



# Dayton Engineer

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## THE VALLEY OF THE GIANTS

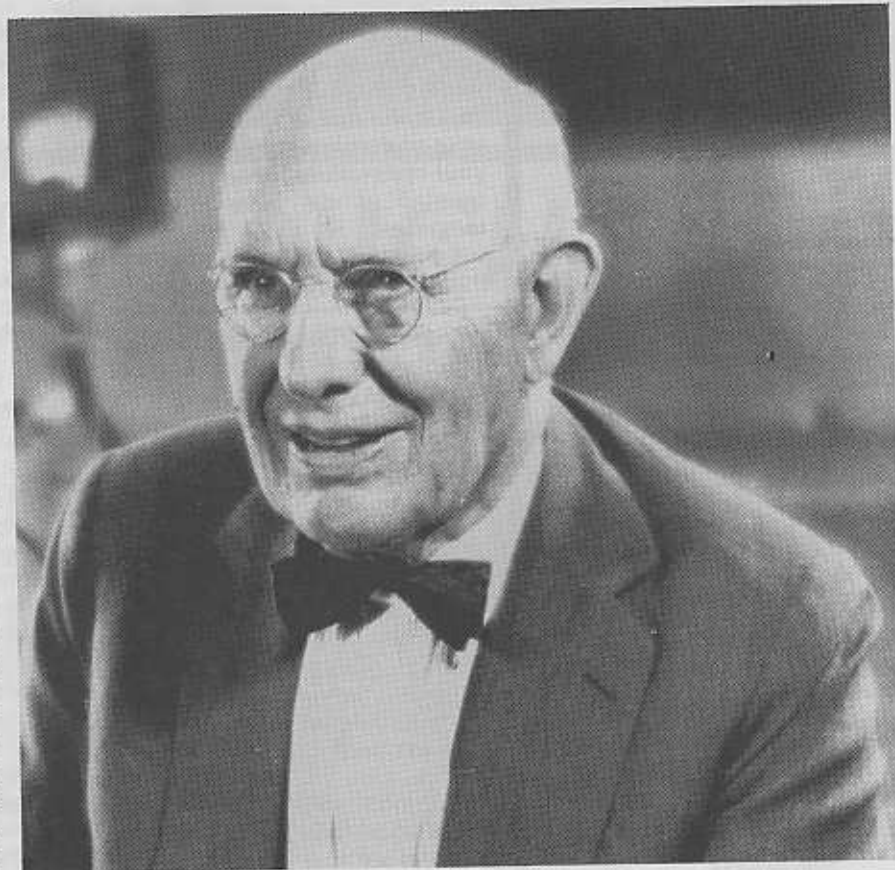
# 'BOSS KETTERING'

Charles Franklin Kettering — he was a genius, widely acclaimed engineer throughout the world

Dayton and the Miami Valley has been and will continue to be the spawning place for giants — not the huge hulks of muscle and bone that exist only in fairy tales but creative human beings with vision, intellect, fortitude and drive whose lives and accomplishments have made and will continue to make life in this universe interesting, productive and very much worthwhile.

No article, book nor library could adequately describe the thoughts, words and deeds of all the giants who have lived and still live in this valley and certainly, we cannot more than briefly describe but a few of the more widely-known persons in this series of biographical sketches in future issues of our newsletter.

Our Club is greatly indebted in many ways to many of these Giants, but to none more so than one of its founding fathers, Charles Franklin Kettering. His genius has been widely acclaimed throughout the world and it is impossible to summarize briefly his vast accomplishments. This sketch is abstracted from a book by Stuart W. Leslie, published in 1983, entitled



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Charles F. Kettering at age 82

# 'BOSS KETTERING'

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"Boss Kettering, Wizard of General Motors." Kettering was born, August 29, 1876, on a farm near Loudonville, Ohio, where as a boy, he displayed an extreme interest in scholarly pursuits. He read voraciously, all articles of scientific nature. His rapid growth, near-sightedness, stumbling gait, disheveled hair and clothing made him an easy target for the adolescent taunts which kept him withdrawn and generally unsociable. However, he was an excellent scholar, and quickly attained a degree of academic excellence in physics and science, and surprisingly, developed an oratory stature, excelling in debates and oratorical contest.

Upon graduation from Loudonville High School, the only job available to him, other than farming, during the general depression in the mid 1890s, was a teaching job at Bunker Hill County School, where at sixteen and on a salary of \$250 per year, he quickly won the respect of his students for his novel teaching methods. After a teaching course at Wooster College, he accepted an upper division teaching job in 1897 at Mifflin, Ohio. In 1898, he entered Ohio State University College of Engineering, where he

excelled in every subject except engineering drawing (due to poor eyesight). Eye problems required him to leave college and be joined with his brother Adam's phone gang in Loudonville and became foreman of Star Telephone Company. It was during this period that he met, Olive Williams and soon after in 1901, at 25, he returned to Ohio State, where his telephone experience gave him a laboratory teaching job and he handled several consulting positions, besides working summers at Star Telephone Company.

On June 22, 1904, at 27, he graduated in both electrical and mechanical engineering. He had also taken all of the chemistry he could handle. He was hired by NCR in Dayton and reported for work July 1, 1904, in the Inventions Department Number 4, where he was to meet the marketing genius, John H. Patterson, as well as Thomas J. Watson (later founder of IBM) and Edward A. Deeds, (an ambitious 30-year-old professionally-trained engineer who was vice-president for finance). Kettering's job was upgrade the product line to meet the innovative marketing strategy of NCR.

He married Olive Williams on August 1, 1905, while he was earning the

substantial salary of \$303.46 per month. Even on his honeymoon trip to Niagra Falls, most of his time was spent in developing an electric motor drive for the No. 79 NCR cash register.

