 1815–1846. However, not all Church publications included the new windowsill theory. In 2014, a reprinted edition of the manual Church History in the Fullness of Times, used by institutes of religion in the Church, retained the narrative that the watch was struck by a bullet and saved John Taylor’s life. These discrepancies in Church publications, combined with questions from museum staff about the interpretation of the watch in The Heavens Are Opened exhibit that appeared in 2015, prompted Church History Department leadership to form a working committee in 2020 to examine the watch and the stories behind it.

This article will review historical sources about the martyrdom, trace the ways the story was told over time, summarize 1998 forensic investigations, and present findings from three recent studies that engage with the disciplines of forensic science, scanning electron microscopy, and finite element analysis. Significant detail will be provided about these recent multidisciplinary scientific studies and will then summarize the inconclusive nature of the results.

The Martyrdom

The attack at Carthage Jail and resultant murder of the Prophet Joseph Smith and his brother Hyrum on June 27, 1844—something Church members refer to as the martyrdom— is well documented (see fig. 1). Written accounts of the assault are primarily based on the eyewitness

3. The Church of Jesus Christ of Latter-day Saints, Church History in the Fulness of Times Student Manual (Salt Lake City: The Church of Jesus Christ of Latter-day Saints, 2014), 282–83.
Reexamination of John Taylor’s Watch statements of Elders John Taylor and Willard Richards, who were in the room at the time the Smith brothers were murdered.

According to these accounts, the jailer had allowed the Smiths and their visitors to use his own bedroom in the jail so that they could be more comfortable. The room was on the second floor, off a landing at the top of the stairs. The men had opened the windows to the bedroom to provide some air circulation on the hot and humid afternoon. Outside they could see the local militia, the Carthage Greys, stationed around the jail, ostensibly to protect Joseph Smith from attack. Late that afternoon, they heard some commotion outside. Willard Richards looked out to see a large group of armed men entering the jail and rushing up the stairs. Gunfire erupted from outside through the open windows. The Smith brothers, Taylor, and Richards shut the door and put their weight behind it to keep the mob from entering the room. Joseph and Hyrum each had a handgun that their concerned friends, hearing rumors of plots to assassinate Joseph, had given them. Taylor and Richards also had heavy walking sticks.

Figure 1. Martyrdom of Joseph and Hyrum Smith, by Gary E. Smith. Courtesy Gospel Media Library.
As the four men leaned against the door, the mob on the other side began to fire musket balls into it. Hyrum was struck four times, including by a ball that entered his face on the left side of his nose, killing him nearly instantly. Joseph briefly mourned over the body of his brother, then quickly “approached the door, and pulling the six shooter <left by Br. Wheelcock,> from his pocket, opened the door slightly and snapped the pistol six successive times.” Taylor stepped into Joseph’s place by the door, and as the mob pushed their musket barrels into the opening, he “parried them off with [his] stick, giving another direction to the balls.”

Taylor indicated that he soon recognized the futility of his efforts and had the thought that friends who could help them might be outside the jail. He thus determined to jump out the window. As he moved across the room toward the window, Taylor was “struck by a ball from the door, about midway of my thigh, which struck the bone. . . . I fell onto the window sill and cried out I am shot. Not possessing any power to move, I felt myself falling outside of the window; but immediately I fell inside, from to me, at that time, an unknown cause.” He lay stunned for a moment on the floor, then crawled under a bed in the corner of the room. He was hit with three more musket balls as he maneuvered under the bed.

Just moments after Taylor slid under the bed, Joseph Smith also tried going out the window. As Joseph reached the window, he was hit by balls from the doorway and from outside. He fell out the window, landing next to a well. The Prophet was dead.

Aftermath

After Joseph was killed, the mob rushed outside, and Willard Richards, mostly unscathed from the melee, came to Taylor’s aid. Richards opened the door and dragged Taylor down the hallway into a jail cell in an adjacent room. Richards then covered him with an old mattress and said, “That may hide you and you may yet live to tell the tale; but I expect they will kill me in a few moments.” Instead, the mob fled, and Richards and Taylor were spared any further violence. Richards transported Taylor to a local hotel where his wounds were tended, and he rested for several days


before returning to Nauvoo. Taylor noted that he had asked Richards to take his purse and watch to keep them safe while he recuperated at the hotel. After arriving back in Nauvoo, Taylor had his wife Leonora send for these items. He later recorded that “my family however were not a little startled to find that my watch had been struck with a ball. . . . It then occurred to me that a ball had struck me, at the time that I felt myself falling out of the window, and that it was the force that threw me inside.” Taylor continued that “the ball struck my watch and forced me back, if I had fallen out I should assuredly have been killed, if not by the fall, by those around, and this ball, intended to dispatch me . . . saved my life.” According to Taylor, “The Lord had preserved me by a special act of mercy. . . . I had still a work to perform upon the earth.”

