

The Cause and Origin of The Hartford Circus Fire

A Study of the Investigations

by M. Skidgell ~ July 1, 2015



Photo 1: Commissioner Edward J. Hickey takes notes at the scene of the Hartford Circus Fire, July 6, 1944.

The July 6, 1944 circus fire at Hartford's Barbour Street circus grounds was responsible for the deaths of at least 168 people, and injuries to more than 484 others. The cause of the fire was officially declared to be "*undetermined*" in 1993 by Connecticut State Police Detective William Lewis, after initially being believed by investigators in 1944/1945 to have "*likely been caused by a cigarette*". An admitted arsonist, Robert Segee, somewhat confessed in 1950 to deliberately starting the circus fire, though he soon recanted his confession and continued to deny his involvement into his elderly years.

THE ORIGINAL INVESTIGATION, 1944-1945

Deputy Chief of the Hartford Fire Department and Local Fire Marshal Henry G. Thomas provided his sworn testimony to Coroner Frank E. Healy and Commissioner Edward J. Hickey on various dates in 1944 and early 1945. Thomas viewed the scene first hand and studied the evidence, concluding "*in my opinion, that I have determined the approximate location... of where the fire started... to the right of the main entrance, about 20 feet, at the base of the side wall, and probably on the outside of the tent... the big top... I would also like to qualify that... we found a section of the uprights - frame upright that supports the seat section - showing a concentrated burning... It is my opinion that there was other material in addition to*

the tent sidewall at the base of that frame structure to give it that amount of burning. In my opinion, a fire starting at the base of the side wall, and the side wall canvas being light and more inflammable than the wood, that the fire would go up the side wall... From the investigation and the evidence that we have found... I have not yet exactly determined the cause of the fire. I am not prepared to say whether or not it was an incendiary fire or accidental fire.” Fire Marshal Thomas’ testimony also included a reply of “No, Sir” when asked if he found any evidence whatsoever to indicate incendiarism.



Photo 2: The southwest bleachers, mostly intact after the fire.

Commissioner of the State Police and State Fire Marshal Edward J. Hickey was called before Coroner Healy on July 11, 1944, and gave the results of his investigation into the origin of the fire. *“We determined that the fire originated in the southwest corner of the main tent, back of the blue bleachers section, and that there had been located beyond the main tent at this point the men’s toilet... and the northeast section of the canvas which comprised the men’s toilet was adjacent to the southwest side wall canvas of the main tent back of the bleacher seats.... One of the props that held up the top row of the blue bleacher seats... showed evidence of severe burning at the bottom of the frame, and the ground immediately surrounding this area was slightly burned. There was intensified fire at this point which is in evidence on the picture taken July 7.... From the evidence found on this ground and at this point, it is my opinion, as State Fire Marshal, that the origin of the fire was at this point... this is the only prop that was severely burned in this particular section, and that the fire centered on this prop and climbed upward from the side wall to the top.*

Commissioner Hickey was in the circus audience with a group of children, and witnessed the fire first hand. Under further questioning by the coroner on August 10, 1944, as to the cause of the fire, Hickey offered his conclusion: *“In my investigation as State Fire Marshal, and as quickly as I could reach the scene where I had first seen the fire, I made an examination of the premises in that area. I saw where the jack supporting the blue bleachers stand had, about 25 to 30 feet from the front entrance, severely burned at the bottom... I find that the fire originated in back of the blue bleachers in the southwest corner on the ground, burning a jack holding up that grandstand, and on the testimony before me, as State Fire Marshal,*

I find that the cause of the fire was the result of carelessness of some unknown person, who threw a lighted cigarette underneath these bleachers.” Coroner Healy questioned this cause, asking Hickey what if chemical analysis shows that a cigarette would not ignite the canvas? Hickey replied, “consideration has got to be given to the dry ground, the condition of the ground, the manner in which the side wall canvas was hanging or folded over on the ground, and the manner in which the cigarette or the burned match landed on the combustible material.”

