Requiem for a cyclotron

Photo courtesy of Elizabeth Wade

From 1936 to 2008, Columbia University housed a physics legend: an early cyclotron. Columbia's cyclotron was one of the first machines to split the atom, confirming reports from Europe that such a feat was possible. It demonstrated that uranium-235 was readily fissionable, leading to experiments aimed at harnessing the astounding energy of a nuclear chain reaction. It helped usher in the Atomic Age and the subsequent promise and problems of nuclear power and energy, the results of which we continue to grapple with today. And in March of this year, it was cut up and sold for scrap.

Physicist John Dunning built Columbia's cyclotron in the 1930s and it split atoms for nearly 30 years. After it was decommissioned in 1965, the university sent key pieces of the machine to the Smithsonian Institution and left the rest in the basement of Pupin Hall, Columbia's physics building. Then it sealed the basement off. For decades, the cyclotron was only accessible by a system of tunnels that runs under the entire university. The tunnels are off-limits to students, although almost every self-respecting undergraduate has sneaked into them. In retirement, the cyclotron became the university's most popular underground attraction.

I first ventured to see the cyclotron on a dark and stormy night in April 2005. Armed with word-of-mouth directions, four friends and I descended into the tunnels through an entrance across campus and made our way toward Pupin. After navigating a few forbidding rooms filled with imposing electrical equipment and many ignored Do Not Enter signs, we made it to Pupin's basement. We had been instructed to find the out-of-order men's bathroom, where one person had to climb over a wall (via an air duct) and into a hall of abandoned laboratories. Once inside, he opened the door for us and the treasure hunt began.

We found the cyclotron in a room that looked like a time capsule from the Atomic Age. Boxes full of official and not-so-official documents (a friend claimed to have found a shopping list that included uranium) and pieces of dusty lab equipment were everywhere, but nothing could distract from the main attraction. The cyclotron's 65-ton magnet was anchored to the floor, sitting under a giant arch that didn't look so different from the air duct my friend had just climbed over; Dunning had built the machine during the Depression with salvaged parts and donated metal. Almost unbelievably, there was a start button on its side, along with stickers that declared several other mysterious objects "critical space items" property of NASA.

But the need for another kind of space became even more critical for the university. Late last year, Columbia announced plans to turn Pupin's basement into a combination of lab space and infrastructure for a new building going up next door. In the process, the cyclotron was dismantled and its pieces—many of which were pure copper—were sold as scrap metal. About a week before it was destroyed, George Hamawy, Columbia's director of radiation safety, organized a funeral for the machine. His heartfelt eulogy covered the machine's important scientific contributions but also touched on its sentimental value. From Hamawy's tale of being drawn to physics after hearing about the cyclotron's experiments to students taking advantage of their last chance to see the fabled machine, people spoke of an attraction to the cyclotron that went beyond its scientific importance, historical value, and even status as a real-life urban legend.

The cyclotron was an artifact of an age before the atomic bomb when excitement, wonder, and hope outweighed the fear that is so familiar today. It was an artifact of decades of tunnel spelunking, Columbia's most public secret. It was an artifact of my college experience, bringing me closer to the people who shared my first Columbia adventure and setting the tone for all the rest that followed. It seemed the cyclotron would always be there—in history and in adventures both collective and personal. I always thought I would be able to go back for a visit, whether at graduation or my 50-year reunion. Instead, I'll be remembering how the cyclotron's multifaceted appeal became most apparent at the end of its life, and remembering how glad I was to be able to say goodbye.

Elizabeth Wade recently graduated from Barnard College. She was a Fermilab intern in the summer of 2005 and continues to write about physics.