

Dr. Googin and his early days at Y-12, part 9 — Googin brought new ideas to Y-12

Last week, we learned that Ted Sprague had just arrived at Y-12 and joined John Googin working in the Bulk Treatment laboratory in Building 9202. This would have been in mid-1944. John was pleased to have the help and between the two of them they made significant improvements in the newly developing technology of preparing uranium for processing through the Calutrons at Y-12.

This must have been fascinating work for John as he had educated and prepared himself with experience for just such an opportunity. He knew exactly what was being done at Y-12, as you will recall. He told his superiors just after a few hours in Y-12 that, "You are processing a heavy metal, probably uranium. You are separating the isotopes of uranium to make an atomic bomb."

In his biography, John tells of many improvements being made to the Bulk Treatment facility including the conversion of the Liquid Phase chlorination step to the Vapor Phase style of operations. He says this was done with a process developed by Harshaw Chemical. John was bringing new ideas into the operation.

Changing the process from liquid to vapor reduced the operation by one step. It allowed the elimination of the decomposition and sublimation step that had been used to convert the pentachloride from liquid phase to the tetrachloride needed as feed for the Calutrons. Again, this was John's efforts to assure that the process could meet the demands for feed material for the ever increasing number of calutrons being installed at Y-12.

John and Ted even looked at the general problem of wastes from the building to minimize even that stream. The building sump tank showed layers of uranium-bearing solids of various valence states and colors and included mercury. The precious uranium material was minutely managed to try and prevent any loss of potential feed material.

The reason for all this close monitoring of uranium and the several, mostly successful, attempts to improve the process was because K-25 was not expected to get above 3.5% assay of enriched uranium (U-235) during the summer of 1944. This was such a serious problem that plans were being developed for new processes designed to handle safely the expected assay of enrichment that might be needed to be processed.

This expansion allowed for further improvements to be made by John and his welcome co-worker, Ted. The two of them designed the new laboratories with new equipment and with all needed industrial services mounted on the walls. They also equipped the new laboratories with wheeled operational unit equipment that could easily be moved in for an experiment and the taken away when not needed.

As exciting as the work was for John, he still found time to observe his surroundings and made observations in his biography about the people, the place, and the adventures of Oak Ridge in 1944.

As spring drew into summer, John mentions that the heavy traffic on the unpaved roads filled the valleys with dust. He did not have much time for travelling but what time he did have he spent learning about the other sites in Oak Ridge, from the outside of course as he was not allowed to enter any of them.

He also knew of the dances on the tennis courts and the other entertainment available in town, but he did not participate much as he worked seven days a week exceeding a full shift each day. Such was his dedication and purpose to the task of assuring the Bulk Treatment facility performed as he had said it could at his first appearance at Y-12.

John concludes comments about the 1944 year by saying he held considerable hope as did others working at Y-12 who knew what was going on. He indicated that the Alpha cycle was well established, and two new style Alpha buildings were being added. These two buildings were the twin buildings of 9201-4 and 9201-5. These two buildings will figure prominently in Y-12's history for the next 60 years!

Each of the buildings comprise approximately 500,000 square feet. Building 9201-4 was constructed first and during the construction of it, a decision was made to expand Y-12. As the first Calutrons in Y-12

were becoming operational, the throughput was so small and fear that the Germans would build an atomic bomb before the United States could get enough uranium 235, caused the Manhattan Project leaders to decide that added capacity was needed at Y-12.

The plans for Building 9201-4 were used to construct 9201-5, so the two buildings are identical. They are also the only two of the large calutron buildings that are laid out across the valley instead of parallel with the valley. Of course, Building 9731, the first building completed at Y-12 and itself a small high-bay structure lays across the valley as well.

Next we will learn just how Y-12 was doing at the end of 1944 and see what John felt were the strengths of the operations at that time.