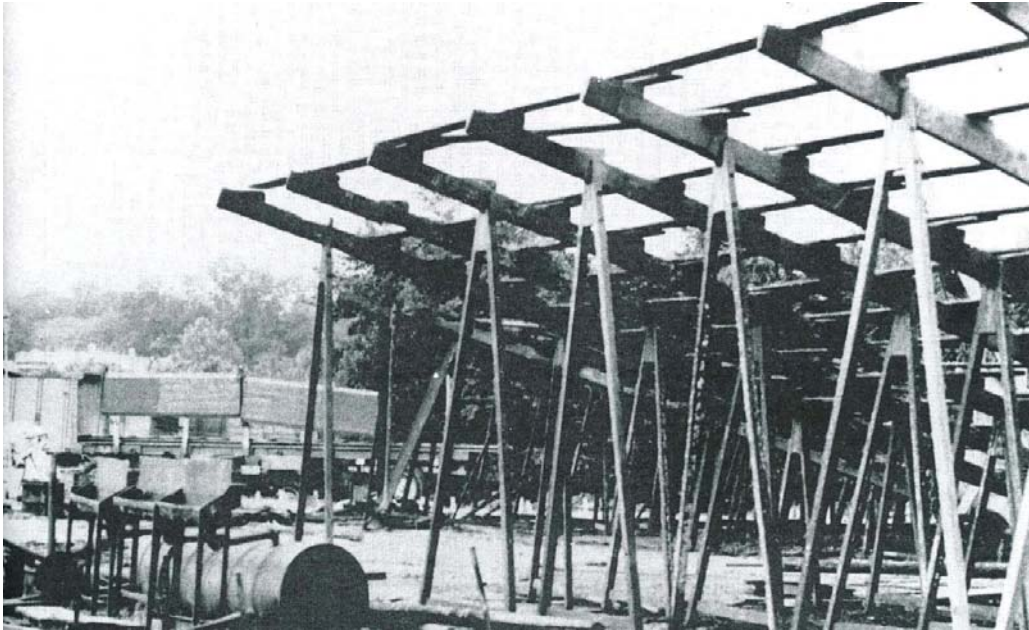


Photo 3: The origin of the fire was in this area behind the southwest bleachers. Charred support jacks are still standing beneath the bleacher seats. The tank and plumbing on the left mark the location of the men's toilet enclosure.

Expert witness Thomas B. Brophy of the Fire Investigation Bureau of New York City was invited to investigate the fire, and was called before both Commissioner Hickey and Coroner Healy to provide the results of his study. Brophy had been investigating fires for more than 37 years, and had previously testified as an expert witness in other cases. He would visit the circus grounds on August 9, 1944, and testify to Commissioner Hickey that *“based on the information you furnished personally from the observations you have made, and the physical conditions, together after examining a wooden jack, I have reached the conclusion that the fire had its origin at the point or near the point where the wooden jack – the bottom of the wooden jack was decidedly charred and carbonized, particularly at the point where the wooden brace entered one of the stands of the jack. An examination showed the fire traveled in a northerly direction and had charred the seats at the bottom and also the jacks. I should say the point of origin was about 40 feet from the center of the main entrance. Ten feet south of that point there was practically no charring of the jacks or the under portion of the seats...If there was dry grass or some other combustible material in or near the point where the canvas wall was draped on the ground inwardly, there is a possibility that a careless smoker might have started the fire.”*

Coroner Healy also questioned Fire Marshal Brophy about his investigation of the fire scene and the evidence. Brophy explained, *“I went over the entire ground.... Where the men's toilet was located, there were some jacks supporting the seats shown to me. At one point where one of the jacks had been removed, I noticed that the fire had travelled in a northerly direction, particularly under the seats... the further north*

you went, the deeper the charring became. South of where this jack was burned... there was less burning on the supports and on the seats, and a short distance away the paint had hardly been blistered by the heat.... I made an examination of the jack... at the bottom of the jack it was heavily charred and carbonized, showing there was intense heat at that point. It is possible, in my opinion, a piece of the side wall might have dropped to that point. I don't know how long that fire was burning at the bottom of the jack. I don't know whether the bottom of the side wall was draped against the wooden jack... I believe there was something else outside of the wooden jack that was first ignited. I don't believe that a match or cigarette could ignite that wooden jack... If there was sufficient combustible material at or near that point, it probably would... From the information furnished to me by Chief Hickey, it is possible that the fire may have been caused by a cigarette or open match flame. I don't know what the physical conditions were at the time of origin, nor do I know whether or not there was any combustible material deposited at or near the point of origin at the time of the fire."