**Early Accounts of Taylor’s Watch Saving His Life**

The promulgation of the idea that John Taylor’s life was preserved by his watch began within days of the attack at Carthage. William Clayton was likely the first to record details of the damage sustained by Taylor’s watch. His journal entry from June 28, 1844, states, “Bro Taylor sprung for the window but several balls hitting him he fell back under the bed. One ball struck his watch and dashed it to pieces. The hands yet remain in the same position the[y] did when the horrid deed was done. They stand at 16 minutes past 5. The watch saved his life.”

Many contemporary Latter-day Saint diarists were serving missions in Great Britain or canvassing the United States as part of Joseph Smith’s presidential campaign at the time of the martyrdom, so Clayton’s journal entry is one of the few that details the events of the attack at Carthage.

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9. William Clayton, Journal, June 28, 1844, Church History Library, The Church of Jesus Christ of Latter-day Saints, Salt Lake City (hereafter cited as CHL). Clayton’s journal entry is dated June 28, 1844, the day after the attack. However, strong evidence indicates that Clayton likely wrote and backdated the journal entry several days or weeks later. See “John Taylor Watch Committee 19th Century Historiographical Essay Draft,” n.d., CR 100 8, John Taylor Watch Committee Research Files, 2020–2023, CHL, https://catalog.churchofjesuschrist.org/assets/2625576d-7283-4621-a251-20366d0efb81/0/2.
10. Joseph Fielding also noted the watch narrative in his journal. Fielding wrote, “John Taylor attempted to get out at a back window but a Ball met him, which it seems threw him back into the Room owing to its taking his Watch which beat in the Watch thereby giving the exact time at which it occurred.” However, Fielding’s journal account was apparently written later since he references accounts from the *Warsaw Signal* and William Daniels that were not published until late 1844 and 1845. Joseph Fielding, Journal, 1843 December–1859 March, pp. 44–45, MS 1567, Joseph Fielding Journals, 1847–1859, CHL, https://
Within weeks, several published accounts of the watch saving Taylor’s life appeared. First, the July 10, 1844, issue of the Nauvoo Neighbor reported, “The senior Editor of this Paper Mr. Taylor, at the horrible assassination of Joseph and Hyrum Smith in Carthage jail, on the afternoon of the 27th day of June, received three wounds in his left thigh and knee and one in his left wrist; besides which, a fifth ball, spent its force against his Watch in his left vest pocket. This ball, but for the timely interference of this valuable watch, must have caused instant death, as it would have passed directly into his lights. This watch, though dreadfully shattered, is a friend that points to the very moment, when he stood between life and death; the hands pointing to ‘5 o’clock, 16 minutes and 26 seconds.’”

Though Taylor, as senior editor of the Nauvoo Neighbor, doubtless informed the writing of the article while recuperating from his injuries, the author is unknown.

The first eyewitness account did not appear until two weeks later in the Nauvoo Neighbor. Written by Willard Richards, “Two Minutes in Jail” depicted the scene in this manner: “Mr. Taylor rushed into the window, which is some fifteen or twenty feet from the ground. When his body was nearly on a balance, a ball from the door within entered his leg, and a ball from without struck his watch, a patent lever, in his vest pocket, near the left breast, and smashed it in ‘pie,’ leaving the hands standing at 5 o’clock, 16 minutes, and 26 seconds,—the force of which ball threw him back on the floor, and he rolled under the bed which stood by his side, where he lay motionless.” Notably, Richards’s account does not specify that the watch saved Taylor’s life.

Although the watch was prominently incorporated into several early accounts of the martyrdom, it was missing from others. John Taylor and Willard Richards jointly authored a letter to Reuben Hedlock, president of the British Mission, in which they recounted the events from
Carthage but made no mention of Taylor’s watch. The Hedlock letter is likely one of the earliest known accounts, for it is dated July 9, 1844; however, it was not published until October 1844.13

Taylor did not give official personal accounts of the attack until a decade later. On the tenth anniversary of the martyrdom, Taylor detailed the events of that day in a sermon. He stated, “I made an attempt to jump out of the windo [sic]. I fell on the windo sill and fell inside. I recovered my feeling and crawled under the bed. I had given Dr. Richards my watch and money. my watch was all broken up. the way I fell in was a par[ty] outside shot me as I was falling and the force of the gun threw me back.”14 Taylor provided more detail in an account he wrote two years later:

