

THE JOHNSTOWN FLOOD

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THE earth dam of the South Fork Fishing and Hunting Club of Cambria County, Pennsylvania, gave way about 3:15 P.M. on Friday, May 31, 1889. The waters of the South Fork reservoir, known as Lake Conemaugh, thus released, traversed the fifteen miles to Johnstown in a time variously estimated at from twenty-five minutes to an hour, causing a property loss of about \$22,000,000, accompanied by a great loss of life.

I have no desire to play upon your emotions by recalling pathetic scenes and I approach this narrative with the dignity and respect which I think this great tragedy deserves.

Comparative Disasters

The estimated number of dead in this disaster was compiled by the *Johnstown Tribune* and totals 2,209. This figure was based on 1,114 identified dead, 636 bodies found but not claimed, and 459 missing. These figures are widely accepted but no estimate which is satisfactory will ever be made, for bodies were found as late as 1911 or twenty-two years after the event.

With this figure in mind, namely 2,209, the enormity of this disaster may be judged by others which have shaken this country.

1888	Blizzard, eastern U.S.	400 dead
1906	San Francisco earthquake and fire	452 dead
1900	Iroquois Theatre fire, Chicago	602 dead
1915	<i>Lusitania</i> sinking	1198 dead
1912	<i>Titanic</i> sinking	1517 dead
1917	Halifax Harbor explosion	1600 dead
1900	Galveston flood, September 8	5000 dead

It will be noted that the Johnstown figure of 2,209 has been exceeded only by the figures of one other disaster, namely the Galveston flood, which consisted of a tornado and a tidal wave which swept fifty-one miles inland on the Texas coast. It is therefore of interest to study

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the unusual combination of factors which contributed to make the Johnstown flood so deadly, if not unique.

Johnstown

People looking down when flying over Johnstown get the impression that it is a city crowded into a hole, due to the steep hillsides which surround it. Like Pittsburgh it too has a "Point" created by the confluence of the Little Conemaugh and Stony Creek. It has sometimes been called "Little Pittsburgh" for, like our city a few years ago, it was "smoky, grimy, busy, and noisy." It too had enjoyed phenomenal growth based upon the expansion of the iron industry. In a period of forty years it had had an increase of seven hundred per cent in population. In other words, it was prosperous.

Factors in Growth

Johnstown emerged from its status as a quiet little frontier town when state engineers, seeking a right-of-way for a canal through the mountains, made it the terminus of the Western division of a canal which was designed to link Pittsburgh with Philadelphia. In addition to being the terminus it was also the point of transition where the traveler, riding smoothly on a quiet canal, was transferred, boat and baggage, to a railroad truck, which was hauled up over five inclines and lowered again over five more to continue on the Juniata division as a canal-boat again. The canal brought new business and strange faces to Johnstown and many stayed. As the natural products of wood, coal and iron ore were found in close proximity, charcoal furnaces had been developed, and George S. King used the canal to ship iron ore to Pittsburgh, then bar iron, and he returned with cash or goods for his store. About 1850 King persuaded his partner, Dr. Peter Schoenberger, to forego the casting of kettles in favor of rolling rails and they turned out what was regarded as a superior product. The Cambria Iron Company was organized in 1852 and it in turn was reorganized in 1862 under Dan J. Morrell, a Quaker. Until 1871 they rolled rails made of iron but they were among the first to experiment with steel rails, attracting William Kelly whom many regarded as the inventor of the Bessemer Process. The brothers, John and George Fritz, also contributed improvements adopted by the iron industry, and in 1873 Cambria Iron Co. was the largest rolling mill in the country and had earned the title of "The cradle of the iron rail." In its development, Dan Morrell was the chief factor until his death, four years before the great flood.

Cambria Owned and Ran the Town

Cambria Iron or the men associated with it owned blast furnaces, converters, rolling mills, iron, and coal mines. They owned the Gautier works which made barbed and smooth wire. They owned a woolen factory, a brick yard, a flour mill, a slaughter house, a shoe factory and a store which did one million dollars worth of business a year, and maybe I should mention the Opera House. They had seven hundred houses which they rented to employees, thirty-five miles of standard track, thirty-five engines, etc. In other words, the town was just about what the Cambria wanted it to be.

