

## Dr. Googin and his early days at Y-12, part 12

After a short diversion to recognize Y-12's role in the 40<sup>th</sup> anniversary of the Apollo 11 moon landing, we return to our series on Dr. Googin. I hope to complete this series in a couple of weeks and return to the chronological history of Y-12.

In addition to describing the social life, or as much of it as John Googin had time to observe, he also described in his Manhattan Project autobiography what work at Y-12 was like in the summer and fall of 1944. John said, "Nearly all of the process operations, the chemical, physical or clerical operations, were performed by the ladies of East Tennessee. There were mostly men in the technical, engineering and maintenance crews."

John's own laboratory, with its vacuum furnace became a resource to the ladies in Building 9202. The way John described it, the process to purify the Beta cycle uranium was first located in Building 9202 in the early days of 1944. When the process grew considerably larger and when Building 9206 was completed, that portion of the chemical processing moved there.

While Building 9206 was completed in May, 1944, obviously the Beta process operations continued for some time in Building 9202 before moving to Building 9206. It was during this time that the following must have occurred.

John tells of the process using mercury cathodes in the purification of uranium. He notes that the ladies operating this process were routinely getting their jewelry exposed to traces of mercury. They would then replace the uranium with their jewelry in the furnace to remove the contamination before the rings and such were destroyed.

Some of the jewelry still came out frosted from the contact with the mercury and other corrosive materials. John found this bit of process adaption humorous, but he also noted that small quantities of the mercury were known to have escaped down the drain in Building 9202.

This was but a very small quantity from his laboratory. I have to think that when John wrote his autobiography in the 1980's he might well have been influenced to mention this small amount of mercury spillage because of the huge public relations issue of the mercury in the East Fork Poplar Creek that had migrated to Oak Ridge sections of this stream.

John was right in the middle of that mercury loss issue. He was instrumental in designing the chemical separation process equipment that used the mercury during the operations of the COLEX (Column Exchange) process during 1955 to 1963. This is where the mercury was used in vast quantities to aid in the separation of Lithium 6 for the Hydrogen Bomb.

He was also much aware of the *Mercury at Y-12* study results published August 18, 1983. In fact, John was listed among the individuals cited as having helped provide valuable assistance to the independent study team formed by then Y-12 Plant Manager, Gordon Fee.

The 1983 study stated on page 37, "...that there is no immediate or foreseeable risk to the health of the public as a result of the past or current mercury discharges other than an unlikely possibility of harm that would result if a person were to ingest a large number of fish containing higher than 1 ppm mercury from the East Fork Poplar Creek on a continuing basis." Yet, the public relations nightmare resulting from the release of the declassified version of the 1977 *Mercury Inventory Report* on May 17, 1983, would surely have been on Dr. Googin's mind when he wrote of this mercury escaping from Building 9202.

He also would have known that Building 9202 served as a pilot facility for the OREX process from April 1953 to May 1954. Therefore, the mention of mercury is understandably included in his autobiographical remarks about Building 9202.

John also mentioned that his career at Y-12 was "moving along." While he was paid weekly and provided overtime compensation, he felt he was doing quite well financially. However, the promotion to a monthly

paid employee without overtime actually yielded a sizable cut in the net pay. John continued to point out to management over the years the importance of technical expertise and the need to provide commensurate compensation for the value of work done by individual contributors as well as managerial functions.

John's supervisor, Sam Vitilla, soon left for another position. In addition to J. P. (Ted) Sprague, who joined the Bulk Treatment group, Tom Strickland was soon added. This along with the necessary technicians brought the group to a large enough number of individuals to have a strong positive impact on the Y-12 uranium chemical purification operations.

Soon the range of interest of the group began to expand from basic chemistry and chemical engineering to other things such as corrosion. Of special interest to them all was the heat-affected zone of welded stainless steels in the process solutions containing chloride and nitrate. The answer found by this powerful group was extra-low-carbon 316 stainless steel which resulted in much improvement.