Previous to the Dr. leaving <Carthage> I told him that he had better take my purse and watch along, for I was afraid the people would steal them. The Dr. had taken my pantaloons pocket and put the watch in it with the purse cut off the pocket and tied a string round the top; it was in this position when brought home. My family however were not a little startled to find that my watch had been struck with a ball. I sent for my vest and upon examination it was found that there was a cut, as if with a knife, in the vest pocket, which had contained my watch. In the pocket the fragments of the glass were found literally ground to powder. It then occurred to me that a ball had struck me, at the time that I felt myself falling out of the window, and that it was this force that threw me inside.15

Though Taylor’s personal recollections were not recorded until years later, it is evident in the sources that he and his associates concluded within days or weeks that his watch was damaged in the attack and that they believed it had stopped a bullet and saved his life.

The Watch Becomes Lore

By the time of John Taylor’s death on July 25, 1887, it was widely accepted that his watch had stopped a bullet at Carthage that almost certainly would have killed him. Within days of Taylor’s death, memorials,
tributes, and obituaries recounted the episode and the role his watch played in preserving his life.\textsuperscript{16} After his death, Taylor's watch remained in possession of his family.

In August 1894, the \textit{Salt Lake Tribune} reported that the watch was on display with other “early day relics” on the west side of the pavilion at Saltair resort as part of a celebration honoring the pioneers of 1847. The article noted that the “watch worn by President John Taylor at the time of the death of Joseph and Hyrum Smith in Carthage jail” was “marked by the indentions of the bullets fired by the mob. The cabinet for this souvenir was made by John Taylor himself.”\textsuperscript{17} The \textit{Salt Lake Herald-Republican} also reported on the celebration, stating that “the relics of Joseph Smith, Brigham Young and Daniel H. Wells were very interesting. Not less so was the watch carried by John Taylor in Carthage jail, a dent in which shows where the bullet struck.”\textsuperscript{18}

The first extant photograph of the watch was taken within four years of the pioneer celebration at Saltair. This 1898 photograph (fig. 2) is annotated with the following title: “President John Taylor’s Watch. Historic time piece which saved his life at the time of the assassination of Prest. Joseph Smith. Bullet mark on face of watch. Copyright 1898 by the John-\textsuperscript{19}Co., Salt Lake.” It is important to note that the hands of the watch were missing by this date, but multiple early accounts, including those from William Clayton, Willard Richards, and those likely informed by


\textsuperscript{19} “President John Taylor’s Watch, 1898,” PH 952, CHL, https://catalog.churchofjesuschrist.org/assets/e85b9b03-d127-46b6-8217-b49f7a7425b/0/0.
John Taylor himself, indicate that the hands remained intact and documented the moment during the attack that the watch was damaged.  

20. The hands must have either broken off or were purposely removed sometime after it was viewed by William Clayton and Willard Richards in June and July of 1844 and before the capture of this 1898 photograph. However, no records have been found that indicate what happened to the watch hands. An apocryphal story has circulated among Taylor descendants that Jack Taylor, a great-grandson of John Taylor, pulled the hands off the watch as a curious young child. This story was shared firsthand by Jack to Rick Turley, former managing director of the Church Historical Department, in 1995. Alan Morrell, curator at the Church History Museum and member of the John Taylor Watch Committee, communicated with Turley and received Turley’s journal entry describing the meeting. "June 6, 1995—In the early evening, Blair’s dad, Don Dowd, picked me up and took me to visit Jack Taylor, a great grandson of Church President John Taylor. Don and Jack had been hometeaching companions at one time. I had been told by more than one person that Jack had torn the hands off the watch that had saved John Taylor’s life on June 27, 1844. I asked Jack to tell me the story. He said that he was the son of John Taylor, who was the son of Richard James Taylor, who was the son of the John Taylor who was President of the Church. Jack’s family moved into a house at 2505 Tyler Avenue in Ogden, Utah, around 1917 or 1918, when Jack was about seven years old. The home had a library with bookshelves that had glass doors that lifted up and slid in to make the books accessible. Jack said that one day when he was in the library, he pushed in on some of the books and found the watch and a gun behind them. He said that, as he recalled, the watch had no crystal, and being a small boy and not knowing really what he was doing, he took the hands off. From that day to
Several years later, in 1906, John Taylor’s daughter Annie Taylor Hyde displayed the watch at a Relief Society meeting in conjunction with her address themed after “the championship of President John Taylor and the prophet, Joseph Smith.” A local newspaper reported that Annie produced “a watch that President Taylor carried in his pocket and which prevented another bullet from entering his body” as well as the four bullets removed from Taylor’s body. 