Another Side of the Picture

Johnstown has been described as "A powerful adolescent with the Civic mind of a child." It had no public hospital; its public school teachers were paid the lowest possible wage; there was no Board of Health, and if ordinances of health and safety existed, they were not enforced. Garbage was not collected regularly and was thrown with dead animals and offal either in the streams or on their banks. When extension of property lines was desired, Cambria, the railroads or individuals encroached on the river bed without protest, but the time was coming when every manmade obstruction was to be swept away in an hour's time.

The Reservoir

If the canal and natural resources made Johnstown they also destroyed it. As I recall, it was John Randolph of Virginia who said, "The Ohio River is a stream which is frozen all winter and dry all summer." Add to this exaggeration the cost of operating its canal inclines and repairing its structures washed out by freshets and you have the elements which enabled the Pennsylvania Railroad to put the canal out of business. When the first canal boat arrived in Johnstown, it had dragged on the bottom of the aqueduct and it became evident that more water was needed. The canal engineers found what they were seeking fifteen miles east of the town and three hundred feet above it. There the state undertook to build a dam which would supply all water needed for the canal between Johnstown and Blairsville.

Only a small portion of the required appropriation had been made when work was begun in January 1840. For a variety of reasons the completion of the dam required twelve years and cost the state \$166,000. When finished in 1853 it was the largest earth dam in the

world, being 931 feet long and 72 feet high. Meanwhile the Pennsylvania Railroad was pushing its track over the mountain and when completed the following year the canal was doomed and everyone knew it. Four years later (July 1857) the Pennsylvania Railroad purchased the canal system for \$7,500,000 and where the railroad had tracks the canal was abandoned, including the Portage Railroad. Without need for water the South Fork Reservoir was unused. Still owned by the railroad five years after purchase (1862) an interesting event took place. After a heavy rain a drainage culvert in the center collapsed and a section of the dam, two hundred feet in length and fifty feet deep, gave way while the reservoir had forty-five feet of water behind it. The watchman immediately telegraphed warning to Johnstown, an act which caused some excitement but it soon subsided for the streams were low and the only damage was to a rail embankment which washed out. This may have contributed to a false feeling of security. The railroad did not repair the dam, and cattle grazed over the lake bottom. On March 25 the railroad sold the reservoir to Congressman John Reilly for \$2,500, and after holding it for two years he sold it to Col. B. F. Ruff for \$2,000. The latter has been described as a coke man but he was also a railroad contractor who specialized in tunnel work. He had not had experience with waterworks or dams.

The Sportsmen's Clubs

On February 5, 1875, a group of outdoor men applied for a charter in the Court of Common Pleas of Allegheny County. This was granted under the name "Sportsmen's Association of Western Pennsylvania," the object being the protection and propagation of game. The list of applicants showed men fairly well-known but not especially noteworthy for wealth. A number of years later, another similar group also applied for a charter (November 17, 1879). Their object was the same and another charter was granted to the South Fork Fishing and Hunting Club. The list of subscribers was more elaborate, but the only name common to both applications was that of Dr. Walter F. Fundenberg (spelled "burg" in the latter). B. F. Ruff appeared as president and as the largest stockholder (\$800). H. C. Frick appeared as the second largest stockholder with six shares or \$600. Otherwise, the list is not especially noteworthy.

Later, on March 19, 1881, this charter was amended to increase the capital stock to \$40,000 and to increase the membership. In the light of later events it seems proper to say here that whatever his

interest, there is no evidence that H. C. Frick ever served as an officer or director of this club. It is to be noted that the court waived any requirement to designate the locale of club activity. This later led to the charge that the club was formed in secrecy and in the end was not contributing evidence of good public relations. It can be seen in these moves how President Ruff raised the money for the repair of the dam. After perusal of the names appearing on these various applications and excepting Frick, one would say that there was nothing to substantiate the claim that these clubs, which seem to have merged, were made up of "Pittsburgh millionaires."

