Georges Henri Lemaître Biography

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Biography

Abbé Georges Lemaître was a man of varied talents. Born on July 17, 1894, in Charleroi, he attended the University of Louvain and studied civil engineering. He became an artillery officer when World War I started in 1914. After the war he received his Ph.D. and, in 1922, was ordained a priest. Then he went on to study astrophysics at Cambridge University, received a Ph.D. from the Massachusetts Institute of Technology in 1927, and returned to Louvain, Belgium, to teach.

Lemaître became very interested in Albert Einstein's equations involving gravity. When he solved the equations, he discovered they described a universe that should be expanding, not static as was commonly believed. Unknown to Lemaître, a Soviet meteorologist, Alexander A. Friedmann (1888-1925), had come to a similar conclusion in 1922. There was no observational evidence to substantiate that idea, and Einstein would not support the theory until he had studied Lemaître's calculations.

Within two years American astronomer Edwin Powell Hubble made observations that showed the galaxies were traveling away from the Earth at incredible speeds. He concluded, unaware of Lemaître's theory, that the universe was expanding outward. Now direct observational evidence existed that supported Lemaître's theory. Einstein agreed that Lemaître's solutions to the equations of gravity were the best.

Lemaître went one step farther, reasoning it should be possible to reverse the concept of expansion and hypothesize backward in time. He suggested that all the matter in the universe originally existed as a compressed "cosmic egg" which had exploded, throwing matter outward.

Based on Hubble's calculations, Lemaître's big bang would have occurred two billion years ago. That was impossible; scientists were very certain that the Earth's crust was older than that. But in 1952, astronomer Walter Baade revised Hubble's figures and a new, much larger scale emerged. It pushed the origin of the big bang farther into the past. The figure accepted today is 15 billion years.

Lemaître also predicted that some background "noise," left over from the ancient big bang, should still be detectable. This too was proven by Arno Penzias and Robert Wilson (1936-) in 1965, the year before Lemaître's death.