Sewickley Valley Historical Society

Signals

XLII, Number 5 April 2015

Wednesday, April 22, 2015
7:30 p.m.
Old Sewickley Post Office

The Shippingport Nuclear Power Station

A PowerPoint Presentation by Desmond W. Bartlett, O.B.E., C.Eng.

Desmond Bartlett is from Southampton, England. In 1947, he began a five-year indentured apprenticeship in steam locomotive design and construction and attended Southampton University College to study mechanical/marine engineering. Between 1952 and 1956, he worked for the Cunard Steamship Company, sailing on both the Queen Mary and the Queen Elizabeth. During these years he studied on his own the developing nuclear propulsion program, which began in the U.S. in 1948 and in the U.K. in 1955, where the major players were Vickers Engineers, Foster Wheeler and Rolls Royce. In 1957, when Vickers opened a nuclear submarine design office in Southampton, Bartlett was quick to join them. For the next eight years his career was devoted to the design, development, testing and operating of the U.K. Land Based Nuclear Submarine Prototype.

In 1958, a "Mutual Defense Agreement" was signed between the U.S. and the U.K. As a direct result of this agreement, the three above-mentioned companies formed Rolls Royce and Associates (RR&A). Admiral Hyman G. Rickover of the U.S. Navy was an instigator behind the formation of the company and envisioned it as the U.K. counterpart of the Westinghouse Bettis Laboratory in Pittsburgh. Bartlett was selected as a founding member by Vickers and spent the years 1959 to 1961 in the U.S. as part of the technology transfer team. He was at Shippingport in the first five months of 1961.

When he returned to the U.K., Bartlett went to work on the submarine prototype at Dounreay, Scotland. In early 1965, he was released to take up a new position as Chief Nuclear Engineer with Cammell Lairds Shipbuilders and Engineers at Birkenhead on the Mersey River, the firm that had been awarded a contract to build two of the U.K.'s four-boat Polaris submarine fleet. In 1967, he became Program Manager and Project Manager of the first boat, HMS Renown, which underwent sea trials and was commissioned in 1968. The second boat, HMS Revenge, followed the same program a year later and was commissioned in 1969.

In 1971, Her Majesty Queen Elizabeth approved Bartlett's appointment as an "Officer of the Order of the British Empire" (O.B.E.), for services to the Nuclear Navy. His name was included in the Queen's Birthday Honours List published in June, and his investiture was at Buckingham Palace later in the year.

Bartlett joined Westinghouse International in New York in 1972, where he had full technical and commercial responsibility for atomic power stations in South Korea and Brazil. In 1979, with the world losing interest in nuclear power, Bartlett left Westinghouse to work in the international engineering and construction industry. He retired in 2001. Now an American citizen, he resides in Sewickley Heights.

Refreshments will be served following the presentation.

Shippingport Nuclear Power Station, 1957-1974

Shippingport had a relatively short life—less than twenty years; the normal design life of a power station is at least thirty. Calder Hall, built at Sellafield, Cambria, in the U.K., the world's first nuclear power station (96 MW), went critical and on line in 1956. It generated power to the grid until March 31, 2003, an operating life of 47 years.

Shippingport was much more than a power station. It was a spinoff of a naval program that ran in parallel with the nuclear submarine program, started in 1948. USS Nautilus, the world's first nuclear powered submarine, went to sea in 1955. Shippingport, a unique, one-of-a-kind plant, went critical and reached full power in December 1957. These two dates, so close together, clearly show parallel development.

Both the submarine program and Shippingport were conceived and developed during the early years of the Cold War, which lasted from the mid 1940s until 1990. On December 8, 1953, President Eisenhower made his "Atoms for Peace" speech to the United Nations General Assembly. Although not mentioned in the speech, Shippingport became a cornerstone of the program. This turned the program from an "important" to a "time is of the essence" undertaking, with the aim of being the world's first "Nuclear Power Plant." This, in turn, gained international news coverage. One U. S. publisher, McGraw-Hill, covered the program regularly in a magazine entitled Nucleonics. This publication had an international readership. Many readers were disappointed that Shippingport failed to overtake Calder Hall and be the first.

The plant was operated with three different cores. It operated on Core 1 from 1957 until 1963. The plant was then shut down, and extensive modifications were made to the primary and secondary circuits. Core 2 was installed, and the plant operated on this core—again very successfully—until 1974.

The third Core was installed in 1977, and the plant operated until 1982. It was no longer a power station, but a research/experimental reactor. Again, the operation was technically and scientifically successful and beneficial to the Navy's research into nuclear core development and core life.

In today's terminology, Shippingport would be considered a PPP, a Public Private Partnership. The public entity would be the U. S. Atomic Energy Commission/Naval Reactors Branch; the private, Duquesne Light. Both organizations should have been pleased with the outcome. The Naval Reactors Branch obtained knowledge and experience to expand the nuclear Navy. Duquesne Light gained a level of confidence to build and operate today's Beaver Valley Nuclear Station, two Westinghouse PWRs (Pressurized Water Reactors). Unit 1, 970 MW, went on line in 1976; Unit 2, 920 MW, in 1987. In 2009, operating license renewals extended their lives until 2036 and 2047, respectively.

Despite Shippingport's short life, its story is still interesting, as its aims were clearly not limited to "Atoms for Peace."

