The breakdown of a Johnson truck prompted one of the boys from the shop to embellish it with this message. The photo was later reprinted, placing Johnson at the tiller.

After the thermometer became wholly pneumatic, "Electric" is dropped from the Company name.

Johnson designs a special holder using code from Footman for his steamers.

No assembly line here. Each Johnson automobile is crafted in Milwaukee for the most demanding of customers.

The scale of the St. Louis time-piece disappointed none of the fair-goers who came to view the world's largest kaleidoscope, and carving table, among other spectacles. Colorful banners lined the 122-foot diameter dial over which the bands — each weighing 2,000 pounds — turned. Audience for the superlative display made newspaper headlines, enhancing the growing international reputation of the Johnson Electric Service Co.

TELEGRAPH EXPERIMENTS

Europeans had already been introduced to Johnson, but not because of his clock. At the Paris World's Fair of 1900, a "wireless" exhibit prepared by the American firm took the silver medal. A German captured the first prize; Marconi placed third.

Johnson, like many scientists, found the mysteries of wireless communication irresistible. Between 1906, when Marconi earned the first British patent for his system of radiotelegraphy and a few years later when the first successful transatlantic message was sent, numerous inventors tried their luck for fame.

Johnson and his sons teamed up with Charles Fortier, another experimenter and former telegraph operator, and, in lieu of Marconi's vast billions, they tested silver, nickel, and magnetic alloys, finding the best results with Canadian magnetic sand. In 1911, they formed the American Wireless Telegraph Company. A tower of 115 feet was built in Oconomowoc, several miles south of Milwaukee, and fruitless attempts were made to transmit messages to the firm's downtown factory. Hired to lend assistance was Lee DeForest, who later provided the breakthrough for radio with his "audion tube."

Although Johnson continued with his telegraph experiments for several years, he soon embarked on another adventure that occupied most of his attention until his death in 1911. It was his most persistent effort — and his most frustrating.

THE JOHNSON AUTOMOBILES

The automobile captured most of the Professor's other interests. He bought himself a "mammoth steam roadster, with live-tube boiler," brought it to Milwaukee and immediately put his factory into the production of steamers. A passerby could catch sight of the Professor dressed in a plug hat and tuxedo coat, testing one of his steamers. The venture, he told the Board of Directors, was "to take our part in the coming revolution in American transportation."

Eight steamers are built to carry Milwaukee's mail in the 1900s. They are the first "increased carrying" to which Milwaukee's mailmen from around the U.S. mail. A $10-cent stamp commemorated the event.
All Johnson vehicles manufactured until the fall of 1907 were steam-powered. Johnson never attempted an electric vehicle, probably due to his knowledge of failures with battery-powered steamers, and because he considered himself an expert in the principles of steam power.

When business dropped off during that year's financial panic, the firm used the fall in activity to prepare for the production of vehicles with gasoline engines. Twice as many trucks as cars were sold. One, two, and three-ton trucks were designed for use as heavy work trucks and delivery vehicles. The Company was awarded the first U.S. contract to deliver mail via a horseless carriage first with their steam vehicles and later with gasoline-driven trucks. The story is told that the skeptical Postmaster initially agreed to pay Johnson an amount equivalent to his horses' feed bills for the service. Asa promoting the Johnson cars, he proclaimed them the "best vehicle for the best people." Like other cars of the day, the Johnson vehicles were designed to appeal to society's elite.

But the Professor's personal flair and enthusiasm, which had played a large part in his previous successes, fell short when it came to the automotive business. He was unable to convince the Company's backers to provide him with the capital needed to launch the auto business on a significant scale.

In the years between 1907 and 1912, annual U.S. gasoline car production climbed from 5,500 to 230,000. Over the same period, the Johnson factory produced about 200 vehicles per year.

"We are just about as much in the automobile business as a man who waves in the ocean is a mariner," Johnson complained to his stockholders in 1909.

Johnson was particularly vociferous regarding Milwaukeeans' lack of enthusiasm for vehicles manufactured in their own hometown. "The Milwaukee public has no use for any Milwaukee product excepting beer." He chastised his stockholders and pleaded, "Above all, I don't draw dividends from us and buy automobiles elsewhere."

With the temperature regulating business successfully underway, Warren Johnson spent much of his final years in Los Angeles meeting with West Coast agents for the automobile business. He died there on December 3, 1911, of Bright's disease, at the age of 64.

Reinforced concrete construction, the first of its type used in Milwaukee, is shown in 1902 for the headquarters building. The top four stories collapse when the concrete isn't allowed to fully harden; the building's foundation is then extended another 100 feet.
“Warren Johnson is one of the great benefactors of humanity. I wouldn't swap him for a dozen Marconis, a regiment of Bells or a whole army corps of Edisons.”

— H. L. Mencken

Johnson trucks are commissioned by Milwaukee firms to deliver coal, sheet metal, and — of course — beer.
A QUEST FOR CONTROL.
From the invention of a simple device sprang an organization that still provides comfort, convenience and energy savings.

The rights to sell, install, and service Johnson temperature regulation systems were sold in 1885 to two firms, which in turn, were assigned the responsibility of establishing manufacturer's representatives throughout the U.S. The Company's officers almost immediately regretted these arrangements. Not enough agencies were set up and those that were did not perform up to expectations.

