

## Professor C. Fayette Taylor



Charles Fayette Taylor  
September 24, 1894 - June 22, 1996

Fay Taylor was a pioneer in the development of the internal combustion engine and a primary developer of the air-cooled “whirlwind” engine used by Charles Lindberg in his first solo flight across the Atlantic in 1927. It was also used in Admiral Byrd’s first flight to the North Pole.

A faculty member of MIT, Fay was the director of the Sloan Laboratory for aircraft and automotive engineering from 1929 to 1960, when he retired. He then turned his genius to sculpture and art. His work is represented in several museums and public buildings throughout the United States.

One of his major contributions to our knowledge of engine design and operation were two texts. The first, co-authored with his brother Eddie Taylor who was Professor of Aeronautics at MIT for much of his life and who later focused on flow phenomena in gas turbines, was: *The Internal Combustion Engine*, published in 1939. The second, a two-volume encyclopedic summary of his (and others) research and experience related to

internal combustion engines—*The Internal Combustion Engine in Theory and Practice*—was published in 1960 (Vol. 1) and 1968 (Vol. 2). It remains in print today.

Professor Fay Taylor lived to be 102. The photograph below, taken at the occasion of the unveiling of one of his sculptures in the Sloan Automotive Laboratory at MIT in March 1987, shows Fay Taylor on the right, his brother, Eddie, on the left with Professor John Heywood, current Director of the Sloan Automotive Laboratory.

Also below, is the Resolution read before the MIT faculty on the occasion of Professor Taylor's 100<sup>th</sup> birthday, September 21, 1994.



**In Celebration of the 100th Birthday of C. Fayette Taylor,  
Professor Emeritus of Automotive Engineering, M.I.T.**

**A MAN OF THE TWENTIETH CENTURY**

Charles Fayette Taylor was born on September 24, 1894, in New York. As a young boy he experienced city life at the turn of the century, first in Manhattan, then in

Monclair, New Jersey, where his family moved when he was eleven. Even then, he was fascinated by things technological. In his evocative autobiography *"Growing Up with the Twentieth Century"* written in the early 1970s around childhood drawings carefully preserved by his mother, he writes, *"these drawings... show a near obsession with machinery and constitute an eyewitness account of many aspects of technical practice... in the early years of the century."* His first ride in an automobile in 1902 was *"one of the high points of my life."* Prophetically the Oldsmobile vehicle was powered by an internal combustion engine. Reading at age 14 about the Wright brother's flights of 1904 and 1905 kindled his intense interest in airplanes.

In 1912 Taylor enrolled in the Sheffield Scientific School at Yale, receiving his bachelor's degree in mechanical engineering in 1915. During World War I, he first served as an inspector of aircraft material for the U.S. Signal Corps. After three months, Taylor was placed in charge of the Navy's Aeronautical Engine Laboratory in Washington, D.C. In 1919 he returned to Yale and, in 1920, was awarded the degree of Mechanical Engineer. From 1920 to 1923, Taylor was the engineer in charge of the U.S. Army's Air Service Laboratory in Dayton, Ohio, where he supervised engine endurance tests, aircraft flight tests and fuel anti-knock tests. It was there that he met Orville Wright. From 1923 to 1926 he was in charge of airplane engine design and development at the Wright Aeronautical Corporation; he was involved in developing the air-cooled "Whirlwind" engine used on the historic flights of Lindbergh and Byrd.

In 1926 Taylor began his long association with M.I.T. as an Associate Professor of Aeronautical Engineering. By 1929 he had been promoted to Professor and became Head of Aeronautical Engineering, a position he held until 1933. Taylor then left the Aeronautical Engineering Department to become Professor of Mechanical Engineering and Director of the new Sloan Laboratory for Aircraft and Automotive Engines, a position he held until his retirement in 1960.

Taylor's professional interests focused on the internal combustion engine which over his lifetime became by far the dominant engine in use throughout the world. Through his research and teaching in the 1930s, 40s, and 50s, he developed the scientific framework for engine design and operation still in use today, and established M.I.T. as an internationally renowned center in this field. He, his colleagues, and his students made major contributions to critical areas of engine performance: combustion, detonation, fuels, thermodynamic analysis, friction, heat transfer, air capacity, dimensionless scaling. His two volume seminal text, *"The Internal Combustion Engine in Theory and Practice,"* is an encyclopedic compendium of his and others research and experience, remains a primary reference for automotive engineers, and continues to sell well some 30 years after its first publication and 55 years after its first edition, an engine text Fay co-authored with his younger brother, Eddie Taylor, who was Professor of Aeronautics at M.I.T. for much of his life. Fay Taylor was one of the first to be elected Fellow of the Society of Automotive Engineers in 1977 shortly after that membership grade was established to recognize outstanding automotive engineering accomplishments.

Fay Taylor's one-hundred years span an era of unprecedented technological change. In his autobiography he wrote: *"it is hard to imagine new developments that will change our life style more drastically than have the automobile, the telephone, electric power air light, the mechanization of farming, airplanes, motion pictures, radio, television, and the development of weapons of war of unimaginable power and range. Not one of these devices was in general use, and many were undreamed of when I first became aware of the world around me."* As we celebrate his one-hundredth birthday it is the breadth of this man, participating over a lifetime in that momentous change, that is most impressive. Fay Taylor exemplifies how the inquiring mind of a researcher, the creative insights of an analyst, the pragmatic hands-on skills of an engineer, and the pedagogical talents of an educator combine to produce one of M.I.T.'s twentieth century technology giants.

In addition, Fay Taylor is an accomplished artist. Following his retirement from M.I.T. he embarked on a second career as a professional sculptor in metal combining his love of building aesthetic objects with his interest in the natural world and technology. (One of his ongoing connections with the Sloan Laboratory was using our welder when his own was not powerful enough!) His sculptures have been exhibited widely and he has completed many civic and corporate commissions. And he has had fun. In the late 1930s Fay owned and flew a small airplane which he and his wife Alice, who is 96 and will be celebrating his 100th birthday with him on Saturday, used for pleasure. He writes: *"From Boston we often flew over to a small airport near the beach at Provincetown for a swim. The trip and swim could easily be completed between lunch and supper time."*

Especially, Fay Taylor through his long lifetime has retained an openness to new ideas and a sensitivity to the problems those less fortunate than ourselves have to face. In the conclusion to his autobiography he wrote: *"Perhaps the greatest challenge which the world now faces is the relative poverty and deprivation of some two-thirds of the world's population who have not participated in, and in some respects have been exploited by, the technical developments of this century... One hopes that coming generations will have the wisdom, the ability, and the generosity required to achieve a more equitable world."*

Professor Taylor, your faculty colleagues at M.I.T. join in celebrating your century, and send you their warmest congratulations on this landmark occasion in your life. After 100 years, you are still young at heart.

Resolution read before the M.I.T. Faculty at their meeting on September 21, 1994