The watch remained in the possession of the Taylor family, and little is known about how it was utilized or stored. In 1934, A. E. Hyde Jr., son of Annie Taylor Hyde and grandson of John Taylor, gifted the watch to the museum owned by the Church of Jesus Christ at the Bureau of Information on Temple Square. Two old acquisition file cards documented the transfer of ownership and remain in possession of the Church History Museum today. Both cards record that the museum took possession of the watch on November 9, 1934, and that the watch “saved” John Taylor’s life.

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22. The likely older of the two “Individual Record of Specimens at L.D.S. Museum” cards contains this description: “A watch which President John Taylor was wearing at the time of the martyrdom of the Prophet Joseph Smith and his brother Hyrum it saved his life.” The donor is listed as Alonzo Blair Irvine, with the following annotation: “A. L. (the L has an E written above it) Hyde Jr.” A handwritten note is stapled to the card that reads, “The John Taylor Watch donor should be A. E. Hyde Jr. change when case is opened.” The second card looks to be the corrected version. The description of the second card reads, “The watch Pres. John Taylor was wearing at the time of the martyrdom of the Prophet Joseph Smith and his brother Hyrum. It is the watch the watch [sic] that saved his life.” The name “A. E. Hyde Jr.” is the only name listed as the donor. Both cards indicate the watch was received on November 9, 1934. The handwritten note attached to the first card that reads “change when case is opened” appears to indicate that the watch was already on display soon after its acquisition when the note was written. Original cards are in the possession of the Church History Museum. Scans of the cards can be viewed in “Individual Record of Specimens at L. D. S. Museum,” John Taylor Watch Committee Research Files, https://catalog.churchofjesuschrist.org/assets/29df27fb-5b49-45e5-8160-8802130f6b3/0/15.
The Deseret News reported that the watch was turned over to the museum yesterday by President Heber J. Grant. The watch was presented to the Church by A. E. Hyde, Jr., and family. Mr. Hyde is a grandson of President John Taylor. . . . The letter from President Grant which accompanied the watch said: “I am sending you with this letter, to be placed in the museum at the Bureau of Information, the watch which President John Taylor was wearing at the time of the martyrdom of the Prophet Joseph Smith and his brother, Hyrum, in Carthage jail, which watch was instrumental in saving the life of President Taylor. A ball fired through the window of the room in which these brethren were incarcerated, struck this watch, which was in President Taylor’s vest pocket.”23

The Salt Lake Telegram also reported on the acquisition, noting that “the watch, carried by John Taylor in his breast pocket, which saved his life by stopping a bullet at the time Joseph and Hyrum Smith were killed in Carthage, Ill., have been placed in the bureau of information in the temple grounds.”24 Presumably, the watch remained on display until the Bureau of Information Museum was demolished in 1976.25

The watch was in the holdings of the Church between 1976 and 1990, though it is unclear if or when it was displayed during this period. The Museum of Church History and Art (later renamed the Church History Museum) opened to the public in 1984. For the next five to six years, the museum ran several temporary exhibits; whether Taylor’s watch was included in any of these exhibits is not clear.26 In May 1990, the museum opened a long-term exhibit titled “A Covenant Restored,” which included the watch. Before the exhibit opened, the Church News published an article

25. No documentation has been found that either proves or disproves whether the Taylor watch was on display at the Bureau of Information Museum for the entire forty-two years from acquisition in 1934 until demolition in 1976, but due to the significance of the artifact, I believe it quite likely that it was in fact on display for all, or nearly all, of that time. “Demolition of the old Bureau of Information and Museum began Wednesday as the first step toward construction of a second LDS Church visitors center on Temple Square,” in “Temple Area Museum Razed for New Center,” Ogden (Utah) Standard-Examiner, August 5, 1976, 8.
26. Exhibit Gallery Guides from this period did not always identify all artifacts exhibited.
by Glen M. Leonard, then director of the Museum of Church History and Art, titled “Artifacts in History Exhibit Recall Events of Martyrdom.” Leonard wrote, “Equally familiar to Church members is John Taylor’s watch. For decades it was one of the most popular items sought out at the old Bureau of Information on Temple Square.”

The Deseret News also ran another article in which Leonard stated that the watch was “the most asked-for item in the museum’s collection.”

Throughout the twentieth century, numerous published accounts of the martyrdom and of John Taylor’s life helped cement the lore of the watch in the consciousness of Church members. Some of the more influential of these included the Documentary History of the Church and Comprehensive History of the Church by B. H. Roberts and Essentials in Church History by Joseph Fielding Smith. These publications further influenced lesson manuals, study guides, and other Church-produced learning materials that indicated the watch stopped a bullet and saved Taylor’s life.


