Emilio Gino Segrè

1905 - 1989

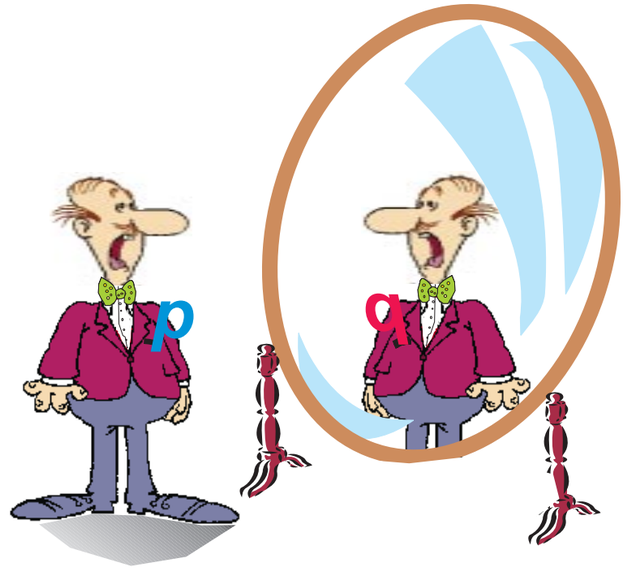
Awarded the Nobel Prize for Physics in 1959

Emilio Segrè was a brilliant and very successful physicist. He made a number of significant discoveries in his career, but his main achievement was the discovery of the ***antiproton*** with O. Chamberlain in 1955, for which they shared the 1959 Nobel Prize for physics.

Emilio Gino Segrè was born in Tivoli, Italy, in 1905, to the family of a manufacturer. After graduating from the Liceo Mamiani in Rome he entered the University of Rome. He wished to be an engineer but switched to physics, having met Enrico Fermi, who had just come to Rome and created a group for research in atomic and molecular physics. Segrè was Fermi's first doctoral student. He worked with Fermi until 1936, when he was appointed director of the physics laboratory in Palermo.

When Segrè visited Berkeley, (part of the University of California in the US), in 1936, he obtained from Lawrence a sample of molybdenum that had been bombarded by deuterium in the Berkeley cyclotron. After chemical investigation of the sample, Segrè with his colleagues confirmed the existence of a new element - number 43. It was the first man-made element ever to be made. They called it - ***technetium*** (Greek for 'artificial'). It is radioactive, and one of its isotopes is much used in medical diagnosis.

On a later trip to Berkeley, in 1938, Segrè learned that he, as a Jew, had been removed from his post at Palermo by Mussolini's law; so, Segrè stayed in Berkeley.



He and his colleagues discovered the anti-proton, $\bar{p}$ (a particle of 'anti-matter')

With the exception of wartime research at Los Alamos, Segrè remained at Berkeley for the rest of his career, and he was appointed a professor in the physics department in 1946. There, in 1940, he discovered another new element, now called ***astatine*** (number 85) and also ***plutonium.***

Segrè again met Fermi, now in the US, to discuss the problem of using plutonium-239 instead of uranium-235, as nuclear fuel.

Segrè was appointed a group leader at the Los Alamos Scientific Laboratory of the Manhattan Project, (the name given for the project to develop the atomic bomb) .

After the war he returned to Berkeley and in 1955 started work on proton-proton and proton-neutron interactions. Segrè calculated that producing an antiproton would require about 6 billion electron-volts (Bev), which could be provided by the newly constructed accelerator at the University of California. **He and his colleagues devised an apparatus and were able to detect the antiproton among the many other particles which appeared after bombardment of copper with protons.** This discovery confirmed that Dirac's antimatter theory was correct.

Segrè was married twice. From his first marriage he had three children. He was also known for his editing and writing. He wrote a biography of Fermi. He was awarded many medals and honorary doctorates. He died in 1989, after a heart attack.

S.E.

His early work was in Rome