

## Final decisions that led to Y-12

As we have seen earlier in this series, Ernest O. Lawrence and his University of California Radiation Lab in Berkeley was the center for research using cyclotrons to separate uranium 235 from natural uranium in machines referred to as *Calutrons*. These newly designed machines were named for **CALifornia University CycloTRONS**. While the use of mass spectrometry had been known and used since 1918, this application on the scale Lawrence was proposing was going way beyond anything anyone had attempted before. His insight into the problem and optimism for the solution was a key element in determining the next steps taken.

At the same time that the research on calutrons was ongoing and making striking progress at Lawrence's lab, decisions regarding the production sites and processes were being made. General Groves arrival on September 17, 1942 and his almost immediate actions to procure the uranium ore, secure the Tennessee site and establish the AAA priority rating increased the pace of all activities associated with the DSM (development of substitute materials) project, soon to be renamed the Manhattan Project.

By late 1942, progress on the reactor technology being led by Enrico Fermi at the University of Chicago's Metallurgical Laboratory (Met Lab) continued to assemble the necessary materials (mostly uranium and graphite) to build the world's first atomic reactor pile. Ultimately some 400 tons of graphite, six tons of uranium metal and 58 tons of uranium oxide was required.

Vannevar Bush was searching for a way to manage the military involvement in what had up to now been primarily a scientific research project. It was obvious something other than the S-1 Executive Committee would be needed. Bush had a tough job, that of balancing the involvement of the government overseers, scientists and military.

He settled on something called the Military Policy Committee to take charge and to maintain the needed balance of power and leadership. He assumed the committee would select a person to place in charge, however, the Army moved more quickly than he imagined. While the idea of forming a military committee was still being discussed, the appointment of Groves was proceeding by Brigadier General Wilhelm D. Styer (at General Brehon B. Somervell's recommendation)

Bush had wanted some method to oversee the project and keep General Styer as the military point person. An interesting series of events that occurred over the first few days of Groves being placed in charge gives some insight into how Bush must have felt. Remember things were moving rather slowly until Groves showed up.

One of the very first things Groves did was to drop in on Vannevar Bush on September 17, 1942 and announce that he had been selected to head the DSM project. This was without a doubt unsettling for Bush. This brash and bold talking Army officer seemed to already be well ahead of what Bush thought was necessarily a group decision. In fact, Groves seemed to already be making decisions regarding the project. It must have seemed odd to Bush that Groves even knew the issues, much less the actions needed to move the project forward.

It helps to understand that Groves had been assigned as the Deputy Chief of Construction for the Army Corps of Engineers and in that position had seen the recent organization of the DSM project as well as the orders establishing the Manhattan Engineer District. He knew about the recommendation by James B. Conant that the Tennessee site be selected and General Marshall's delay in doing so. He had even requested General Marshall provide him weekly reports on the status of the MSD. Groves urged construction to begin and felt the priorities would be aligned to support the project when such construction had begun. So, he was very much aware of what was going on and not happening. Little wonder that he was already prepared for quick decisions when he got the assignment.

Although he was initially reluctant to accept the assignment, General Styer made it clear he really was needed to do the job. When his meeting with Styer ended, he never seemed to look back, but attacked the job of managing the effort with characteristic zeal and dogged determination.

Now back to Bush and the Military Policy Committee. After the unexpected visit by Groves, Bush quickly sought assurances from Under Secretary of War, Robert P. Patterson, General Somervell and General Styer regarding this unknown upstart of a Colonel who had presented himself as the person in charge. His fears were somewhat set aside by the strong support for Groves expressed by these trusted individuals.

In a meeting in Secretary of War Henry L. Stimson's office on September 23, 1942, Bush, General Marshall, Generals Styer, General Somervell, James B. Conant and others were discussing the military policy committee. Stimson proceeded to name the leadership of the committee as Bush, chairman with Conant as his alternate. Members named were Admiral William R. Purnell to represent the Navy and newly promoted to General, Groves to represent the Army.

However, later in the day, Stimson changed that last member to be General Styer instead of Groves. General Groves tells of this change in his book, *Now it can be Told*, and says that while General Styer seemed a bit embarrassed by the change in membership and assured Groves that he had nothing to do with it, Groves was actually pleased with the change. He saw General Styer as being better able to help Groves by being in that position.

So, with the Military Policy Committee in place, General Groves taking action to acquire the Tennessee site and other things falling into place, the decision on which technologies to actually construct was pressing on the whole group. Those individuals who headed the various scientific studies were pushed by Groves to provide evidence of progress to the decision makers so he could start construction in Tennessee.

In October and November 1942, a series of reviews were conducted at the various research sites. All methods were explored again and each champion attempted to convince the decision makers of the superiority of their individual efforts.

Lawrence had continued to make significant progress on his calutrons. He was confident that his process was the one that could be counted on to separate the Uranium 235 most effectively and most quickly. However, as we will see next week, not everyone agreed with him.

Y-12, (or electromagnetic separation), for a time, was not considered a viable option. It was only seen as being capable of producing test quantities of Uranium 235. Without strong support from James B. Conant, Lawrence's calutrons might never have been considered beyond the review we will examine next.

Next week we will see how Groves went about these reviews and reached a final decision to recommend to President Roosevelt that electromagnetic separation be one of the processes (the one that led to Y-12) pursued to make an atomic bomb. Two other processes were also recommended to be pursued, gaseous diffusion and a reactor to produce plutonium.