

## Dick Lord: from secret calutrons to cyclotrons for science (As published in The Oak Ridger's Historically Speaking column on February 4, 2013)

Carolyn Krause continues her use of Oral Histories found in the Center for Oak Ridge Oral Histories at the Oak Ridge Public Library, web site:  
<http://www.oakridgetenn.org/departments/Library/Departments-%26-Services/COROH>

The ever increasing amount of interviews being collected are making this archive one a most effective sources of historical information. Carolyn's example shows how research can produce valuable and authentic information to support historical facts in a more interesting fashion. Her story of Dick Lord is one that will captivate the reader and makes learning history fun.

Before getting into Carolyn's story, a word about the "electricity experiment story" from last week. David Hobson wrote to say his that Dad was a millwright who had worked with Logan Emlet to install the setup in the reactor. David said, "By the way, he told me the light was a Christmas tree bulb and was accidentally dropped and broken after the experiment. He and Logan were good friends."

I also was approached by Dub Shultz who told me about a very large steam whistle that was connected to the Graphite Reactor that was used to produce the steam to blow the whistle...he promised to write the story for *Historically Speaking*.

Now for Carolyn's story about Dick Lord which begins here:

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In some movies the main character embarks on a journey, and in others a stranger comes to town. In real life Richard Lord, a native of New Jersey, was prepared to go on a journey almost 70 years ago to a job offered him in Oak Ridge. And he did come to the Secret City as a stranger, but only after he was able to find it.

In 1943 Lord and his father, who worked in an office for Pennsylvania Railroad in Philadelphia, could not locate Oak Ridge on a map or get information about it. So he wrote a letter to the company that hired him before he graduated with a degree in electrical engineering from the University of Pennsylvania.

"We can't find Oak Ridge, Tennessee," he wrote. Then he received a telegram that stated, "Report to the Empire Building in Knoxville, Tennessee." That building housed Tennessee Eastman's employment office. Lord finally arrived in Oak Ridge on Nov. 10, 1943, a month after graduating from Penn.

In a March 17, 2011, interview for COROH with local filmmaker Keith McDaniel, Lord relayed his first impression of the town. He recalled machines he had never seen before that scooped up earth in large amounts and moved it. He remembered the dust and mud "that could suck the shoes right off your feet."

Lord did not get the technical job offered him because his security clearance had been lost. So he was placed in the Training Division in town. He worked with Leon Love to teach the young women hired to be "cubicle workers," a term not explained to him.

These girls in their mid-to-late teens were hired to operate the "calutrons" at the Y-12 Plant. These were industrial-scale mass spectrometers, based on Ernest O. Lawrence's invention in Berkeley, California, at the Radiation Laboratory which used huge magnets to deflect uranium ions of two different masses (U-238 and U-235), causing them to separate into different collectors. U-235 was the first atomic bomb fuel.

Lord and Love taught a little physics to the calutron operators whose jobs entailed "watching meters and adjusting dials," according to Gladys Owens, one of the many workers who had no idea what they were producing. They trained female operators to run machines the men had

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never worked. Then Lord's clearance came through and he was moved from town to Y-12, where he saw his first calutron. But he was kept on as a trainer.

In an interview for Public Radio International's Bob Edwards Weekend Show on "Alumni of the Manhattan Project," aired Jan. 27, 2013, Lord said, "They had no intention of me finding out what they were doing...When I first saw the equipment, I knew it went into a magnet and I knew it was a separator. I didn't know right away that we were separating uranium [isotopes]...but there was a lot of talk that went on among small groups who were confident about not being exposed."

"Once you figured out what you were doing, were you at peace with that?" he was asked.

"Oh, absolutely," Lord said. "I was delighted. There has been a lot of talk about how we never should have dropped the bomb. If you were living in those days, you knew that's what had to happen. I never had second thoughts. (Lord told McDaniel that six of his high school classmates had been killed in World War II.)

"You have a different perspective if you lived through the beginning of the war to the end, as opposed to reading about it in a history book. I remember listening to the Battle of Britain on the radio as it was going on. We feel like we ended the war so there should be some recognition for that."

"What about after the war," the reporter continued, "when the first photographs and newsreels showed up and you saw the effects" of the atomic explosions.

"We were in seventh heaven. We were celebrating."

"Even though it was largely civilians who were vaporized, in some cases?"

"During the war I don't think that mattered," Lord said, pointing out that hundreds of thousands of Japanese had previously been killed in the fire bombing of Tokyo and other sites. Others have pointed out that a million Americans and a million Japanese would have been killed if the war had not been stopped by the atomic bombs.

In the summer of 1945, Dick and Kay Lord were married. During their honeymoon they heard President Truman issue his ultimatum to Japan: "Surrender or else." Lord knew what was coming.

They experienced the "chaos" in Jackson Square as Oak Ridgers openly rejoiced that the war that killed 54 million people had ended and that Oak Ridge had played a key role in bringing peace.

He worked on a team to try to make Y-12's electromagnetic separation competitive with the new gaseous diffusion process at K-25 for enriching uranium in U-235. The attempt failed, the calutron plant shut down, and Y-12's employment dropped from a high of 22,482 people in August 1945, to fewer than 2,000 people in 1947.

"I was one of the fortunate people to remain employed in Oak Ridge for my whole career," Lord said. "I never left."

After the war, Lord became involved in operating the 86-inch cyclotron located in Building 9201-2 at Y-12 cobbled together from Y-12's excess calutron parts, including the huge magnets. Then the Oak Ridge Isochronous Cyclotron was built at Oak Ridge National Laboratory. Lord moved to ORNL to work on ORIC, where he became an expert on magnet design.

"I was very much involved with the design of its magnet and the magnet coils, which nobody expected to last this long (from 1963 until 2011, when ORIC was shut down)," he told McDaniel.

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His sense of accomplishment was enhanced further when he led the effort to inject the ion beam from the Holifield tandem accelerator into ORIC to boost the beam's energy for physics experiments at Holifield.

Lord and his wife have enjoyed retirement since 1984, when Union Carbide left town as the government contractor. And he continues to stand his ground even when a stranger, like a reporter for PRI, comes to town.

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Thanks again Carolyn for an excellent excerpt from COROH archives. Thanks also for tying a current interview on Public Radio International to an oral history interview. It is this type of connection that makes our history come alive to the readers.



Famous Calutron Girls photo by Ed Westcott showing Gladys Owens in the front right who worked at Y-12 from January to August 1945 and who returned to Oak Ridge in 2004 to find herself in this picture that she did not remember being made – see her video oral history interview at the American Museum of Science and Energy's Oak Ridge Room near the calutron cubicle panel display



Richard "Dick" Lord