

This was a brief discussion between Joseph and Kevin deleted from Chapter 2. It is about the British Bombing of the Ruhr Valley Dams in World War 2. It was deleted since there was a significant amount of material already written about the incident, including a book and a movie. The bombings do however form part of the basis for the story.

Kevin completed the realignment of the laser. He stood back watching Joseph grading the channel and said, “Don’t you feel guilty sometimes about doing this type of work?”

The question seemed to come from nowhere and Joseph set down the form. “I do not know what you mean?”

“Come on, you know what I mean Joseph. You’re well aware what the Army is going to do with the information we develop about dam failures.”

“They are going to use it to create better methods for predicting the height of the waves from catastrophic failures. Actually, there were a half a dozen or so catastrophic failures in United States during the previous year, so the research is quite topical.”

“Do you really believe that? The army will probably use it so they can destroy dams in China or Russia to inflict the maximum damage on the enemy.”

Joseph shrugged his shoulders and said, “Sometimes knowledge can be used as a weapon. Dynamite was initially developed for clearing rubble for the Panama Canal and you cannot list how many times it has been used in history for military uses. All that I know that what we are

developing here can be applied to flood prediction and creating alarm systems for failures.

Where did you get the idea that the military was going to use our results?"

"I was talking to my grandfather who was in the service and he always told me stories of World War II. He was over in Europe- stationed in England and he heard about the British bombing of two dams in Ruhr Valley in 1943. I guess at that time the Ruhr was a center for steel production, water supply, and hydroelectric power and was a major strategic target. My grandfather was an expert with munitions and he liked to tell me all about the bombs they dropped. The bombing of the dams meant overcoming a major technical problem of delivering the explosive to the site. With regard to a dam, normal bombs would not work since they would bounce across the surface of the water, and the water would absorb the explosive force. Not even torpedoes would work since the Germans constructed netting across the dam that would render them ineffective."

Joseph patiently listened to the story. Not allowing a graduate student to show that he knew more than he did, broke in, "I read books on the history of the war and remember the mission. They solved the problem by creating a special spinning cylindrical bomb to skim the surface of the water to deliver the explosives directly to the dam. The planes carrying the bombs had to fly a low altitude, and of the seventeen planes that started the mission only eight returned."

Kevin added, "The mission was considered to be highly successful by the military and the public with newspaper headlines claiming that over ten thousand Germans drowned. The scientist that created the bomb received the Victoria Cross from the King."

Joseph tried to go back to his work. “Yes, there was a downside that the dams were rebuilt so quickly that steel production for the next year was twice as large as the previous years. The newspapers never emphasized that there were thirteen hundred Ukrainian women and children prisoners of war that were in a camp downstream of the dam that died as a result of the flooding. To me the whole affair demonstrates that the utter futility of war. All that was proven is that you can kill ten thousand people at one time, and these days you don’t need to destroy a dam to do that. The military has conventional weapons that deliver a thousand times the explosive force of the atomic bomb that was dropped on Hiroshima. Despite your opinion, I don’t think that the military is interested in creating civilian casualties. That is why I think what we are studying has more peacetime applications than wartime.”