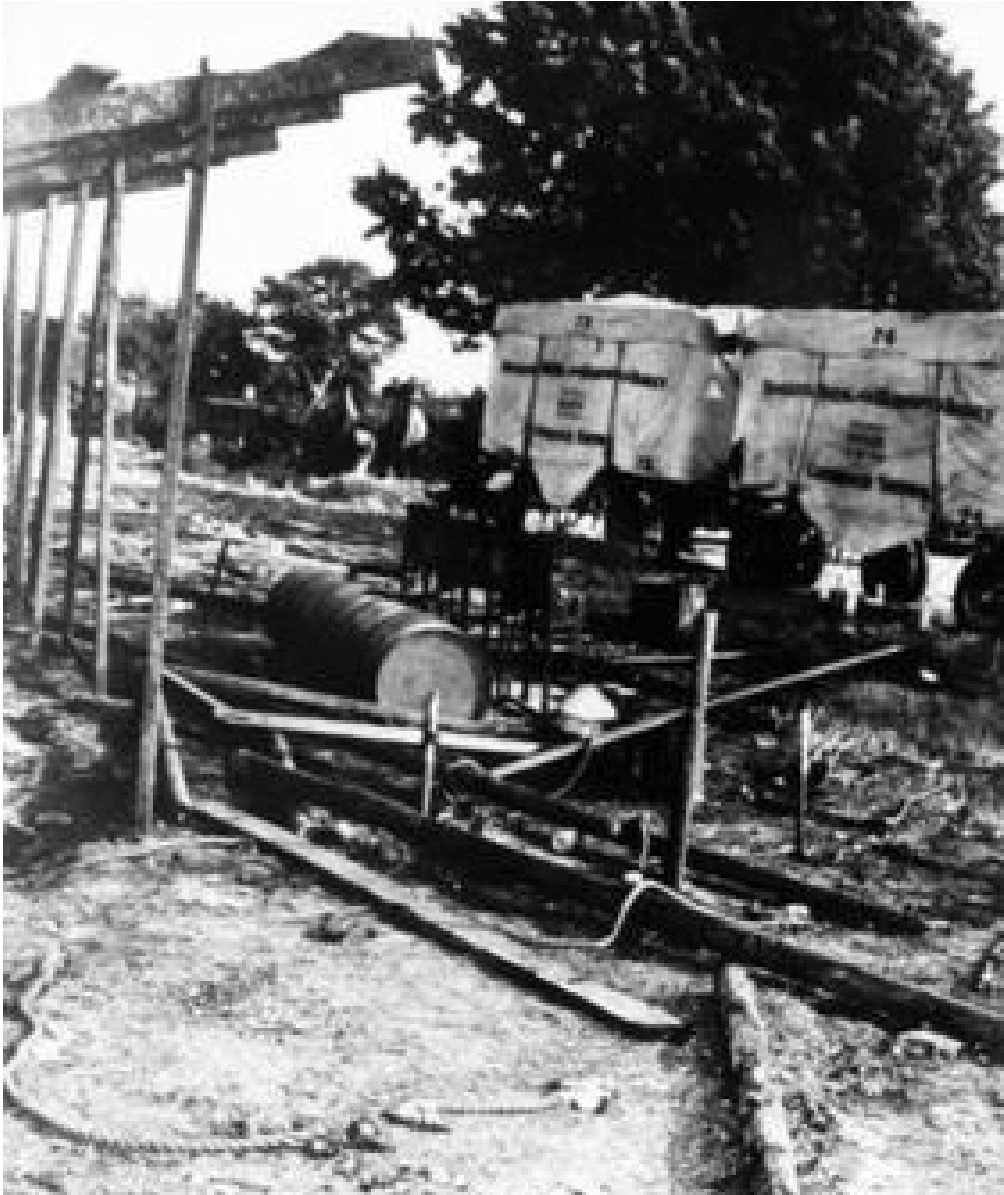


Photo 4: Another view of the southwest bleacher support jacks, and the men's room area.