Questioning the Accepted Narrative

After the “A Covenant Restored” exhibit opened, curators and docents at the Museum of Church History and Art began noting that some visitors questioned the accepted narrative that Taylor’s watch was hit by a bullet. Some patrons believed that the watch didn’t appear to have the type of damage that many would expect a projectile from a firearm to produce. Complicating the story further was the fact that a bullet also struck Hyrum Smith’s pocket watch in the same attack, though after it passed through Smith’s body. Compared to Taylor’s watch, Hyrum’s timepiece appears to have sustained significantly more damage (see fig. 3).

In 1998, Jennifer Lund, then Curator of Education at the Museum of Church History and Art, coordinated an examination of Taylor’s watch. Lund later shared what prompted the inquiry:

For people trained in certain branches of science, simply looking at the watch in an exhibit raised a contradiction between the physical evidence visible on the watch and the story related in the exhibit label. Over the last twenty years, the Museum has had a number of visitors report the obvious inconsistency. We were well aware of these comments, but had never followed through on them. Then a docent with academic training in physics started volunteering at the Museum and he raised the issue again and requested permission to conduct a physical examination of the watch.30

Figure 3. Images of Hyrum Smith’s Watch (left) and John Taylor’s Watch (right). Note the more extensive damage visible on Smith’s watch as compared to that on Taylor’s watch. Courtesy Church History Library.

Neil Ord, a physics professor at Weber State University and a museum docent, requested the opportunity to examine the watch. Lund facilitated the inspection and wrote that their objective was to “fully document the watch through measurements, photography, and analysis” as well as “explore the questions of how the watch was hit, what hit it, how much damage was done, etc.”

1998 Examinations

On October 12, 1998, staff from the Museum of Church History and Art removed Taylor’s watch from the exhibit case, and several experts assembled to scientifically examine the piece. The experts included Ord, who invited Dr. Charles Pitt, an emeritus professor of metallurgy at the University of Utah, to participate. Dave Packard, a firearms expert at the museum, also engaged in the inspection. A museum conservator disassembled the watch, and the experts carefully examined and photographed the inner workings, taking special note of damage both inside and outside the watch. After the examinations were completed, one museum staff member suggested that they invite James Gaskill, a forensics expert and professor in the Criminal Justice Department at Weber State University, to look at the watch before its return to the exhibit case. Two days later, on October 14, 1998, Gaskill performed a forensic examination of the watch. The two resulting reports contained some similarities as well as some stark contrasts.

Ord and Pitt authored a report in which they detailed several of their observations based on scientific measurements using tools such as a microscope, calipers, and scales. They also performed a Vickers hardness test and force calculations. Pitt and Ord noted the damage on the face of the watch including the hole that had often been referred to as a bullet hole in past interpretations. They clarified that a bullet did not cause the hole, but that the hole resulted “from a rod in the watch mechanism penetrating part way through the watch face, thus creating the damage on the front of the watch face when the watch was compressed by some force.” According to Ord and Pitt, “No evidence could


be seen to suggest a bullet fragment had penetrated the hole.” Instead, it appeared the watch was crushed by enough force that internal mechanisms damaged the exterior of both the front and back of the watch. From these findings, Ord and Pitt formulated a new hypothesis. Because “John Taylor’s account indicates that he fell upon the window sill after being hit in the thigh,” they believed that “he crushed the watch when he fell against the window sill.” Their conclusion was very specific and given without qualifiers.33

Gaskill agreed with Ord and Pitt that “the scrape or dimple on the front of the watch which has often been interpreted as a bullet hole, is not one.” However, he cautioned that the hole might “be the result of damage from a bullet.” As a forensic scientist who often testified in criminal cases in courts of law, Gaskill presented his conclusions with more caution than Ord and Pitt. Gaskill also included other important findings in his report. He commented that “the force which Taylor describes as having pushed him back in the room could not have come from a bullet. Bullets do not push people backwards, no matter the caliber or range.” In addition, “no where [sic] on the watch is there damage which can be definitively linked to a bullet. . . . However, it is a distinct possibility that a bullet struck the watch.” Gaskill also stated that “damage to the watch is greater than would be possible from a fall of his body on the floor or knocking against the bedframe. . . . He would have had to fall against something sharp like a window ledge (for which there is no evidence) or a small sharp object like a newel post on a bed.” “From the evidence remaining after being handled and displayed for more than a hundred and fifty years,” he declared, “it is impossible to reconstruct the event in exact detail.” Gaskill concluded, “There is no evidence which questions the basic claims of the first person accounts of the martyrdom recorded by John Taylor and Willard Richards.” Essentially Gaskill stated that he could not definitively say what caused the damage to the watch.34

