Dr. Googin and his early days at Y-12, part 10 — Googin, a valuable contributor to the mission

In the last installment of the story about the early days of John Googin at Y-12, the numerous improvements made to the Bulk Treatment operations in Building 9202 were highlighted. John's contribution during the first few weeks and months had been tremendous. When Ted Sprague arrived, the improvements were even more pronounced and frequent.

Earlier there were concerns about just getting enough uranium feed material prepared for the Alpha Calutrons in the first three buildings, 9201-1, 9201-2 and 9201-3. By the time John and Ted had worked out the process improvements, those concerns were fully addressed. The feed requirements for the first design set of Alpha Calutrons were easily met.

By mid-year 1944, the first Beta Calutrons were being brought on line in Buildings 9204-1 (completed in March 1944). Later in the year, the second Beta building, 9204-2 (completed in September 1944) and the third Beta building, 9204-3 (completed in November 1944) had been brought on line.

The last two Alpha buildings that housed the Alpha 2 Calutrons, a later design that used a rectangular racetrack, Buildings 9201-4 and 9201-5 were on line by the June 1944 and September 1944 respectively. The improvements in the Bulk Treatment operations were key to meeting the feed material needs for these operations.

Building 9202 was keeping up with the demand to produce uranium feed material for the Alpha Calutrons with the latest modifications. Preparations were being made to receive enriched UF6 from S-50 and K-25.

The Beta Calutrons were functioning well and the first uranium 235 product concentrated at high levels or enriched to what would later be termed, "weapons grade" was being processed. The Beta cold peroxide was performing as desired in the Beta 4.

Building 9206 was doing the balance of the Beta cycle. The first samples from Beta had been watched as they went through the final laboratory-scale purifications in Building 9203 earlier in the year. Building 9203 was the first processing building for the Beta intermediate and final product cycles, where solvent extraction with diethyl ether was used to purify and recover the uranium instead of using precipitations as in Building 9202.

John concluded this summary of the status of Y-12's production of uranium 235 at the end of 1944, by stating, "It was known that Los Alamos was getting the product materials and was working on them," but to what effect was not know to those at John's level in the process. The ever-increasing production rate was being made possible by the steady improvements in the processes and by additional calutrons being added.

During the first months of operation of the unique and monumental Y-12 location of the Manhattan Project begun in 1942 and operated until 1945 solely to separate the enriched uranium isotope 235 from the more common element of uranium 238, several serious problems had developed and were constantly being solved.

Eventually there were over 1152 production calutrons in Y-12. These units operated as batch processes to separate the material in very small quantities. Only 4% of the uranium in the source material actually ended up in the receivers of the calutrons. The remaining 96% of the material missed the calutron receiver slits and was coated on all the internal elements of the calutron.

To recover any enriched uranium that was deposited by these side streams a growing number of recycle streams that must be purified for further enrichment became a major concern. Here is where John Googin became a most valuable contributor to Y-12's mission.

Although he had only been at Y-12 a few months, he had quickly grasped the overall production stream requirements. He understood the Bulk Treatment and other activities going on in Building 9202 as being "somewhat of a crossroads for uranium chemistry work in Y-12."

John noted that there were many unusual events in the hectic life of the "junior chemist" as he called himself, in the early months of his coming to Y-12. He found many challenging situations and many "interesting characters" to work with, he said.

I am sure the environment was exciting for this young man from New York finding himself in the hills of East Tennessee. However, his work required his undivided attention and he obviously delighted in every minute of it. He was constantly working to improve the process and to make the work more productive.

Most of John's activities in the early months were associated with the Alpha chemical recycle work doing what was required to make pure uranium tetrachloride for feed to the Calutrons. He noted that there were only a few days off and little contact with other sites in Oak Ridge, beyond bus trips there and back to satisfy his curiosity. He observed that K-25 did not look too far along in early 1944.

Next John will tell us a bit about the social life in Oak Ridge, what little he saw of it, and of his visits to the University of Tennessee library.