ONAN COMPANY HISTORY

Beginnings Through 1982

Edited by
David W. Onan II

2012

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Onan Company History

Introduction

A large part of my family's history is tied up in the company founded by David W. Onan. Three generations were involved. I want my descendants to have this information available to them.

About This Work

The basic text was given to me by Tom Valenty, retired President of Onan, in November 1992. Permission to use the original documents in any way I wanted was granted by the Cummins Engine Company in March 2001. The original consisted of a 1984 photo copy of 145 pages of double spaced, typewritten pages. With it were some notes from Ned Phelps to Tom, and Tom's personal note to me in which he said the history was compiled by Don Larson.

There was no copy in digital form (word processing) so I did the optical character recognition, OCR, and editing. Editing consisted of removing hard carriage returns from the end of each line, reformatting the paragraphs, and correcting the spelling which OCR did not recognize. Up to that point each page was an individual document, so the pages had to be combined into one single document.

The actual amount of editing I did is fairly small. I have great admiration for people who write, and want to allow them full expression and choice of style. At the same time, I don't think the text was ever subject to finished scrutiny by the author or the company. There is a lot of conjecture written into the early life of D. W. Onan, to the point of making it more romantic than perhaps it was. At times I wanted to interject, "WE DON'T KNOW THAT!!" A few sentences have been combined into paragraphs. I have left in some wordy and tiresome parts. The format is changed to use features available by the word processor. When I have corrected errors or elaborated, my text is in brackets, thus; [correction].

I am grateful to Tom and Cummins for its use. Photographs come from the Onan Family Foundation archives.

David W. Onan II
Grandson of the founder
2012

CHAPTER ONE

HOW IT STARTED


phot0066 David W. Onan 1905

At first glance, the story of the Onan Corporation is a story of machines --- initially machines that helped people do their jobs of repairing automotive parts and components better. But a long, careful look into the history of the Onan Corporation shows that it really is a story of people, unusual people who dedicated their lives to building better machines, but who gave an even higher priority to the people around them.

This all started because the founder, the late David W. Onan, who was a mechanical genius, was above all a humanitarian. His amazing ability with machinery has resulted in a major company with operations throughout the world, but those who remember him, his family, friends and co-workers-remember him mostly for his compassionate regard for people with whom he came in contact. His warm feeling for people has been contagious with others at Onan throughout the history of the company.

Dave Onan, or D.W. as most of his associates called him, was a giant of a man, both figuratively and literally. A Fortune Magazine article in 1943 described him as "so big and broad that he sometimes seems larger than life".

A native of Minnesota, D.W. Onan moved to the East as a teenager, but his quest for a better opportunity lured him back to the state of his birth while still a young man. He was born on July 4, 1886, in Moorhead, MN, the second of four sons of David and Ellen Onan. [Ed. His father was named Edward. A mistake he made once and was often repeated by others.] His father was a railroad worker, who put in long hours on the job but still had time to putter with machinery around the house, helping plant a mechanical seed in young Dave that flourished in the years to come. Life in the last years of the Nineteenth Century in the Red River Valley was austere and rather unexciting for a youngster, unless, like young Dave Onan, you were blessed with a vivid imagination and could build things out of nothing but scrap. Dave created his own excitement:, both at his home in Moorhead and later on when the family moved to Wahpeton, N.D., where his father was transferred.

When young Dave was 14, his father died, and Ellen Onan took her four sons to Niagara Falls, N.Y., which was her original home. [Ed. Ellen Morris Onan was born 1858 in Chesterfield County, VA] That was 1900, and it fell upon Dave and his brothers to help support the fatherless family. Dave never was fond of school, so dropping out to work, especially because it was a necessity, was not an unpleasant experience.

His first job there was helping to build a power plant for the Niagara Fails Power & Light Co., but in a couple of years, when Dave was 16, he landed a better job as a streetcar conductor. He loved that work, especially the close contact with people, and though he wanted to stay in that type of job, Dave wasn't happy with the East. He kept thinking of his childhood in Minnesota and yearned to return.

Shortly after his 19th birthday, Dave decided the time was ripe to return to his native state; he was certain he could get a job as a streetcar conductor in either Minneapolis or St. Paul, so in mid-1905 he bought a railroad ticket to the Twin Cities and headed west.

It wasn't unusual for young men from the East to travel to Minnesota to seek their fortunes in the early years of the Twentieth Century. Minnesota was the land of opportunity in those days. Business tycoons like James J. Hill, Frederick Weyerhaeuser and George Draper Dayton were establishing national reputations from their bases in Minnesota. Mushrooming companies such as Washburn Crosby (now General Mills), Pillsbury, Cargill, Peavey, Minnesota Mining and Manufacturing, and the Electric Heat Regulator Co. (now Honeywell) were providing jobs for eager young men from all parts of the East.

Though jobs were plentiful, Dave Onan wasn't able to find one as a streetcar conductor in the Twin Cities when he arrived. Undaunted, he accepted a job as manager of a roller skating rink in South St. Paul, not exactly the answer to his dream, but it was steady, pleasant work. It was at the roller skating rink where Dave met Emily Roman, a young woman who lived in the neighborhood. They were married in 1907.

Due to his interest in mechanics, Dave Onan soon decided his abilities would be better tested in the growing automobile industry. He accepted a job with the P. J. Downes Co., distributors of Rambler Motor Cars, selling and servicing them. The automobile business in the first decade of the 1900s was vastly different from what it is today. There were very few dealers, most of them headquartered in major cities, and service stations as we know than were non-existent. It was not uncommon for Dave Onan to sell an auto to someone hundreds of miles away, and then have the problem of delivering it, often driving it for miles across fields in areas where there were no roads. In the Onan Corp. archives there is a photo of D.W. Onan taken in 1908, showing him driving a two-cylinder Rambler, with chain drive, across an alfalfa field near Judith Basin, Montana. Onan went by train with the auto from the Twin Cities to Montana, but he had to drive 200 miles cross-country to deliver the auto to the owner.

When an auto broke down, it was up to the owner to remove the part that wasn't working and to ship it back to the dealer, or to some distant repair shop, to have it fixed. The logistical problems of repairing an auto intrigued D.W. Onan. He thought there was an opportunity for a special business, doing nothing but repairing broken parts of an automobile, or motor cars as they were called then. Without funds to start such a business, Onan did the next best thing. He took a job in 1909 with the Hollis Co., in Minneapolis, a wholesaler of motor car accessories and garage equipment. Shortly after he joined the firm, the name was changed to Reinhard Brothers Co.

It wasn't long before Onan convinced the owners of the company that a special department involved only in repairing the electrical parts of a motor car would be a profitable addition to the Reinhard business. Onan, naturally, was put in charge. It was his first opportunity to prove to himself he was exceptionally skilled, not only in mechanical matters, but in organizing a business, in marketing, and in managing people.

Within 10 years, Onan, now called the superintendent of the Reinhard Electrical Repair Department, was supervising 50 mechanics and turning out from 100 to 125 repair jobs a day. The repair shop and storeroom for spare parts occupied the entire fourth floor of the Reinhard building. Onan's original ideas of how to operate a repair business resulted in such efficiency that competitors simply were unable to compete either in service or price. Motor car dealers from states throughout the central part of the U.S. routinely sent broken electrical parts to Reinhard, knowing they would be satisfied with the quality of repair, the speedy return and the price.

Onan personally trained each of the mechanics working for him. It's notable that of the 50 workmen he had in 1919, only one had been a motor car repairman before being hired by Onan. The men had been plumbers, mechanics in other fields, telephone repairmen, or just people with a mechanical aptitude. Once hired, they seldom left Onan's shop. For many years the labor turnover in his department averaged less than one percent a year.

Everything in Onan's shop was highly organized for utmost efficiency. The tool room was located in the center of the room, and tools were issued to mechanics only when they presented a written request, which was kept on file until the tool was returned. Each workman had his own well-lighted bench equipped with the necessary electric wiring and testing equipment.

Onan insisted that all units to be repaired had to be disassembled in a seamless iron pan to keep every part, large and small, in one receptacle until it was ready to be put back together, making certain nothing would get lost.

As the various units arrived for repair, they were placed in numbered compartments and taken for repair in the order they were received, always on a first-come, first-served basis, so they could be returned as quickly as possible. With several hundred parts usually waiting for repair, his system was necessary to ensure prompt attention.

Onan's storeroom had $50,000 to $60,000 worth of spare parts with his inventory constantly being replaced so no unit had to wait for necessary parts. His stock included repair parts for starting, lighting and ignition equipment on every motor car ever manufactured.

Although Onan's repair shop was only a part of the Reinhard Brothers operations, it was the fastest growing, and most profitable, part. The Reinhard building, located on 28th street, between Hennepin and Nicollet Avenues, was quickly being converted from a warehouse for motor accessories to a repair business under D.W. Onan's supervision.

But Onan wasn't satisfied with working for someone else. He was too independent to be happy as a hired hand. He also was too energetic to be involved only in one enterprise. During World War I, he taught mechanics at the Dunwoody Institute in Minneapolis, and in his spare time worked on several different mechanical inventions, most of them having to do with motor cars, in the basement of his home at 1331 Penn Avenue North. He also was active in service club work and was a devoted family man. He and Emily Onan were the parents of three children, sons Charles Warren (Bud) and Robert D. and a daughter, Geraldine.

David Onan's driving ambition, during ail these early years, was to have a business of his own.

He was soon to realize that ambition.

CHAPTER TWO

BIRTH OF THE ONAN COMPANY


David Onan and his Wrist Meter

One of the many difficult problems facing D.W. Onan during his 13 years at the Reinhard Brothers Co. was the lack of specialized tools and testing equipment to make the repairs on the electric parts of early Twentieth Century motor cars.

He neatly solved most of these problems by inventing the tools and equipment he needed, and building them in the basement of his house during his spare time.

Having already decided that sometime in the future he would be in business for himself, Onan made it clear to the owners of Reinhard that his tools could be used by the mechanics there, but the rights to manufacture the tools for others would be retained by Onan.

Although it was his idea originally for Reinhard to start a repair shop, Onan realized that as motor cars became more popular, the practice of removing a faulty part and shipping it, sometimes hundreds of miles, to a repair shop was not the most efficient method. His theory was that eventually there would be motor car mechanics in every city and town, and people would just drive their autos to a nearby service center and have the repairs made there.

There were only two things preventing that from happening. One was the lack of trained mechanics, and this already was being solved. With more and more motor cars being produced, the demand for mechanics was growing, and schools for them were being established. The second problem was the lack of tools for the mechanics.
Onan thought he had the solution for that problem with the many inventions he already had made, and ideas for several others.

In 1918, while still working days at Reinhard, Onan began experimenting with marketing some of the tools he had invented to mechanics in other parts of the country. He contacted motor car repair shops by mail and through small, one-column, one-inch advertisements in Popular Mechanics magazine. The response was encouraging.

Onan worked nights and weekends in his basement shop at his Penn Avenue home, and when orders for tools exceeded what he could produce, he hired some of the better mechanics at Reinhard to work with him in his basement shop during their off hours.

One of the first tools Onan invented and produced was an armature stand. It consisted of a 24-inch length of two-inch pipe with two metal castings that would slide back and forth to fit the

length of any armature. The pipe was mounted on a stand. The castings could be locked in place to hold an armature, and a large screw with a pin was used by the operator to apply the exact amount of pressure he needed in order to work on the armature. The tool was designed to enable a mechanic to work on the armature without having to lay it on a bench where the winding of the armature might be damaged.

Probably the most successful of his early tools was his spring spreader. This device enabled a mechanic to easily spread the springs of a motor car so grease could be applied between the leaves for a smoother, less noisy ride. The spring spreader consisted of a "C" clamp with hardened steel points on one end. A pipe was fastened to -the "C" clamp that had a handle that forced the steel points between the leaves of the spring, spreading them so grease could be inserted. Later, when sticks of graphite, about the size of a stick of chewing gum, became available, they were used instead of grease.

He also designed a device called the Onan Test Rack, on which a part could be mounted and then run just as if it were on a motor car. The rack contained a sliding track with a metal pulley and belt. The part, an armature or starter, for instance, would be attached, and it could be operated at variable speeds as if it actually were on a car.

Onan added to his collection of tools and equipment as the need arose for them and he could dream up a device that would work. He invented a growler for testing the winding of armatures, cutting tools, a third-brush wrench, and an armature lathe.

Of all his early inventions, he was proudest of what he called the Onan Wrist Meter. An advertisement, which he wrote himself, says of the Wrist Meter: "It is to the mechanic what a thermometer is to the doctor. Worn like a watch—just as well made."

The Wrist Meter consisted of the meter itself, which was strapped to the mechanic's wrist with a leather band. Two long, insulated wires were connected to the meter, There were small metal clamps attached to the loose ends, and these clamps fastened to an electrical part of the car. In a detailed instruction book which was included with the Wrist Meter, Onan wrote: "Anytime you have trouble, start from the source, in other words, the battery, and then work from there until you find the trouble."

Onan's writing was hardly polished, but it was in easy-to-understand language and it was designed to instruct mechanics who weren't concerned with good grammar as much as with clear details.

Onan invented his Wrist Meter in 1918, and it was about this time he had decided he had enough self-designed tools to go into business for himself. Unfortunately, he didn't have enough money to leave his job at Reinhard and devote full time to his business. So, for the next four years he worked at Reinhard, at $200 a month, during the days and devoted his spare time to his own business.

He had no full-time employees, but there was a constant parade of workmen in and out of the Onan home—people who also worked in their spare time on the Onan business.

His first full-time employee, Julius P. "Dyke" Grabow, joined Onan in January 1920. Dyke was a student at North High School in Minneapolis at the time, and for the first several months worked after school hours and weekends.

He was hired not for work in the shop, but to set up an office in a room on the first floor of the Onan home. He handled Onan's mail, wrote letters dictated by Onan, kept the books, ran errands, helped design the ads that ran in Popular Mechanics, and performed a wide variety of duties.

Grabow, who stayed with D.W. Onan and the Onan Corporation until he retired a few years back, fondly remembers those early days working in his small office in the Onan home. He recalls, "Mrs. Onan used to entertain her women friends in the living room just off the office. They sat around and talked and played cards. In the afternoon, lunch was served, and thanks to Mrs. Onan, I was always included. I especially remember the lemon meringue pie, which she had baked in the morning. It was out of this world."

The volume of business was growing steadily as mechanics found Onan's tools invaluable in repairing motor cars, and it soon became obvious the space available in the Onan home was inadequate.

In November 1920 Onan rented a nearby building on Oliver Avenue and 14th Avenue North and moved his operations there. Owned by a Mr. Pratt, who formerly had been a mayor of Minneapolis, the building originally was a solidly constructed barn. The front part had been converted into a one-story, two-car garage with a pair of large doors facing the street. The back part of the building, where horses had been kept when it was a barn, had two stories. The top floor, which had been a hay loft, was ideal for storing equipment. The main floor was used by Onan for assembling his tools and equipment.

The front of the building, about 30 by 40 feet in size, was the main work area and also contained Onan's office. The new location of the David W. Onan Co. was not a fancy place, but it was a big improvement over the basement shop in his home. Although he continued to work full-time at the Reinhard Co., Onan had one permanent employee in Dyke Grabow and now was able to increase the number of part-time workers with the additional space available.

Onan developed a close working relationship with Oscar Dahlen, who operated the 0. H. Dahlen Printing Co. in Minneapolis, during his two years in the converted barn. Dahlen printed the instruction books that went with all the tools, and he printed the advertising folders and other promotional material Onan used in his direct mail campaign.

Onan assembled the parts for his tools in his building, but many of the parts were built by outside suppliers. Ralph Hitchcock and his sons, who operated the Modern Pattern Co. in Minneapolis,

made all the patterns for the tools. Modern Pattern later became Hitchcock Industries, which is still operating in the Twin Cities.

Charlie Carlson, another friend of Onan, operated a tool and die business in a shop on Main Street, just off Hennepin Avenue, and he provided most of the dies for Onan's tools.

Most of the parts for Onan's tools were produced by his friends in Minneapolis, but some had to be obtained from out-of-town suppliers. For instance, he bought the pulleys for his Test Rack from Superior Spinning Co. in Superior, Wis.

In his early years, it was the generosity of his many suppliers that allowed Onan to stay in business. They extended credit to their friend far in excess of normal business practices, because they had faith in Onan and knew they eventually would get their money. When Onan decided to leave Reinhard and devote full time to his own business, it was these same friends and suppliers, along with some other friends, who came up with the necessary financing — in cold cash.

Oscar Dahlen, Charlie Carlson, Ralph Hitchcock, all suppliers, and Harry Atwood, a friend who owned Atwood Coffee Co., together loaned Onan $5,000 in late 1922 so he could quit his job at Reinhard and further expand.

The owners at Reinhard were sad to see Onan leave their company, and they offered him a full year's pay, $2,400, if he would stop in at the Reinhard shop once or twice a week to see how things were going and to offer advice. This was an unexpected bonus for Onan.

For the first time since he started his own business, Onan had extra cash available. With some of this extra cash, He decided to buy a larger building for his growing business. He purchased a large, three-story house at 39 Royalston Avenue, a few blocks from downtown Minneapolis.

Onan moved into his new location in December 1922. He was now 36 years old, was operating his own business, and he felt on top of the world.

CHAPTER THREE

"SAFTY SAW"

Like most entrepreneurs, D.W. Onan was a confident man. He was optimistic that his new business would grow and succeed, and he wasn't concerned, or even aware, that he was pitifully short of capital for expansion or that he lacked solid business experience.

In retrospect, it was fortunate Onan wasn't the conservative type, because, in all likelihood, he wouldn't have started his business in the first place. He certainly wouldn't have made the plunge he did in late 1923 to spend nearly all his available funds to became a property owner.

There's no question that Onan's growing business needed more space than was available in the old former barn he rented on Oliver Avenue and 14th Avenue North , but the property he bought on Royalston Avenue, near the Minneapolis Loop, far exceeded his immediate needs. In addition to the large, three-story house at 43 Royalston there also was a smaller house behind it on the some lot. Then there was a large, usable barn, a shed and a summer kitchen behind the smaller house. Onan was in an expansive mood when he made the purchase, and he decided that even though he didn't need the space immediately, he purchased the lots on 45 and 47 Royalston as well. Lot 45 was vacant, but there was an ornate old gingerbread house on Lot 47.

Within the next few years, Onan's foresightedness paid off handsomely. Before 1924 was over, he had connected all the buildings at 43 Royalston into one large complex. Early in 1925 he started building on the adjacent lot, and by 1929 his factory covered all of Lots 43, 45 and 47.

It's interesting that one of the first carpenters Onan hired to expand the buildings on Royalston was Gabe Valenty. It was through this association that Valenty's son, Tom, became acquainted with Onan and his company. Tom Valenty joined Onan on a part—time basis in 1936 and stayed with the company throughout his career, serving as president and chief executive officer from 1972 until 1981 when he was named vice chairman of the board. Tom Valenty retired in June 1982.

While it's obvious D.W. Onan made a wise decision in buying the Royalston property, it also is obvious he didn't carefully inspect the buildings before doing so. One of Onan's two sons, C.W. (Bud) Onan who was 15 at the time, was given the job of cleaning up the building before his father moved in his equipment. When Bud got to the second floor of the big, old house, he noticed a "terrible odor. " Bootleggers had been using the house and the summer kitchen to

make illegal whiskey, and Bud found 32 barrels of overly ripe mash. Bud went across the street to use the phone and called his father. "Have you been in the upstairs of that house?" he asked his Dad. "No," D.W. Onan answered. "You ought to come over," Bud recommended. D.W. Onan rushed over to his newly purchased property, saw the mash and called police. Those were prohibition days, but the police were unable to track down the bootleggers.

After the house was cleaned, Onan transferred his operations from the old barn to his new location. He was in full production by the first of the year, 1923, but sales of his auto repair equipment were slow during the first several months. Onan was marketing the tools and equipment through small ads in magazines and with direct mail, and although the response was good, his limited capital made it impossible to greatly increase his promotional activities.

The product line was the same he had been assembling first from the basement in his home and then in the converted barn. His one new item after moving into the Royalston location was a test bench that was designed to hold all the equipment Onan sold. The test bench was made of angle iron with a four-by-six-foot hardwood top on it. The one-and-one-fourth-inch top was made of birch or maple. The bench had a drawer to hold the Onan Wrist Meter and instruction book and some of the other small tools. The test equipment could be mounted on the bench.

When a customer bought a piece of equipment from Onan, it normally was shipped in a wood crate. Cardboard cartons were not popular in those days. Each shipment needed a different sized crate, depending on what was shipped, and there was no supplier of custom-made crates. So Onan's workers hand-made each crate. Shipping the test bench, because of its size and weight, was especially a costly and time-consuming chore. It took two workers most of one day to build a crate and ship the test bench.

A work day back in 1923 was vastly different from today. Onan's workers, and most other craftsmen in those days, worked from 7:30a.m. to 5 p.m. on Monday through Friday and even longer, from 7 a.m. to 6 p.m., on Saturdays.

Onan, who was constantly seeking ways to improve productivity, was frustrated over the time it took to crate his tools and equipment. He finally decided that because the big consumer of time was sawing the wood that went into the crates, he would buy a motorized saw so he could speed up the process. After several days of looking around the Twin Cities for a proper motor-driven saw, he gave up. The only thing he found suitable was a large overhead swing saw, and he decided that was simply too dangerous.

Onan was never frightened by the prospect of trying to invent a work saver, or a piece of equipment that could save him money so, as he had done time after time when he couldn't find equipment he wanted, he decided to design a saw himself. For instance, when Onan first moved into the house at Royalston, it was heated by an old coal furnace that was constantly giving him trouble. It didn't dawn on him to buy a new furnace. He called his old friend, Ralph Hitchcock, and the two of them designed an oil burner to convert the coal furnace. This was before oil furnaces were available. Onan and Hitchcock made a brass unit which was set inside the furnace.

Oil dripped on it from above to create a flame. Dyke Grabow, Onan's office manager, whose job every day was to buy two quarts of kerosene in the morning to feed the burner, said he thinks it was 'the first successful oil furnace ever made.

For some reason Onan decided not to market the oil burner, and it was one of his few inventions he didn't later sell on the open market.

The saw he invented, for example, proved to be one of his most successful products. Onan's main concern in designing a motor-driven saw was to make one that was safe to operate as well as saving time and money. His first saw consisted of channel iron welded together for the stand and a flat piece of metal for the top. The top was bent down two inches on all four sides and the corners were then welded.

In the top was a long saw slot with various holes along it in different positions. The saw guides were made with two metal bars riveted together. The saw was operated by a swing saw beam bolted to the side cross beams. The electric motor was mounted on a plate fastened to the saw beam so the weight of the motor counter-balanced the beam. The saw handle was operated with the right hand leaving the left hand free to hold the board to be cut. The board was held firmly against the guide and the saw blade was pulled across the board. With both hands being used to operate the saw, it made the operation relatively safe.

Although Onan made many improvements in future years, the original design of the saw was an immediate success. It was a revolutionary approach to motor driven saws, and it opened an immense market. Not until the radial saw was invented years later was there significant improvement in the design of Onan's saw. The major difference between the radial saw, which is commonly used today, and Onan's saw is that the blade is mounted on top in the radial saw, while Onan's design had the saw blade underneath.

Onan's saw was designed primarily for cross-cutting boards to make his crates, but it could be converted easily to do heavy ripping, mitering and even had a removable dado throat.

The dimension of the top of Onan's saw was 26 inches wide and 32 inches long. Side tables, made of wood encased in a steel band, would be attached, forming an eight-foot-long bench. There were wheels on the bottom of the stand so the saw could be easily moved even though it weighed nearly 400 pounds.

The aluminum handle, which was used to pull the saw blade forward, also served as a guard to protect the blade when not in use. The guard and gauge on top of the table were adjustable and served as an enclosure in which the saw blade operated. Saw blades were 12 inches in diameter and made of 15 gauge steel. The first electric motors were two horsepower, powerful enough for any work which the saw blade could handle. Operation of the saw was as simple as marking a board with a pencil, and the sawing speed was as fast as an operator could draw the blade forward.

The main safety feature of the saw was that the operator had to stand erect to run the saw and both hands had to be used, one for holding the lumber and the other for pulling the handle forward. The electric motor was spring mounted, causing the belt to slip if the lumber was pinched or caught. The saw enabled Onan's workers to reduce drastically the time necessary to build a crate to ship the auto repair tools, but the unexpected bonus was that it became the young company's most popular product in the marketplace.

