

Atomic Dawn - Part II

Lead: Scientists had discovered the atom's nucleus, had determined that it was made of protons and neutrons and had split it, but it remained to put these discoveries to use. In the early 1940s, a team under Enrico Fermi at the University of Chicago set out to create a sustained nuclear reaction.

Intro: *A Moment in Time* with Dan Roberts.

Content: From an early age, Enrico Fermi demonstrated a quick grasp of science. Born in Rome, as a child he began to read everything on which he

could get his hands. His entrance exam to college was considered prodigious and within eight years after high school he had received his doctorate and was the youngest full professor in the history of the University of Rome. Fermi combined a deep interest in theoretical physics with a practical orientation toward experimenting. Having both tendencies was rare.

By the mid-1930s Fermi was applying his skills and intellect in examining the atom's nucleus and came very close to discovering the process of nuclear fission. Awarded the Nobel Prize in Physics for 1938, Fermi used the trip to Stockholm as a way of accomplishing his escape from Mussolini's Fascist Italy. He began his

stay in America by teaching at Columbia University.

Meanwhile, Otto Hahn, the German radiochemist, and his team had irradiated uranium and produced Barium. Transforming one element into another with radiation had been already been done, but up till then the substances created were close to the original on the periodic table. The creation of Barium, a much lighter element, meant that the uranium nucleus had been split. The further discovery that spectacular amounts of energy had been released in the process had important implications for the creation of an enormous source of power. Fermi set out to tap this fountainhead of energy. To do that he

needed to create a sustained nuclear reaction without blowing up everything in sight.

On December 2, 1942 a team lead by Fermi at Chicago did just that. In a transformed squash court under the University's football stands a carbon rod was withdrawn from a huge pile of carbon logs studded with uranium pellets. Instruments told the story, a sustained and controlled nuclear reaction was in progress. Next time: From theory to bomb.

At the University of Richmond, this is Dan Roberts.

Resources

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