Just over three years later, Glen M. Leonard, then director of the Museum of Church History and Art, published his book Nauvoo: A Place of Peace, a People of Promise in which he summarized and cited Ord and


Pitt’s report that the watch was damaged when Taylor fell against the windowsill.35 Though Leonard did not participate in examinations of the watch, he had granted permission for the work to be done and received a copy of Ord and Pitt’s report. It appears that he had misplaced or forgotten about Gaskill’s conclusions at that time but became reacquainted with them after publication of the book.36 As noted earlier, after the new interpretation was published in Leonard’s Nauvoo, other authors began to include it in their publications.37

**Latest Forensic Studies**

In April 2020, Church History Department leadership authorized the creation of a committee to perform a multidisciplinary study of the watch. While museum staff sought clarification for interpretation and signage about the Taylor watch, leadership also wanted to provide consistent messaging in department publications and at historic sites. They recognized that “experts analyzing the watch could not agree on the cause of the damage,” which “raises questions on the museum’s interpretive position for this important artifact of the Restoration.” All evidence would be considered and made available for future researchers.38

The committee first reviewed research related to the physical watch and its provenance, the events of the Martyrdom, and how the story has been told in the years since the attack. It quickly became evident that additional forensic research was necessary. The hope was that new advances or technologies in forensic science might provide more insight into what caused the damage to Taylor’s watch.

35. Leonard, Nauvoo, 397–98; see note 47, which reads, “Neal and Gayle Ord have gathered evidence suggesting this interpretation (”Artifacts of the Martyrdom,” unpublished manuscript in the author’s possession)."


The committee hired two teams of forensic experts who examined both the John Taylor and Hyrum Smith watches in the conservation lab of the Church History Museum on November 6, 2020. Michael Haag, owner and president of Forensic Science Consultants, based in Albuquerque, New Mexico, partnered with Justin Bechaver and Jennifer Gelston of J & J Forensic Consulting LLC in Kearns, Utah. Mitchell Pilkington, then crime scene investigation manager at Layton City (Utah) Police Department, partnered with Paul Rimmasch, a crime scene investigator with the Weber County (Utah) Sheriff’s Office.

Chris Howard, an antique watch specialist in Salt Lake City, disassembled and provided valuable insights about both the Smith and Taylor watches. The forensic teams took detailed photographs, performed x-ray fluorescence tests to determine all elements present in both watches, and swabbed for lead residue, which a bullet would have left behind (see figs. 4 and 5).

The initial reports from both forensic teams provided similar conclusions. Pilkington and Rimmasch stated that “damage to the John Taylor watch face is not consistent with the direct impact of a projectile” and that the “deformations observed are consistent with a compressive force being applied, creating stress fractures in the enamel.” Haag, Bechaver, and Gelston agreed, explaining that “careful examination” of the face of the watch “shows a characteristic that does not support, and rather refutes” the hypothesis that the divot near 1:00 on the watch was caused by a bullet striking the watch face. They explained that “conical fracturing, or beveling, exists in the enamel paint surrounding the site that indicates the force that created this damage was from the inside of the dial outwards. Additionally, there is a slightly convex, or outwardly bulging dome, at the center of the damage in the underlying metal, within the center of the site.” These findings were consistent with Pitt and Ord’s conclusions about the “bullet hole” on the face of the watch. Both teams recommended the completion of more empirical work to see if certain scenarios could duplicate the damage on period watches of similar age, style, and construction.


**Figure 4.** Internal working mechanisms of John Taylor’s pocket watch. Photographed by Michael Haag, President of Forensic Science Consultants, on November 6, 2020. Courtesy Church History Library.

**Figure 5.** Internal mechanism of Hyrum Smith’s watch. Photographed by Michael Haag on November 6, 2020. Courtesy Church History Library.
The committee next purchased eighteen English-made fusee pocket watches originally manufactured between 1820 and 1850.\textsuperscript{41} Replica period firearms and ammunition were supplied by Sam Weston, a Church History Museum docent, along with a replica of the windowsill at Carthage Jail.\textsuperscript{42} The committee obtained forensic ballistic gel, which simulates human tissue, and made some linen and wool pockets to simulate period clothing (see fig. 6). It also secured a high-speed camera to capture video of all the tests. The committee gathered the supplies and, with permission to use the Grantsville Police Department’s outdoor gun range, spent a day using multiple ballistic and blunt force scenarios to damage watches. Everything was carefully documented with before and after photographs of the watches. The exact cause of damage was carefully recorded for each of them (see figs. 7 and 8).