Onan decided to market the saw soon after the first model was built and he could see the potential. Because the safety features were impressive, Onan decided to incorporate that in the brand name. He wrote out the first piece of advertising material in longhand, and gave it to Dyke Grabow to type. Grabow noticed that Onan had called it the "Safty Saw," and Grabow mentioned to Onan that he had misspelled "Safety." Onan replied, "Leave it just that way, because then we can have a copyrighted name that no one can steal. So, from then on, the Onan saw was officially named the "Safty Saw", and despite the spelling error it was marketed that way throughout the country, and no on attempted to copy it.

After making his first saw for his own shop, Onan was asked by his friend and investor, Oscar Dahlen, to build one for his printing business. The third saw was sold for Onan by Reuben Skarnes to a company in Duluth. Skarnes, a long-time friend of Onan, played an important role in marketing the saw even though he never was a full-time employee of the company. Skarnes knew D.W. Onan when Onan was working for the Reinhard Company, and they became close friends. Skarnes, like Onan, was mechanically inclined so they had much in common. Skarnes left Minneapolis before Onan started his business. He took a job as a sales engineer for the Hyatt Roller Bearing Co. in Chicago and worked there until 1923 when his father, back in Minneapolis, suffered a stroke. Skarnes returned to the Twin Cities to be with his father and gave up his job with Hyatt.

When Onan was with Reinhard, he often talked with Skarnes about his dream of going into business for himself. He convinced Skarnes that the independence of being your own boss was worth just about any sacrifice, When Skarnes returned to Minneapolis, Onan was operating his own business, and he offered Skarnes a job.

Skarnes turned his down. "Dave had done a good selling job on me earlier, and I was determined to go into business for himself and not work for anyone," Skarnes recalled. Skarnes wanted to become a manufacturer's representative, and to sell for a variety of companies. He told Onan he would handle the line of products that Onan distributed along with several other non-competing lines. "At that time (1923), Dave Onan didn't have his saw yet, so I sold his automotive tools and equipment," Skarnes said. "When Dave invented the saw in 1924, I could see the potential in that and started selling it immediately."

The first sale, to the company in Duluth, netted Skarnes $9.90 in commission. "Dave had priced the saw too low at the beginning," Skarnes said. The first models went for only $105, Skarnes remembers, but Onan quickly increased the price as the sales demand exceeded his ability to produce them. As the price increased, however, the saw also was improved. There were blades

and equipment added to it so it could cut marble and tile. The biggest improvement came when Onan decided to have a die for the top produced by the Youngstown Press Steel Co. in Ohio. The top and the ends were then stamped out, giving the saw a much more professional look.

The disadvantage was that Onan had to order 1,000 tops at a time from Youngstown without having saw orders to fill. Fortunately, orders for the saw came in from all over the country, and the item soon exceeded revenues from all other Onan products.

Skarnes remembers traveling to cities like Chicago and San Francisco, selling dozens of the saws on a trip. He also established dealerships in many different cities. He recalls large trucks with crated saws piled two deep leaving the Onan plant at least twice a week. The market for the saw was greatly expanded when Onan decided to offer it with an air-cooled gasoline engine so it could be used outside at construction sites. The saw now was available with a Briggs & Stratton gasoline engine or two types of electric motors— a three-phased 220-volt motor or a single-phase motor for either 110 or 220 volts.

A big boost came in 1925 when the A. S. Aloe Co. of St. Louis, a general contractor, asked Onan to manufacture saws with the Aloe brand on them for outside construction work. By now the saws were priced at between $250 to $275, depending on the motor available. In 1925, Aloe alone purchased $12,510 worth of saws and the following three years bought about $25,000 worth each year. Sales to Aloe fell off in 1929, and the company stopped buying the saws in 1930. Onan continued to market the saws to others, however, until just before World War II.

The saw was the salvation of the Onan company during the 1920s, and sales far exceeded the volume coming from the auto tools. The peak year for the saw was in 1926 when sales of this one item reached $192,572, while sales of all of Onan's automotive products were only $27,314. Sales of the automotive tools and equipment really never took off for the Onan Company, partly due to the success of the saw. The peak year for Onan's automotive line was in 1925 when sales were $29,871. The volume went down each year thereafter until the line was dropped in the 1930s.

Saw sales, on the other hand, remained healthy until the effects of the Great Depression were starting to be felt in 1930. Here are the annual sales volume of the saw from the time it was first marketed in 1924 until it became a minor part of the business in 1933.

YEAR SALES

1924—$16,998
1925—$111,908
1926—$192,572
1927—$153,075
1928—$100,122
1929—$100,393
1930—$57,924
1931—$23,644
1932—$11,650
1933—$4,984

Because saw sales remained robust for many years, Onan never had problems with ordering the stamped-out tops from the Youngstown Press Steel Co. in quantities of 1,000. Problems did

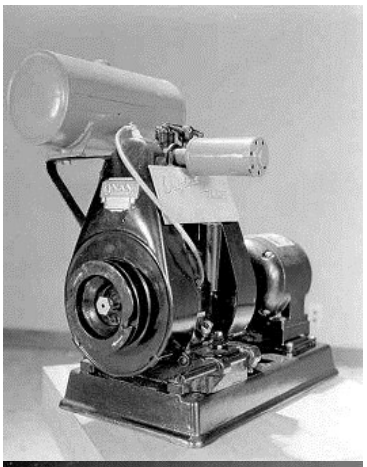
arrive, however, in the 1930s when sales began to fall off. Most of the last order of 1,000 tops remained at the Youngstown plant for years until company officials told Onan he would have to have them all shipped to Minneapolis, Onan old-timers remember seeing hundreds of the tops stored in a Minneapolis warehouse long after the saw had been discontinued.

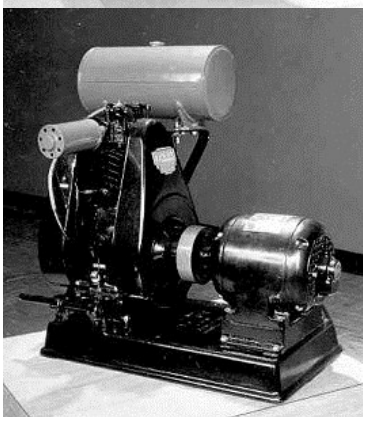
Other, even more successful, products followed the "Safty Saw," but there's little doubt-that if Dave Onan hadn't invented the saw in 1924 and decided to market it, the Onan Company might never have succeeded. The "Safty Saw" played a mighty important role in the history of the Onan Company.

[Ed. Note. During the 1940s, many saw table legs and tops were assembled with casters for use as transporting tables for small generator sets in the production shop. Bench heights were adjusted to match the saw tables so units could be slid on and off. They became portable, multi-purpose work benches.]

CHAPTER FOUR

THE FIRST ELECTRIC PLANT





In addition to being a mechanical genius and a humanitarian, D. W. Onan also was a philosopher. He was fond of putting down on paper his thoughts on a variety of subjects.

He once wrote his 12 points for operating a successful manufacturing company:

1. Product acceptance.
2. Engineering.
3. Experimental research.
4. Tool & die excellence.
5. Production and assembly.
6. Production flow.
7. Final testing.
8. One-product concentration.
9. Meeting a need.
10. Sales and service facilities.
11. Basic management.
12. Teamwork.

It was No. 8 — one-product concentration — more than any other factor, exemplified the Onan Company. Seemingly by accident, but in view of D. W. Onan's philosophical jottings, a planned strategy. The Onan Company started with tools to repair motor cars, quickly switched its emphasis to the "Safty Saw", and before a decade had passed it was producing generator sets, a product the firm has stayed with ever since.

Like the auto tools and the "Safty Saw", the company found itself in the generator business because of Onan's ninth tenet — meeting a need. D.W. Onan's fishing buddy, George VanWagenen, first called attention to the need. VanWagenen, a Minneapolis businessman, had a summer cottage at Lake Mille Lacs in north central Minnesota. "Dave, I've got a problem you can solve," VanWagenen challenged his friend. This was in the summer of 1926. "We need electric lights at my cottage. I'm tired of kerosene lamps, and I don't want to buy one of those Delco units and fuss with batteries all the time. Why don't you design a generator with a gasoline engine that I can keep at the cottage. I can use it when I'm there and forget about it when I'm not."

D.W. Onan liked the idea for several reasons. His "Safty Saw" business was booming, and for the first time in years he had some spare time on his hands. He now also had a "partner" who, like Dave, loved mechanical challenges. The partner was his oldest son, Charles Warren Onan, or

"Bud" as everyone called him. Bud, who had reached 16 on May 30 that year, had quit high school and gone to work full-time for his father. Like his father, Bud was exceptional with anything mechanical, and both were excited about the prospects of designing a gasoline-driven generator set; not so much as a possible product for the company, but just as a project for their restless imaginations.

Bud and his father decided to start with equipment familiar to them. The highly successful "Safty Saw" used a Master motor and a Briggs & Stratton air-cooled gasoline engine. They decided they could easily convert the Master motor into a direct current generator that could be operated by the Briggs & Stratton engine. After several months of work, they built a 300-watt, 115-volt, direct current generator set, and gave it to George VanWagenen in the Spring of 1927 to try at his Lake Mille Lacs cottage.

VanWagenen had bad news for them. "I can't use it," he said. "The lights flicker so much it drives me crazy. " Bud and his father decided the problem was in the coupling. Bud Onan said at the time, "I went to work on this coupling, and it was a horrible project. I redesigned it, and tried the springs in all positions, from center to end, from a small radius to a large radius, and back down again. We finally arrived at a design that would work, and the flickering was eliminated."

Bud Onan discovered that the flickering had been caused by the cyclic irregularity of the single cylinder engine. The problem was finally solved by connecting the generator to the engine with a spring coupling that allowed the generator to turn at a constant speed regardless of engine speed variation. After testing the unit several times, and increasing the power to 350 watts, the Onans were satisfied they had a product they could market.

They called it the "Onan Ten-Lite Generator."

The Onans sold the Ten-Lite Generator for $99 plus $12 for 10 30-watt light bulbs and enough wiring to string them around a small home. It was a vast improvement over existing battery-powered systems. The market for the Onan generator was primarily in rural areas where "city power" wasn't available.

[Ed. Note. Jim Hoiby gives D.W. the credit for solving the problem more elegantly while the two of them worked on it after Onan started making their own one cylinder engines. A second set of breaker points was set to operate on the same cam as the ignition breaker. These points were connected to a resistor that was connected into the generator electric field winding circuit to lower the generator voltage momentarily at the time the engine fired on the power stroke.]

Dave Onan knew how to market his new product, too. He had a formula that was foolproof and the hardest-working advertising manager of any small company around. She was Nell Tangen, who joined the Onan Company right out of school in 1923, and she not only handled the advertising but was a secretary, bookkeeper and office manager.

It was her conscientious attitude that not only made her an invaluable employee for 35 years but landed her the job in the first place. Dave Onan had advertised for a secretary for his new business and Nell Tangen's school was looking for jobs for their students. The school suggested to Nell that she go to the Onan "plant" at 43 Royalston and apply for the job. When she reached the address and saw only a dilapidated three-story home, Nell was sure she had the wrong address. When she looked inside and saw a messy office with no one around, she didn't know if she wanted to work there anyhow, so she left. A few blocks away, Nell decided she just couldn't go back to her school without a better story than the one she had, so she returned to the Royalston address. Dave Onan had been out in back the first time Nell looked in, but he was in the office when she returned. Nell inquired about the job and Dave Onan hired her on the spot. It was the beginning of a long association that ended when she retired in 1958.

The advertising program, which Dave Onan formulated and Nell Tangen carried out, consisted of small but frequent ads in magazines such as Popular Mechanics, and a direct-mail project targeted at past customers. Dave Onan was sold on this approach, and he used it faithfully throughout his years with the company with about the only change being slightly larger ads as the business grew. To start with, the ads were mostly one-column by one or two inches.

A typical ad had a picture of an Onan generator set with a small headline at the top reading, "COMPLETE ELECTRIC LIGHT PLANT." The headline was squeezed between two reverse blocks of type, one that said, "ELECTRIC LIGHTS ANYWHERE," and the other which said "$99," which for years was the lowest priced model.

The ad included a sub-headline that read, "For your country homes, camp, cottage, or wherever electricity is needed." A complete description of the light plant was included, along with the enticing "Operates all standard appliances. RADIO. As easy to install as an outboard motor. Write for folder. If you will describe the place where you need electricity, we can send complete details and proposal free."

The ad had the Onan name at the bottom and an address that varied with each ad. That was Dave Onan's key. Whenever he received an inquiry by mail, he could tell which ad had produced the response. For instance, the ad that ran in the October Popular Mechanics would carry the address of 6 Royalston Ave. while the ad in the November issue would have 7 Royalston Ave., and in December it would be 8 Royalston Ave, Those were the days when the mailman knew where the Onan mail should go even if the address was wrong.

In 1958, the year she retired, Nell Tangen wrote a letter to C. F. Minor, Sr, an advertising representative with Popular Mechanics, in response to some correspondence from him.

The letter said: *"Your letter brought back many pleasant memories of the regular calls you made on Mr. D.W. Onan and me for over 25 years. Do you remember your visits to us when the office was in the living room of an old home and we had a total employment of approximately 30 people? And do you remember the first one-inch keyed ad? In those days, it was sometimes hard to scrape together the $45 for the 14 line ad.*

"I recall the first key we used was 2 Royalston Ave. and over the years we used keys as high as 9000 before moving to our present University Avenue location.

"In some old ad records, I notice Popular Mechanics circulation in 1931 was 590,115, a far cry from the 1957 circulation of better than 1,330,000. Mr. Onan had great faith in the inquiries received from Popular Mechanics for these were always backed up by sales, too—and quite a few in foreign lands long before we began using Mecanica Popular, the Spanish edition.

"A mighty interesting record, wouldn't you say.

"I haven't carried the title of Advertising .Manager for many years now but sat in on an ad meeting just a week ago where the tentative 1959 ad schedule was being reviewed. Popular Mechanics was, as usual, down for a 12 month consecutive schedule, which will make an uninterrupted schedule since February 1929—over 30 years. During that time we grew from a very small organization to better than 2,500 employees during World War II and back down to our present 650.

"The 2" space we now use is still not large, but I know there is no stretching the advertising budget, so in spite of our long association, if there weren't satisfactory results now from Popular Mechanics, we wouldn't be among the advertisers. "

The Onan advertising strategy, which over the years resulted in an average of about $18 in sales for every dollar spent, was complemented by frequent mailings to past customers, especially when new, improved models were introduced. D.W. Onan also insisted on personal follow-up, usually by mail, to all company sales. Nell Tangen remembers that Onan insisted on going through all incoming mail every day, and any problems or complaints were immediately answered by him personally.

Opening the mail was one of the highlights of the day for D.W. Onan, almost a morning ritual in the old house on Royalston Avenue. D.W. Onan's office was in the front sunroom while his secretary, Nell Tangen, worked in the front foyer. As business increased, two other secretaries were hired, and they worked in the living room. A draftsman worked in the dining room, and Bud Onan did his design work in the kitchen.

When a complaint came in the mail, you could hear D.W. Onan's soft grumbling if you were nearby, but when he opened a letter containing a large order or a badly needed check, you could hear his excited exclamations of joy throughout the entire house.

Not surprisingly, sales of the new Onan Ten-Lite direct current generator sets were slow at first. One factor that contributed to this was the fact that power from electric utilities is alternating current. Therefore, most lamps and appliances were designed for alternating current, and they were therefore less expensive than direct current lamps and appliances.

The alternating current problem was compounded when the first AC radios came out in late 1928. Both D.W. Onan and the engineers at Master Motors agreed it would not require much of a change to convert the direct current generators to alternating current units. Without changing the basic structure, the DC generator was modified by adding a collector ring and rewinding both the stator and rotor. The same coupling was used only with a slightly larger diameter and a flywheel was attached ahead of the coupling. Different springs were needed on the coupling and rubber bumpers were attached.

The first AC generator produced by Master for Onan was a 500-watt unit. It was the country's first portable, gasoline powered AC generator, and it opened an immense new market for Onan.

The major suppliers of radios in the late 1920s were Wells Gardner and Stewart Warner. In late 1929, just before the stock market crash and the start of the Great Depression, D.W. Onan, proving once again he was a good promoter as well as a mechanical designer, struck a deal with Wells Gardner. He convinced the radio people that combining the sale of Onan generators with a free radio would help both companies. Wells Gardner agreed and made radios available to Onan at their cost, allowing a clever promotional strategy: "Buy an Onan AC generator unit and get a popular Wells Gardner radio free. " It boosted sales greatly and helped get Onan established in the generator market.

The following year D. W. Onan struck an even more important deal with another company — this time Montgomery Ward, the giant catalog company. Onan convinced Montgomery Ward to market Onan-made generator sets through its catalogs, and the sales to the big chain during the next several years made an important contribution to Onan's profit statement.

Montgomery Ward bought its first Onan generator sets in October 1931, and during that lean decade purchased nearly three-quarters of a million dollars worth of Onan products.

In 1932, the first full year of the marketing agreement, Montgomery Ward added $32,831 to Onan revenues, and the amount grew each year, reaching a peak of $164,373 in 1938. Sales to Montgomery Ward slipped $90,664 the next year and continued to fall until World War II eliminated all non-military orders.

As important as Montgomery Ward was to the Onan sales picture, it was still the direct marketing efforts by D. W. Onan that made the company successful during the trying 1930s.

In 1928, the first year Onan generators were available, the company sold only $12,081 worth of them; sales of the "Safty Saw" were still the mainstay of the company. In 1929 generator sales climbed to $56,942, a big increase but still only about half of saw sales.

As the popularity of the "Safty Saw" declined in the following years, the sales of generators mushroomed. In 1930, before the Montgomery Ward deal, Onan had generator sales of $88,475, and total revenues grew considerably in the following five years thanks primarily to the addition of the Ward catalog sales.

Profitability was greatly increased, starting in 1931, when the Onan company decided to produce its own generators and engines, eliminating Master Motors and Briggs & Stratton as suppliers. Larger capacity units also were added with 1,500 and 2,000 watt generator sets becoming quite popular as homes in rural areas added more and more electrical appliances.

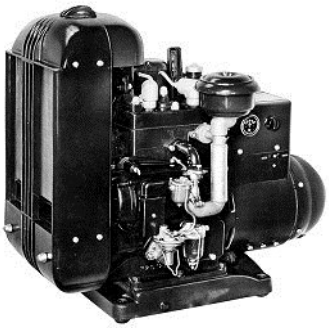
The establishment of the Rural Electrification Administration after President Franklin D. Roosevelt took office in 1933 premised to cause serious problems as farm areas were wired for electricity just like their city cousins.

By 1935, Onan itself sold $117,994 in generator sets in addition to the $84,774 in business to Montgomery Ward. There was another $19,000 in miscellaneous sales. By 1939, Onan increased generator set sales to $348,809 while Montgomery Ward contributed another $90,664.

A decision by D. W. Onan to vastly increase his promotion overseas spurred foreign sales to offset the loss of U.S. rural areas, and the company continued to grow. And by then foreign business contributed almost 80 percent of total sales, an amazing feat for a small company located so far from the normal export centers.

CHAPTER FIVE

THE GREAT DEPRESSION



History books call Oct. 24, 1929, "Black Thursday". It was the beginning of the worst stock market crash ever experienced in the U.S. It also was the beginning of the Great Depression, the country's longest, deepest and darkest economic period - an upheaval that lasted more than 10 years, not officially ending until the United States entered World War II.

Black Thursday didn't go unnoticed by D. W. Onan, his son, Bud, or their growing crew of workers at the Onan Company plant on Royalston Avenue near downtown Minneapolis. They heard reports of the stock market crash on the radio, and they saw the screaming, black headlines in the newspaper.

But it wasn't a particularly significant event to them. The Onans didn't own shares of stock in any publicly owned corporation, although D. W. Onan had seriously considered buying some stock a few years earlier in a rapidly growing Minnesota company. The promising firm was Minnesota Mining and Manufacturing Company, later to be known as the 3M Co., and its stock was considered a bargain. Onan was tempted, but he needed his money for his own business.

The Onans certainly couldn't have known that Black Thursday was the beginning of a long decline in the country's economy or that the next ten years would be the toughest in history for most U.S. businessmen. After all, 1929 was turning out to be an excellent year for the Onan Company, and, except for the nation's farmers, the U.S. economy was booming. Sales of the new Onan generator sets were starting to take off with more than $50,000 in orders already received that year. Sales of the Onan "Safty Saw," even though down from previous years, had brought in more than $100,000, and there was a smattering of sales of motor car tools and equipment. The Onans fully expected 1929 to be the best year ever with total sales to exceed $175,000. There wasn't much reason to be concerned about "Black Thursday" at the Onan company.

It wasn't long, however, before the seriousness of the situation confronting all businesses in the country started to became apparent to D.W. and Bud Onan. On Nov. 2, a few days after "Black Thursday," one of the leading businessmen in Minneapolis, Wilbur Foshay, who had just built the fabulous 32-story Foshay Tower in the center of downtown, went bankrupt. The Onans and other owners of small businesses began to worry a bit. If that can happen to a highly successful man, what does the future hold for those still struggling to survive?

Farmers, who then represented the biggest potential market for the Onan generator sets, were among the first to feel the effects of the Great Depression. They already had been battered by

the effects of several years of drought, and they had nothing in reserve to cope with further problems. From 1929 to 1932, the cash income of the nation's farmers plunged by more than 75 percent. Wheat prices dropped from $1.21 a bushel in 1929 to 49 cents in 1932 and corn fell from 78 cents to 21 cents. Those farmers with a few spare dollars put a high priority on adding electricity to their places now that it was available with Onan generator sets, but many simply couldn't scrape together the small amount of cash it took.

As the domino effect of the depression took place, workers lost their jobs in industry after industry. More than 70 percent of the workers on the Minnesota Iron Range were without jobs by 1932. Across the country, there was an average of 100,000 people losing their jobs each week until the mid-1930s when the unemployment total reached 20 million, or 25 percent of the work force.

During the trying years of the Great Depression, the Onan Company suffered less than most businesses, but times were far from easy. From the peak in 1929 when total revenues were $172,605, Onan sales fell during each of the next three years—$138,280 in 1930, $128,219 in 1931 and $111,980 in 1932.

D.W. Onan was a firm believer that when a worker joined his company, he or she could expect 52 paychecks a year, and he was determined they shouldn't have to worry day after day about losing their jobs. Onan himself did most of the worrying. There were many times when meeting the payroll was a very uncertain proposition, but he managed it each and every week. Both he and son Bud had to take pay cuts along with most of their 40 workers, but even during the darkest days of the depression everyone received a paycheck each week, and there is no record of anyone losing a job.

There were times when the workweek was reduced to four days, and there were other times when there simply wasn't enough for everyone to do, but the plant stayed open. Paychecks of $12 -to $15 a week seem paltry today, but back in the early 1930s that was the difference between standing in a bread line or living relatively comfortably. Homes could be rented for $15 to $20 a month, meat and other food items could be bought for pennies a pound, and a shirt cost only 25 cents.

D.W. and Bud Onan spent much of their time in the first few years of the depression assuring their small crew that times would soon get better, and that at least they were assured of keeping their jobs. Things did get better for the Onan company, starting in 1933 when total sales for the year reached $114,280, only a couple thousand higher than the year before, but it was the first gain since 1929. In 1934, revenues reached $141,814, a healthy 24 percent increase over the year before. They jumped to $221,494 in 1935, $289,128 in 1936, $373,941 in 1937, $429,305 in 1939 and jumped past the half-million mark in 1939. As sales increased, additional workers were needed and the total payroll exceeded 60 people by 1939.

It was during the 1930s that several key people were added - people who later became instrumental in much of the future growth of the Onan company. Tom Valenty, who went on to

become president and chief executive officer before retiring in 1982, joined Onan on Aug. 3, 1936, when he was 16 years old, doing odd jobs. When the summer was over, Valenty went back to finish his last year of high school, but he continued to work part time at Onan, and after graduation, he resumed full—time duties.

Valenty recalls that his parents could not afford to pay his college expenses, so if he were to go on to the University of Minnesota, as he had hoped, he would have to convince D. W. Onan to allow him to work part time for the next four years. Onan enthusiastically agreed, and in the fall of 1937 Valenty enrolled in the institute of Technology, working toward a degree in chemical engineering. Working as many hours as he could spare from his busy college schedule, Valenty put in some time practically every week day and often all day Saturday, Sunday and holidays at the Onan plant. When he first started at Onan, Valenty was paid 35 cents an hour, and by the time he received his bachelor's degree in 1941, he was earning 75 cents an hour. "As graduation approached, I interviewed with a number of potential employers, finally accepting a position as engineering trainee with the Caterpillar Tractor Co. in Peoria, Illinois," Valenty remembers.