Commissioner Edward J. Hickey, in his *'Report of Commissioner of State Police as State Fire Marshal to State's Attorney for Hartford County concerning The Fire in Hartford on July 6, 1944 at the Ringling Bros. – Barnum & Bailey Combined Shows, Inc.'*, issued January 11, 1945, provided his final conclusion: *"this fire originated on the ground in the southwest end of the main tent, back of the "Blue Bleachers," about 50 feet south of the main entrance, and was so caused by the carelessness of an unidentified smoker and patron who threw a lighted cigarette to the ground from the "Blue Bleachers" stand. The evidence before me does not disclose this to be the act of an incendiary. It indicates this ground fire at the point described above burned the immediate grass area, the wooden supports for the "Blue Bleachers" structure, the side wall canvas upward, then the tent top, and traveled quickly under and over the tent top northeastward, causing panic, an immediate loss of 125 lives, personal injuries to 538 persons, and destruction by fire of considerable circus property."*



Photo 5: Aerial view of the big top ruins. The fire originated in the southwest bleacher area, center of photo.

Frank E. Healy, Coroner for Hartford County, interviewed 50 witnesses, including the men investigating the fire and numerous Ringling personnel. The *Coroner's Record of Inquest* was released on January 11, 1945, the same day as the Commissioner's report, and provided Healy's conclusion as to the origin of the fire. *"The fire started in back of the blue bleachers, at the base of one of the stringers, in the southwest end of the tent, and from there caught onto the side wall. A picture of this stringer supporting the bleachers shows that it was burned through at its base. The evidence seems to show that the fire was caused by someone throwing a burning cigarette onto the folds of the sidewall canvas or on the ground."*



Photo 6: The big top in flames. Men can be seen lifting the canvas sidewalls to help others escape.

The Ringling Brothers and Barnum & Bailey defense team would file a motion on March 29, 1945, for suspension of the sentences of the circus personnel who were tried and found guilty in the case. Within their appeal, they would explain: *“There is no disagreement as to the approximate point within the tent at which the fire started. It is our view that if it was an accidental fire, it started in some readily combustible material, such as a paper bag dropped by a patron which in turn ignited the sidewall at a point where it touched the ground. However, this explanation is far from satisfactory... We feel very strongly that the fire was of incendiary origin and on trial we will have substantial evidence to support such a possibility. Anyone who would deliberately set the circus afire might well be aware of various means of creating a quick and an intense fire.”* There never would be a trial where Ringling would present this evidence, nor would it find its way into the press.



Photo 7: View of the fire from Barbour Street. The burning big top is behind the tent in the foreground.

THE RE-INVESTIGATION, 1991-1993

March 12, 1991, nearly 50 years after the big top went up in flames, Connecticut State Police Detective William Lewis, from the Investigation and Enforcement Unit, was assigned by the Department of Public Safety / Division of Fire and Building Safety to lead a three-person team to re-examine the origin and cause of the 1944 Hartford Circus Fire. Instructed to work on the reinvestigation secondary to all current investigations, the team would spend the next two years reviewing reports, photographs and witness statements from the original investigation files.

In an early report filed by Detective Lewis, 04-16-1992, he stated that he *“has reviewed all available material concerning the origin and cause investigation, including, but not limited to reports, photos and eye witness statements.”* Lewis, with his fellow investigators, stated in his report that the circus fire *“more probably than not, started in or just on the outside of the men’s toilet located to the south of the main*

entrance. Burn patterns observed in photos, witness statements as to their initial observation of the fire and normal fire growth tent to support this theory.” Lewis’s conclusion at this time was that “this fire’s cause shall be listed as undetermined... unable to positively eliminate all accidental causes with the information available”. The case remained open.