Repair of the Dam

Thousands of words have been written for and against the quality of the work done in the repair of the dam under the supervision of Mr. Ruff. Some of the materials used were straw and hemlock boughs and the natives who saw them being placed never forgot them. After reading the reports of competent engineers, who had the advantage of hindsight, I share their beliefs, along with those of Cyrus Elder, General Counsel of Cambria Iron Co., who himself lost a wife and daughter in the flood. I have abstracted them as follows:

- (1) The construction was sound. (The criticism of the use of hay and hemlock boughs can be disregarded for it is the universal practice to prevent seepage in all earth dams whether built by men or beavers.)
- (2) The spillway was inadequate to carry off surplus water but it required the heaviest rainfall in the history of the area to develop this fact.
- (3) Water flowing over the top of the dam washed out the supporting earth and caused the failure. Water was never expected to overflow the crest of this or any other earth dam.

Development of a Club

The Pittsburgh *Commercial Gazette* of July 3 and 4, 1883, carried an article which described the development of recreational features of the club at the lakeside. A clubhouse with forty-seven bedrooms and a large dining hall had been erected. Membership dues of six hundred dollars carried the privilege of two weeks' use of the club for the families and permitted them to erect their own cottages, of which seven had been built in three years. Also at a boathouse two steam launches were moored, including sailboats and some fifty lesser craft

(rowboats, canoes). The lake had been stocked with game fish from Lake Erie and members looked forward to hunting both ducks and geese in the fall. The paper then listed the following men as members: Hilary Brunot, Andrew Carnegie, John W. Chalfant, J. K. Ewing, Henry Clay Frick, Philander C. Knox, Frank B. Laughlin, S. S. Marvin, Andrew Mellon, Reuben Miller, Frank T. Oliver, Walter McClintock, Henry Phipps, Jr., Robert Pitcairn, James Schoonmaker, Benjamin Thaw and Col. E. J. Unger. It was the publication of this list which gave the club its reputation as being composed of millionaires. There is however, even today, a question as to the membership of some of these men. Col. Unger had for ten years been the proprietor of the Union Station Hotel and when it was destroyed in the riots of 1877, he had become the proprietor of the Seventh Avenue Hotel. His activity, and he was president of the club at the time of the flood, was undoubtedly responsible for much of its popularity. On the other hand, the club's efforts to conserve their fish was another great strain on public relations. One native in particular claimed he had fished there for fifty years and the club, in addition, had overflowed some of his land. He not only continued to fish himself but he sold fishing rights to others. You have here the elements leading to the claim of the rich oppressing the poor.

Attitude of the Johnstown Tribune

Editor George T. Swank of the *Johnstown Tribune* refused to admit for fifteen years prior to the flood that there was any danger in the South Fork dam. He reasoned that if flood waters were released they would lose force before reaching the town. He reported favorable opinions of citizens who had examined the dam and he reasoned that it would disintegrate slowly in case of failure, but in 1887 he admitted that with a great flood in the valley a break might be dangerous and concluded his article, "—that is one of the possibilities not worth worrying about."

Weather Conditions Before the Flood

Pennsylvania's greatest rainfall of the century was building up. "The month of May in the mountains was the wettest on record and the rainfall from May 30th to June 1st was the greatest ever recorded." The great storm coming from the direction of the southeast centered between Johnstown and Harrisburg and, while Pittsburgh showed a rainfall of only one-and-one-third inches, one recording one hundred

miles east of Pittsburgh showed a reading of 8.6 inches. The Susquehanna had a tremendous flood but negligible loss of life made it relatively unimportant.