D. W. Onan was disappointed over the prospect of losing Valenty, and he argued as convincingly as he could that there was a good future for him at Onan, including a pay raise to $1 an hour. The real clincher, however, was the almost certain fact that the U.S. soon would be involved in World War II and Valenty probably would be drafted. He decided to stay in Minneapolis, working at Onan, until military service beckoned.

Also joining the Onan company during the darkest days of the Great Depression was a 19-year-old aspiring engineer, Jim Hoiby. Hoiby started with Onan on April 13, 1934, becoming Chief Engineer at the start of World War II, and before he retired in 1977 he had advanced to vice president of the company's Advanced Design and Planning Department.

The Onan Company's James C. Hoiby Technical Center in Minneapolis was named after him in recognition of the many valuable contributions he made over the years.

But back in 1934 it was Hoiby who was the grateful one - ecstatic, in fact, over being able to find a job when such an accomplishment was mighty rare. Hoiby was a friend of Bud Onan, and Hoiby's natural talents with mechanical and electrical gadgets were well known to Bud. [Jim was Bud’s brother in law.] Hoiby was in Long Beach, California, looking for work when the Onans decided they needed an engineer to help them develop some new generator products. Bud Onan sent Hoiby a telegram offering him a job, and Hoiby quickly accepted.

While in high school, Hoiby was more interested in tinkering with machinery than he was in reading the classics or studying geography. His father owned an automotive repair shop, and Jim had ready access to tools he needed for his hobbies. When he was 16, Hoiby designed a two-cylinder engine in the drafting department of his high school. He made the patterns in the school's wood working shop, machined the castings in the school's machine shop and then assembled it in his father's garage. The engine was used to power a propeller-driven ice boat. Hoiby also was interested in electrical gadgets, building radio receivers and transmitters with

rudimentary tools and test equipment. When he joined Onan, he was elated over having good electrical equipment at his disposal. He was especially impressed with Onan's cathode ray oscillograph, one of the first ever marketed.

His first assignment at Onan was working in the machine shop under Steen Ecklund, making parts for the company's first engine for its own generator sets. Then he was given a drafting table in the old house on Royalston next to the manufacturing plant that had been added.

Hoiby not only loved his job, but he worshipped the Onans, both father and son. At the time of his retirement, Hoiby fondly described D. W. Onan: "He was an entrepreneur with a remarkable combination of talents. He was endowed with the qualifications of a marketing manager, a finance officer, an electrical engineer, a mechanical engineer and a factory production manager. All combined with the initiative and drive that it takes to start a business. His congenial, friendly personality attracted other qualified people to help him."

It also was during the depression that another Onan family member joined the company. Bob Onan, the younger brother of Bud, came aboard in 1933, spending all of his business career with the family-owned concern. Unlike his brother, who had all the traits of his father, Bob Onan was not especially mechanically inclined. His strong points were with working out people problems. During his nearly 30 years with the company. Bob served as personnel director, the public relations representative and in various other administrative capacities.

One thing all three Onans had in common was a deep concern for the community in which they lived and for their families. Although busy in running the company, all three found more than enough time to devote to civic activities and to family affairs. D. W. Onan was especially active in the Optimists International organization, serving as District Governor, International Vice President and in 1932 being elected Optimists International President at the convention in San Francisco. He also served as president of the Minneapolis Civic and Commerce Association and was active in many community projects throughout the years. Both sons likewise showed intense interest in civic activities.

Their involvement in community problems probably had much to do with the fact that the Onan Company was relatively successful in the depression years when so many other businesses around them failed. Not that the Onans breezed through those rough years of the 1930s, but the company never was in serious danger of going bankrupt. The closest Onan came to a financial crisis was in 1933 when the company had extremely tight cash flow. D. W. Onan hoped to correct the problem with help from bankers, but he was flatly turned down. He had much better success, however, with his suppliers. He approached them with an honest assessment of his problems, and within 10 days persuaded them to extend the Onan Company $30,000 worth of credit.

From the beginning, D. W. Onan's philosophy was to treat suppliers, customers and employees with the same respect and honesty he hoped they would show him. When his suppliers cams through with the badly needed credit, he knew his philosophy was right. Onan also didn't forget the favor. In future years there were many opportunities to change certain suppliers for promises

of a better price or faster service, but Onan refused to drop any of the suppliers who had helped him out in 1933.

Survival of the Onan company during the Great Depression can be attributed to many reasons, none more important, though, than the great flexibility of the young firm. Every time a problem arose—and there were many of them during the 1930s—the Onans quickly figured a way around it, often not only neatly solving the dilemma at hand but opening up huge new opportunities for the future. When it became obvious there was a tremendous market for Onan generator sets, it also became obvious the engines and generators being purchased would not do the job required. The Onans solved the problem by designing both their own generators and engines. Once they had their own engineering capabilities, they were able to constantly modify and improve their products, vastly increasing their sales potential.

The stickiest problem of the 1930s was caused by the U.S. government. With Onan generator sets finding wide acceptance in rural areas of America, it appeared the huge market would keep things humming at the Onan plant for many years. Then the REA (Rural Electrification Administration) spoiled that prospect as electric power from central utilities became commonplace among farmers. Instead of bewailing this development, the Onans quickly turned to foreign markets where electric power was available only in larger cities, with little prospect rural areas there would be seeing any REA type project. Export trade was a rarity for small companies back in the 1930s, but the Onans didn't worry about the complexities. There was a huge market overseas and the Onan company had a product in demand. To D. W. Onan and his sons, it merely was a simple case of matching demand with supply.

There were no expensive foreign junkets to hunt out prospects. The Onans just increased their small ads in publications that were read in lesser developed countries, did more direct mail promotion to those areas, and relied on word-of-mouth referrals from satisfied customers. Within a few short years, Onan generator sets were to be found in 49 foreign countries. By 1936, foreign sales were exceeding domestic sales. Customers included satisfied plantation owners in Jamaica, natives in Nigeria, rice farmers in China, jukebox operators in Mexico, fishing boat operators in New Caledonia, oil drillers in Venezuela and jungle dwellers in the Philippines—all using, and praising, Onan generator sets.

There were no complicated foreign exchange problems involved. The Onan Company asked for, and received, U.S. dollars, usually in advance. Orders were small but plentiful. The simple approach was sought whenever possible. For instance, the Onans received a $105 order from an individual in Alaska. The freight bill on the order would have been $96. So the Onans sent it by parcel post. The cost was $17.

There was no end to the applications for an Onan generator set. A promotion piece used by the company in 1937 stated, "Ideal for operating radios, portable sound and public address systems, remote radio transmitters, private communications systems, neon signs, motion picture equipment, portable medical and dental clinics, geologist instruments, assayer equipment, sales demonstration trailers, portable saws, flood lights and floor sanders. " The wide variety of uses for

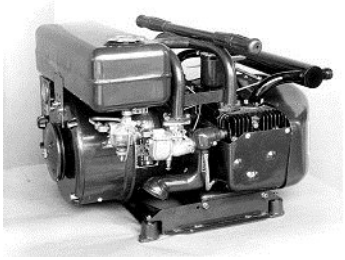
the generator sets meant the company needed a product line that would meet all of these different demands. From a single 350-watt unit, the Onan generator set line quickly offered 1,500- and 2,000-watt models, then modified the equipment until by the late 1930s there were units in the 20,000-watt category.

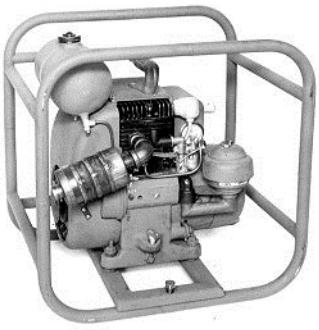
The convenience of remote electric starting of the generator sets was introduced in 1935.

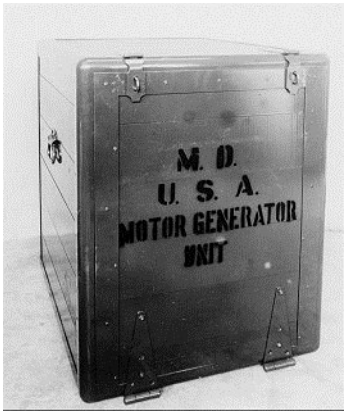
By 1939 the Onans were certain their small business was firmly established and they anticipated steady, but moderate, growth for many years. They couldn't have dreamed, however, of what World War II would do to their plans.

CHAPTER SIX

WORLD WAR II BOOM







From the very beginning, D. W. Onan did not have ambitions to develop his business into a giant operation. It wasn't that he had a grand scheme to grow to about 100 employees in one modern, spacious plant and then stay that size. Onan's long-range game plan was much more vague. He wanted a business that was small enough so he could walk around the plant and greet any of his workers by name, know their problems and goals and chat with them as a friend. He wanted a business big enough to provide him and his family a comfortable living but small enough so that he and his sons. Bud and Bob, could run all aspects of it.

There were times during the formative years of the 1920s and especially during the depression years of the 1930s when some of Onan's suppliers, his financial backers and even some employees wondered if the company would even survive. But D. W. Onan himself was always supremely confident the business would succeed, and even though he was impatient occasionally about the early growth, he never doubted that eventually he would have the size company he wanted.

The year 1940 probably came closest the Onan's idea of the perfect- sized business. The Onan Company produced 3,540 generator sets that year, it had about 100 employees, and total revenues were $855,846.

The next year the U.S. entered World War II and the desperate needs of the military for dependable portable electric plants took top priority, and D. W. Onan completely lost control of his plans for orderly growth.

During the next five years, Onan was manufacturing as many as 70,000 generator sets annually, had as many as 2,500 employees in five different plants in the Twin Cities, was sub-contracting work to 82 other companies with 5,500 workers, and had annual sales as high as $50 million. From the beginning of 1942 through the middle of 1945 all of the Onan company's production went to the U.S. military and its allies.

The Onan Company wasn't alone in the abrupt switch from peacetime operations to frantic military production. Manufacturing companies throughout the country that could possibly handle items needed for the war went through the trauma, and Minnesota firms especially were affected. U.S. military officials were concerned that locations on both the East and West Coasts

would be vulnerable to enemy bomber attacks, and they chose sites in interior states whenever possible for defense production. Minnesota was an ideal state, located far away from both coasts, and it had hundreds of efficient plants that could convert their facilities to making wartime goods.

Even in November 1941, the month before the U.S. officially declared war on Japan and Germany, Minnesota companies were awarded $346 million in defense contracts. Military production by firms in this state totaled billions of dollars before the war ended.

Minneapolis-based Honeywell, for example, produced aircraft controls and, later, even bombsights. General Mills, Pillsbury, Green Giant, Geo A. Hormel and other Minnesota food companies, switched to making products for the growing allied military force around the world. The 3M Co. in St. Paul manufactured a variety of military goods. Minneapolis Moline and the St. Paul branch of International Harvester converted from farm equipment to producers of armaments, and the Ford Motor Co. assembly plant in St. Paul built military vehicles.

There were seven large shipbuilding yards constructed in Duluth, and the Cargill Co. built Navy tankers at facilities near Savage. Military officials even had a government-owned arsenal in the state, the Twin City Ordnance Plant at New Brighton, which produced ammunition 24 hours a day, seven days a week.

Most of the manufacturing facilities that switched to wartime production didn't experience the rapid expansion that the Onan company had, but a few had even more dramatic growth. The Northern Pump Co. in Minneapolis, for instance, was a small firm with 50 employees making fire engine pumps in 1940. Before World War II ended. Northern Pump, whose name was by then Northern Ordnance Co., was in a $20 million plant in Fridley with 15,000 workers, manufacturing gun mounts and related equipment and machinery for the U.S. Navy on an around—the-clock basis. It was the Navy's largest ordnance producer and early in the war it was the country's largest defense plant that had started from scratch.

One of the reasons the Onan company experienced such tremendous growth during the war was the fact it became involved in military production more than two years before the Japanese attacked Pearl Harbor on Dec. 7, 1941.

Onan's first major military customer was Great Britain, starting in 1939. Unable to find dependable portable power plants either in their own country or in Europe, the British turned to Onan for hundreds of small A.C. generator sets for military radio transmitters and other communications operations. The British also needed a special direct current generator for charging batteries. The British military had high praise for the equipment purchased from Onan, especially because of its trouble-free operation and its durability. The word was passed on to U.S. military authorities, who were making plans for a quick buildup of defense equipment in the very likely event America would get involved in the war.

The first orders from the U.S. military came in late 1940 and early 1941, and even though the Onan reputation was well known, some very stringent testing was required before any units could be shipped.

In January 1941, the Onan company received an order from the U.S. Army for 400 small generator sets, provided that a prototype of the set could pass a 1,000 hour endurance test. The test ended in the middle of the night and the government inspector was due at the Onan plant the next morning. An anxious group of Onan workers, including D.W. Onan, carefully checked out the tested equipment, but not knowing the requirements, they could only hope it passed.

One of -the concerned workers said, "I just don't believe this unit is pulling what it should after 1,000 hours. I'm sure the government is going to expect it to have more power. Let's grind the valves and get it in better shape." D. W. Onan cut him short: "Not on your life. The government can cancel the contract if it isn't satisfied, but we're not going to cheat."

When the government inspector arrived in the morning, he checked the tested unit and then suggested they grind the valves. When that was accomplished, he said he was more than satisfied, and that if grinding the valves was all the maintenance it needed after 1,000 hours there was nothing to worry about.

D. W. Onan's honesty had paid off once again.

With the U.S. military orders coming in on top of the British demand, plus the civilian business, things were beginning to get hectic at the Onan plant. In January 1941, Onan produced 269 units with 147 employees, but the volume increased each month during the year climaxing with December business that saw 1,011 generator sets manufactured. The Onan company now had a crew of 324 workers.

Onan sales in 1941 totaled $2.9 million compared to less than a million dollars the year before, but the real growth was yet to come. Revenues in 1942 jumped to $14 million. They reached $32.5 million the following year and approached $50 million in 1944.

As men and machines were added at the Royalston plant, conditions became so crowded it was difficult to find an aisle to walk down. More space was desperately needed, and there simply wasn't time to construct a new building large enough to handle all production. In the first two years of the war, as production increased each week, D. W. Onan expanded the Royalston plant as much as possible, and then leased four other buildings in Minneapolis.

These included one that had been used by the Caterpillar Tractor Co. as a manufacturing plant. The U.S. government condemned the facility on the grounds it was being used for civilian production and made the building available to Onan on a lease basis in the summer of 1941. The plant, located at 2515 University Avenue Southeast, was purchased by Onan in 1944.

Other buildings leased by Onan during the war years included the Highland plant across the alley from the original Royalston facility, the Arrowhead plant at Stinson Boulevard and Broadway Street Northeast, and the Madison plant on Madison Avenue Southeast. With all five plants, Onan had manufacturing floor space equal to six city blocks, but it still wasn't enough to handle all the government orders pouring in. Much of the engine production that Onan couldn't handle was sub-contracted to the Continental Motor Co. in Muskegon, Michigan.

One of the major headaches throughout the war years was the great variety of equipment needed by the various branches of the military. Onan produced 65 different models of generators and 40 types of internal combustion engines to drive the generators. There were 41 separate branches of the armed forces ordering generator sets from Onan, ranging from 350-watt to 35,000-watt units. Many of the parts going into the generator sets were made by more than 80 subcontractors for Onan.

Space to assemble the generator sets wasn't the only problem. Scarce equipment was needed, and there wasn't time to wait for it to be built. In the first several months of the war, the Onan Company bought more than 700 pieces of used equipment and machine tools and converted them for its use. More than 200 new pieces of equipment also were purchased as they became available.

Onan generator sets were used in literally hundreds of different applications by the military, including those used for lights for surgeons in field hospitals, for X-ray machines, for mobile telephones and radio communication, for mess halls, weather bureaus and to operate electrical equipment on large guns, radar equipment and PT boats. More than half of all the portable electric plants used by the allied forces during World War II were produced by Onan.

Onan quickly established a reputation with the military as a resourceful and imaginative company, qualities the government badly needed as it raced from one crisis to another. In the early days of the war, military officials promised D. W. Onan he would not have to worry about getting critical supplies, the necessary plants, manpower or financing, because war production took top priority and the U.S. government would see that Onan had everything it needed. Unfortunately, it didn't work out that way. Other than condemning the Caterpillar plant near the University of Minnesota for Onan's use, the government rarely was effective in getting things accomplished in time for Onan to meet its tight schedules. Part of the reason was the impatient attitude of the people at Onan. While waiting for government action, they usually went ahead on their own and did what was necessary. This so impressed the military that they more and more tossed tough problems to Onan, knowing that somehow they would get solved.

A good example was the assignment the Navy originally gave to Westinghouse, but the task was solved only after Onan stepped into the picture. Early in the war, the U.S. Navy needed a way to keep track of what the Japanese were doing on the Pacific Islands they had captured. The Navy asked Westinghouse to make some portable, waterproof radio transmitters that could be dropped from destroyers into the ocean near these islands. U.S. spies on the islands would then

pick up the radios, using small boats, smuggle them ashore and set up secret surveillance stations. They then could report Japanese activities on the islands to the U.S.

Westinghouse had no problem designing the lightweight aluminum radios, and it tried to build a small electric plant to power the radios but gave up in frustration. The Navy told Westinghouse to go to Onan for help. Jim Hoiby, chief engineer at Onan, recalls, "Westinghouse came to us for a lightweight 800-cycle generator set. We adapted the OTC engine—our first two-cylinder opposed engine—and built it out of aluminum. But we had never even seen an 800-cycle generator and none was available commercially. The Navy used them on some of its aircraft, but we couldn't get clearance to study them. I learned that a Navy plane with this type generator was at the Navy airbase in the Twin Cities, and although I couldn't get authorization from officials there to let me inspect it, some Navy friends smuggled him on the base and I went to the plane like I owned it, studied the generator and left with no one the wiser. Then I went to the University and gleaned some design information from a professional paper I found on high-speed inductor-alternators."

So, from his surreptitious visit to the airbase and the information obtained from an academic paper, Hoiby and his men were able to design and build a dependable 800-cycle generator set, and the Westinghouse project was a success. It seemed that every time Onan solved a tough problem for the military, it gave them reason to hand Onan even a tougher problem. Jack McFail, manager of Experimental Department at Onan during the war, says, "The military kept us plenty busy, all right. They wanted maximum life and minimum service. They pushed us to extend the time that our units could run before they needed oil added or changed. Every quart of oil had to be shipped in, so it was always in short supply. When we'd lengthened the time our sets could run without service from 100 hours to 200 hours, they wanted 400. When we gave them 400, they wanted 800.

One of the big bottlenecks during the war was getting the necessary parts from suppliers to keep production flowing. It was especially hard to get enough magnetos and governors for the generator sets in the early months of the war. Jim Hoiby remembers the Onan production manager came storming into his office and said they just couldn't meet delivery schedules with those items short all the time. Hoiby paced up and down for a few minutes, and then said, "All right, we just have to build our own magnetos and governors." He called a few of his engineers together, told them the problem and within a few weeks, Onan was manufacturing its own magnetos and governors in the quantities needed to keep production on schedule.

Rings and cylinders also were in short supply most of the time, but it was just impossible for Onan to manufacture every part that was needed for assembly. Whenever possible an outside supplier was used, even if Onan had to set one up in business. Paul Millerbernd, a blacksmith at Winsted, Minnesota, a small town west of the Twin Cities, came into the Onan plant one day early in the war and said his small business had been cut off from its steel supply and there was nothing for him to do. The people at Onan handed him a generator frame ring and asked, "Could you make this if we supplied the steel and the machines to do it?" Millerbernd took the ring back to his shop, worked all night, and came back the next day with one he had made. It was perfect. Millerbernd didn't have the equipment to mass produce the rings, however, so he and D. W. Onan

made a trip to Chicago where they found a used piece of equipment that would do the job. Millerbernd also didn't have the $10,000 the machine cost, so Onan bought the machine and let Millerbernd pay for it over the next few months as he received payment for the rings he supplied.

Finding enough manpower during the war also was a major problem for the Onan company. It was not only necessary to hire enough people to keep pace with the growing number of orders, but hundreds of Onan workers were called to military service.

Prior to the war, all the production workers at Onan were men, and the first woman wasn't hired until after the war started. She was Mrs. Harold Paukert, who replaced her husband on the Onan assembly line when he went into the U.S. Army. His job, and then hers, was winding armatures, only her more nimble fingers did a much faster job. In fact, during the war, women were able to increase production by 50 percent in many of the tedious assembly jobs at the plant. Eventually, women made up about 20 percent of the work force at Onan, and they since have always played an important part in the success of the company. [But not in the production shop.]

During the 1920s and 1930s, the Onan company was constantly in financial trouble, and the war corrected that to an extent, but the tremendous growth didn't make the company or the Onan family as wealthy as you might expect. D.W. Onan, who didn't, or couldn't, use the banks for financing during the depression years, was a regular (and favored) customer during World War II. His backlog of military orders was all the collateral needed to get any loan he wanted.

But the government made certain that no business would find it easy to get overly rich out of the war effort. Excess profit taxes by the federal government claimed nearly all earnings over a modest amount, and even top executives were limited to what they could earn. President Franklin Roosevelt ordered early in the war a flat limit of $25,000 a year in salary for any executive in the U.S. to make certain no one would benefit too much from the crisis facing the country. Extraordinarily high personal income taxes also made it difficult for an individual to keep more than a modest amount.

In many ways, however, World War II was a boon to the Onan Company. It gave it valuable expertise in generator technology, it spread the Onan reputation to millions of additional people throughout the world, it allowed the company to amass equipment and plants it could use after the war, it opened up financial relations with banks, and it put the company in the soundest condition it had been in since it was founded.

But the war produced many negative results, too. D.W. Onan was forced to run a company many times larger than he ever wanted, and even though he and his sons. Bud and Bob, and their top managers had to work long, hard hours seven days a week, they benefited only modestly in a financial sense. Also, there was a constant, gnawing concern on the part of the Onans that when the war ended, and all military production was abruptly halted, the company would face a serious crisis — one that easily could kill the business. How could Onan possibly survive with its gigantic overhead if sales would plummet almost overnight from $50 million a year to the pre-war $800,000 annual revenues?

The Onans also were concerned about laying off hundreds of hard working, loyal employees. And would the Onans be able to find work for the more than 400 former employees who were called into military service and were guaranteed to get their old jobs back? As World War II began to wind down and thoughts started to turn to converting to civilian production again, the Onans were mighty concerned about a whole new set of problems.

CHAPTER SEVEN

POST WAR TRAUMA

While Many Americans danced in the street: when World War II came to an end in 1945, D.W. Onan and his sons. Bud and Bob, celebrated the end of the longest and costliest war in U.S. history with mixed emotions. They, too, were elated over the long-awaited victory by the allied forces. They as much as anyone wanted to see the end to the killing that had been going on throughout the world for so many years, but the Onans knew the months ahead would be extremely tough ones for their company. Long before the actual end of the war, the Onans knew conditions at their company would be changing drastically. They had nearly 2,500 employees working around the clock, all doing the same thing.-.producing generator sets for use by the military. There had been no civilian production since early in 1942.

It was obvious that as soon as the war ended, military requirements for Onan products would drop to practically zero overnight. Conversion to manufacturing items for the civilian market again presented many problems for the Onans. They ranged from the very survival of the company to the tragic inevitability of laying off the majority of their workers. The Onans dreaded the prospect of terminating as many as 2,000 of their loyal, hard-working employees as much or more than the thought that losing millions of dollars of orders overnight might destroy the company.

The horrendous layoff problem was seriously compounded by the promise that all of the more than 400 Onan workers who had left during the war for military service would get their jobs back. There really was no assurance the total manpower requirements at the Onan company would equal the number of returning servicemen. Fortunately not all of the war veterans would be returning at the same time, giving the Onans time to absorb them.

World War II ended officially on Aug. 14, 1945, with the unconditional surrender by Japan. In the weeks following, the Onan company had millions of dollars of cancellations from the military. Terms of the contracts that were cancelled called for the purchase by the government of all materials in process in order to soften any financial hardship. Although the buy-back provision was an attractive proposition, D.W. Onan decided to keep all the materials on hand so the company could convert to civilian production as quickly as possible. It was a wise decision. Materials needed to build engines and generators were still scarce after the war, and because no civilian generator sets were available during the war years, there was a pent up demand for the units.