Working with William A. Chryst (a near physical duplicate of Kettering), whose talents meshed perfectly, many NCR products were developed, including motors, clutches, indicators, information processors, calculators

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Kettering was a teacher in this school at Bunker Hill



Kettering as a young teacher in Ohio

# OF THE GIANTS



**Kettering works in lab**



**Curiosity and drive motivated Kettering**



# 'BOSS KETTERING'

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and systems involving interdepartmental accounting. By the end of 1906, the results of only a couple years of Kettering's ideas were beginning to have significant effects on NCR sales strategy. His specific innovating contributions were overshadowed by the more general changes in outlook and direction which he has initiated. The Inventions Department was rapidly becoming more of an organized laboratory and less of a machine shop.

In 1908, Charles S. Sprague, head of New York's Union Dime Bank, asked Kettering to develop a system to mechanize bank accounting. After developing the system and seeing it through its early trials, he resigned from NCR on Sept. 18, 1909, attracted by the allure and challenges of the automotive field.

"If," as one observer commented "the nation found the automobile the perfect technological expression of its personality, its quest of space, time and class, then the automobile found in Kettering, an inventor whose technological style perfectly matched the needs of its early years."

While still at NCR, Kettering had moonlighted on weekends, along with Deeds and Chryst on an electrical ignition system for automobiles and Kettering had applied for his own ignition patent just 3 days prior to resigning from NCR. The following year marked the start of producing electrical ignition systems and also, at Cadillac's Henry Leland's suggestion work was started on a self-starter. The Dayton Engineering Laboratories Company was off to a good start. "The Barn Gang," consisting of seven ex-NCR men, besides Kettering, Deeds and Chryst: Robert S. DeMaree, Zerbe Bradford, William Anderson, R.R. Todd, John Reece, H.C. Phillips and W.H. Mooney were the Delco team and their orders from the major automobile producers soon required expansion into the Beaver Power Building at 4th and St. Clair Streets. Then, in the fall of 1912, with 1,200 employees, the Delco group moved to a 4-story building on East First Street, where two floors and the basement were occupied at the time of the 1913 flood on March 25th. By 1915, Delco had 2,000 employees and now occupied 500,000 square feet in



In driver's seat, Kettering operates GM car

a new 7-story building across the street. Delco took an active roll in employee affairs, first establishing Delco Dell south of Dayton, then underwriting Triangle Park, and eventually purchasing 143 acres for an employees activities center along the Miami River, north of Dayton.

William C. Durant had founded General Motors in 1908, as Henry Ford's only real competitor and on May 11, 1916, Kettering and Deed's joined Durant and United Motors, which brought them into contact with Alfred Sloan, the man with whom they would later build GM into the largest manufacturing enterprise in the world.

Kettering's new-found wealth made him an investor in many technical ventures, most of which did poorly. He also became involved with Arthur Mortan in a progressive educational concept called "Moraine Park School," which operated for about 10 years before the venture was discontinued. He and Deeds called together in February 1914, prominent area engineers and announced the formation of The Dayton Engineer's Club and contributed a generous financial offer. Charter members included Kettering, Deeds, Arthur Morgan, Frank Clements, J.H. Hunt, Orville Wright and Bill Chryst. The Engineer's

Club outgrew its original quarters and on July 31, 1916, Kettering and Deeds announced a gift of \$300,000 for the new clubhouse, completed one year later, at the corner of Monument and Jefferson streets.

During World War I, Kettering, now 40, with nearly 100 patents, heading two corporations and a wealthy man, joined five Dayton business men included Deeds and Orville Wright, in forming the Dayton Wright Airplane Company, to produce DeHaviland Airplanes for the military.

The constant pressure and redesign requirements and the numerous problems encountered kept the Wright Airplane Company from producing any real contribution to the war effort, eventually building 3,000 airplanes which arrived in Europe too late to see any appreciable action.

Dayton Metal products was another of Kettering's company which did make substantial contribution to the war effort in the production of fuses and other war materials. Here, with Thomas Midgley (also, form NCR) was chief chemist and with Kettering, they took on development of a high performance aviation fuel. Later, Thomas A. Boyd and Carroll A. Hochwalt, Ohio

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# Kettering

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State Chemistry graduates, joined in the effort and although the perfect aviation fuel was not developed at the time many important contributions to civilian fuel needs were made.

Kettering had also accepted a contract to develop a self-guided flying bomb. It was not perfected in time to be of any use in the war effort and was in general, produced for economy of production rather than of sufficient sophistication for accurate delivery of heavy destructive power. However, it was the Kettering design that the American government received for WWII and not the expensive Sperry design used in WWI. Kettering was an enthusiastic pilot until he was grounded by Olive's continued protest. He supported aviation and was financially involved in United Air Lines and profitable General Motors aviation interests such as Allison Engineering.

The architects of General Motors Corporation were E.A. Deeds, J.L. Pratt, G. Renchler, E.G. Biechler, C.S. Mott, Alfred Sloan and Charles F. Kettering. Joining GM signified the end of Kettering's career as an independent inventor and entrepreneur. His managerial activities would be restricted thereafter to administration of research.

Kettering died of a multiple stroke on November 25, 1958. His body lay in state throughout Thanksgiving Day, in the Engineer's Club that he loved and where a continuous line of friends and acquaintances passed his simple bronze casket to pay their last re-



The inventor checks out GM automobile

spects. He was buried in Woodlawn Cemetery beside his wife, Olive, who had passed away in April of 1946, as a result of pancreatic cancer.

The Sloan-Kettering Research Institute was but one of many of his gener-

ous contributions to mankind. Cities, highways, office towers, etc., are affectionately named in his memory.

He was truly one of the leading giants in this "Valley of the Giants" — our own Miami Valley.

— Wilson A. Charbonneau



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