Thursday, May 30, was Decoration Day and the weather in Johnstown permitted an elaborate parade of veterans with band music and oratory as graves were decorated. About 4:00 P.M. a drizzle began, which, before the night was past, became a torrential rain and before 8:00 A.M. both the Little Conemaugh and Stony Creek were over their banks and the lower parts of Johnstown were covered with water. By noon the streets of the town were under water varying from four to eight feet in depth. Rowboats were being used in the main square and water was five feet deep at the corner of Main and Market Streets. (I have a classmate who in recent years spent nearly a year in Johnstown yet he had never heard of this.) The populace began lifting carpets and raising pianos and comparing it with a somewhat similar flood two years earlier and in general treated it (at first) as a seasonal inconvenience. The Rev. David J. Beale, a survivor of the flood, wrote in his book, *Through the Johnstown Flood* — "I am persuaded that few if any, imagined that there would be disaster arising from that source" (Conemaugh Lake). He does not say so but the few who appeared to be apprehensive and acted quickly in the emergency were railroad men along the line of the telegraph.

Early Warning to Knox and Reed

The record is not clear but it would seem that during the early hours of the morning of May 31, Philander C. Knox must have received word at his home on Sheffield Street, Allegheny, that conditions at the dam were causing concern. He was an alleged member of the club and their lawyer. Acting immediately he summoned a cab and instructed the driver to get him to the Union Station in time to catch a train leaving for Johnstown at 8:10 A.M. En route the horse lost a shoe and in spite of threats and bribes the cabbie refused to drive farther. Knox missed the train which happened to be the "Day Express" in two sections, both of which were engulfed in the flood with an estimated loss of ninety lives, twenty-six of whom were taken from the first section. A thankful Knox later looked up the cab driver and obtained the horseshoe which caused the delay, had it mounted in red velvet and for many years it decorated his office desk as a memento. Judge James H. Reed, Knox's partner, is reputed to have run the length of the East Liberty station platform but failed to catch the same train.

At the Site of the Dam

Col. E. J. Unger had come to the club over the holiday because he was interested in a sewer which was being dug under the direction of Civil Engineer John G. Parke. Rain began to fall in the late afternoon and increased during the night. Parke slept through the rain and on arising next morning found the lake and valley covered with mist. He noted that the lake had risen two feet during the night. He took a boat and rowed to the head of the lake and found the surface covered with logs and trees and the "woods boiling full of water." The South Fork, usually only two feet deep, was a raging torrent, stripping trees six feet above its bank. He returned to the dam where he found Col. Unger and fifty men trying to cut a new spillway on the east side of the existing cut. They encountered rock and their efforts were only partially successful.

The engineers who designed the dam never intended to let water flow over the top. It was provided with a spillway which would function when water was within four feet of the top. This did not have the capacity required for this storm. As the surface crept up, as a last resort the men plowed a furrow in the earth of the crest but by 11:00 it became evident that it was a losing game. It was said in criticism that the club had placed wire grills in the spillway to prevent the loss of fish and when Unger undertook to have the men remove them the pressure was too great to dislodge them. Whether they were a factor is questionable.

As the water crept toward the top of the dam all understood the import. Parke, after consultation with President Unger, mounted a white horse and galloped down to South Fork, a borough about fourteen miles above Johnstown, and spread an alarm which must have proved effective for that town had only one death from the flood which followed. He then dispatched two men to a telegraph tower two miles beyond. What happened at the tower is not clear but Parke reported later that the lady operator on hearing the news promptly fainted and had to be carried out. It is a question whether any warning went out subsequently from the tower, but it may have been due to all or nearly all the wires being down. There was also reluctance to send out a warning which would prove false as in the past. Parke returned to the dam and noted three inches of water flowing over the crest and increasing. As expected, it was wearing down the surface. The first break was ten feet wide and shallow but it widened rapidly and about 3:15 P.M. a great mass from 200-to-300 feet wide and two-thirds of the depth moved out, leaving a narrower breach clear to the bottom.

Flood Phenomenon

The dam had broken with a roar and the first warning the people had was the sound as of distant thunder. This was accompanied by a wind which was actuated by a wall of water and above all was a dense cloud of dust and a rolling crest which pounded down everything in its path under a deluge of boulders, rocks, trees, and wreckage.