Several major retailers, notably Montgomery Ward and Fairbanks-Morse, plus several smaller companies contacted Onan shortly after the war ended asking for generator sets with their own labels on them. Because Onan had the materials and the units wanted were similar to the military

versions, these orders were accepted and the generator sets were delivered. Onan had done considerable business with Montgomery Ward before the war, and in fact, it was these private label orders that helped the Onan company survive the tough depression years. So getting back to producing generator sets for others to sell was not a new or unpleasant experience.

The volume of orders in the months following the end of the war wasn't enough to offset the loss of the demand by the military, but it helped Onan cushion the blow. In anticipation of a growing civilian market, the Onans kept more employees than they needed and more plant space than was required, but it still was necessary to lay off hundreds of workers and to abandon the Madison plant. Onan kept the original Royalston-Highland plant, the University plant and the Arrowhead plant, all of which were now owned by the company. The turmoil at the Onan company in the months following the end of the war is almost unimaginable. Hundreds of workers were laid off each week at the same time returning servicemen were coming back to their old jobs. Most of the employees losing their jobs were prepared for it, but it still was a highly unpleasant experience for both workers and management.

Jim Hoiby, the chief engineer in the Onan Engineering Department, recalls the "pink slip Fridays" in late 1945 and 1946. "I was laying off about 20 engineers each week," he says. Hoiby's department, which during the war years had about 150 employees, shrank to 35 people by mid-1946. Most other departments had similar experiences. Within a year from the end of the war, total employment dropped from around 2,500 to approximately 500. The payroll remained in that area for several years.

There were bright signs in the post-war years, too, as the company designed new products for the civilian market and redeveloped many of the sales programs set up during the 1930s. The heavy export sales that marked the pre-war years were gone, however, along with the wartime military orders. Foreign sales, which accounted for 80 percent of Onan's total revenues in the late 1930s, suffered primarily from the huge number of generator sets available as war surplus in all countries involved in World War II. A notable exception was South America. There was a relatively heavy volume of orders for Onan products after the war from Brazil, Argentine and Chile, but demand from Great Britain, Europe and the Far East was only a tiny fraction of what it had been in the 1930s.

A huge demand in domestic sales more than offset the loss of export trade, especially immediately after the war when the U.S. market had a voracious appetite for hard goods after several years of a starvation diet.

In addition to resuming trade with the country's rural areas, many of which were still without any electric power, there were several new markets for Onan to tap. A post-war homes building boom created a large demand for portable electric plants to be used by contractors putting up the homes.

With the war over, people not only had spare time but also money to spend, and the marine business was a big shot in the arm for Onan. Pleasure boats became popular and generator sets

were needed for a variety of purposes on the boats, especially the larger models. Other recreational markets also opened and grew.

Power for stand-by purposes also figured prominently for Onan after the war. A federal requirement that all new hospital buildings have standby power units boosted sales for Onan, as well as the growing trend by other commercial and industrial buildings to have emergency stand-by generator sets in the event utility power went out.

Onan management, realizing the rapidly changing times presented an unusual challenge to come up with new products for different markets, or to stagnate and fail to grow, made a Herculean effort to diversify. The company had been making its own engines to drive the generators, but no effort had been made to get into the engine business itself until late in 1946 when a decision was made to market its highly successful air-cooled engines for purposes other than being on one end of a generator set.

The small gasoline engines were offered, and readily accepted. Sales went to original equipment manufacturers to power truck refrigeration units, rotary tillers, pumps, tractors, small delivery vehicles, aircraft energizers, conveyor systems and in many other applications. The decision proved to be a wise move. During 1946 Onan produced a total of 60,000 units, almost all of them generator sets, but in the following year the volume dropped to 41,000 units and 15,000 of those were engines for non-generator use. The falloff in business would have been disastrous if it hadn't been for engine production.

It was in 1947 also that Onan decided to produce a small diesel engine, primarily for continuous running, heavy duty generator set applications. And the Onans correctly felt there would be a big demand for a diesel-powered generator set aboard boats. The safety feature was a major selling point and assured the success of the new product. The Onan diesel engine opened an entire new field that was to play a vital role in the firm's future.

The post-war years meant that once again Onan had to beat the bushes for business, no longer being able to rely on orders flowing in from the government. The company beefed up its advertising and public relations departments, not so much in manpower as in a greatly increased budget. Small ads for Onan products appeared in more than 100 different publications during the mid and late 1940s, along with an ambitious direct mail program. And for the first time, Onan was stressing product publicity, generating articles about the firm's products for use in the various trade publications. Literature was designed for each of the various products and when inquiries came in, the pertinent information was quickly dispatched to the interested parties.

Sales couldn't keep all of the company's facilities busy, however, and in 1948 it was decided to close the Arrowhead plant. When a city-financed area rehabilitation program displaced the Royalston plant in 1950, all operations were moved to the University plant. The Arrowhead plant later was reactivated for a short time when military orders spurted again during the Korean War.

One of the first major decisions following the war was to change the legal structure of the company. Originally founded as a sole proprietorship by D.W. Onan, the firm became a partnership in 1928 after Bud Onan joined the company. In 1946, the Onans decided there were several advantages to becoming a corporation, and in that year it became D.W. Onan & Sons, Inc. D.W. Onan was elected chairman of the board. Bud Onan became president and Bob Onan was elected vice president and treasurer.

Onan was acquired by Studebaker Corporation in October, 1960, following which it was first called the Engine Generator Division of Studebaker, and then the Onan Division. In 1968, the company became the Onan Corporation, A Wholly-Owned Subsidiary of Studebaker-Worthington, Inc. In March of 1972, 20% of Onan's common stock was offered to the public, and the stock was listed on the American Stock Exchange. In December, 1975, Hawker Siddeley Group Public Limited Company, which also purchased some additional Onan stock, made a tender offer for the publicly held Onan shares, after which Studebaker-Worthington owned 63% of Onan's stock and Hawker Siddeley owned the remaining 37%. In 1979, Studebaker-Worthington was acquired by McGraw-Edison Company, as a result of which McGraw-Edison owns 63% of Onan with the remaining 37% held by Hawker Siddeley.

Although changes at Onan during World War II and in the post-war period were drastic, one thing remained constant during all those years—the treatment of employees as members of the large Onan family, a treatment dictated from the very beginning of the company by D.W. Onan.

CHAPTER EIGHT

A BIG, HAPPY, FAMILY

Probably the most distinctive thing about the Onan Company, going all the way back to the founding carried through to the present, is the unusual treatment of the workers and the resulting loyalty and high morale — even in the toughest times.

Both D.W. Onan and his son, Bud, who succeeded him as chief executive officer, were firm in their belief that fair and compassionate treatment of their workers would have a high priority at all times, and this philosophy was so ingrained and successful that it has been carried on even after the Onans left the scene.

D.W. Onan felt strongly that workers should be paid well for their labors, but, in addition, if a company was profitable it should share those profits with the people who made it possible. That's a popular conception today, but back in the 1920s and 1930s it was an unusual attitude on the part of management.

D.W. Onan was a pioneer in the country regarding profit sharing. Informally he shared his profits with his workers in several ways from the very beginning, and in 1952 he instituted a generous Profit Sharing Plan that continues in modified form to the present.

Profit sharing was only one of many ways the Onans showed their appreciation to workers. The liberal benefits over the years have made the Onan Company a model for others to follow.

The Onans were certain that by treating employees generously, the workers, in turn, would more than make up for it with high productivity, low absenteeism, high morale, low turnover, and generally be the big, happy family the Onans sincerely desired. That is exactly what has happened. There are literally hundreds of examples of how this policy has succeeded. Typical of remarks is one made recently by Ruben Solee, who started with Onan back in 1951. He said he had been offered another job and promptly turned it down. "I told them no. I love Onan as much as I love my wife. It's the people here—you don't often find people like these. I used to work in the electric lab, and I remember how D.W. Onan would come around on Saturdays to say hello. He'd say, 'Come down and visit my place in Florida.' I worked with Jim Hoiby, Tom Valenty, Bud Onan—all extraordinary people."

Further evidence that Onan workers regard the company as much more than just a factory in which to put in their hours can be found in the way they have regarded union over the years. There have been. several attempts by unions to represent Onan workers, but all, with one unusual exception, have failed. At the Twin Cities plants there have been union elections in 1950, 1960, and in 1979 and all were soundly defeated.

In the 1950 attempt by the CIO to organize the workers, the plant workers rejected representation by the CIO by a wide margin, but the tool and die workers elected to be

represented by the International Association of Machinists. The Tool and Die department, which numbers about 18 employees, has been represented by the IAM ever since. In 1960 it was the United Auto Workers that tried to organize the Onan factory workers; union representation was again turned down. In 1979, an election seeking representation by the IAM resulted in a rejection by factory employees. There also have been three attempts to organize workers at Onan's plant at Huntsville, Alabama with the first two votes ending in a defeat for union representation and the results of the third election were contested by the company.

The majority of Onan workers obviously have felt there was no need for third party representation. And even if there were no impact on other workinq conditions, third party representation easily could change the friendly relationship between employees and management that has been built up during the past 60 years. The rejection of union representation by the Onan work force probably would never have happened if it wasn't for D.W. Onan's original philosophy that each employee must be treated as an individual and that mutual good faith and shared success is a very essential part of a solid business operation.

In the early years D.W. Onan did his sharing in a very informal way. His original idea of profit sharing was a healthy bonus at the end of the year for each of his small crew and a five or ten dollar bill for a worker on his or her birthday. Onan's idea of medical coverage was to pay a worker's hospital bill plus wages while away from the job from company funds. His idea of company social activities was a spontaneous party to celebrate a big order or a significant personal event in the life of a worker.

As the company grew, D.W. Onan realized he would have to formalize his system of benefits, and he was able to do so without reducing them. On the contrary, as the company became larger it also became more profitable and the benefits became even more liberal.

During World War II, when profits were plentiful, D.W. Onan not only shared with his employees, but he set aside a generous amount each month for all workers who had been called into military service. Other companies around the country copied his idea until the U. S. government stepped in and outlawed any similar plans in the future, The Onan plan, however, was exempted because it had been started early in the war. When the war ended, Onan workers who served in the military all received a healthy bonus of several hundred dollars, based on the length of time spent in the military. Most similar plans paid the person only if he or she returned to work, while the Onan plan paid each person regardless of whether or not they returned to Onan.

The Profit Sharing Trust set up by D.W. Onan in 1952 was one of the nation's first and most generous programs. All employees became eligible after two years, and not a cent of employee money was involved. The entire program was funded by company profits. The plan, funded with pre-tax dollars, provided for up to 15 percent of each person's annual wages, payable upon retirement, or in certain cases, after 10 years of service.

The program, now called the Onan Profit Sharing Plan has been modified several times since it was started. Another benefit program includes a thrift incentive feature where workers can add

to their savings with their own contributions. For each dollar contributed in a given year by an employee to his or her own fund, the company matches that with a contribution of at least 25 cents, with up to an additional $1.00 matched company contribution depending on sales growth and profitability.

The company has all of the traditional employee benefit programs, including medical, surgical and hospitalization insurance, life insurance, disability insurance, paid holidays and up to five weeks vacation.

Back in the days when the company was smaller, Onan had a traditional Christmas party each year that evolved into a company-wide Christmas breakfast each December. All employees were invited to breakfast, which was featured by the announcement of how much was being contributed to the Profit Sharing Trust. The unusual part of the breakfast was the frank assessment of how the company performed financially during the year. D.W. Onan, and later his son, Bud, told all employees what the company did in sales and profits, and why. For a privately held company, this frankness was highly unusual, but there's no question it helped boost employee morale.

All the Onan sharing with employees had had dramatic results with its relationship with workers. For years the absenteeism rate was two-thirds below the average for similar businesses in this area. And annual employee turnover traditionally has been less than five percent. Today with about 2,500 employees worldwide, the average length of service for all Onan employees is eight and one-half years. About 15 percent of U.S. employees have been with Onan for 15 years or more and there are about 150 workers with more than 25 years service.

Onan workers are also unusually active in events of their own choosing. There are leagues for bowling, softball, golf, tennis, trap shooting, archery, volley ball and other sports, and a retirees club.

It would be inaccurate to say management-employee relations today at Onan are the same as they were years ago when D.W. Onan knew the first and last name of each and every employee. Things have changed, but every attempt has been made to continue the philosophy of sharing with employees.

Bud Onan, who took over as chief executive officer following the retirement of his father, was keenly aware that it was his job to prepare employees for the change from a small, closely-knit company to a large, necessarily more impersonal, operation. His concern about this change came through in a letter he wrote to all employees on May 25, 1955.

The letter started: "A few years ago, it was an easy matter to make sure everyone at Onan knew what was going on - and why. Now, because of the problems of size and complex operation, it's not so easy. It's impossible to personally discuss plans and changes with each of you. The next best thing is a personal letter like this one, from me to you."

His letter contained details about changes in the company, including plans for new products and the announcement that for the first time Onan had named non-family members to be officers of the company. He revealed that the four heads of major divisions at Onan had been elected officers of the corporation. They were Hi Hascall, vice president, sales; Jim Hoiby, vice president, engineering; Jerry Olson, vice president, manufacturing; and Jack Shea, vice president, administration.

Bud Onan felt this change was a milestone for the company, a leap from a family-run organization to a more conventional corporation, and it worried him. He included a chart showing the company's new table of organization, but Bud Onan wasn't comfortable with the chart, filled with boxes and lines. He said in his letter, "I would like to stress one thing about organization charts. No chart drawn on paper can completely and fairly picture an organization. People do not easily fit into blocks on a piece of paper.

Organizations are people, and just as people and circumstances change, so do organizations—and the charts that reflect them. A chart is not a means of fitting people into arbitrary niches. It is not a limitation on initiative. It really works the other way. An organization chart is useful only in helping to define each of our current responsibilities, the authority we may exercise, and to whom we are accountable for our activities. We all like to know where we're at."

Bud Onan concluded his message by saying, "We are not a stuffy group around here. We have no intention of being so. Dad always believed in an 'open door' policy. So do Bob and I. We cherish and want the friendly and informal interchange of ideas that has helped to build this company. We want the kind of organization where each of us has the chance for individual expression, and individual opportunity. The fact that several of you are now officers of this corporation certainly proves that opportunity exists, and will continue to exist."

CHAPTER NINE

ONAN'S PHYSICAL FACILITIES


1944 Test Room

Nothing demonstrates the dramatic growth of the Onan company more than the startling changes in its physical plants during the past 60 years. From D. W. Onan's basement to a converted garage to a converted barn to a converted house to a sprawling hodge-podge of less - than-efficient industrial buildings used during World War II, Onan's operations are finally located in a series of strategically located, modern manufacturing facilities. After nearly a half century of occupying plants that originally were built for other purposes and adapted as best could be for Onan's use, most of the company's facilities today were specifically designed for its operations.

Onan currently occupies more than a dozen buildings in the Twin Cities, Huntsville, Alabama, and San Diego, California, with total floor space of 1,563,600 square feet. The company also has leased field offices in Ft. Lauderdale, Florida; London, England; Dubai, United Arab Emirates; and Singapore.

Onan's largest facility is in Fridley, a northern suburb of Minneapolis. In the mid 1960s, after more than 20 years in its University Avenue plant in Minneapolis, Onan management decided a new, modern facility was needed to keep up with anticipated growth. A 147-acre site in Fridley was purchased in 1967. Constructed on the site at Central Avenue and 73rd Avenue Northeast, were a manufacturing plant of 473,600 square feet, a three-story office building of 85,000 square feet and an engineering building of 66,000 square feet. The new headquarters plant was fully occupied in 1969.

By then the Onan company was one of the world's largest manufacturers of electric generator sets, having produced more than a million units since its founding, and it was operating out of the most efficient generator set facility in the world.

Only slightly smaller than the Fridley facility is Onans ' s manufacturing plant at Huntsville, constructed in 1974. Located on 90 acres of land adjacent to the Huntsville-Madison County Airport, the $20 million installation was primarily designed originally to manufacture generator sets for recreational vehicles. Since then Onan has turned the facility into an engine plant by investing another $100 million in equipment and increased warehouse space for the production of Onan's L Series family of diesel engines.

Onan's third manufacturing facility is in San Diego, operated by a subsidiary, Elgar Corporation, acquired in 1979. Elgar, which occupies five buildings in the Kearney Mesa area in San Diego, produces AC power conditioning equipment and uninterruptible power systems. Most of Elgar's products are designed to correct power variations, voltage drops, line noises and other problems that can plague sensitive electronic equipment. Elgar manufactures high isolation transformers to eliminate common power problems, precision AC line conditioners for laboratory and instrumentation applications, and power regulators for computer and high technology loads. Its uninterruptible power systems protect against the effects of brownouts and blackouts on sensitive electronic gear such as computers and process controllers, and, when installed in conjunction with emergency standby power generator sets, provide power during the interim period between when a power outage occurs and when the standby generator set (s) starts and reaches operating RPM and frequency.

Other buildings owned or leased by Onan in Minneapolis and Huntsville provide various support functions for the company's manufacturing and marketing operations. Among these are the James C. Hoiby Technical Center, located on the Onan site in Fridley, and the Central Parts Distribution Center in Brooklyn Park, a Minneapolis suburb not far from Fridley.

The James C. Hoiby Technical Center, dedicated in June, 1979, and constructed and equipped at a cost of $6 million, is Onan's research and development facility. The 30,000 square-foot, two-story building houses materials research laboratories, electrical and electronic labs, and computerized engine development test cells. More than two dozen engineers and technicians staff the Hoiby Technical Center. James C. Hoiby retired in 1977 after a 43-year career with Onan, during which he was honored for the many engineering contributions he made to the company and its products.

At the Central Parts Distribution Center, Onan, in 1981, consolidated all the functions relating to parts and service in one building. More than 25,000 different items are controlled and handled at the 115,000 square-foot Center with the help of a modern computer system. The Center receives more than 150 orders for parts daily from 215 Onan distributor and dealer accounts in the U.S. and overseas. Also housed in this leased facility is Onan's Service Training School, which provides training in formal courses on all aspects of servicing and maintaining all of Onan's products for distributors, dealers, customers and Onan employees. Onan also has two warehouses in Minneapolis, one that is 90,000 square feet and the other 42,000 square feet. It also has a 58,000 square-foot warehouse in Huntsville.

Although all of Onan ' s products are now manufactured in the U. S., a few years back Onan had manufacturing facilities in Brazil and Canada. However, manufacturing operations in these countries proved financially disappointing, and both plants have been sold.

The Brazil operation involved Onan's first experience in acquiring another company. In 1972 Onan purchased a Sao Paulo firm called Montgomery-Cisa, Maquinas e Motores S/A, Brazil's leading producer of small gasoline engines. It was doing about $5 million in sales annually at the time Onan acquired it. The product line was expanded to include gasoline engines, diesel engines,

alternate fuel engines, and a variety of small generator sets and pumps. A small profit was made by Onan-Montgomery in the first two years after the acquisition, but losses were experienced from then on, and the company was sold in 1980.

Tom Valenty, president and chief executive officer during the years Onan owned the Brazilian company, said, "Shortly after the acquisition, we were soon to became intimately aware of the problems of doing business in a country with an inflation rate that reached 50 percent annually, coupled with the impacts of government controls on prices, wages, benefits, imports, duties, deposits, etc."

Onan started its manufacturing in Canada in 1964 at Guelph, Ontario. It already had a healthy volume of sales in Canada, and the Guelph operation was started with the objective of serving Canadian distributors better and to satisfy the "Buy Canadian" trend that was growing in that country. Sales did increase during the first three years of Onan-Canada's operations and a new manufacturing facility was constructed in 1967. Even though the product line was expanded, sales did not meet the company's projections following completion of the new plant and in April, 1970, the plant was closed and later sold. Onan currently supplies its Canadian market with products manufactured in the U.S.

Onan's employment during the late 1970s and early 1980s at its three locations has ranged between 2,500 and 3,000, with the bulk of the workers— about 1,800— in the Minneapolis locations. Employment at Huntsville is about 500, but that number could increase to over 1,000 as Onan's L diesel engine business reaches maturity. There are about 350 employees at the Elgar facilities in San Diego.

Elgar was acquired to complement Onan's generator set line with power conditioning and uninterruptible power products, While the performance of the Elgar subsidiary has been only moderately successful since the 1979 acquisition, a reorganization and plant updating were in process during 1981 - 1983 and a strong contribution to Onan profits is anticipated from Elgar in the future. Elgar is hampered by having facilities spread out in five separate buildings, and a consolidation of facilities would be desirable.

Unexpected economic developments shortly after construction started at Huntsville very nearly killed that project before it was completed. Original plans called for production of aluminum gasoline-powered engines and the generator sets powered by those engines at Huntsville. The generator sets were in high demand by the motor home market, an industry that had been growing spectacularly during the late 1960s and early 1970s. There also was a heavy demand for engines for garden tractors. Both the motor home and garden tractor business mushroomed after the new plant at Fridley was constructed, and it soon became obvious Onan couldn't meet all the new demand with production facilities in the Twin Cities.

About six months into the construction of the Huntsville plant, however, the Arabs imposed their oil embargo in October 1973, resulting in soaring gasoline prices, and the motor home market

practically collapsed overnight. The severe 1974 recession soon followed, and garden tractor demand also fell off sharply.

Tom Valenty said he seriously considered stopping the Huntsville project, but cancellation charges would have cost Onan about $11 million, so the construction continued. As the economy recovered beginning in 1976, sales of motor home generator sets and garden tractor engines improved dramatically, providing a good demand for Onan products manufactured at Huntsville.

Then the development by Onan of its diesel engine program occurred a few years after the Huntsville plant was completed, and L series engine operations now dominate production in the ultra-modern Alabama plant.

The new plant easily could have been constructed in the Twin Cities instead of Huntsville, had it not been for a very unfavorable business climate in Minnesota. The Fridley complex had been designed to allow for future expansion, and it originally was planned to enlarge that facility when sales volume would require additional manufacturing space. There was ample land available at Fridley and many other factors in favor of expansion there, but Minnesota, under its then new governor, Wendell Anderson, had just decided to shift the state's tax burden from home owners to business. Corporate income taxes, personal income taxes and the sales tax were boosted so real estate taxes could be cut and state spending could be increased.

At about the time Onan was deciding where to construct a new plant, its tax liability in Minnesota rose by almost 50 percent. And while Minnesota was increasing Onan's tax liability, officials at Huntsville came up with several ideas to make a move there exceptionally attractive from an economic standpoint. The decision to build in Alabama instead of Minnesota saved Onan about $3 million immediately, and an amount substantially exceeding that with the planned expansion into diesel engines.

Tom Valenty didn't allow the situation to escape the notice of Minnesota's new governor, in a letter to Gov. Anderson, Valenty stated, "The proposal to meet the rising cost of operating the state government by massive increases in taxes is likely to ‘kill the goose that lays the golden egg’. The state derives its income form business and individuals. The individuals derive their income from the businesses, whether it be manufacturing, farming, banking, or services. The critical item in this chain is business. Without business there are not jobs – no income – no tax money.”

CHAPTER TEN

SALE OF THE COMPANY

One of the most unusual aspects in the history of the Onan Company is the fact that never once in the 60-plus years it has been in existence has it ever failed to produce an annual profit - a feat matched by very few U.S. businesses. Sometimes the profit was small, often it was less than had been projected, but there never was a losing year.

That doesn't mean, of course, the company was without its normal share of problems. In each decade it seems that a crisis of one type or another was constantly threatening the well-being of Onan, especially during the firm's first 40 years. In the 1920s it was the serious lack of capital. In the 1930s it was the overwhelming Great Depression. In the 1940s it was the traumatic shift; from hectic war production to a civilian market that had been nonexistent for four years. These problems all have been explored in previous chapters.

The 1950s presented a totally new problem, never present in the previous 30 years. The Onan Company began to stagnate. It was an insidious situation, difficult to diagnose, but all the signs of stagnation were there. Sales were sluggish and declining, there was not the usual parade of new products, costs were rising and profit margins falling, there was a lack of long-range planning, budgets were lax and were not being met, and management was beginning to get top-heavy.