Detective Lewis, in a 06-23-1992 report, again concluded that *“the origin of the July 6, 1944 Hartford Circus Fire was more probable than not within the confines of the men’s toilets which was located on the southeast side of the main entrance to the main tent. All indications are that a cigarette thrown into the grass could not have alone started this fire. There is not enough evidence to positively determine the exact source of ignition. Thus the cause of the Hartford Circus Fire is undetermined.”*

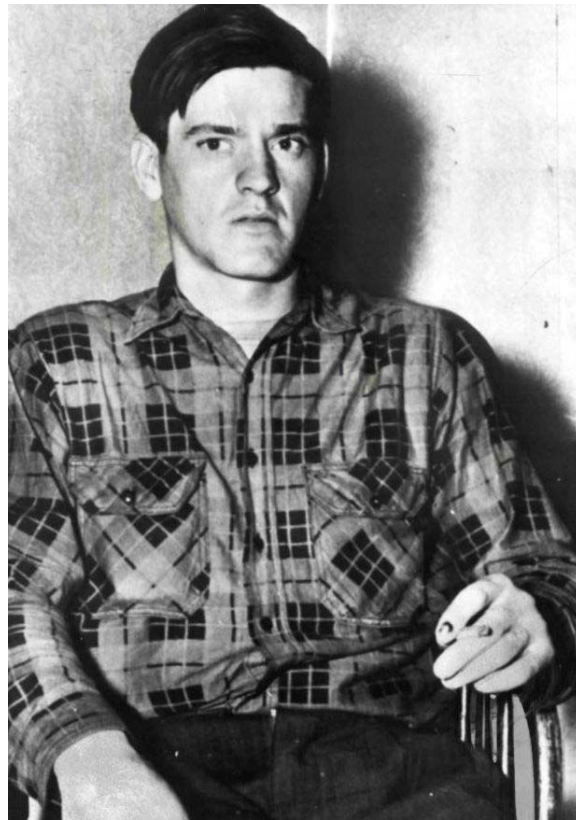


Photo 8: Robert Dale Segee, 1950.

Continuing the investigation, Detective Lewis and his supervisor would meet with Robert Segee at his home in Columbus, Ohio on March 16 & 17, 1993. Segee was said to have confessed to Ohio authorities in 1950 to numerous crimes in Ohio, Connecticut, Maine, New Hampshire, and Japan. After an investigation and extensive psychiatric examination in Ohio, Segee no longer believed that he was responsible for the Hartford Circus Fire, and the state’s doctors agreed. He was found guilty of setting other fires in Ohio, and he served his time. Forty years later, Detective Lewis interviewed the aging Segee and found *“no new evidence that [Segee] could have started the 1944 Hartford Circus Fire. No new information was obtained from Robert Dale Segee that shed any light as to the origin or cause of this fire. As previously stated in the supplemental report dated 04-16-92, it is the opinion of this investigator that the cause of the 1944 Hartford Circus Fire remain listed as undetermined. The re-examination of the Hartford Circus Fire could not possibly eliminate all accidental causes. No evidence exists that would lead*

to the possible arrest of Robert Dale Segee or any other person for starting the 1944 Hartford Circus Fire.” The investigation was closed, 03-18-1993.



Photo 9: Photo from the 1993 Forensic Report showing a lit cigarette in a tray of dried grass.

CIGARETTE BURN TESTING

Focusing on Commissioner Hickey's 1945 determination that a lit cigarette ignited grass which in turn spread to the support jack and the canvas, Detective Lewis' investigation uncovered the results of a test conducted between 2:00 and 4:00 PM on July 25, 1967 in which lit cigarettes were dropped into grass. *"The report concluded that cigarettes would not start grass fires when the humidity was above 22% and matches would not start grass fires above 78%."* Lewis, looking to confirm these results, arranged for Dr. Henry Lee of the State Police Forensic Science Laboratory to perform a series of tests to determine if a cigarette would indeed ignite grass under similar weather conditions as were in place on July 6, 1944. The team of criminalists' conclusion, after conducting their own tests in April, 1993, was that: *"the cigarette only generated a limited amount of heat and energy, compared to the reported required 350 degree Fahrenheit average ignition temp for dried grass. Therefore it is difficult to ignite freshly cut grass with a cigarette. Laboratory experiments using zero moisture content for the grasses also failed to result in ignition. Therefore, a lit cigarette in grass or hay is inconsistent as the cause of the Hartford circus fire of July 6, 1944...Whether or not other materials, such as paraffin wax, matches, gasoline residues, and other combustible materials were present in the men's room near the main tent on July 6, 1944 is unclear at this time. If these materials were present, it would have changed the ignition conditions at the time of the fire. Based on other investigator's test results, if the relative humidity is greater than*