It had been predicted that such a flood would lose its force in its devious channels and due to the friction of the hills. It swept away the bridge at South Fork but was checked momentarily at the great masonry bridge known as "the Viaduct" two miles farther west. Barkless trees indicated it built up to a depth of one hundred feet before it swept the bridge away. Just east of Johnstown it carried out the bridge known as Number 6 consisting of two spans of iron girders.

The Borough of Mineral Point was entirely wiped out. In East Conemaugh and Woodvale, every building was swept away and both places were almost depopulated. It was much the same in Conemaugh except more people escaped to the hills, while in Johnstown they estimated that two-thirds of the population were casualties of one sort or another.

The force of the torrent may be judged by the fact that it overwhelmed thirty-two locomotives which weighed from fifty to seventy tons each. Some were overturned, others were found a mile from their original position. It swept away eighteen passenger cars and 315 freight cars, and they in turn were instrumental in tearing up both track and roadbed. Two of the locomotives never were found. At the Gautier wire works it picked up and, as it progressed, unrolled 200,000 pounds of both smooth and barbed wire which was on spools in the yard. (This is noteworthy because later, at the Stone Railroad Bridge, this wire, interwoven with debris, blocked the free run-off of flood water and defied the efforts of the heaviest lifting devices of the railroad to remove it. This forced those trying to clean up to revert to the use of dynamite which was the only effective means of breaking the mass.)

The flood divided in Johnstown, already covered with from four-to-eight feet of water. One branch headed south to Stony Creek while the other followed its regular channel to the Stone Bridge. This solid bridge, consisting of seven arches, extended across the river in somewhat the same direction the flood was taking so that it did not receive the full force of the blow. (It is still standing today.) The debris quickly filled the arches, turning the bridge into a veritable dam. The

water continued along its upper face until it reached the far shore where it changed direction, flowing up Stony Creek and thus meeting the water coming down. A great whirlpool developed which was four miles in length.

Many people still clinging to wreckage who reached the bridge were saved, but it is equally true that many thinking they had reached safety were lost.

Fire, probably starting from overturned stoves or lamps, broke out in the wreckage about midnight, adding new terrors to those already existing. In spite of torrents of rain it burned for four days.

A small section of the bridge, at its end, did yield enough to permit the passage of some wreckage and survivors, but it was said only one man passed through the arches and lived.

Himmelwright, an observer who survived, reported that the flood reached its highest stage in five minutes and remained at that level for twenty minutes, with heavy rain falling. Victor Heiser, who observed the flood at the bridge, said that it took only ten minutes for the wreckage to pile up at the bridge and another counted twenty minutes until the current washed out parts of that bridge, after which the flood seemed to have lost much of its destructive power. A heavy rain continued till after dark.

A Summary and Some Aftermath

A staff reporter for *Engineering News* wrote, "The spoils consist of (1) Every tree the flood touched in 16 miles; (2nd) all the buildings of a thickly settled district, three miles long and one-fourth to one-half mile wide; (3rd) half the human beings, all the horses, cows, dogs, cats, and rats that were in those buildings; (4th) many hundreds of miles of telegraph wire, some from poles — but mostly from the mills, uncoiled and woven throughout the entire mass; (5th) fifty miles of railroad track materials; (6th) locomotives, cars, tenders, steam boilers, bridges, streetcars, boilers, pig iron, brick, stone, machinery of all kinds." The total property loss was estimated at \$22,000,000.

A safe is about as buoyant in water as an anvil but an item in the paper after the flood stated that twenty safes, battered almost beyond recognition, had been assembled from the streets and awaited an expert to open them.

When the flood waters receded they had deposited about six feet of new soil east of the Stone Bridge and all of Johnstown was a sea of

mud. George T. Swank reports that when a congregation of one of the churches which survived got around to visiting it, they found the entire floor carpeted with sprouting oats six inches high, probably from a horse's nosebag.