Analysis of the photographs, videos, and watches took the forensics teams several months to complete. While they worked, they suggested that the committee bring in experts from additional disciplines to help with the investigation. This included the conducting of Finite Element

\textsuperscript{41} Watch expert Chris Howard helped the committee identify those most like Taylor’s watch, which was made in England in the 1830s. Fusee refers to a specific type of mechanical design in which a chain is wrapped around a fusee, or spindle, creating torque that allows the watch mechanisms to function.

\textsuperscript{42} Weston made the windowsill replica to the same dimensions and walnut wood type as the window frame at Carthage.
Figure 7. Screenshot from video recorded with a high-speed camera just as a ball makes impact with one of the watches. Courtesy Church History Library.

Figure 8. All pieces of each watch and the ball that hit it were saved together for detailed photography and analysis. Courtesy Church History Library.
Analysis (FEA), which uses advanced software and computing systems to simulate and predict how products and materials will react to physical forces. Mark Fleming from Fusion Engineering ran such simulated tests for scenarios that the committee could not attempt with its limited physical watches (see figs. 9 and 10).\textsuperscript{43}

\textbf{Figure 9.} FEA simulation images of impact of a lead ball against the back of the watch at three different speeds. Courtesy Church History Library.

\textbf{Figure 10.} Cross-section view of watch compressed against the edge of a walnut windowsill. Note that the deformation from the edge of the windowsill covers the length of the watch. Courtesy Church History Library.

\textsuperscript{43} For greater detail into the FEA analysis methodology see Mark A. Fleming, “John Taylor Watch Impact Simulation: Analysis Report,” John Taylor Watch Committee Research Files, https://catalog.churchofjesuschrist.org/assets/6044609a-590d-4211-a71c-07b5bea6a083/0/0.
Forensics expert Paul Rimmasch noted via microscopic photography that inside the dent on the back of John Taylor’s watch were what appeared to be globules of some unknown material. He observed similar dents and globules on some of the test watches (see figs. 11, 12, and 13). Rimmasch suggested that the watch, specifically inside the dent, be inspected with scanning electron microscopy (SEM). Felipe Rivera at the electron microscopy facility at Brigham Young University (BYU) agreed to scan and analyze the results.

**Figure 11.** Dent on back of John Taylor’s watch. Courtesy Church History Library.

**Figure 12.** Microscopic view inside the dent on the back of Taylor’s watch. Note the globules and striations inside the dent. Courtesy Church History Library.

**Figure 13.** Microphotography images of dents on test watches 18 and 19 with Taylor’s watch on the far left as comparison.Courtesy Church History Library.
Rivera’s report indicated that the globules were not a foreign substance but the same composition as the metal around them. He noted that it appeared that the metal in the dent had been heated enough to create the globules that later hardened (see figs. 14 and 15).

Pilkington and Rimmasch synthesized the results from the physically damaged test watches with the results of the FEA and SEM and noted some striking similarities. Test watches eighteen and nineteen were damaged when Mike Haag fired a ball into a metal plate which...
caused fragments of the ball to hit the watches at a 30° angle (see fig. 16). Both test watches exhibited similar dents to the one on the back of Taylor’s watch, and inside those dents were globules like those on Taylor’s. In addition, the FEA scenarios that Mark Fleming ran indicated that the simulated damage most like what was on Taylor’s watch occurred in a scenario when the virtual watch was hit by a bullet at a 30° angle and slowed down to approximately two hundred miles per hour. These similarities suggested that Taylor’s watch could have been hit by a fragment slowed by ricochet or from passing through something (see fig. 9). This would account for the minimal damage on the watch when compared to other watches that took direct hits from a bullet. Pilkington and Rimmasch cautioned, however, that the “analogous damage” to the test watches “is by no means definitive proof that the striations and melting to JTW [John Taylor’s watch] were caused by a projectile fragment.” Regardless, the findings are intriguing.44

But the forensics team of Haag, Bechaver, and Gelston were skeptical of the FEA findings. That team also had difficulties in contacting and