18% no ignition of cigarettes will take place. There may be ignition of grasses if other conditions are right and if the relative humidity is less than eighteen percent. These results and our own studies with the records indicating the humidity on July 6, 1944 was approximately 60% suggest that the ignition of the fire by a cigarette on or in the grass would have been difficult.” Only cigarettes (filtered and non-filtered) were used for these tests; no other or ignition methods were tested.

Additionally, Dr. Lee provided his opinion about the origin of the fire, based on his analysis of photos, sworn testimonies, and witness statements, and he determined that “Charring patterns on the surface of the bleacher seats also indicated that the fire was burning from the top, most likely resulting from the dropping of burning canvas onto the seats.... Most of the grass under the bleacher seats as shown in the photographs appears to be intact and unburned. This could indicate that this is not a ground fire and is inconsistent with a typical grassland fire pattern.”

After reviewing Dr Lee’s Forensic Lab report, Detective Lewis reported on 06-21-1993 that Dr. Lee “also agreed with this investigator that a cigarette alone could not have started this fire. Dr. Lee further concluded that whether or not other materials, such as paraffin wax, matches, gasoline residues, and other combustibles were present in the men’s room near the main tent on July 6, 1944 is unclear at this time. If these materials were present, it would have changed the ignition conditions at the time of the fire. Thus this investigator’s conclusion dated 03-18-1993 remains as written. That the re-examination of the Hartford Circus Fire could not eliminate all potential accidental causes of this fire. No new evidence was discovered that could lead to the submission of an affidavit for possible prosecution of anyone for arson. Thus this re-examination into the 1944 Hartford circus fire is being closed at this time, no criminal aspect.”

Detective Lewis’ “Executive Summary for the Hartford Circus Fire re-examination into the forensics concerning the origin and cause of the fire”, dated 06-30-1993, finalized the conclusions made in his earlier reports. “All available information was examined and reviewed and the team concluded that the July 6, 1944 Hartford circus fire started in or just to the outside of the men’s toilet (tent) which was located to the south of the main entrance into the big top, against or very close to the tent sidewall. A carelessly discard cigarette thrown into the dry grass would not alone have started this fire, but other accidental ignition sources could not be eliminated... The re-examination did not reveal any indication that this was an intentionally set fire... Case closed.”