D. W. Onan, his sons, Bud and Bob, and other members of management were well aware of the problems and were working hard to correct them, but in retrospect it is clear that the zip that had marked the company during its first 30 years was missing. As the 1950s began, D. W. Onan was approaching his 64th birthday and, after a lifetime of battling the day-to-day business problems, he was running out of steam. As president. Bud Onan was making many of the top management decisions, but he, too, was beginning to tire after those hectic post-war years that had threatened the very survival of the company. The company had only 440 workers as 1949 came to a close, compared to 2,500 only four years earlier, but at least the hectic transition to civilian production had been completed and it was again business-as-normal.

Then in the summer of 1950 the Korean War started and orders from the U.S. military again began to flow into the Onan plant. Business picked up, the Arrowhead plant was reactivated and workers were added, but the boom was short-lived. Annual sales hit a peak of $17.4 million in 1952 and employment topped the 800 mark. For the rest of the decade, however, sales declined, going to $15.3 million in 1953 and hitting a low of $11 million in 1958.

By now Bud Onan was in full charge of the company. D. W. Onan had suffered a stroke in 1954, and although he partially recovered, he never again was fully active in running the company. D. W. Onan died in 1958. There were many factors, including the death of the founder, contributing to the stagnation of the company during the 1950s, but none was more important than the simple fact the Onan family no longer was willing to gamble everything it owned to help the business

grow. It was much easier in the beginning. There wasn't much at stake, and gambling everything seemed the natural thing to do.

In the 1950s, however, the Onan family, through years of hard work and sacrifice, was relatively well off and financially secure. It just didn't make sense to pour all they had earned over the years back into the company and take a chance of losing everything. Without large amounts of new capital, however, the Onan Company couldn't possibly achieve the growth of which it was potentially capable. By the end of the 1950s, the Onan Company was ready for a badly needed blood transfusion.

The Onan family wasn't actively seeking a buyer for the company, but when officials of Studebaker-Packard Corporation approached them with an offer in 1960, there was immediate interest. Studebaker-Packard, formed by the merger of the two companies in 1954, was based in South Bend, Indiana, and it, like Onan, was having problems — only of a different type. Studebaker-Packard was fighting for its life in the automobile business with all signs pointing to the fact it was losing the battle. Corporate strategy had dictated that Studebaker-Packard had better get into other product lines, and it was sitting on more than $100 million in tax credits that could immensely help in a program of acquisitions for the purpose of diversifying.

Studebaker-Packard offered to buy total ownership of the company from the Onan family, provided Bud Onan stay on as chief executive officer. The Onans accepted the offer, and in October, 1960, the company became a division of Studebaker-Packard.

There was a multitude of reasons why the Onans were willing to sell the company. The price was considered fair. The new owners could invest the capital that was badly needed to keep Onan growing. There was an immediate need for a million dollars to tool up for the new J Series engines that Onan had on the drawing boards, and another half-million to add an engineering building to the University Avenue plant.

Then there was the sizable tax liability owed to the federal government by the late D. W. Onan's estate.

There were personal reasons too. Bud Onan's wife was anxious that he slow down his pace and lessen his concern about the future of the company; Bob Onan was in ill health and anxious to leave the company.

[Ed. Note: Selling the company was a pretty scary thing for Bud to do. One thing that helped him get comfortable with the decision was a growing personal relationship with Harold Churchill, President of Studebaker-Packard. As the negotiations went on, there became a strong bond. Like dad, “Church” was a get your hands dirty, take charge kind of person. Bud and Church talked the same language. Church had come from Engineering to be President and launch the Lark car, which was the first money maker for Studebaker in many years. I was with dad in South Bend when Churchill made the offer to buy Onan. Dad said to me as we went back down the office elevator together that Churchill was the kind of person he could work with. He said he would accept the

offer. After Churchill retired, he and dad kept a running personal correspondence. He enjoyed hearing from Churchill on the progress he was having rebuilding a school bus, with his own hands, to take his wife and two newly adopted children on a tour of the American West. Church was a rock hound and sent dad bolo ties and cuff links he had made after the trip.]


Harold Churchill and Bud Onan

The sale of the Onan Company to Studebaker-Packard came as a shock to the company's employees. Following the shock came deep concern that the inevitable changes would mean it no longer would be the pleasant place to work that it had been.

Bud Onan's letter to all employees immediately after the sale tried to reassure the workers that the changes would be good for the company and for them, and that he would still be around for a long time. But the employees were still apprehensive.

Jack Shea, executive vice-president and a long-time employee at Onan, did much to help alleviate the concerns of the workers with a letter addressed to "all Onan associates," on December 14, 1960. Shea said, "I've been asked the same blunt, personal question a good many times. It deserves a direct answer. The question has been asked by both shop and office people, in various ways, but here's what it boils down to. 'Jack, you've been close to this whole thing. How do you really feel personally? Do you believe that we can keep everything we have, or will Studebaker-Packard move in and take over, with new management and new policies? '

"I can answer that question without qualification. Yes, I do believe that we can continue to have everything that we have now - and more! We can keep our philosophy, our programs, our benefits, and our profit sharing. We can have security, opportunity, and a rewarding future. I do not believe that anyone is going to move in and take over, with new management or new policies. I have some very practical reasons for my confidence.

"Of course, we all expect to stand up and be counted. We're responsible for our results here. No matter who the stockholders are, whether it's a single family or thousands of people, we have to keep this business healthy and profitable to justify our work. That's true under any circumstances. Only we can guarantee our future, but we have everything we've ever had with which to do it, and more.

"Make no mistake. I, too, was uneasy when the change was first announced. I have a big personal stake in what happens. In a few weeks, I'll have 19 years with Onan. It's most of my working life. If there really was a threat to this way of business life, I'd be disturbed as well as any of you.

"I think all of us react to change in much the same way. We first react emotionally, and then we apply reason to the facts. I've been through both stages. I've had a chance to calmly look at what's happened, why it's happened, and what it means to us.

"First of all, let's look at what's actually happened. All that really happened was that the owners of the stock changed from a few people to many people. The physical character of the capital assets of this business is exactly the same. In other words, we have the same building, equipment and tools that we had before.

"Our most important asset remains the same. The people who built this business, each and every one of you, are still here to pool abilities, skill and experience toward a common and mutually profitable goal. So, we're the same people, working with the same facilities as we always have.

"Studebaker-Packard's approach was one of practical business logic. They're rapidly diversifying, and they have the money to do it. They bought five companies in the last 16 months, and they're going to buy more. They're spreading their risks for the protection, and, ultimately, the profit of their stockholders. Their program will only work if they acquire well managed, profitable, sound, growing, businesses that can produce a profit for the total corporation, and that can do it on their own, with their own plans and programs, not necessarily in conformance with each other."

Shea's reassuring letter helped calm an unsettled situation, and workers quickly adapted to the change of ownership.

Tom Valenty, who later was to become president of the company, remembers there were some dramatic changes after the sale — all for the better. He says, "We were now forced to plan, to prepare realistic annual budgets, to set new order and shipment targets, to come forth with a new product development program, a planned replacement of old machine tools, and much more.

"Studebaker-Packard did not force any change in management personnel. What did happen, though, was that our approach to management now included risk taking. Under this approach we undertook a large military generator set development program, which led to many others in the ensuing years. These contracts provided cash flow for the new machine tools, new products, and market development."

These changes gave Onan the blood transfusion it needed. The business grew from $15 million in sales in 1960 to $44 million by 1968.

Studebaker-Packard proved to be good for Onan, and, just as important, Onan proved to be good for Studebaker-Packard. In 1966, for instance, Onan contributed 22 percent of total Studebaker-Packard sales, but it also contributed a hefty 55 percent of the parent company's net profit for the year. In 1967, partly because of Onan's strong performance, Studebaker-Packard was able to bring about a merger with Worthington Corporation, a Harrison, New Jersey manufacturer of compressors, electric power generating equipment and diesel locomotives.

Onan's new parent was now known as Studebaker-Worthington, Inc.

In 1968, Bud Onan, who was then 58 years old, decided to retire after 42 years with the company. Before making his decision public, Onan asked W. Glenn Gordon, who was group vice-president: for Studebaker-Worthington and responsible for the Onan Division, if he would be willing to become chief executive officer of Onan.

Gordon, who at the time was considering being transferred from South Bend, Indiana to Harrison, New Jersey, where the new Studebaker-Worthington headquarters was to be located, was agreeable. So was Gordon's boss, Deraid H. Ruttenberg, chairman and chief executive officer of Studebaker-Worthington. So, after a 48-year history, Onan was being run for the first time by someone other than an Onan family member.

Gordon introduced several changes to Onan in his years as chief executive, including improving the management team, sharpening the gross margin concept, which went from 22 percent to 36 percent in just a few years, and he started a vastly improved long-range planning program. Gordon also supported the planning of the Onan facility at Huntsville, Alabama.

In 1972, Gordon was moved across town by Studebaker-Worthington to become chief executive of another division, Turbodyne, a Minneapolis manufacturer of steam and gas turbines and turbine-powered generators. Tom Valenty, who had become president in 1970, succeeded Gordon as chief executive officer.

It also was in 1972 that a decision was made to sell 20 percent of Onan to public shareholders with Studebaker-Worthington retaining the other 80 percent. The 600,000 shares of stock were sold in March, 1972 for $19 a share and the stock was listed on the American Stock Exchange. Within a few months the stock price had soared to $44.50 a share, and it looked as though another smart move had been made. Deraid Ruttenberg, the parent company's chief executive officer, had made the decision to take Onan public, and it wasn't his first success along those lines. He earlier had sold some stock of another division, STP Corporation to the public at $25 a share and it quickly went to more than $50.

But the stock market is a fickle place, and before 1973 had ended, investors had gone sour on the market and prices plummeted. Onan shares dropped from the $44.50 a share peak to a low of just under $9. In 1975, it was decided to take Onan private again. The 20 percent that was owned by the public, plus another 17 percent from Studebaker-Worthington, was sold to Hawker

Siddeley, a London-based company with interests that include diesel engines and generator sets, among many other activities and product lines.

Hawker Siddeley had just sold its DeHavilland Aviation division to the Canadian government for $39 million, and it wanted to invest that money in another North American company. Onan looked like a perfect fit. It offered $37.5 million for 50 percent of Onan, and the deal was tentatively agreed upon. Two days before the papers were to be signed, Studebaker-Worthington called off the deal. Later, Hawker Siddeley agreed to settle for 37 percent ownership, and that proposal was accepted. Hawker Siddeley still owns 37 percent of Onan, but Studebaker-Worthington is no longer the parent company. In October, 1979 the McGraw Edison Company, headquartered in Rolling Meadows, Illinois, acquired Studebaker-Worthington, and it now is the owner of 63 percent of Onan.

[Ed. Note: I don't want to get ahead of the story, but as a matter of clarification, today the company is wholly owned by Cummins Engine Company in October 2012]

CHAPTER ELEVEN

MARKETING STRATEGY

For more than a half century, it has been the people at Onan who made the company a success, but it was sound and innovative marketing that gave those people the strategy they needed.

Of all the thousands of difficult marketing decisions made over the years by Onan executives, the one that finally evolved in 1947 undoubtedly was the key to the company's present success as a world leader in power generation equipment.

That was the year D.W. Onan and his sons. Bud and Bob, decided that manufacturing generator sets for retailers, such as Montgomery Ward, to be sold under the retailers' brand names, would hamper Onan's future growth. Although the company's private-label business was growing and was profitable, there was discomfort over Onan's destiny being subject, to such a great extent, to the willingness of the mass merchandisers to promote Onan products.

Prior to World War II it was the additional sales of Onan products by Montgomery Ward that, in a large part, were responsible for the company's surviving, so there was a certain amount of loyalty to this class of customers as well as apprehension over the prospect of doing without them.

Several other mass merchandisers had joined Montgomery-Ward as important Onan customers, including Fairbanks-Morse, Wind Charger, Winco and others. There were two main disadvantages of relying on private-label business, however.

(1) Onan's growth could be seriously hurt at any time merely by one or more of these retailers' deciding to drop Onan as a supplier.

(2) None of the mass merchandisers offered the type of service to buyers of generator equipment that Onan felt was essential to keep customers satisfied.

In addition to the private-label business, Onan had, since the founding of the company back in the 1920s, relied heavily on direct selling through small magazine ads and promotional mailings.

The decision made in 1947 was to set up Onan's own domestic and international distributor network and gradually to eliminate marketing through private labels and direct selling. It was a crucial move and the timing was critical. In retrospect, the decision was a wise one and the timing was perfect, although it took several years to fully implement it.

Since the 1947 decision, Onan's marketing strategy has undergone substantial changes at times and is constantly being fine-tuned, but it remains basically the sale of Onan products to the end-user through a comprehensive network of distributors and dealers. Today there are Onan distributors in every state in the U.S., who, in turn, have more than 2,000 dealers across the

nation. In addition, Onan's International Division has approximately 100 distributors worldwide in about 75 foreign countries.

Onan also sells products directly to original equipment manufacturers, to the U.S. government and the company has even re-entered the private label business in areas it felt it could not reach through the Onan distributor-dealer network.

The overwhelming success of the distributor-dealer strategy can be attributed to the extreme care Onan has taken over the years in screening and selecting the distributors in this network. And the network is more than a sales organization. It also provides Onan customers around the world with parts, service and application engineering. Onan always has had a pledge to service its products, no matter how or where they are sold or used.

At the company's Service Training Center in the Twin Cities, a special training staff is continually instructing field service people on how to repair and maintain Onan products. Onan frequently brings its distributors, dealers and other customers to the Service Training Center for seminars on proper servicing technique. Onan's international staff, in addition, conducts training schools in foreign countries.

The international market for Onan products has been growing gradually since the end of World War II and today represents a very significant portion of Onan's total business. Foreign sales have had some wild ups and downs during Onan's first 50 years. Since 1971, however, overseas growth has been carefully planned and pursued, and the wide fluctuations are much less frequent than in earlier times.

Prior to World War II, 80 percent of Onan's total sales came from foreign countries, but in the years immediately after the war, this part of the company's business was insignificant. During the 1950s and 1960s there was an attempt to increase overseas sales, but proper attention to this potential market was never achieved.

In early 1972, Onan decided to split international sales away from domestic sales where it had been treated as a step-child. International has since achieved division status within Onan, and it now has all of the functions of a free-standing business unit except manufacturing.

Tom Valenty, the chief executive officer at Onan during most of the 1970s when international marketing came into its own, says, "We made a lot of mistakes in the early to the mid-1970s as we tried to increase our international sales volume. We recognized the need for sales offices closer to the foreign marketplace. We moved every single trading company office location at least once since first implementing them. We changed trading company managers, several times in some locations, before we found the right combination of qualities and capabilities. We redesigned our products to meet foreign standards and we provided literature in several languages. All this effort has been costly, but now we have our act together. It works."

In 1972 Onan's export sales were well under $10 million a year. Valenty gave the newly formed international group a goal of $50 million annually in sales. The goal was reached and exceeded significantly in 1981, although International Division sales turned down in 1982.

Valenty says, "We set a strategy for increasing international sales in 1972, put forth the effort, lived through many mistakes, but after a decade of aggressively pursuing international business, we have the pay-off."

A parallel can be drawn between Onan's marketing efforts internationally and with it U.S. government sales. During World War II Onan was the primary supplier of generator sets to various military services, producing a peak of $50 million a year in government business. This dwindled after the war to practically nothing and government business didn't pick up again until a concerted effort was made by Onan in 1960 to acquire military contracts.

Onan had played a modest role as a supplier of generating equipment to the U.S. military during the Korean conflict in the early 1950s, but marketing results were far from impressive. In 1960 the company made a decision to actively pursue U.S. military business on a permanent basis, but unfortunately, Onan had let that market slip to the point it didn't even have the initial contacts in which to start a sales campaign.

Tom Valenty, who knew an official at the Engineering Research and Development Laboratories of the U.S. Army at Fort Belvoir, Virginia, volunteered to assist Onan's marketing people in establishing military sales.

Valenty recalls, "On our first visit, we were allowed into the laboratories, but their development funds were already committed, and they had no production requirements. Nevertheless, several of us continued to call on the Fort Belvoir contacts for the next couple of years, and we got to know the project engineers well. It turned out that the smaller generator sets were being developed for the government by a military products section of an industrial engine manufacturer. This group had good academic design experience, but it was totally lacking in knowledge of generator set production processes. Their designs were almost impossible to produce in large quantities and at a reasonable cost. Needless to say, we succeeded in getting our views across, but after two years of effort and the expenditure of a fair amount of money, we still had no prospects of getting any business."

Unknown to Onan executives, however, events were to occur to make their two-year investment worthwhile. In October 1962, Valenty received a phone call from his acquaintance at Fort Belvoir. He asked Valenty if he had read the morning paper yet. Valenty said he had not. Valenty's Army friend said, "Well we might be at war today, and we don't have any generator sets to fight a war with." He was referring, of course, to the Cuban missile crisis and to the confrontation between President John Kennedy and Russia's Nikita Khrushchev.

Valenty was asked if Onan was willing to quickly build 12,000 five-kilowatt military design generator sets.

"I was elated," Valenty says. "Here was our chance at an order after two years of coming up empty-handed." Valenty was asked for a price on these 12,000 sets, and Valenty replied he would need drawings and specifications. He was told there was no time for that, and that a price would have to be submitted that afternoon.

Valenty says, "What do you do when you. are offered a tremendous opportunity, but have no drawings or specifications to work with? They wanted a price in four hours, but no one in manufacturing, finance or administration at Onan knew anything about the product. " Valenty sat down with Harry Jorgenson and the head of Onan's costing department and they worked out a price from the limited facts available.

"The request was preposterous," Valenty says, "but eventually we came up with a price of $1,234 per unit."

Onan quoted the price to the military and won the contract. In executing the contract, Onan had to completely redesign the family of military five-kilowatt sets so they could be built on a production basis. In the process of developing the generator set, Onan had to upgrade its drafting, engineering, technical manual and quality assurance capabilities. "We were a much better company by the time the production contract was completed," Valenty thinks.

From this initial contract, Onan went on to produce tens of thousands of five-kilowatt sets for the military, thousands of 1.5-kilowatt military design generators and regulators, some ten-kilowatt sets and the first production quantities of the 60 kilowatt military standard sets.

Onan became a major supplier of generating equipment to the military during the Vietnam war. The successful financial performance in the military set business provided the drive to build the Fridley facility in 1968 and 1969, and the strong cash flow from government contracts enabled the company to finance new product development, new production equipment and other marketing programs.

It's probably accurate to say that Onan's present market strategy had its birth in 1947, became of age in 1958 when "new blood" was brought into the marketing department, and since then has constantly refined its sales programs to where it's the envy of its competitors today.

Onan's financial results bear out that assessment. Business increased from the $11 million annual volume in 1958 to $20 million in 1963 and $63 million in 1969. By 1973, Onan passed $100 million in annual sales, and has had steady growth since then, reaching today's present annual volume of around a quarter-of-a-billion dollars.

This amazing growth has been fed by many different factors, but Onan's marketing strategies can take much of the credit. It's obvious that this marketing strategy has been held together over the years by a single characteristic—persistence. As the strategy evolved, Onan was persistent in its marketing plans, and this persistence has more than paid off in growth and profits.

[Ed. Note. In large part, the stagnated sales spoken of in the 1950s was the result of a stagnated Vice President for Sales. Brought up in the early iron peddler tradition. He needed to retire.

A sadly omitted part of this story is the contributions of Roy Mullin and Bill Auger.
Bud Onan, my dad, could see what was happening and knew what he had to do. Vice Presidents could only be replaced by Bud and Jack Shea, the Executive Vice President. A professional search was initiated and candidates narrowed down. I remember my dad's comment that the candidate he liked best was going to be non-traditional and perhaps hard to contain. But he said that he would rather try to focus the man's energy than whip him into activity. That candidate was Roy E. Mullin.

Roy came from an automotive background, but not a technical one. In fact, Roy would never learn much of the technical details of Onan generators. What he did well was inspire people and lead the charge. With him came Bill Auger. Bill was a counter point and able to carry out Roy's programs.

Roy brought the concept of Marketing to Onan. That is sales, promotion, market research and customer service.

We called ourselves the "World's Leading Builder of Electric Power Plants" but did not look like it with 1 inch ads in Popular Mechanics. We re-assessed our advertising strategy, changed frequency and space size to look like a leader. Some of the full page image building ads in Fortune featured Bud Onan talking about the product. He owned the company. Most other advertising was in prominent trade journals with hard hitting copy aimed at customers and buying influences.

The perception was that not all competitors units would perform to their nameplate rating. A program of "Performance Certified" was begun. Each unit shipped with a certificate saying it had been run and tested to assure it would meet its nameplate performance rating with instruments who's accuracy was certified by an independent testing laboratory.

Many assemblers built standby generator sets but manufactured none of the components. Then there were the engine or generator builders who assembled. Along with a standby installation was switchgear to control the units start up, switch the load to the generator, and return to normal status when the commercial power returned. Onan could say it manufactured the complete package and therefore was the only company who could take complete responsibility for the installation. We called it "Unit Responsibility." This was another item to spotlight the difference in our products.

OEM customers need special handling because they are not a client you typically advertised to. Canadian fishing trips and sport outings, with the principal executives of the customer and Onan, created a personal relationship that encouraged sharing ideas and concerns. Knowing the customer on a first name basis meant it was more likely we would be called than dumped.

The company airplane, a DC-3 converted specially for executive travel, was used to bring Onan prospects, customers and buying influences, like architects and engineers, to the factory for 3 day conferences on Onan products. All expenses paid! This was very well received and made the airplane a profit center. Not often a corporate airplane pays for itself.

The heart of the marketing effort was distributors. These independent business men ran organizations that may themselves employed hundreds of people. They also had local knowledge of specialize situations. Roy and Bill set up a Distributor Advisory Council made up of representative distributors who they themselves elected. They would meet twice a year at the factory and discuss issues of importance including Onan company policies. It was very successful

Roy loved to be a showman. In one instance he literally threw down the gauntlet to Sherwood Egbert, who was then President of Studebaker-Packard and about to introduce his pet project, the Avanti car; as to who would return the most profit to the corporation. Of course, Roy won! He established a fraternity called Onan Marketing Leader for the person(s) who contributed most to marketing for the year. They got bright red sport coats to wear at all official Onan events.

These programs under Roy's leadership had much to do with pulling Onan out of the '50's stagnation. He nurtured growth in the motorhome, standby and OEM markets. Unit Responsibility put service and parts in a prominent position. The Look of Leadership was recognizable company wide.

I worked for Roy for 6 years. I was in charge of advertising, sales promotion, market research and product planning. We traveled around the world together; and I was exposed to more about marketing from Roy than I could possibly absorb. He had endless respect for my dad, but was never shy about telling him when he thought dad, or anyone else, was wrong. At the same time, dad seldom had to put breaks on Roy. When he did, Roy reacted professionally. You knew where you stood with Roy. He was openly manipulative and honest.]

Roy Mullin VP Marketing, Bud Onan, Bill Auger Sales Mgr, Jerry Olson VP Mfg
Celebrating the One Millionth Unit in December 1967

CHAPTER TWELVE

ONAN'S GROWING PRODUCT LINE

Although Onan's product line today is varied — it would take another book just to describe the different items available — nearly everything manufactured by the company falls into the category of energy conversion and control devices. It's been that way almost from the very beginning. The company was started, of course, as a producer of equipment and parts for motor cars, and there were the early manufacturing and profitable sales of the "Safty Saw".

Onan designed and produced its own air-cooled engines, becoming the first company to develop opposed two-cylinder engines with the necessary low level of vibration. Four-cylinder engines later were added to the line) and Onan became a leader in the production of gasoline engines in the 5 to 40 horsepower category. The Onan engines were the first with such features as pressure lubrication, aluminum cylinder blocks with cast iron sleeves, and replaceable bearings.

The small Onan gasoline engines were so well designed that other original equipment manufacturers clamored for them, launching the firm into a new market as a supplier of small industrial engines for purposes other than powering generators. Starting in the late 1940s, Onan engines were sold to manufacturers of truck refrigeration units, rotary tillers, pumps, and many other pieces of equipment.

It also was in the late 1940s and early 1950s that Onan entered the diesel engine market, a field that today holds tremendous promise for the future. Onan is now marketing its new L Series family of diesel engines ranging in size from 15 to 125 horsepower. The company, during 1980-1981, invested more than $100 million at its plant in Huntsville, Alabama, where the new diesel engines are manufactured.

Since 1979 Onan has been supplying electronic AC power conditioning and frequency conversion equipment. This new product line was the result of the acquisition of Elgar Corporation in San Diego) California. Elgar is now a wholly-owned subsidiary of Onan. The highly sophisticated equipment made by Elgar is designed to eliminate power variations, voltage drops, line noise, to correct other power line problems, and to provide uninterruptible power.

