ALBERT EINSTEIN

When you hear about Albert Einstein, what is the first word that comes to mind? Genius, isn't it? Einstein, the famous theoretical physicist, is undoubtedly a scientific genius. Albert Einstein, also known as The Father of The Nuclear Age, perhaps one of the most brilliant minds ever to exist was a very quiet man. Einstein's Theory of Relativity revolutionized scientific brought with new conceptions of time, space, mass, motion, and gravitation. But to understand **how he developed an interest in science** we should begin from Albert's birth.

Albert Einstein (14 March 1879 – 18 April 1955) was a German-born theoretical physicist. He developed the general theory of relativity, one of the two pillars of modern physics While best known for his mass–energy equivalence formula $E = mc^2$ (which has been dubbed "the world's most famous equation"), he received the1921 Nobel Prize in Physics "for his services to theoretical physics, and especially for his discovery of the **law of the** photoelectric effect".The latter was pivotal in establishing quantum theory.

Near the beginning of his career, Einstein thought that Newtonian mechanics was no longer enough to reconcile the laws of classical mechanics with the laws of the electromagnetic field. This led to the development of his special theory of relativity. He realized, however, that the principle of relativity could also be extended to gravitational fields, and with his subsequent theory of gravitation in 1916, he published a paper on the general theory of relativity. He continued to deal with problems of statistical mechanics and quantum theory, which led to his explanations of particle theory and the motion of molecules. He also investigated the thermal properties of light which laid the foundation of the photon **theory of light**. In 1917, Einstein applied the general theory of relativity to model the large-scale structure of the universe.

He was visiting the United States when Adolf Hitler came to power in 1933 and did not go back to Germany, where he had been a professor at the Berlin Academy of Sciences. He settled in the U.S., becoming an American citizen in 1940. On the eve of World War II, he endorsed a letter to President Franklin D. Roosevelt alerting him to the potential development of "extremely powerful bombs of a new type" and recommending that the U.S. begin similar research. This eventually led to what would become the Manhattan Project. Einstein supported defending the Allied forces, but largely denounced using the new discovery of nuclear fission as a weapon. Later, with the British philosopher Bertrand Russell, Einstein signed the Russell–Einstein Manifesto, which highlighted the danger of nuclear weapons. Einstein was affiliated with the Institute for Advanced Study in Princeton, New Jersey, until his death in 1955.

Einstein published more than 300 scientific papers along with over 150 non-scientific works. His great intellectual achievements and originality have made the word "Einstein" synonymous with genius

Theory of relativity and $E = mc^2$

Einstein's "On the Electrodynamics of Moving Bodies" was received on 30 June 1905 and published 26 September of that same year. It reconciles Maxwell's equations for electricity and magnetism with the laws of mechanics, by introducing major changes to mechanics close to the speed of light. This later became known as Einstein's special theory of relativity.Consequences of this include the time-space frame of a moving body appearing to slow down and contract (in the direction of motion) when measured in the frame of the observer. This paper also argued that the idea of a luminiferous aether—one of the leading theoretical entities in physics at the time—was superfluous. In his paper on mass–energy equivalence, Einstein produced $E = mc^2$ from his special relativity equations.] Einstein's 1905 work on relativity remained controversial for many years, but was accepted by leading physicists, starting with Max Planck.

Photons and energy quanta

In a 1905 paper, Einstein postulated that light itself consists of localized particles (*quanta*). Einstein's light quanta were nearly universally rejected by all physicists, including Max Planck and Niels Bohr. This idea only became universally accepted in 1919, with Robert Millikan's detailed experiments on the photoelectric effect, and with the measurement of Compton scattering.

Einstein concluded that each wave of frequency f is associated with a collection of photons with energy hf each, where h is Planck's constant. He does not say much more, because he is not sure how the particles are related to the wave. But he does suggest that this idea would explain certain experimental results, notably the photoelectric effect.

Cosmology

In 1917, Einstein applied the General theory of relativity to model the structure of the universe as a whole. He wanted the universe to be eternal and unchanging, but this type of universe is not consistent with relativity. To fix this, Einstein modified the general theory by introducing a new notion, the cosmological constant. With a positive cosmological constant, the universe could be aneternal static sphere.

Einstein believed a spherical static universe is philosophically preferred, because it would obey Mach's principle. He had shown that general relativity incorporates Mach's principle to a certain extent in frame dragging by gravitomagnetic fields, but he knew that Mach's idea would not work if space goes on forever. In a closed universe, he believed that Mach's principle would hold. Mach's principle has generated much controversy over the years.

Wormholes

Einstein collaborated with others to produce a model of a wormhole. His motivation was to model elementary particles with charge as a solution of gravitational field equations, in line with the program outlined in the paper "Do Gravitational Fields play an Important Role in the Constitution of the Elementary Particles?". These solutions cut and pasted Schwarzschild black holes to make a bridge between two patches.

If one end of a wormhole was positively charged, the other end would be negatively charged. These properties led Einstein to believe that pairs of particles and antiparticles could be described in this way.

Death

On 17 April 1955, Albert Einstein experienced internal bleeding caused by the rupture of an abdominal aortic aneurysm, He took the draft of a speech he was preparing for a television appearance commemorating the State of Israel's seventh anniversary with him to the hospital, but he did not live long enough to complete it.[84]

Einstein refused surgery, saying: "I want to go when I want. It is tasteless to prolong life artificially. I have done my share, it is time to go. I will do it elegantly."[He died in Princeton Hospital early the next morning at the age of 76, having continued to work until near the end.

During the autopsy, the pathologist of Princeton Hospital, Thomas Stoltz Harvey, removed Einstein's brain for preservation without the permission of his family, in the hope that the neuroscience of the future would be able to discover what made Einstein so intelligent. Einstein's remains were cremated and his ashes were scattered at an undisclosed location.

In his lecture at Einstein's memorial, nuclear physicist Robert Oppenheimer summarized his impression of him as a person: "He was almost wholly without sophistication and wholly without worldliness ... There was always with him a wonderful purity at once childlike and profoundly stubborn."