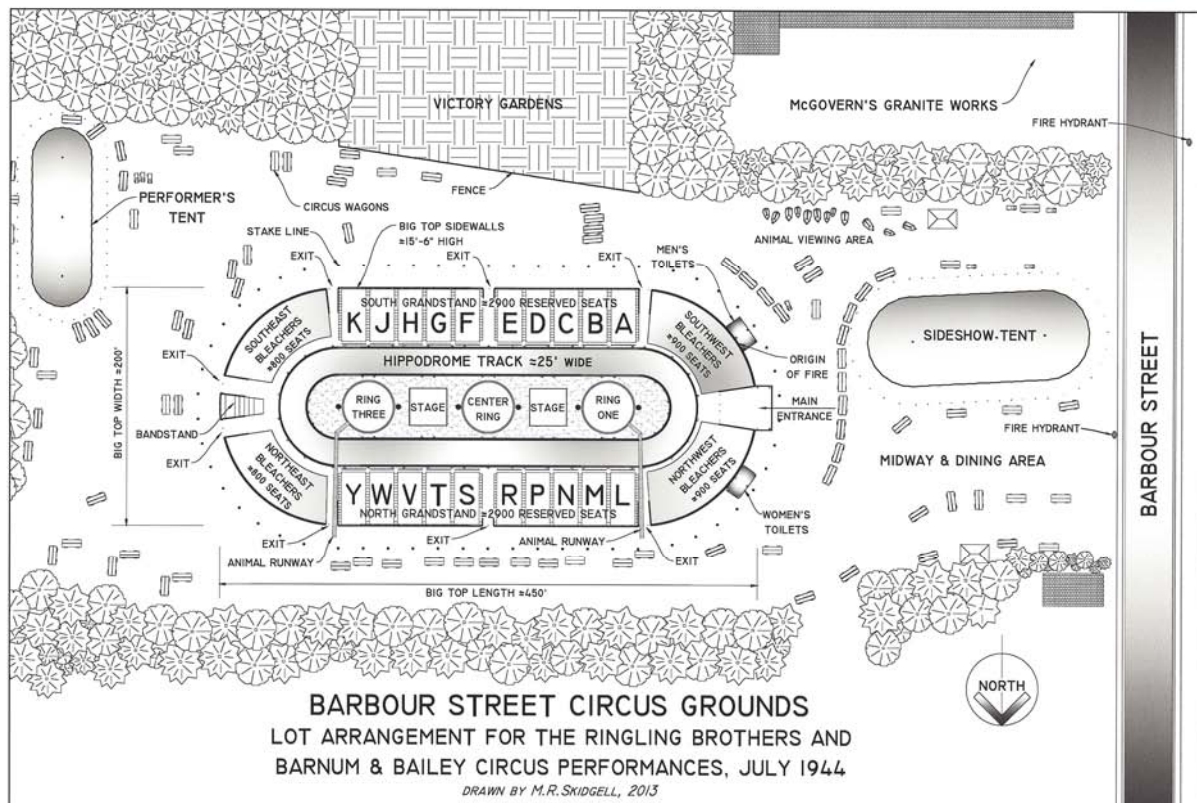


Photo 10: Layout of the circus grounds on July 6, 1944. The fire originated behind the southwest bleachers.

"SO, WHAT REALLY HAPPENED?"

How did the fire actually start? The "discarded cigarette" theory from the 1944/1945 investigations was officially disproved in 1993, but consideration of other conditions that may have been present were not accounted for.

The original investigators determined that the fire began in the vicinity of the men's toilet enclosure that was attached to the big top wall, behind the southwest bleacher section. Hartford Fire Marshal Henry Thomas was the only investigator who was specific in his testimony that he believed the fire to have started outside of the big top, at this area. Commissioner Hickey, along with Coroner Healy and expert witness Thomas Brophy who were likely influenced by Hickey's investigation and presentation of evidence, identified the origin of the fire as this same general area, but they testified and reported that they believed the fire began when the wooden support jack, inside the big top, was possibly ignited by a cigarette thrown into the grass or folds of the canvas by someone in the bleacher seats. The 1993 investigation clarified that the fire likely began on the outside of the big top / inside of the men's toilet enclosure.



Photo 11: Circus workers installing canvas. The tops of the canvas sidewalls are not lowered in this photo.

With the origin of the fire having been determined by the investigators, let's look at what was happening in this area. According to the testimony of the man who installed it, the men's toilet enclosure consisted of four canvas walls with an opening for entry/exit, and no roof. The enclosure was erected outside and to the right of the main entrance of the big top, and behind what would be the top row of the southwest bleacher seats, around the middle of the section. The canvas walls of the big top would often be lowered to allow airflow into the arena, but where the toilet enclosures were attached to the big top, the walls were kept tied up. Had they been lowered, it would have been possible for those in the top rows of the southwest bleachers to actually look down into the toilet tent. Circus employees were not on duty inside the men's room, but they would check the area periodically during performances. These facilities were accessible to circus patrons, as well as other people on the grounds including circus workers, people viewing the sideshow attractions and the animal menagerie, and those just visiting the grounds. No ticket was needed to enter the rest rooms.



Photo 12: The tops of the canvas sidewalls are lowered to allow airflow into the tent.