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<table>
<thead>
<tr>
<th>Researchers/Reports</th>
<th>Method</th>
<th>Dates Performed</th>
<th>Summary</th>
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<tbody>
<tr>
<td>Ord and Pitt Physics and</td>
<td>Physics and Metallurgy</td>
<td>October 1998</td>
<td>Stated that the watch was not hit by a bullet but was crushed by the force of Taylor’s falling body pushing the watch against the windowsill.</td>
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<td>Metallurgy</td>
<td></td>
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<tr>
<td>Gaskill Ballistic Forensic</td>
<td>Ballistic Forensic Science</td>
<td>October 1998</td>
<td>Stated that the hole in the face of the watch was not caused by a bullet. Concluded that there was not enough evidence to prove whether the overall damage to the watch was caused by a bullet or bullet fragment or something else.</td>
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<tr>
<td>Science</td>
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<tr>
<td>Haag, Bechaver, and Gelston</td>
<td>Forensic Science</td>
<td>November 2020</td>
<td>Stated that the damage to the watch is not consistent with the damage that would be expected with a direct hit from a firearm projectile. Suggested more empirical testing.</td>
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<tr>
<td>preliminary Forensic Science</td>
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<tr>
<td>Pilkington and Rimmasch</td>
<td>Forensic Science</td>
<td>November 2020</td>
<td>Agreed that the damage to the watch is not consistent with the damage that would be expected with a direct hit from a firearm projectile. Suggested more empirical testing.</td>
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<tr>
<td>preliminary Forensic Science</td>
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<tr>
<td>Fleming</td>
<td>Finite Element Analysis</td>
<td>2021–2022</td>
<td>Results showed that an angled impact at 200 mph (294 fps) with the 45-caliber musket ball most closely replicated the damage to the back face of the watch cover. The 200 mph (294 fps) speed deformed the rear face of the watch but did not result in excessive deformation or complete penetration of the watch.</td>
</tr>
<tr>
<td>Rivera</td>
<td>Scanning Electron Microscopy</td>
<td>January 2022</td>
<td>Results showed that globules inside the dents of Taylor and test watches were of the same composition as the metal alloys in the watches. It appeared that something heated those specific areas of the watches, melting metal fragments of the watches that later hardened.</td>
</tr>
<tr>
<td>Pilkington and Rimmasch</td>
<td>Forensic Science</td>
<td>July 2021–2022</td>
<td>Synthesized data from FEA, SEM, and forensic studies indicate an intriguing similarity between the damage on Taylor’s watch and the test watches hit with ricochet bullet fragments at a 30° angle.</td>
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<tr>
<td>final</td>
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<tr>
<td>Haag, Bechaver, and Gelston</td>
<td>Forensic Science</td>
<td>July 2021–May 2023</td>
<td>Ballistic and material damage assessment only—concluded that the damage on Taylor’s watch most resembled that of a test watch smashed with significant force between two pieces of hardwood.</td>
</tr>
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</table>
coordinating with Rivera about the SEM work. It thus chose to exclude Rivera’s data from the tests and focus strictly on a ballistic and material damage perspective. From this approach Haag, Bechaver, and Gelston believed that the damage most closely aligned with that found on Taylor’s watch came from test watch 24, which, while lying on a walnut wood surface, was hit with considerable force by a plank of wood. Because it is clear that the watch was in Taylor’s pocket when it was damaged, they knew that this scenario was not similar to how the watch was damaged. However, to Haag, Bechaver, and Gelston, the damage on that test watch most closely aligned with what is seen on Taylor’s watch.45

Yet Pilkington and Rimmasch indicated that in all smash-test scenarios that utilized forensic gel behind the watch to simulate human tissue, the watches were hardly damaged at all—certainly not to the level of Taylor’s watch. It was only when a test watch was smashed between two pieces of hard wood with considerably more force than a body falling could create that it exhibited the damage noted by Haag, Bechaver, and Gelston.

Conclusion

So what, then, can be concluded from the work of the committee and its consultants? When the committee started this project, it knew that finding an exact cause for the damage to John Taylor’s watch was extremely unlikely, but it wanted to gather as much information as possible in the hope of finding more clues. The investigations certainly succeeded in gathering new and intriguing information. Because of them, the committee recommended that the Church History Department update its messaging to reflect that the cause of the damage to the watch is unknown. Though it is disappointing to not have a conclusive cause of the damage, it does not detract from what occurred in Carthage Jail to John Taylor. The fact remains that he miraculously survived four serious wounds and felt a force prevent him from falling out of the window. He concluded the force to be a bullet that would have mortally wounded him near his heart and attributed God’s power in using the watch to save his life.

The committee invites scholars to review the data and findings in these reports. They are open to research and are available in digital format in the Church History Catalog at the following link: https://catalog.churchofjesuschrist.org/record/b0736f07-13b3-4da5-b7f5-3678a91b9550/0?view=browse.

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