Richard P. Feynman (1918-1988)

Early Life

- Born May 11, 1918, to Melville and Lucile Feynman
- Raised in Far Rockaway, New York

Educational Background

- Undergraduate degree from MIT in 1942 and was a member of Phi Beta Delta
- Ph.D. in Physics from Princeton University

Los Alamos and the Manhattan Project

- He developed the Bethe-Feynman formula for calculating the yield of a fission bomb, other work included calculating neutron equations for the Los Alamos "Water Boiler", a small nuclear reactor, to measure how close an assembly of fissile material was to criticality

The Feynman Lectures on Physics

- Feynman began teaching at Cornell but then went to Cal Tech, due to his unhappiness at Cornell
- During the 1960s, the faculty at the California Institute of Technology were concerned about the content of the introductory courses in the undergraduate programs and decided to compile a new physics program.
- In 1961, Feynman was asked to teach a two-year freshman course of introductory physics at Caltech.
- Feynman was hesitant initially because he was afraid that he might not have enough time for research however, he wanted to instill a curiosity in undergraduates about physics, so Feynman agreed to give the course only one time. Two professors at Cal Tech recorded every lecture and this series of lessons. They compiled the lectures into three bound textbooks called The Feynman Lectures on Physics.
- Feynman Lectures on Physics is perhaps the most popular physics book ever written.

Feynman's Nobel Prize

For all of his contributions to physics, especially to the renormalization of quantum electrodynamics, Feynman received the 1965 Nobel Prize in physics

Three of Feynman's Biggest Contributions to physics

- Quantum Electrodynamics- Theory behind the interactions of charged particles with the electromagnetic field. QED rests on the idea that charged particles interact by emitting and absorbing photons. These photons are called "virtual" because they cannot be seen or detected in any way.
- Feynman Diagrams- A graphical method of representing the interactions of elementary particles. They aid in visualizing and calculating the effects of electromagnetic interactions among electrons and photons. Feynman diagrams are used to make very precise calculations (accurate to the 9^{th} decimal place!) of the probability of any given process in QED.
- Superfluidity- the frictionless flow and other strange behavior observed in liquid helium at temperatures near absolute zero (-459.67 °F) which arises from quantum mechanical effects. When ^{4}He is cooled below 2.18 K (-270.97 °C), the heat conductivity rises enormously. The helium also displays rapid flow through very small pores and spontaneously climbs over the rim of its containment vessel, **against** the force of gravity, as a thin film with no measurable viscosity.

Feynman in his Later Years

- Feynman continued to make contributions to the world of physics, but he was also fighting a battle with a rare form of cancer during the last ten years of his life One of his biggest projects was his participation in the investigation of the Challenger Disaster which occurred on January 28, 1986 in Florida
- Feynman blamed the disaster not only the o-ring, but the miscommunication between NASA engineers and management

Richard Feynman died on February 15, 1988.

"I'd hate to die twice, its so boring" – Richard Feynman's last words