First News to the Outside World

The first news to reach the outside world, giving some indication of the extent of the disaster, was from Robert Pitcairn, Superintendent of the P.R.R., who was inspecting the line just west of Johnstown. One of his work trains had been stopped at the Stone Bridge and he was in touch with them. Their report indicated widespread destruction with wreckage piled on their track forty feet in height. This was confirmed by what he himself had seen, namely many people clinging to wreckage which had floated past the tower at Sang Hollow. He correctly estimated the seriousness of the situation and at 7:00 P.M., he sent a wire to the Pittsburgh *Chronicle Telegraph*, and another at 11:00 P.M. stating his facts and urging in the name of humanity that a public meeting be called to send immediate relief in the form of food and clothing to the stricken people. This telegram opened the floodgates of publicity attracting reporters from all over the country. A public, avid for fact, got much fiction. No one has ever accused those reporters of lacking imagination. They estimated the dead at fifteen thousand; a waterspout caused the flood and an explosion of natural gas started the fire in the drift. They used experiences from disasters long since forgotten, and even went back to the destruction of Pompeii. Countless heroes on horses of many colors carried the warning. A Harrisburg newspaper is reported by Shappee as writing, "The Johnstown Poetry fiend has tuned his lyre. Get the gun. This thing must be stopped before it commences." Swank wrote in the *Tribune*, "As if the flood consisting of houses, engines, logs had not caused us sufficient agony, we are having flood poetry deluged upon us."

This publicity reached the farthest corners of the earth and regardless of fact touched the heart of a generous world. Pittsburgh by reason of proximity and personal interest organized a committee which recognized the need for action and by Sunday night had two carloads of food at the Stone Bridge, most of which was carried manually around a long gap in the track. Conspicuous among the many were the names of James B. Scott, William R. Thompson, William McCreary, Capt. Bill Jones, Henry Clay Frick, Henry Phipps and Reuben Miller. Similar committees were formed clear across the country and in

foreign lands. Their generosity is suggested in the following figures :

Cash subscribed — \$3,700,000 of which \$800,000 was from Pittsburghers, \$141,000 was from abroad ; 1,500 carloads or 17,000,000 pounds of supplies ; 10,000 express packages, some of which weighed 600 pounds ; but the record is only fragmentary.

The donations covered every form of food including preserves of which there was almost too much ; clothing for children and adults including one dress suit ; sectional houses, tents and bedding, tools of all kinds, horses, household furniture, sewing machines, coffins, \$2500 worth of disinfectants from England and one lady's scanty bathing suit. Perhaps the donor of the latter had heard the news that any person who tarried in Johnstown carried away the strong odor of disinfectant on his clothes and the health department, as an added precaution, had recommended that every person take a bath daily. The *Tribune* wrote that "open plumbing, openly arrived at, reduced modesty to primitive levels."

Labor

It was said that prior to the state taking over on June 11, there were no less than ten thousand men working on the drift at the Stone Bridge. Other groups included linemen, axemen, embalmers, police guards, firemen, Red Cross and Yellow Cross units. Conspicuous among them was Clara Barton, who remained five months, but due to some difficulty with the medical unit, she devoted her activity largely to supplying furniture and household needs to the survivors and her name is widely revered in Johnstown today.

Legal Action

Legal action was brought in four suits against the Fishing Club as a corporation, against Colonel Unger as president, and against fifty alleged members who were named. These cases were either settled or discontinued and, as far as is known, no one bringing action profited thereby. Knowledge that President Ruff who supervised the reconstruction of the dam was dead and the impressive meteorological data tended to soften the resentment against a changing membership, but some feeling survives to this day. Many club members feared what a jury might do up to the time when the statute of limitations permitted them to breathe easier.

Conclusion

I realize the shortcomings of this paper, but I have tried to present in all fairness some of the factors which made this disaster so deadly. I do not think the many factors which contributed so largely to it will soon be repeated.

This talk with slight variations is recorded as delivered on tape which is on file at the Historical Society.

I wish to thank many writers whose work I have used freely. I am especially indebted to Nathan D. Shappee whose dissertation for a doctor's degree at the University of Pittsburgh is a fund of factual material; also to Mrs. Margaret Bothwell whose research on file at the Historical Society included some important facts not generally known.