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A transformational year in physics: 1932 CHARLES W. CLARK, Joint Quantum Institute, JOSEPH READER, National Institute of Standards and Technology — On New Year's Day, 1932, the *Physical Review* announced Urey's discovery of deuterium by the observation of Balmer emission lines in atomic hydrogen that were at the wavelengths predicted by Bohr's theory for an isotope with a mass twice that of the proton. At the time it was thought that the deuterium nucleus contained two protons and one "nuclear electron" confined inside the nucleus by an unknown force. This view quickly changed when *Nature* published Chadwick's discovery of the neutron nine weeks later. In June, Heisenberg made the suggestion that the neutron and proton were alternative levels of a quantum two-state system: the isospin concept that guides nuclear theory to this day. In August, Anderson discovered particles with the mass of, and charge opposite to, that of the electron: the first discovery of antimatter. Meantime, Cockroft and Walton effected the first disintegration of nuclei by particles accelerated by high voltages, and Lawrence and Livingston showed that the cyclotron could make high energy particles without high voltages. Six Nobel Prizes are directly traceable to work done within that one year! We review these events and their consequences. This talk is based on an article published in *Physics Today*, March 2013.

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