Elgar manufactures high isolation transformers, AC line conditioners for laboratory and instrumentation application, AC power regulators for computers, instrumentation and other high technology loads, and uninterruptible power systems for protection against brownouts, blackouts and other power line disturbances. Elgar is also the leading manufacturer of inverters and uninterruptible power systems for the nuclear power industry.

Although the equipment manufactured by Elgar promises to play an important role in Onan's future and the diesel engine program at the Huntsville plant represents a major capital expenditure, Onan's worldwide reputation has been earned through a half century of manufacturing rugged, well designed, dependable generator sets.

In the smaller generator set sizes, Onan makes a wide range of sets for recreational vehicles, special purpose vehicles, military use, construction projects, pleasure and commercial boats, for home use - including standby power, and for portable welding equipment. In the larger sizes, typically up to 750 to 1,000 kilowatts, Onan manufactures standby and continuous, or prime, power generator sets for use in telecommunications facilities, commercial buildings, construction projects, hospitals, banks) computer centers, retail stores, office buildings, schools, prisons, sports stadiums, and nursing homes to name a few applications.

Emergency standby power generator sets, the product line for which Onan has historically been best known, account for approximately 25 to 30 percent of Onan's business. Governmental bodies and code-making bodies are becoming increasingly aware of the need for emergency standby power that will be available as long as there is a utility outage, and generator sets are the only source of standby power that can meet this need. So standby power should continue to be an important market for Onan generator sets.

Tom Valenty has been especially active in pushing for awareness of the need for dependable standby equipment. One of the reasons for this goes back nearly 30 years. An experience one evening in the mid-1950s left an indelible mark on Valenty. He recently recalled the event: "I took my family to the Ice Follies and we were sitting in the stands at the big arena in Minneapolis waiting for the show to start. There were about 10,000 people in the stands and we experienced a local power failure. All the lights went out. The arena was pitch dark and some frightened person in the audience started to scream. In a short time, less than a minute, hundreds of people were screaming. This went on for what seemed like 10 minutes. The crowd was at the very edge of panic; anything could have happened. Finally, several cars were driven into the arena with their lights on; they gave enough light to show the crowd there was nothing to scream about." That experience convinced Valenty that Onan was in the right business, and since then, he has spoken out frequently on the need for emergency standby generator sets.

In larger facilities, such as hospitals where adequate standby power is required by law, there may be several Onan emergency standby power generator sets installed. In these multiple-set installations, it is not unusual for the sets, in conjunction with installed Onan-designed and manufactured paralleling gear to have the capability of "sequential paralleling". This means that in a hospital, if a power outage were to occur, all of the, say, three generator sets would start up, virtually simultaneously. The first set to reach rated frequency and voltage could assume the hospitals most critical electrical load. This would include such things as life support equipment and operating room lights and other operating room equipment. The second set to reach rated frequency and voltage would assume the next most critical electrical load, and the third set would assume the least critical load.

Onan's gas turbine-powered generator sets are used for emergency standby power and they are also used to provide prime power, in which instance the electric utility typically becomes the source of emergency standby power in the event that the turbine generator sets do not run for some reason, such as malfunction or interruption of fuel supply.

Onan's turbine-powered generator sets are also used in cogeneration installations wherein the large amount of heat generated by the gas turbine is captured and can be used in a variety of ways. The heat can be used in industrial processes that require large amounts of heat, with the electricity that is produced by the generator set being used to provide power for the industrial process, or, in some cases, it can be sold to the local electric utility.

In addition to paralleling gear, Onan also manufactures components such as automatic transfer switches and other switchgear and controls that are installed in standby power applications. Onan also provides separate generators for industrial and military markets.

Onan has been fortunate over the years in having a wide variety of users for its generator sets and engines, because as some markets have become less active, others have become more popular, helping to reduce the peaks and valleys in sales that hamper so many businesses. A good example is the motorhome market, which has been an excellent market for Onan. The first motorhome that required generator sets were first introduced in the early 1960s. Onan was asked to design generator sets for these new recreational vehicles, but the first efforts were disappointing. The early sets were poorly installed, too noisy, vibrated the motorhome, and often could not start the electric air conditioners. Onan engineers worked feverishly to improve the product, and their efforts paid off. By 1967, Onan had a superior generator set designed for motorhomes and the motorhome market itself expanded beyond anyone's dream.

There were dozens of manufacturers of motorhomes in the country and there was a reliable Onan generator set available for any size vehicle. Onan soon had a major share of the market. As sales of motorhomes mushroomed, Onan brought out new, lower cost products. A major factor in Onan's success in this market has been the availability of service on the generator sets through the company's distributor network and distributors' dealers who sell and service Onan products.

Because of the rapidly growing production of motorhome generators sets in the early 1970s, Onan management decided to construct a plant at Huntsville, Alabama, to provide additional capacity for the manufacture of high volume aluminum engines and the generators powered by these engines. These units were used mostly for the recreational vehicle market.

In October, 1973, the Arab oil embargo was put into effect, causing gasoline shortages and soaring gasoline prices. The motorhome market and Onan's sales to it were staggered.

Construction at Huntsville has already started when the motorhome market collapsed due to the oil embargo. The decision was made to continue with the construction of the Huntsville facility in the belief that the market for aluminum gasoline engines and generator sets would eventually come back after an adjustment to the Arab oil embargo had been made. This situation did correct itself, and increased sales of products from the Huntsville facility occurred in 1976 and 1978. In about 1977, it was decided to concentrate the manufacture of engines at the Huntsville facility for the new lines of diesel engines, then under development, that would be launched in the early 1980s.

Onan had been producing diesel engines for years, but in the mid-1960s management recognized that its dependable J Series diesel engines would need to be replaced as the machine tools used to produce them wore out and new diesel technology became available. So work was started on what is now Onan's L Series family of diesel engines.

The L Series, a family of 2, 3, 4 and 6 cylinder, water-cooled diesel engines, covering the power range of from 15 to 120 horsepower, is a modern design using the latest well-proven technology available.

While one of the principal applications of the new engines was in Onan generator sets, they also are suitable for and used in other original equipment in construction, industrial, agricultural, transport refrigeration, and other fields.

One of the secrets to Onan's success has been its constant introduction of new and improved products. As markets change, so do Onan's products.

Here are some product milestones, starting with the introduction of the famous Ten-Lite generator:

- 1926 - The first generator set for sportsmen was designed.
- 1930 - The first Onan designed and manufactured gasoline engine was built.
- 1939 - Three families of two-cylinder, air-cooled gasoline engines were introduced. One of these, the OTC, was built at the rate of 10,000 or more a year during World War II.
- 1941-45 - Onan produced more than half of all the generator sets supplied to the Allied Forces.
- 1946 - The first small diesel engine was designed.
- 1950 - The patented Vacu-Flo system for truck compartment cooling was invented.
- 1963 - Onan again becomes a major supplier of generator sets to the U.S. military.
- 1964 - The first sound attenuating enclosure for marine diesel-powered generator sets was designed.
- 1965 - The first marine muffler was designed to permit engine exhaust of generator sets from below the water line.
- 1969 - The first space-saving, square-designed generator set designed.
- 1971 - Five-year warranty on standby systems offered.
- 1976 - Production of two millionth power unit by Onan.
- 1976 - Shipment of first gas turbine-powered electric generator set made.
- 1979 - Elgar power conditioning and uninterruptible power systems business acquired.
- 1981 - First L Series diesel engine produced at Huntsville.

The above is an impressive list of new product achievements, sustained over approximately five decades. Will Onan's future program for developing new products keep face with the company's past history of activity in this important area? The answer is yes, as you will see in the next and

final chapter of this history of Onan Corporation. Onan's five-year plan commits the company to a high level of new product activity.

CHAPTER THIRTEEN

THE FUTURE

While the Onan Company's past success has been traced to capable people following a sound strategy of sticking to products they know about, what about the future direction of the company?

On September 1, 1981, a new president and chief executive officer was appointed at Onan, and although S. A. "Tony" Johnson is a man with wide experience in industry, he is, after all, an "outsider." That could mean an entirely new direction for the Onan Company. But does it?

Johnson, who was 41 when he came to Onan from a top executive position, Vice President for North American Businesses, with Cummins Engine Co., Inc., Columbus, Indiana, had devoted considerable time to developing and implementing new strategies at Cummins. [Cummins Engine Company of Columbus, IN had acquired Onan]

His first several months at Onan were devoted to getting acquainted with Onan people and the company's operations, and then to mapping out a detailed long-range plan that would address his goals for Onan in the context of current and anticipated economic conditions over the next five years.

Onan now has a very complete, formal five-year strategic plan of direction that is reviewed and updated annually. A brief statement that best captures what Onan will be doing in the future can be found on a page up front in the thick notebook that holds the long-range plan. It says simply; "Onan's direction is managed growth related to the company's know-how base and consistent with its long-term financial objectives."

Johnson says, "That summarizes the fact we want to grow, but we want that growth to be managed, not just willy-nilly in any direction; we want it to be growth that we have planned. And we want that growth to come from areas where we know how to do things.-.either our manufacturing know-how base, our marketing know-how base, or our technological know-haw base. We don't want to go into the washing machine business, or the clothing business, or the sports business or into other things we don't know how to do." Johnson added: "We also want anything we do to meet our financial objectives. We've set ourselves some reasonably tough financial goals, and we will test everything we do against those. "

Johnson explains that Onan's financial objectives are a 10 percent real growth (after inflation) in sales every year and a return on investment that is in the upper quartile of industrial companies in the Fortune magazine 1000.

In the five-year plan, Onan has several specific non-financial objectives:

- To increase the share of the company's base business, which is electrical power generation.

- To increase Onan's penetration in AC power conditioning, which is at Elgar, the company's electronics firm in San Diego.
- To enhance the quality of the company as perceived by its stakeholders—Onan's employees, customers, suppliers, neighbors and shareholders.
- To establish a position as a supplier of diesel engines of up to 125 horsepower.
- To optimize Onan's position in the small gasoline engine market.
- To expand the company's business in controls, switchgear and generators.
- To seek new business and new opportunities related to Onan's know-haw base.

Johnson says the long-range plan specifies that when the five-years are completed, Onan will see 25 percent of its sales coming from products or services the company does not currently offer.

In the course of developing the five-year plan, an analysis of Onan's operations showed that there were 36 separate businesses within the company. Producing and selling generator sets to the motorhome industry, or producing and selling small gasoline engines to manufacturers of garden tractors, are two examples of separate businesses. In Johnson's view, 36 was too many businesses for Onan to be in, and they have been grouped into 10 "business clusters", each of which constitutes a profit center. There are five business clusters in Onan's Electrical Products Division, two in the Engine Division, one in the International Division and one each in Elgar and in Parts.

Another aspect of developing the five-year plan was an effort to identify Onan's vulnerabilities, and one was that Onan must increase its manufacturing efficiencies so as to produce redesigned electrical products at less cost. The five-year plan calls on Onan to maintain and improve the quality of its products and at the same time reduce costs an average of 20 percent.

Onan's line management was assisted in preparing the five-year plan by two consulting firms — Pugh-Roberts and The Strategic Planning Institute, both of Boston, Massachusetts.

Onan's five-year plan is probably a misnomer. Johnson says a good long-range plan is never fully completed. "It should be a living document— one that is constantly in use, and not something to put on a shelf and take down once a year to review. "

Johnson says a strategic plan not only tells a company what it should do, but, just as important, what it should not do. "For instance, Onan is not a consumer company with household name recognition, and our plan tells us to stay out of that area."

How does Onan's new long-range planning fit into the company's past?

Although the technique is different and there is more stress now on using the plan in a day-to-day basis, the primary goals are similar to those that guided management in years past.

Before Tom Valenty retired as president, he wrote a paper entitled, "Historical Perspectives on Onan." In it he listed the factors that guided the company during his administration:

(1) Strong product development capability.
(2) Intimate knowledge of the user's application requirements.
(3) Cost consciousness.
(4) Production capacity in step with or ahead of market demand.
(5) Ability to serve the customers in marketing, parts, service and promotion.
(6) Strong margins and cash flow to provide the ability to finance the business and its expansion. No debt.
(7) Persistence to see a project through to a successful conclusion
(8) People who can make the necessary happen.

Even though Tom Valenty's goals have different words than those contained in Tony Johnson's five-year plan, it's evident that the original Onan philosophy, first laid down by the company's founder, Dave Onan, and carried on by his son. Bud Onan, is still very much alive. At Onan the emphasis will continue to be on a quality company — staffed by quality people and producing quality products.

[Ed. note. Tony Johnson's vision was much like what we had in the 1960s. I know because "Planning" was in my job title. The business always had too many businesses. But that provided the kind of diversification which I think helped the sales curve. It was a vertical integration of product and a horizontal aggregation of market. Maybe what he was talking about is more a matter of style than substance.]

Editor's Note

My part in the company

As a toddler I was paid in cookies for modeling with the product. At age nine I worked in the shipping department pasting labels on crates and made $25 for a summer. Dad, Bud Onan, let me come to the shop after school whenever I wanted, and then go home with him at the end of the day. So, we talked a lot about what was going on. About the time I was a junior in high school I started working summers as a draftsman. I enjoyed being at a big drafting table. It was fun learning from the other draftsmen, many who produced real works of industrial art. Dad usually spent some part of the day in drafting, working with Al Fleury or Ole Aho on one pet project or another.

After a year at the University of Minnesota in Engineering School, I was back working full time. It was a drafting job that turned into a sales job in a mobile product display. A year or so later when this was over, I went back to engineering to work on engine development. Most of my time was spent on the small diesel engines. It was improving the old models and then development of the J

series diesel. In June, 1962 I presented a paper to the Society of Automotive Engineers in Atlantic City, NJ, on the development of the J series product line.

With a couple transition assignments, I began what was called Product Planning or just plain Planning. This involved advertising, sales promotion, market research and product planning. While we liked to think the company was now marketing driven by Roy Mullin, in fact there were a lot of engineering and technical considerations that had to be justified with market considerations. I helped facilitate bringing these interests together.

My last effort was giving up my conference table for the planning of the new building in Fridley. I left the company in 1968 with my name on a new office I never occupied. The 15 years I worked at the company were a lifetime of experience. I rubbed shoulders with people who were the best in their field. I was blessed.

David W. Onan II
October 8, 2012

RELATED SUBJECTS
Onan Company History 1982

INTRODUCTION

The preceding Onan Company History 1983 described David Onan as a mechanical genius. It certainly is true that his abilities were in his genes because he had little education. At age 16 he was working for the Niagara Falls Street Railway Company. His return to Minnesota and his active business days are described there.

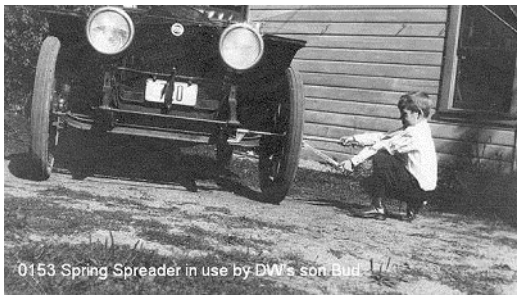
What I want to do is illustrate a bit of his abilities as an inventor, tinkerer and promoter with an emphasis on the mechanical and electrical. Both the automobile and electricity were leading edge technology when he was a young man. I'm sure he had no idea they would combine in his life to become his future. It speaks to his character that he believed he could achieve success at the cutting edge of technology.

THE MOTOR CAR

Still somewhat of a curiosity, but emerging into the mainstream, it was a device of considerable mystery and no little derision. In 1906 he took a job with P. J. Downes Company of Minneapolis, distributor of Rambler automobiles. When an auto was sold frequently someone had to be taught how to drive and service it. One instance was the Heffelfinger family of Ferndale, Wayzata MN. DW lived with the stable master at Highcroft estate for a week while he taught him how to drive and service the car. Another situation was the delivery of a new auto to a Montana customer. Presumably he and the car went by train to the closest point where it could be delivered on its own wheels. The picture below is D. W. Onan going cross country in the Judith Basin of Montana.

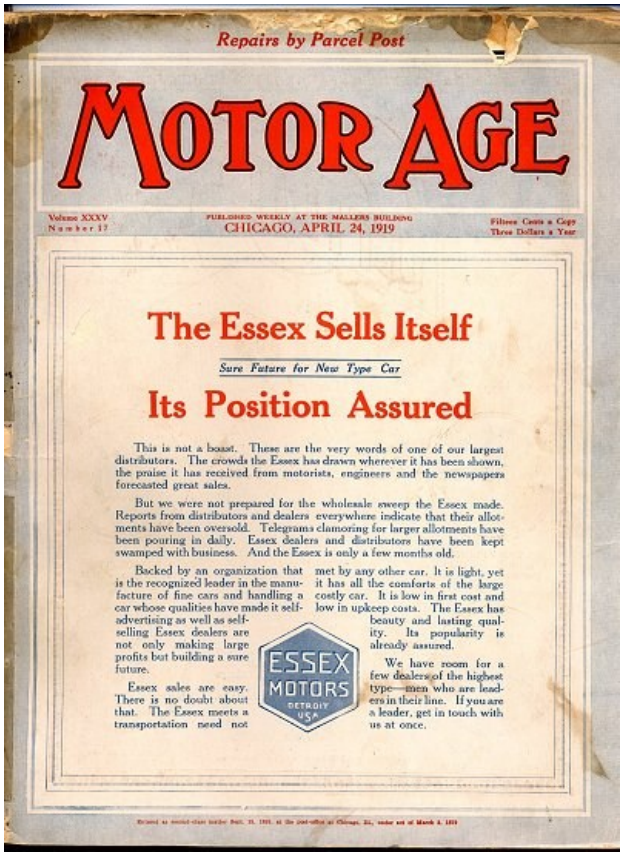
This was greasy hand, skinned knuckle sort of work that gave Dave an intimate knowledge of the automobile. It not only taught him how things worked, but what did and what didn't. Auto engineering was pretty much empirical, cut and try. Apparently his mind worked well in this area and he learned quickly.

The Spring Spreader came directly out of a need. In about 1917, the patent application is not dated, he developed this device which spread the leafs of the spring apart and applied grease between them. It was all contained in one tool, as demonstrated by his son, Bud, then 10 years old.



0153 Spring Spreader in use by DW's son Bud

By 1919 he was well established at Reinhard Brothers running their auto parts repair shop. This involved management skills, including planning and scheduling; and personnel supervision.



Repairs by Parcel Post

MOTOR AGE

Volume XXXV
Number 17

PUBLISHED WEEKLY AT THE MALLERS BUILDING
CHICAGO, APRIL 24, 1919

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Sure Future for New Type Car

Its Position Assured

This is not a boast. These are the very words of one of our largest distributors. The crowds the Essex has drawn wherever it has been shown, the praise it has received from motorists, engineers and the newspapers forecasted great sales.

But we were not prepared for the wholesale sweep the Essex made. Reports from distributors and dealers everywhere indicate that their allotments have been oversold. Telegrams clamoring for larger allotments have been pouring in daily. Essex dealers and distributors have been kept swamped with business. And the Essex is only a few months old.

Backed by an organization that is the recognized leader in the manufacture of fine cars and handling a car whose qualities have made it self-advertising as well as self-selling Essex dealers are not only making large profits but building a sure future.

Essex sales are easy. There is no doubt about that. The Essex meets a transportation need not met by any other car. It is light, yet it has all the comforts of the large costly car. It is low in first cost and low in upkeep costs. The Essex has beauty and lasting quality. Its popularity is already assured.

We have room for a few dealers of the highest type—men who are leaders in their line. If you are a leader, get in touch with us at once.

ESSEX MOTORS DETROIT USA

Vol. XXXV, No. 17 Chicago, April 24, 1919 $3.00 Per Year

MOTOR AGE

REPAIRS *by* Parcel Post

By Fred M. Loomis
Motor Age Editorial Staff

More than 21,000 repair jobs were handled by the concern housed in this building during 1918. Parcel post carried them from owner to shop and back again

MORE than 21,000 pieces of motor car electrical equipment came for repair to the shop of the Reinhard Brothers Co., Inc., by parcel post, express and freight during the last twelve months, were repaired and returned the same way. These units came from dealers and garagemen from all over Minnesota, North and South Dakota, Montana, northern Wisconsin, northern Wyoming and northern Iowa. Throughout this vast stretch of territory the dealers have been educated to the knowledge that the Reinhard company can and will, promptly and efficiently, repair any piece of electrical equipment which goes on a motor car.

Primarily the Reinhard company is a wholesaler of motor car accessories and garage equipment. More than a score of salesmen travel the road in the Northwest and the company has become one of the best known and the strongest of accessory houses. Parallel with the growth of the concern as an accessory house, however, has been its development as a repair house for electrical equipment for motor cars. The growth of this department of the business has been phenomenal and the shop which employed only about twelve men regularly a year ago now keeps fifty men busy, and David D. Oran, who has charge of this department, says he expects to double that number by the end of the present year. At the present time from 200 to 225 repair jobs go through the shop every working day.

From the point of view of dollars and cents the electrical repair department of the Reinhard company represents but a small percentage of the total annual business. However, in relative importance this department is all out of proportion to its money value. Through it in all probability the company comes into more intimate relationship with dealers and with garagemen throughout the Northwest than it does through any other department of its business.

Repairs a Profession

Mr. Oran is possessed with the idea that motor car repairing is a distinct business or profession and that it is by no means the least important of the vocations that have grown up within the automotive industry. His theory is that the specially trained repairman, who gives prompt and efficient service, is an all-important factor in the automotive trade who has not yet received his due measure of recognition. He determined, therefore, insofar as Reinhard Brothers were concerned, there should be no manner of doubt in the mind of anyone. From the very first, in shop equipment, skill of mechanics, efficiency and precision of work and promptness of service, the importance of the repair industry has been emphasized, until now all through the Northwest has been established the conviction that if anything goes wrong with the electrical equipment on a motor car a sure cure can be found in the Reinhard shop in Minneapolis and all it is necessary to do is to send the unit there for repair. The result is that thousands of pieces of equipment are sent to the company every year, and the reputation and business of the concern are growing by leaps and bounds.

The repairshop, and the stock of necessary new parts, occupy the fourth floor of the Reinhard building. The shop proper is in the front and the stockroom are in the rear. The growth of the business, both in the accessory and repair lines, is crowding the company, and arrangements now are being made either to add four stories to the present structure or to build a unit of equal

8 MOTOR AGE April 24, 1919

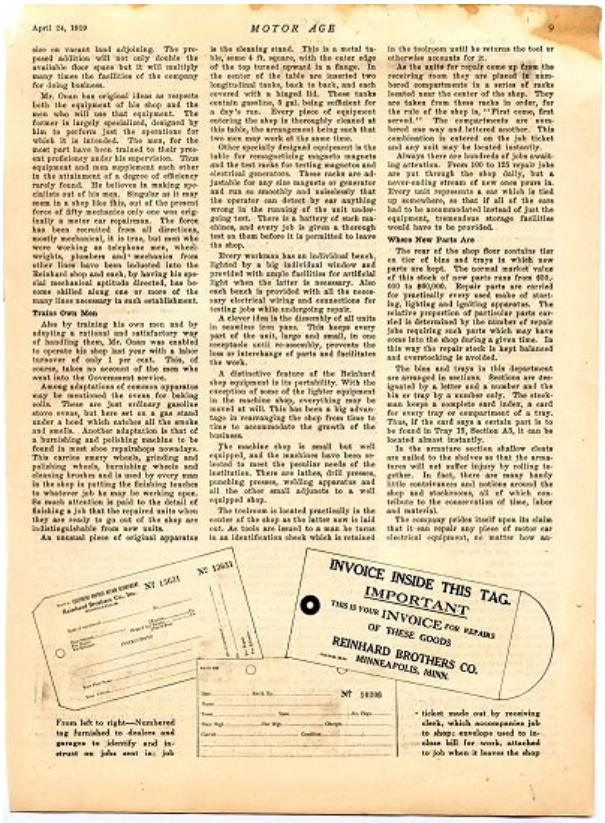
David D. Onan and his force in the shop office keep track of the jobs as they come and go

Electrical equipment from half a dozen states comes to the Reinhard establishment for treatment

Jobs come in this rack from the receiving department and are handled in their turn

The sample and showroom of Reinhard Brothers Co., Inc., which handles 21,400 repair jobs a year

They use some anti-skid chains in the Northwest, as shown above. At the right is part of the racks in the accessory department, where thousands of parts are kept



April 24, 1919 MOTOR AGE 9

also on vacant land adjoining. The proposed addition will not only double the available floor space but it will multiply many times the facilities of the company for doing business.