Despite these problems, the Johnson Electric Service Co. was very successful. Just two years after it was founded, shareholders were paid the first annual dividend totaling $10,000. Yearly dividends were paid consecutively until 1900 when the firm reorganized and increased its capitalization to $800,000. Dividend payments resumed in 1902 and have since been paid on a quarterly basis without interruption.

In 1902, a year after Warren Johnson was elected president, the name of the firm was changed to Johnson Service Co. The term "electric" didn't really apply, even in 1885, because in that year Johnson received a patent for his first pneumatic system of temperature regulation. Of the over 50 patents Johnson received and assigned to the Company, most were for devices aimed at harnessing the power derived from air, steam, or fluid pressure.
More than 100 years later, thermostats continue as a focal point for Johnson Controls' product line. Despite numerous changes, the pneumatic method of operation remains fundamentally the same.

Compressed air is constantly supplied from a compressor through tubing to the thermostat. Inside is a bimetal bar or sensing device that opens in response to temperature changes. This movement activates a solenoid that triggers the electric control relay to control electrical power to the plant.

The pneumatic side of the 1885 Johnson thermostat included a solenoid that triggered the Professor's "electro-pneumatic" valve to control pressure supplied to a diaphragm air motor. By 1895, the electric side of the thermostat, consisting of a metal valve and battery, was eliminated.

In these early years, only schools, large residences, and public buildings were using hydraulic air compressors as a dependable source of power for control systems. Most homes and buildings could not afford this type of installation and were not wired for electricity. The Company's market, therefore, was defined by those buildings, usually in urban areas, that could be equipped with a source of pneumatic power.

TEMPERATURE REGULATION

By 1912, the Company had regained the rights to do business directly throughout the U.S. With this accomplished, the Johnson Service Co. listed 19 branch offices in the U.S., six in Canada and direct agents in Berlin, Copenhagen, Warsaw, St. Petersburg, and Manchester.

Upon the election of Harry W. Ellis as president in 1912, all businesses other than temperature regulation were abandoned. The automobile business was sold to White Truck of Cleveland and the clock business to Hall Clock of Chicago.

Ellis, who had earned a reputation as being a tireless worker and leader as manager of the Chicago branch office, foresaw ample opportunity and growth in
the controls field. He implemented a modern accounting system and began improving the efficiency of factory operations in Milwaukee.

Ellis upheld the Professor's policy that only trained Johnson mechanics could install their devices. The firm was to serve not just as a source of regulating equipment, but as a customer's single source of design, installation, and service. Services in the early years meant getting the devices in and working properly. When parties were held in private mansions, it was not uncommon, although usually unnecessary, for a Johnson man to stand by his control plant while the festivities were underway. Soon it became clear that expert, routine service was advisable to keep these important systems in perfect order. Contracted service agreements were sold widely.

Expansion of the temperature control business closely paralleled the country's building boom. Vertical cities sprang up where transportation lines intersected. Structural steel was replacing iron and concrete proved itself a tough competitor of brick and stone. Frank Lloyd Wright constructed a building that was air-conditioned and hermetically sealed against noise and dirt. The roots of building control had taken hold.

World War I, however, provided a setback. The War Industry Board deemed temperature control a system for comfort and therefore, the industry was classified as non-essential to the national effort.

Civilian construction was curtailed and the volume of Johnson Service contracts dropped off. In order to keep the factory and its employees going, the sales force turned to government buildings for business. For the first time, they also began sizing up the potential for refitting old buildings with new temperature regulation systems.

The Company's volume of new contracts exceeded $1 million in 1925. A business depression limited construction of office buildings, but a war-weary public was crying for entertainment and better services. In 1929 the Rivoli in New York was the first movie theater to offer "air-cooled" comfort. Other theaters later followed suit, as did department stores and restaurants.
By 1928 contracts secured by the company were surpassing $1 million, Johnson Service Co.'s success led President Ellis to report to stockholders that it had built up a surplus of over twice the amount of capital stock, and the dividends that have been declared, as a result, caused the price of our stock to become so high as to be incorrect and embarrassing.

ECONOMY SYSTEMS

During this prosperity, management had secured the patent rights to a product that anticipated an enduring concept in the management of buildings. It was the Duot Thermostat, which allowed a building engineer to save heating fuel by automatically lowering temperatures at night and on weekends.

When the depression crippled the construction industry in the 1930s, almost all installations were directed toward "economy" temperature systems. Fuel savings was the goal in work available through the Public Works Administration for schools and government buildings. In 1940 the Johnson Service Co. took its story to the public by listing its securities over the counter through the NASDAQ exchange. Joseph A. Cutler, who had become president in 1938, reported sales for that year of approximately $2 million and net income of $345,000. Thirty North American branch offices were in operation and an export group had been formed.

Like Warren Johnson, Cutler began his career as an educator, teaching engineering at the University of Wisconsin. Like Ellis, Cutler's presidency would last nearly a quarter of a century.

DEFENSE PRODUCTS

When the U.S. entered the Second World War, installations of heating and ventilating systems were common in private and public buildings. The change in public perception of building controls was told by the government's classifying Johnson Service as part of an essential industry.