A Deuterium - Deuterium Source of Neutrons

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A DEUTERIUM—DEUTERIUM SOURCE OF NEUTRONS

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A single section accelerator tube built for 300 to 400 k.v. is used to accelerate a beam of deuterons obtained from a conventional arc discharge source. The beam impinges on a target of \( \text{P}_2\text{O}_5 + \text{H}_2\text{O} \) producing neutrons according to the reaction

\[ \text{H}_2 + \text{H}_2 = \text{H}_3 + n \]

The target assembly is immersed in a tank of water which because of the elastic \( \text{H}_1 \) and \( n \) collisions becomes a source of thermal neutrons.

Detection is accomplished by placing a piece of silver in the tank. The silver becomes artificially beta radioactive by the well known reactions

\[ \text{Ag}^{108} + n \rightarrow \text{Ag}^{109} \]
\[ \text{Ag}^{109} \rightarrow \text{Cd}^{109} + \text{e}^- \]

Since the half life of the beta activity is something over three minutes there is ample time to remove the silver from the tank and detect the beta particles with a thin walled Geiger-Müller counter.

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APPARATUS FOR PRODUCING SOFT X-RAYS

F. M. Bailey

A 30-watt soft x-ray apparatus has been designed to provide a simple and economical source of soft x-rays for radiography in the wavelength region between 1.1 and 0.6 Angstroms. The x-ray tube was constructed of pyrex, and a thin spherical window incorporated for transmitting the radiation. The electrical equipment was built from standard laboratory parts, employing a neon sign transformer as a source of potential.

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