Mr. Onan has original ideas as respects both the equipment of his shop and the men who will use that equipment. The former is largely specialized, designed by him to perform just the operations for which it is intended. The men, for the most part have been trained to their present proficiency under his supervision. Their equipment and men supplement each other in the attainment of a degree of efficiency rarely found. He believes in making specialists out of his men. Singular as it may seem in a shop like this, out of the present force of fifty mechanics only one was originally a motor car repairman. The force has been recruited from all directions, mostly mechanical, it is true, but men who were working as telephone men, wheelwrights, plasterers and mechanics from other lines have been inducted into the Reinhard shop and each, by having his special mechanical aptitude directed, has become skilled along one or more of the many lines necessary in such establishment.

Trains Own Men

Also by training his own men and by adopting a rational and satisfactory way of handling them, Mr. Onan was enabled to operate his shop last year with a labor turnover of only 1 per cent. This, of course, takes no account of the men who went into the Government service.

Among adaptations of common apparatus may be mentioned the ovens for baking coils. These are just ordinary gasoline stove ovens, but here set on a gas stand under a hood which catches all the smoke and smells. Another adaptation is that of a burnishing and polishing machine to be found in most shoe repairshops nowadays. This carries emery wheels, grinding and polishing wheels, burnishing wheels and cleaning brushes and is used by every man in the shop in putting the finishing touches to whatever job he may be working upon. So much attention is paid to the detail of finishing a job that the repaired units when they are ready to go out of the shop are indistinguishable from new units.

An unusual piece of original apparatus is the cleaning stand. This is a metal table, some 4 ft. square, with the outer edge of the top turned upward in a flange. In the center of the table are inserted two longitudinal tanks, back to back, and each covered with a hinged lid. These tanks contain gasoline, 3 gal. being sufficient for a day's run. Every piece of equipment entering the shop is thoroughly cleaned at this table, the arrangement being such that two men may work at the same time.

Other specially designed equipment is the table for demagnetizing magneto magnets and the test racks for testing magnetos and electrical generators. These racks are adjustable for any size magneto or generator and run so smoothly and noiselessly that the operator can detect by ear anything wrong in the running of the unit undergoing test. There is a battery of such machines, and every job is given a thorough test on them before it is permitted to leave the shop.

Every workman has an individual bench, lighted by a big individual window and provided with ample facilities for artificial light when the latter is necessary. Also each bench is provided with all the necessary electrical wiring and connections for testing jobs while undergoing repair.

A clever idea is the dissembly of all units in monotone iron pans. This keeps every part of the unit, large and small, in one receptacle until re-assembly, prevents the loss or interchange of parts and facilitates the work.

A distinctive feature of the Reinhard shop equipment is its portability. With the exception of some of the lighter equipment in the machine shop, everything may be moved at will. This has been a big advantage in rearranging the shop from time to time to accommodate the growth of the business.

The machine shop is small but well equipped, and the machines have been selected to meet the peculiar needs of the institution. There are lathes, drill presses, pounding presses, welding apparatus and all the other small adjuncts to a well equipped shop.

The toolroom is located practically in the center of the shop as the latter now is laid out. As tools are issued to a man he turns in an identification check which is retained in the toolroom until he returns the tool or otherwise accounts for it.

As the units for repair come up from the receiving room they are placed in numbered compartments in a series of racks located near the center of the shop. They are taken from these racks in order, for the rule of the shop is, "First come, first served." The compartments are numbered one way and lettered another. This combination is entered on the job ticket and any unit may be located instantly.

Always there are hundreds of jobs awaiting attention. From 100 to 125 repair jobs are put through the shop daily, but a never-ending stream of new ones pours in. Every unit represents a use which is tied up somewhere, so that if all of the units had to be accumulated instead of just the equipment, tremendous storage facilities would have to be provided.

Where New Parts Are

The rear of the shop floor contains tier on tier of bins and trays in which new parts are kept. The normal market value of this stock of new parts runs from $60,000 to $80,000. Repair parts are carried for practically every used make of starting, lighting and ignition apparatus. The relative proportion of particular parts carried is determined by the number of repair jobs requiring such parts which may have come into the shop during a given time. In this way the repair stock is kept balanced and overstocking is avoided.

The bins and trays in this department are arranged in sections. Sections are designated by a letter and a number and the bin or tray by a number only. The stockman keeps a complete card index, a card for every tray or compartment of a tray. Thus, if the card says a certain part is to be found in Tray 15, Section A5, it can be located almost instantly.

In the armature section shallow cleats are nailed to the shelves so that the armatures will not suffer injury by rolling together. In fact, there are many handy little contrivances and notices around the shop and stockroom, all of which contribute to the conservation of time, labor and material.

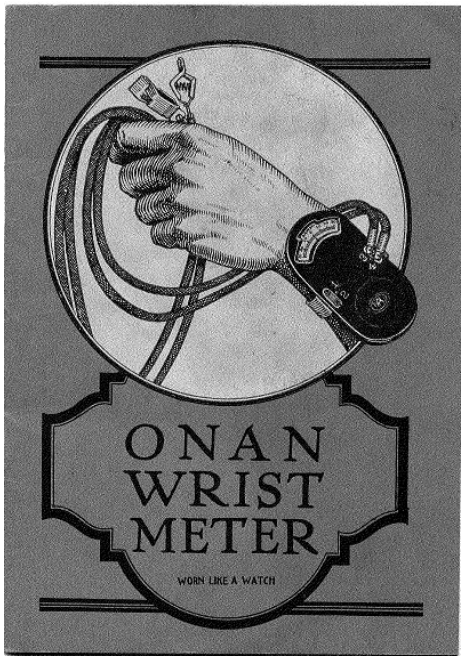
The company prides itself upon its claim that it can repair any piece of motor car electrical equipment, no matter how an-

From left to right—Numbered tag furnished to dealers and garages to identify and instruct on jobs sent in; job ticket made out by receiving clerk, which accompanies job to shop; envelope used to inclose bill for work, attached to job when it leaves the shop

David Onan 1918

The Wrist Meter in 1921 was directed at the new era of auto electrical problems. Not only was the engine ignition system electric, but there was the “chassis electric system” which included lights and electric starting. The first electric starters were installed as “after-market” accessories because the auto manufacturers were not all adopting it immediately. Electric starting meant the lady of the family could now use the car, and she was anxious to do so. But dependable electric equipment was a ways in the future. The auto mechanic with an electric problem was usually looking at a one of a kind installation and needed tools to diagnose problems.

The Wrist Meter was intended as the all-purpose diagnostic tool. And it could be carried to the source of the problem and used by the mechanic right on the spot, often avoiding sending parts by mail for repair. But as any techie will tell you today, new stuff is baffling. Dave also had to write instructions for use. Here are a few of the 37 pages in the instruction manual.



Instructions

For the Use of

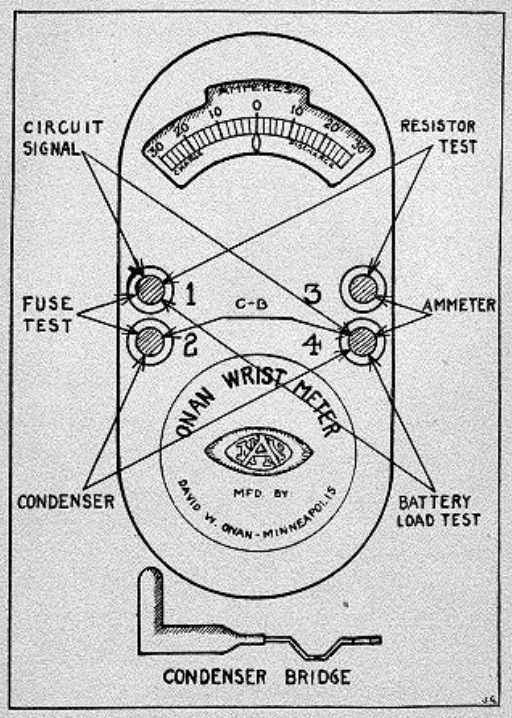
Onan Wrist Meter

Manufactured and Guaranteed by

DAVID W. ONAN

43 - 51 Royalston Avenue

Minneapolis



Showing the Test Combinations possible with the WRIST METER and the Name of each as referred to in the Book as explained on opposite page.

AMMETER

Connections 3-4

For all Ammeter Testing.

Ammeter is protected against burn out and can be connected across battery or the line at any point without danger. The release Buzzing and the Meter reading 30 Ampere.

CIRCUIT SIGNAL

Connections 1-4

Using this connection and testing at any point in the system will indicate instantly the presence or the absence of a circuit if current is encountered signal will buzz. *Making it unnecessary to watch the Instrument while testing.*

AUTOMATIC BREAKER

Connections 1-4

Using the Circuit Signal as Automatic Breaker, connecting the Condenser with Bridge furnished, forms a Master Vibrating System for testing High Tension Winding Coils and Starting Magneto systems with the use of Battery Current.

FUSE TEST

Connections 2-4

With the Battery connected to Nos. 2 and 4, shorting a fuse across connections 1 and 2, will signal a circuit if fuse is O. K. Signal will buzz.

CONDENSER

Connections 2 and 4

With the Test Condenser in Wrist Meter it is possible by the replacement method to determine the condition of any condenser—if system works with Wrist Meter Condenser and not the one in the Equipment proves Faulty Condenser.

RESISTOR TEST

Connections 1-3

In connection with testing low reading Armature coils a set resistance must be used to get approximate values. These connections give a fairly low reading on low resistance coils—also can be used to determine proportional drop at battery when starter trouble is encountered.

BATTERY DROP TEST

Connections 1-4

Encountering Starter Trouble it is necessary to determine whether battery has normal capacity. With the Wrist Meter connected across the Battery signal will buzz when using Starter if Battery is O. K. and will stop buzzing when Battery is too low for satisfactory operation.

GENERATOR ORDERS.

(E) GENERATOR FAILS TO CHARGE

Test No. 16. Open Battery Line

Wrist Meter 1-4 Connected Test "16" follow battery line until source of supply is located.

Test No. 17. Open Ammeter

Wrist Meter 1-4 Connected for Test "17" and indicating current would prove open in Ammeter, provided battery line up to Ammeter is correct. If not correct check with Wrist Meter. 3-4 Test 17A

Test No. 18. Relay Trouble

With the Wrist Meter 1-4 connected for Test "18" and the meter indicating current. **Wrist Meter 3-4 Test 18A. Reading** at meter indicates Relay trouble. Close points if not operative. Look closely to grounded connections of relay seeing that surface is free from paint, rust, or corrosion. Watch closely for burnt odors indicating burnt relay. Look for bad or dirty contact points, or remove and replace relay with another which is O. K. After removing, test relay between point marked "ground" and Generator with "Test Lamp" See page–18–. Close points and test with battery circuit. If magnetized on both these tests, it proves the relay O. K. but adjustment may be necessary. If either test is open, replace relay with a new unit.

Test No. 19. Brushes, Commutator and Field Troubles

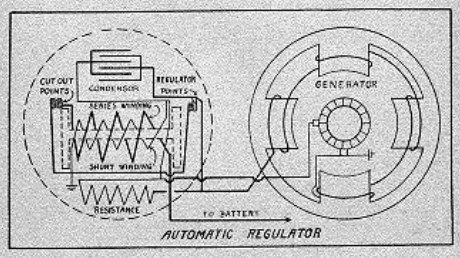
Starting at Generator Terminal as source of supply, with Generator running at moderate speed, use Wrist Meter 3-4. Failure at this point would indicate trouble in Generator and it should be examined by a close visual inspection of the Brushes and Surface of Commutator. Look also closely to see if the Armature Leads are unsoldered, or for indications of burnt odor, or appearance of heated condition. See also that brushes are long enough to reach commutator surface, brush spring and leads are firm and in place, and if possible clean brush holders, or see that they are free from pivot where pivot type is used. If third brush type of Generator always try the brush by removing from the commutator and allowing it to return with Generator operating, With Wrist Meter connected to Battery line, ground and note the reading to see that Battery source is available. See "18". With the Battery current connected as 18-A to Battery terminal, if Generator builds up and reading is opposite from test made, it would show Generator is charging and should then function correctly. Failure to get charge at this point would indicate trouble further in the Generator, and it should be removed for further inspection. Do not attempt to make regulations on any type of Generator until the brush springs are examined closely and commutator is true. A small and uneven brush tension will cause spasmodic action on regulator adjustment, vibration from uneven commutator, and cause a low or high charging rate, as well as cutting out the operation of the Generator at high speed.

(F) GENERATOR CHARGES TOO HIGH OR TOO LOW

Tests 17-19-20-21

Test No. 20. Third Brush Adjustment

Modern or third brush type of Generators with adjustible third brush to limit the amount of current regulating charging rate, are the simplest type of Generator. Bear in mind the fact that the third brush carries the same relation to the field capacity as does the spark advance concern ignition, thus allowing a lesser distance between the Armature Brush and Third Brush, which lessens the resistance and increases the capacity, while the greater distance and greater number of coils decreases the capacity. The increased capacity means an increased charging rate, while a decreased capacity means a lower charging rate. Note "Common Laws from Practice" page 32.



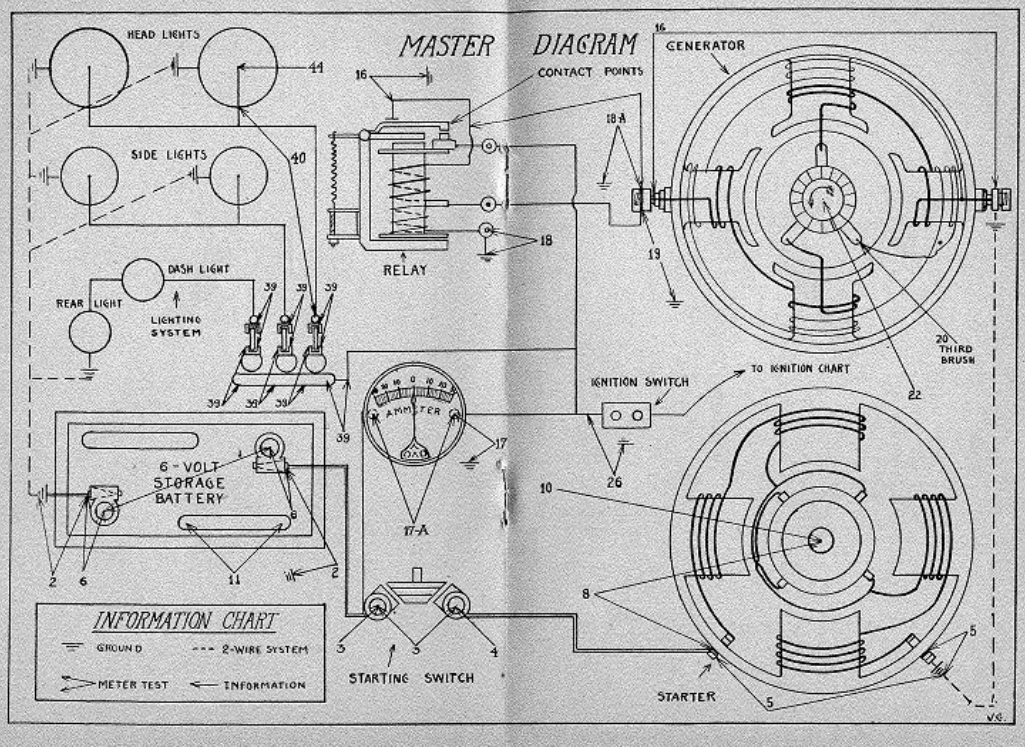
To Adjust Automatic Regulator.

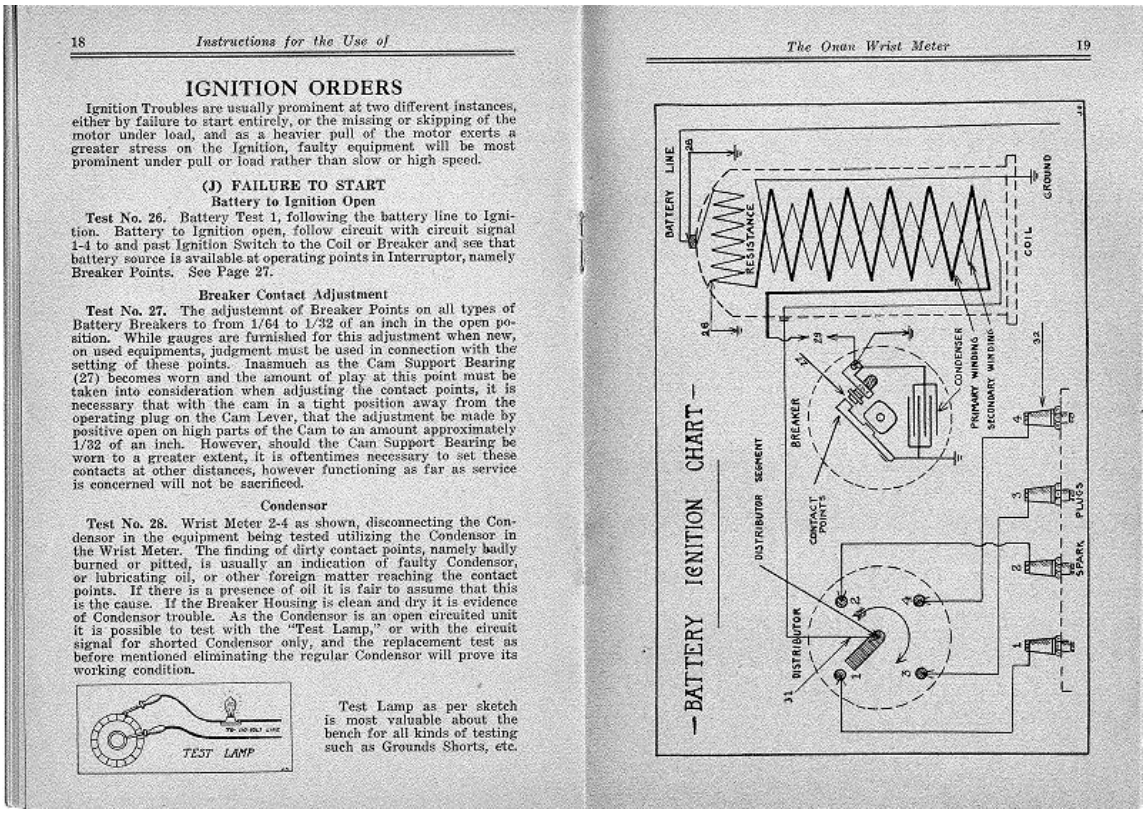
To increase the charging rate increase tension at Regulator Contact Points.

To lower Charging Rate Release Contact Tension.

Test No. 21. Regulator Adjustment.

The Regulator Contact tension resisting the magnetic pull of the regulator should be adjusted to allow only a normal charging rate. See page "Common Laws From Practice." Adjustment on regulator points should not only be made to show the proper charging rate, but the Generator should be started and stopped a number of times, as well as run at high speed to determine the amount of heat and the permanency of the adjustment. While regulators are of many designs, the principle, like the third brush, remains the same.





18 *Instructions for the Use of*

IGNITION ORDERS

Ignition Troubles are usually prominent at two different instances, either by failure to start entirely, or the missing or skipping of the motor under load, and as a heavier pull of the motor exerts a greater stress on the Ignition, faulty equipment will be most prominent under pull or load rather than slow or high speed.

(J) FAILURE TO START

Battery to Ignition Open

Test No. 26. Battery Test 1, following the battery line to Ignition. Battery to Ignition open, follow circuit with circuit signal 1-4 to and past Ignition Switch to the Coil or Breaker and see that battery source is available at operating points in Interruptor, namely Breaker Points. See Page 27.

Breaker Contact Adjustment

Test No. 27. The adjustemnt of Breaker Points on all types of Battery Breakers to from 1/64 to 1/32 of an inch in the open position. While gauges are furnished for this adjustment when new, on used equipments, judgment must be used in connection with the setting of these points. Inasmuch as the Cam Support Bearing (27) becomes worn and the amount of play at this point must be taken into consideration when adjusting the contact points, it is necessary that with the cam in a tight position away from the operating plug on the Cam Lever, that the adjustment be made by positive open on high parts of the Cam to an amount approximately 1/32 of an inch. However, should the Cam Support Bearing be worn to a greater extent, it is oftentimes necessary to set these contacts at other distances, however functioning as far as service is concerned will not be sacrificed.

Condensor

Test No. 28. Wrist Meter 2-4 as shown, disconnecting the Condensor in the equipment being tested utilizing the Condensor in the Wrist Meter. The finding of dirty contact points, namely badly burned or pitted, is usually an indication of faulty Condensor, or lubricating oil, or other foreign matter reaching the contact points. If there is a presence of oil it is fair to assume that this is the cause. If the Breaker Housing is clean and dry it is evidence of Condensor trouble. As the Condensor is an open circuited unit it is possible to test with the "Test Lamp," or with the circuit signal for shorted Condensor only, and the replacement test as before mentioned eliminating the regular Condensor will prove its working condition.

Test Lamp as per sketch is most valuable about the bench for all kinds of testing such as Grounds Shorts, etc.

The Onan Wrist Meter 19

We don't know how Dave acquired all the technical knowledge. The meter was a very sophisticated instrument for its day, and the technology was rapidly evolving. The drawings were professionally made.

AUTO ELECTRIC AND REPAIR TOOLS

Material, heat and design made early auto electric parts subject to failure. When the Wrist Meter diagnosis indicated repair in-situ was not possible, the part was removed and taken to the bench for work. Dave built the bench test equipment Reinhard Brothers used. His agreement with them allowed him to sell it to anyone.

The nature of the test equipment was that it had to simulate running conditions. Motors and generators actually had to spin or be spun on the test stand. In additions to the pages shown, there were lathes and supports that held the parts while major repairs to be made. What follows are a few of the 14 pages from his from his 1924 catalog.

Onan Automotive Repair Shop Equipment

Manufactured By

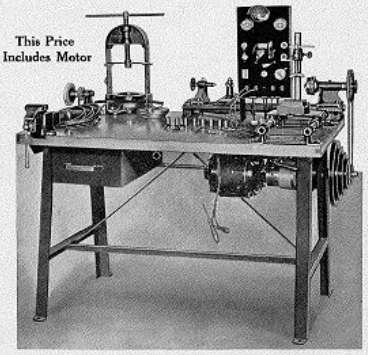
DAVID W. ONAN

48 to 51 Royalston Ave.

MINNEAPOLIS, MINN.

Onan Electrical Repair Shop Assembly, Complete $290.

This Price Includes Motor



Handles every operation either mechanical or electrical on Generator or Starter

This Assembly includes the **Onan Testing Device,** with all Fittings for driving and testing every make and model of Generator, Starter, and Magneto; the **Onan Test Panel,** with instruments for electrical tests on Coils, Magneto Windings, Lamps, Spark Plugs, Fuses, etc.; the **Onan Lathe and Mica Undercutter,** with universal chuck for turning of small parts, commutators, etc.; the **Onan Bearing Press,** with **Puller Plates** for removing standard bearings, and a **Grinder** for dressing tools for Lathe and other purposes.

All equipments mounted on **Hardwood Bench,** with ample space for Bench work, has **Steel Bench Legs** and **Steel Drawer** for tools and fittings.

This Equipment includes **Motor,** and is complete with **Instructions** for operating each individual unit.

All units in this assembly are furnished separate if desired. Any unit not wanted in the assembly may be deducted at the list price.

Vise shown is not furnished. Any 3½-inch or 4-inch vise is suitable.
Motor furnished 110 Volt, 60 Cycle A. C., unless other is specified.
The assembly comes crated and boxed ready to put in operation.
Shipping weight approximately 500 lbs.

An Order Blank for Your Convenience on Last Page

The Onan Spring Spreader and the Onan Bench Equipment

Spring Lubrication

The comfort of riding depends upon the springs. A well oiled spring seldom broaks, sags, or squeaks.

The life of the spring depends upon the attention given it.

A necessity no less important than the care of any other part of the automobile.

A cheap car with spring well oiled rides better than a high priced one without.

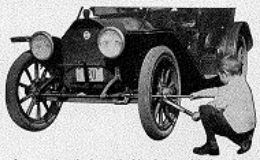
Patented

Makes Spring Oiling a Pleasure

The Onan makes it possible to quickly and effectively oil between the leaves of any kind and all sizes of springs, and allow the person doing the work to keep clean.