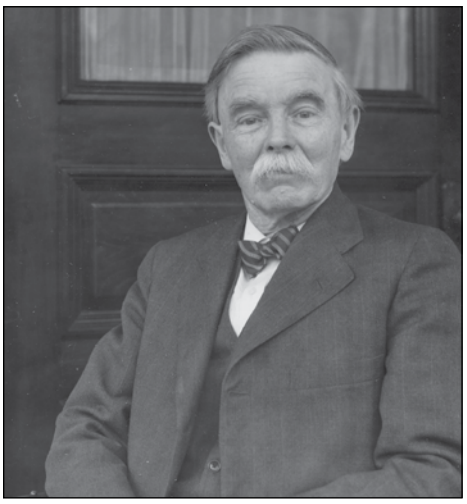
Shippingport was honored by the American Society of Mechanical Engineers as a National Historic Mechanical Engineering Landmark on May 20, 1980. The plaque reads, in part, "The first commercial central electric generating station on the United States to utilize nuclear energy was the Shippingport atomic power station…"

Hello, Australia!

In 1873, two brothers stood on the dock in Belfast, Ireland, and exchanged goodbyes. They would never see each other again. Francis Corry "Frank" Watson (1850-1935) was leaving his younger brother, Samuel J. Watson, to make a new life in America. A few years later Samuel would, himself, leave Ireland for Australia.

Coming to Pittsburgh, Frank Watson became a trusted employee of the grocery firm William Haslage & Son. In 1904, he moved to Sewickley to manage a grocery at the corner of Beaver and Chestnut Streets, which was at first known as Watson & Perry. In time, he became owner of that store, Watson & Co., and conducted business there with the help of his son George. The photo on page 3 of this newsletter, from the SVHS Bicentennial Collection, shows a group of costumed children, probably in Halloween garb, posed in front of the store. Watson & Co. closed May 1, 1929, and the property was sold to the Gulf Refining Company, which razed the grocery to build a gasoline station. Today the site is occupied by a Citgo station.

By 1930, the Watson brothers, Frank, 80, and Samuel, 72, had been separated for 57 years, with the written word being their only means of communication. Frank's grand son-in-law's father, Dr. Frank Conrad, assistant chief engineer at Westinghouse, suggested that they might talk through the new medium of radio. The Westinghouse Electric and Manufacturing Corporation, since its pioneer broadcast of the Presidential election results in November 1920 on the first commercially licensed radio station, KDKA, had been communicating with distant places by short wave radio through telephone, reaching into the far north and to explorers well within the Antarctic Circle.



Francis Corry "Frank" Watson

And so it was arranged. Frank Watson talked from his home at 818 Centennial

Avenue in Sewickley at 8:30 a.m. on Monday, April 28, 1930, with Samuel, who lived in Forbes, New South Wales, but traveled 300 miles to Sydney for the broadcast. KDKA connected the two through short wave station W8KK in Pittsburgh and station VK2ME in Sydney. This conversation of 85 years ago was widely publicized at the time and would be a dramatic means of bringing before the public the extent of radio's progress. By the way, it was estimated that a half-hour telephone conversation between the U.S. and Australia in 1930 cost $500—over $7,000 in today's dollars!

The Watson brothers were thrilled by their successful communication across 9,000 miles. "Hello. Is that you Samuel?" said Frank, as engineers from Westinghouse completed the connection. After discussing their respective families, Samuel noted, "The leaves are falling from the trees here; it is fall." And Frank countered with "And it's apple blossom time here."

Frank Watson was the grandfather of long time SVHS member Margaret Watson Dury of Sewickley.

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Thanks to the following, who have supported SVHS with gifts in addition to membership dues:

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New Members

James & Melanie Crockard, Sewickley; Fred R. Custer, Allison Park; Brian Dodson, Pittsburgh; Mr. & Mrs. Paul F. Fagan, Sewickley; John Haley, Gibsonia; Robert B. Hamilton, Jr., Noblesville, IN; Craig-Nelson Holland, Sewickley; Bill Obenour, Sewickley; Stephen J. Ratcliffe, Gainesville, GA; Tim Zeffiro, Sewickley

Special Contributions

Charles T. Wright, in honor of his grandfather, Charles Pfitzner

In Memoriam

Mrs. Pauline Okie Walker

The (Old) Moon Township Historical Society has a new website, created by SVHS member and Moon Township resident Mim Bizic. You can visit it at http://www.moontownshiphistoricalsociety.com/welcome_and_about_us

Nominating Committee

The following have been named to the SVHS Nominating Committee for 2015/16. The slate will be announced in the May issue of *Signals*, and the election will be held at the Annual Meeting, May 20, 2015.

Jim Darby, Chair
Don Kipke
Don Traviss
Nancy Merrill

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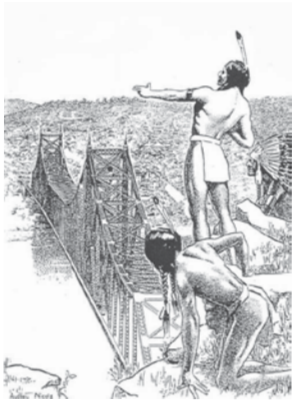

April 2015

This iconic 1899 photograph is another from Sewickley Valley Historical Society's Bicentennial Collection (see also page 3 of this newsletter). It shows a class from the Sewickley Public School on an outing, with the Woodland Road bridge over Little Sewickley Creek in the background. This bridge, the second over the creek, was built by stonemason William Dickson, who also supplied the stonework for the "yellow brick school" that these children attended. The bridge dates from 1889. A recent automobile accident displaced the bridge's masonry abutments, and it will be closed to traffic for at least two or three months. About 300 vehicles per day use the bridge.

Signals is designed and edited by Susan C. Holton. Visit our website, www.sewickleyhistory.org — e-mail us at sewickleyhistory@verizon.net — or call us at 412-741-5315. We're open 10:00 a.m.-2:00 p.m., Tuesday through Friday, or by appointment.