Smoking was not specifically forbidden in the circus tent, but it was discouraged. It's reasonable to consider that a patron visited the rest room, relieved themselves and lit a cigarette, tossed the match, and hurried out of the men's room to return to the show which had just begun, with thousands of fans enthralled by the *"Greatest Show on Earth"*. Meanwhile, the discarded match in the men's room, having landed in the wall canvas folds or in a pile of some type of flammable material – wastepaper, sawdust, wood chips, dry grass - that was positioned against the wall of the men's room enclosure. The tiny match flame ignites this "fuel material" slowly, and the thin stream of rising smoke goes unnoticed, hidden from view of the patrons by the walls of the toilet tent. As the fire increases in size, more smoke rises from the men's room enclosure, but it's still barely noticeable amid all that is happening on the circus grounds at this time. Most people are inside the big top watching the show, and this men's room area is not visible from inside. Those outside the big top may be running late and hurrying to get inside, or preoccupied with the sideshow attractions or the animals in the menagerie area. The lot is dry and dusty, with dust clouds occasionally stirred up by a breeze, and vendors are also generating smoke from cooking their food. Circus trucks and power generators were on the lot, also producing smoke. It is understandable that anyone who saw light smoke coming from the men's room thought nothing of it at this time.



Photo 13: The area around the main entrance, where light smoke could easily go unnoticed.

The growing fire in the debris pile next spreads to the inside wall of the men's toilet enclosure. Untreated for fire or water protection, wall canvas was known to circus folks to be flammable, and as a precaution the circus employed "seatmen" to be stationed under the seats during shows, with their primary task being to watch for fire and extinguish immediately with the pails of water that were kept under the seats. The canvas wall of the men's room, installed just a few inches at most from the canvas wall of the big top, is soon completely in flames. The smoke from this fire thickens, and at this point people outside of the big top are the first witnesses to this disaster in progress, some see flames shooting above the remaining walls of the men's toilet enclosure, and many see the smoke. The flames consume the inside wall of the men's room and spread to the outer walls of the men's room and more importantly, the fire begins to penetrate through the big top sidewall canvas at various levels, some near the ground, some up high on the wall. Flames from the burning sidewall rise and lick at the flap of the roof canvas, which is even more flammable than the wall canvas due to the paraffin waterproofing. The roof ignites as soon as the fire reaches it.

The seatmen detailed to be under the southwest bleachers would have clearly seen the flames break through the big top sidewall canvas near their location, and their training would have dictated that the canvas sidewall be lowered immediately to prevent the roof canvas from catching fire. It was common knowledge for the circus workers that once the roof canvas catches fire, there is no saving it – just get the people out. When the flames first spread to the big top sidewall canvas behind and beneath the southwest bleachers, both seatmen designated to work under the bleachers at the west end of the big top were under the northwest bleachers, and neither of them was aware of the fire until they heard the patrons above them begin screaming and quickly leaving their seats.



Photo 14: View from inside the big top, minutes before the fire began.

The fire wasn't noticed inside the big top until Ringling usher Kenneth "Sheik" Gwinnell noticed the fire to his right as he was facing the reserved seats on the south side of the big top. He was able to see the small, growing fire through the crowd of people sitting in the southwest bleachers, and Gwinnell took action by grabbing a couple other ushers and they attacked the spreading flames with buckets of water from under the bleachers. At this point, the entire wall of the men's room tent was in flames, but those inside the big top only saw where the flames had poked through the big top wall and where the roof canvas had just started to burn. Before the ushers could throw a fourth bucket of water on the fire, the flames on the sidewall were out of control and the roof canvas had ignited. With not only canvas as fuel but also the waterproofing paraffin substance feeding the fire, the flames on the roof canvas spread quickly. Stimulated by a gust of wind, the roof burned with unimaginable speed as flaming pieces of wax-coated canvas drop onto the crowd and fixtures below, burning everything it landed on. In less than 10 minutes, the massive canvas roof was consumed by fire, and firefighters began to spray water on the smoldering remains of seating, equipment, and bodies.

So who tossed the match? More to come...



Photo 15: The southwest bleachers remain standing in the center of the photo, while the reserved seating section in the foreground has been thoroughly destroyed.