The Onan is of all metal construction. The Jaw is adjustable, screwing back and forth on the long handle extension, and will fit any spring from 1½-inch to 2¼-inch in width, a lock nut holding it in place. The tool bit is made from English Annealed Tool Steel, and can be repointed whenever necessary. The point or bit is forced between the leaves by means of the long lever handle which makes the operation so easy that a child can do it.

Now $4.00



In operating the lever the bit of the tool is forced from one side of the spring only, making it possible to place the tool and operate easily and to place the lubricant between the leaves.

The lever is built to lock and hold the bit between the leaves until the handles are parted. It can be so operated as to allow the spring leaves to come together **without a snap** and allow all possible lubricant to stay between the leaves. The tool will stand constant service. The advantages of this tool can be most appreciated by those who have tried other methods.

PRICE, $4.00 EACH.

Spring Lubrication Means Increase in Business Likewise Profit to the Oiling Station and Garage

Steel Bench Legs—Light, Durable, Inexpensive

Just what you need to assemble modern shop equipment. With low initial cost, install a neat and convenient equipment. It will save you money together with giving your customers more confidence in your work. The Onan way costs less, lasts longer.

Bench Legs crated in pairs, 36 in. high, 28 in. wide, each leg 2 in. wide. Weight 60 lbs.

Pair $8.00

Steel Bench Drawer—Safe, Sanitary, Durable

Give your mechanic the idea of retaining a good set of tools neatly cared for. It will not only increase his efficiency but increase the confidence of your trade. A neat workroom sells everyone. The Onan Bench Equipment and notice the improvement.

Furnished with slide rails and suitable locking loop. Packed in shipping carton. Weight 10 lbs. Each $4.50

Own an Onan

Without overburdening your capital you can install Onan Equipment, Raise the Efficiency of your Mechanic, and increase your Patronage, Production, and Profit. It will pay quickly the low initial cost.

PROFIT-PAYING-REPAIR SHOP EQUIPMENT

An Order Blank for Your Convenience on Last Page

The Onan "FORD" GENERATOR TEST STAND

(Without Lathe or Growler)

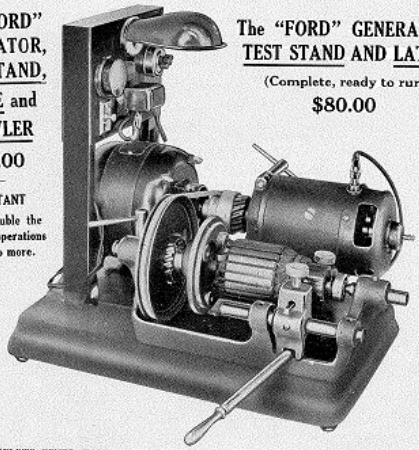
$58.00

The "FORD" GENERATOR, TEST STAND, LATHE and GROWLER

$90.00

IMPORTANT

Handles double the number of operations but cost no more.



The "FORD" GENERATOR TEST STAND AND LATHE

(Complete, ready to run)

$80.00

A COMPLETE GENERATOR TESTING UNIT FOR FORD SERVICE STATIONS

THE ONAN "F" GENERATOR TEST STAND is designed with the idea of making it possible to quickly mount the generator from the Ford car, drive it as though it were in operation on the car at a speed approximate to twenty-five miles per hour, and hold the Generator in such a position as to enable the operator to reach every adjustment, see plainly the function of the brushes so that he can adjust them properly, and know when the Generator operates correctly before again being installed in the motor.

THE ONAN is equipped with a ¾ h. p. 114 volt A. C. 1749 speed Motor, fitted with special coupling which makes the drive flexible, and is furnished with both a flat and V belt pulley so that the equipment can be used for other purposes as driving the Onan Lathe and Mica Undercutter, etc.

Price $58.00

THE "FORD" GENERATOR TEST STAND AND LATHE

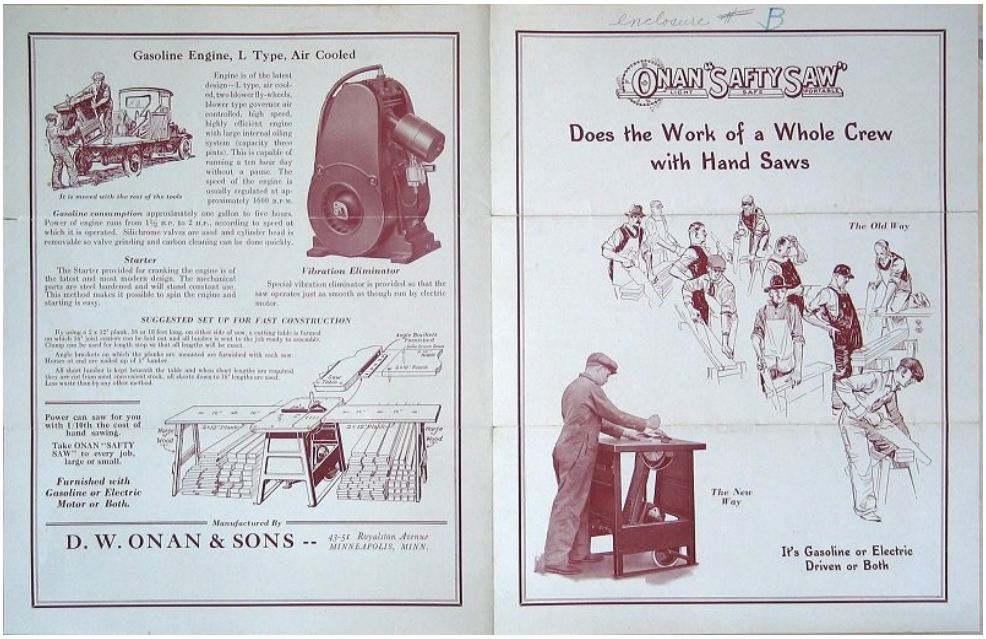
Combined in one unit utilizing the same motor and mounting on a base 12x18 inch the "F" Generator Test Stand and Armature Lathe offers a most consistent investment to those shops not equipped with a regular engine Lathe.

The regular Test Stand is furnished the same as listed ($58.00) and the Lathe as listed at $25.00 in combination and including the large base. Belt, turning tools, pulley, etc.—everything is furnished ready for operation. This price $80.00.

Price $80.00

THE SAFTY SAW

This one product propelled D. W. Onan ahead economically further and faster than anything else to date. It is my guess this was somewhat of a surprise. The saw had many uses in construction and manufacturing. It could be powered by an engine or electric motor so there were no limits to where it could go. It was the pioneer of table saws. It handled the major work or cross cutting and ripping, as well as a few fancy cuts, but the basic purpose was in construction and crating. I can also guess that saws were not Dave's first love. When the generator set came along he found much more to interest him.



The saw made for some bigger promotions, such as this newspaper spread, for Dave and the company.

Special Mail Edition THE MORNING PROGRESS Page 10

Necessity Again Mothers Invention

Minneapolis Man Perfects Portable Sawing Machine Which Does Away With Hand Sawing On All Building Construction

Stops the Old Tradition of Marking and Squaring Each Board and Holding It With Knee Greatly Reduces Building Costs by Machine-Cutting All Lumber Runs a Ten-Hour Day For Less Than a Dollar

Either Electric or Gasoline Driven. The Perfection of a Vibration Eliminator and Starter Makes Possible the Installation of a High Speed, Air Cooled Gasoline Engine—as Smooth and Easy to Operate as an Electric Motor.

D. WARREN ONAN Inventor Minneapolis, Minnesota

SELF-CONTAINED, GASOLINE-DRIVEN SAW MACHINE PORTABLE WITH WHEELS PROVIDED

MODERN RESIDENCE CONSTRUCTION

ALL LUMBER CUT TO LENGTH AND SIZE WITH PORTABLE SAW

THE AX AND ADZE —THE PRIMITIVE WOOD-SHAPING METHOD

THE HAND SAW— USED BEFORE THE SEVENTEENTH CENTURY

STILL USED EXTENSIVELY BY SOME BUILDERS

PIT SAW THE FIRST LUMBER METHOD— STILL IN USE IN SOME FOREIGN COUNTRIES

THE YOUNG GASOLINE SAW MACHINE OF TODAY— COMPLETE, READY TO RUN

NOTE THE STARTER (The Engine is started as easy as an electric motor)

Have you seen this?

An Interesting Story— "The Passing Of An Old—Old Tradition"

Moderate Home Building Where Electric Current Is Not Often Available

Large Construction—The Baker Building, Minneapolis, Where Several Saws Were Used.

How about a little two color printing?

In 1978 this saw was still working for Onan distributor in Minneapolis. He had painted it the contemporary Silver-Green color.

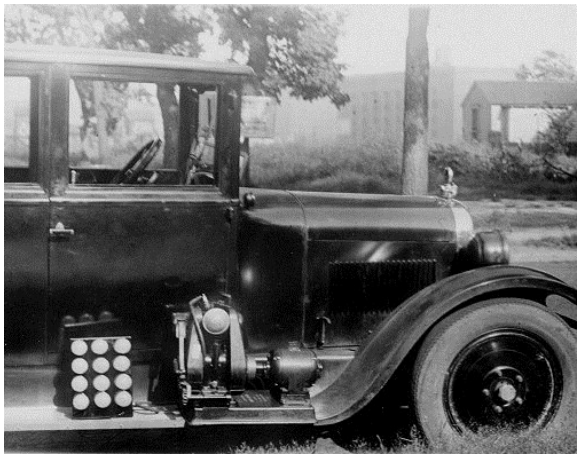

The Last Saw Ever Seen

ELECTRIC PLANTS — GENERATOR SETS — POWER PLANTS — or simply, an ONAN

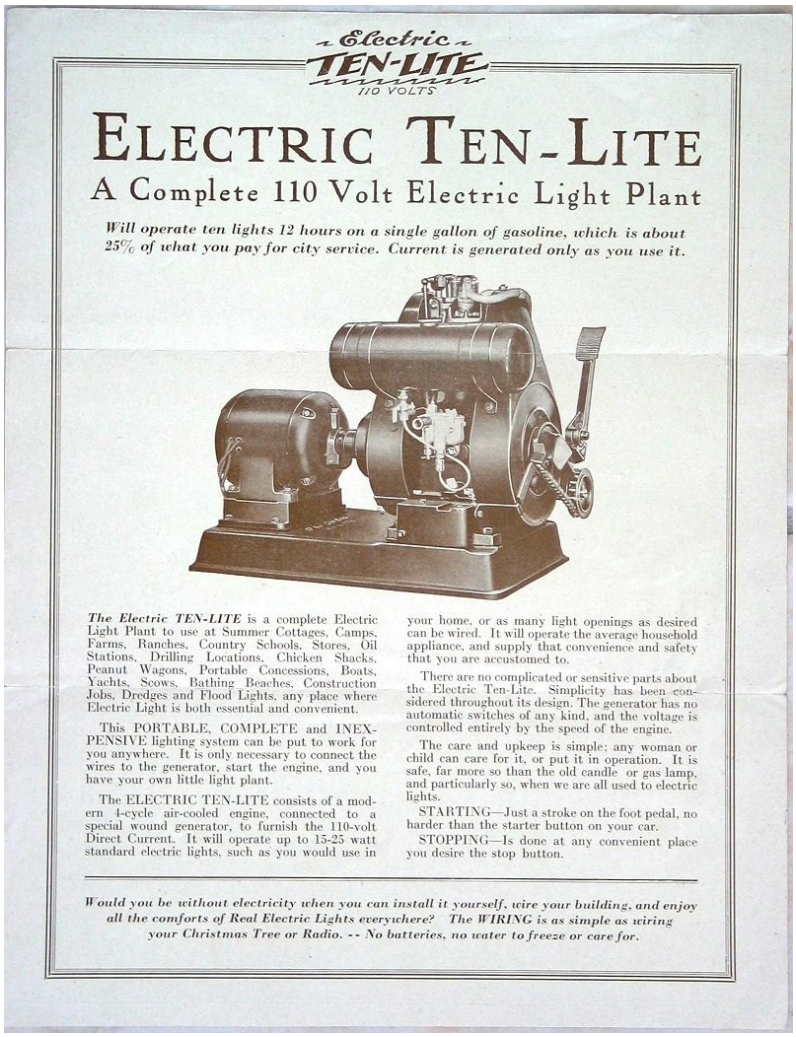
The story of how the first generator set came about is good enough for me. Given what Dave had in hand and his experience it is reasonable to see how he put a purchased Briggs-Stratton engine and a generator on a common base and connected the two with a coupling. Municipal generating stations were built that way and he was just reducing the size.

The fact that the generator was Direct Current (DC) is no surprise. DC will run a light bulb just as well as Alternating Current (AC). The light bulb does not know the difference. In fact it glows a little brighter on DC. The light flicker caused by power impulses of the one cylinder engine were another matter. Bud's tinkering with a spring coupling was the only answer, and it was a poor one. Coupling alignment and spring breakage plagued the setup. At the same time, they were used only a few hours a day and a bit of tinkering with the lightplant was tolerated.

Dave began building and selling more of them. The Ten-Lite.



One way to sell them was to drive out of town a few miles to where the power lines ended and start knocking on doors.



Electric TEN-LITE 110 VOLTS

ELECTRIC TEN-LITE

A Complete 110 Volt Electric Light Plant

Will operate ten lights 12 hours on a single gallon of gasoline, which is about 25% of what you pay for city service. Current is generated only as you use it.

The Electric TEN-LITE is a complete Electric Light Plant to use at Summer Cottages, Camps, Farms, Ranches, Country Schools, Stores, Oil Stations, Drilling Locations, Chicken Shacks, Peanut Wagons, Portable Concessions, Boats, Yachts, Scows, Bathing Beaches, Construction Jobs, Dredges and Flood Lights, any place where Electric Light is both essential and convenient.

This PORTABLE, COMPLETE and INEXPENSIVE lighting system can be put to work for you anywhere. It is only necessary to connect the wires to the generator, start the engine, and you have your own little light plant.

The ELECTRIC TEN-LITE consists of a modern 4-cycle air-cooled engine, connected to a special wound generator, to furnish the 110-volt Direct Current. It will operate up to 15-25 watt standard electric lights, such as you would use in your home, or as many light openings as desired can be wired. It will operate the average household appliance, and supply that convenience and safety that you are accustomed to.

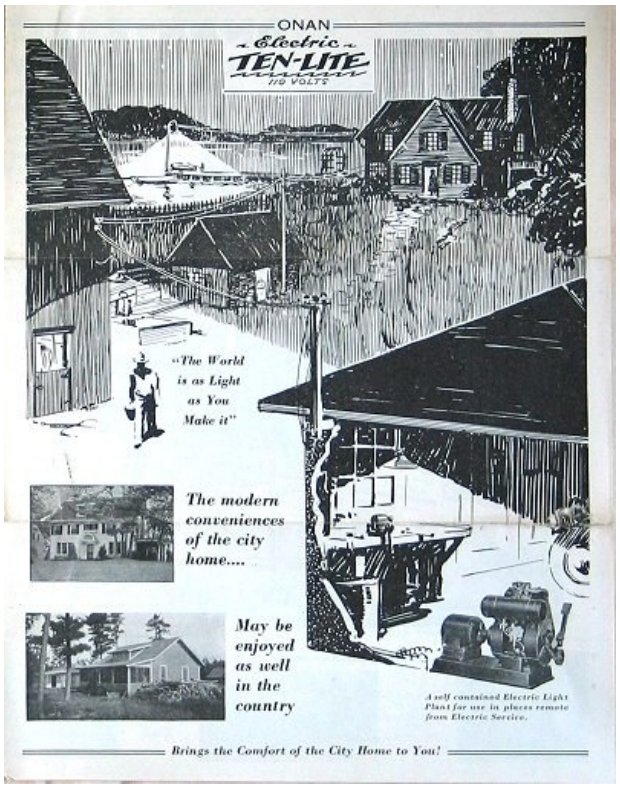
There are no complicated or sensitive parts about the Electric Ten-Lite. Simplicity has been considered throughout its design. The generator has no automatic switches of any kind, and the voltage is controlled entirely by the speed of the engine.

The care and upkeep is simple; any woman or child can care for it, or put it in operation. It is safe, far more so than the old candle or gas lamp, and particularly so, when we are all used to electric lights.

STARTING—Just a stroke on the foot pedal, no harder than the starter button on your car.

STOPPING—Is done at any convenient place you desire the stop button.

Would you be without electricity when you can install it yourself, wire your building, and enjoy all the comforts of Real Electric Lights everywhere? The WIRING is as simple as wiring your Christmas Tree or Radio. -- No batteries, no water to freeze or care for.

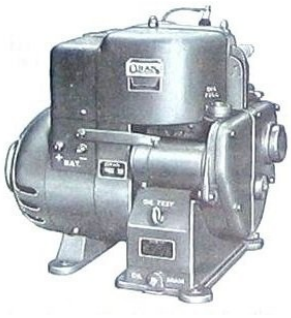


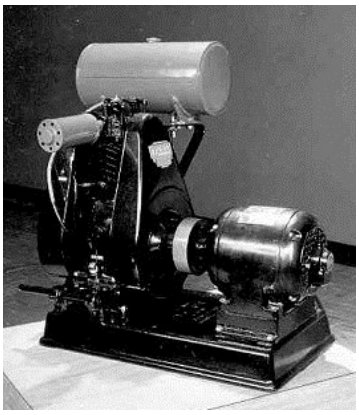
Dave was able to sell a unit, wire the house and get a light in the barn all in one day.

During the early 1930s units increased in capacity for more lights and appliances by connecting larger engines to larger generators. AC current became the accepted standard and electric starting a common feature. If the generator was located away from the house, push-button start and stop was available.

HE CHANGED THE PARADIGM

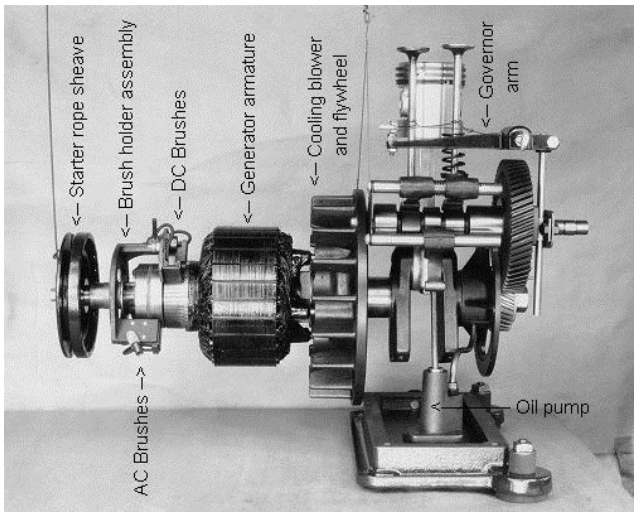
Dave wanted to build the complete product to control quality and features. He would build his own engines and generators. Today no one would set up to manufacture engines in small quantities because tooling cost and competition would not allow it. But he had more in mind. He wanted to combine the engine and generator components into a single structure, avoiding a mounting base and coupling. By 1934 he had put this concept together. The result is startling.

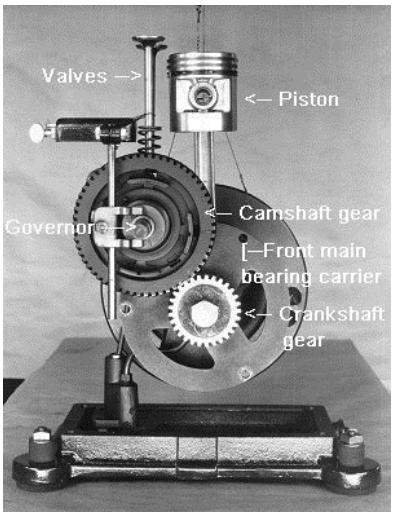




HOW THEY DO THAT?

We are fortunate to have wonderful 78 year old pictures the company made; probably to illustrate a parts book. Everything is hung from wires, still visible, and shows all the moving parts of the unit. I have added the part names.





A general description is as follows: generator parts to the left, engine parts to the right. (The generator brush holder assembly is static and attached to the generator frame, not show.) The cooling blower / flywheel is the coupling between the generator and the engine. The generator, flywheel and engine crankshaft are solidly and rigidly attached together so that nothing can change their alignment. This is done with a long stud that goes through the hollow generator shaft into the engine crankshaft. It is secured by a nut which also holds the starter rope sheave.

Everything to the right of the flywheel is inside the engine crankcase. An oil pump forces oil to the front main bearing and other moving parts.

Features that made this design a standard:

AC, alternating current, was the mainstream. AC required precise engine speed control to provide standard 60 cycle current. The governor mechanism was contained in the front of the camshaft gear. A shaft connected to the governor arm which led to the engine throttle. The high speed moving parts were inside the engine with abundant oil for lubrication.

Where electric starting was desired, DC windings in the generator could turn it into powerful DC cranking motor, eliminating the need for a separate starter motor.

His own innovation had solved the light flicker problem electrically but involved timing with the engine power pulses. He could now attach a second set of contact points actuated in the same way as the ignition breaker points. This contact connected a resistor into the generator field winding circuit to momentarily reduce the output voltage. It is the solution which endures today with all 1800 RPM generator sets.

In a couple years it was found that the center flywheel / blower was a problem in rain and high temperatures. The flywheel / blower was moved to the other end of the engine. The rigid coupling of engine and generator was maintained by an external taper on the generator shaft fitting an internal taper on the engine crankshaft. The assembly was then through bolted together as before.

COLOR

In modern industrial equipment color is identity. Saws were black. Briggs-Stratton engines were painted black, so the whole Ten-Lite series was black. When Dave began making his own engines and generators he wanted to define them with a color. He chose Forest Green. A very dark green. It didn't show dirt and covered a multitude of sins by the iron foundry. During World War II colors varied depending on what the government wanted. Army olive drab, black, Navy gray were a few. After the war the company chose a medium gray. I don't know who picked it and it didn't conflict with anything but the mouse gray product got lost in the shadows. In the early 1950s staff worked with Minnesota Paints on a new green. It was a medium green with a bluish cast caused by its

metallic nature. Called Silver-Green, it was lush and had good covering qualities. It was used until the 1980s when the switch to electrostatic spraying meant the end of metallic paints. As reformulated it lost some of the lushness but is used today to identify with the Onan name on generator sets.

There were exceptions. OEM customers could specify primer. A 1960s trend in the marine industry was painting engine rooms and equipment white. The marine generator sets followed with green on the name and model identification. Nobody ever asked for black.

NOT EVERY IDEA WAS WONDERFUL

STERN DRIVE

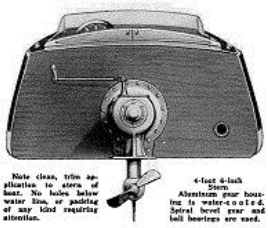
In the days of the Safty-Saw sales decline Dave was looking for new things to sell. Out of the Prohibition bootlegging era came a technology of high powered boat engines for the “rum runners”. The Auto Engine Works of St Paul MN made engine conversions; and marine transmissions under the name of Capitol Gear Company. The Dingle boat company of St Paul made beautiful mahogany runabouts. Prohibition was over and technology was looking for a market.

This great old picture is the first and only in front of the original office on Royalston Avenue. Subsequent literature extolling the virtues listed the company as the sole distributor. Bud did all the testing and boat riding. Weight distribution was the first problem; too much at the rear. Water leaking into the drive was a problem requiring a whole development program, but the crash of 1929 killed it. Joy riding would have to wait. The concept was years ahead of its time and probably technologically too.

"The CAPITOL"

STERN DRIVE AND REVERSE GEAR

All the Comfort, Safety and Control of the Motor Car Made Possible for Small Boats



Note clean, trim application to stern of boat. No holes below water line, or paneling of any kind requiring attention.

4-foot 6-inch Stern. Aluminum gear housing is water-cooled. Spiral bevel gear and ball bearings are used.

"Capitol" Stern Drive is built high quality throughout. The spiral bevel gears are quiet in operation, hardened, treated and lapped to perfect fit. Ball bearings are used throughout.

"Capitol" Stern Drive and Reverse Gear are backed with more than thirty years of marine and motor building experience and large "CAPITOL" drives are in use in all parts of the world.

These Modern Advantages

OPERATION of the boat, self-starter, electric lights, throttle, spark, forward and reverse, is entirely from the driver's seat; just like your car. All the comfort, safety and control of the costly boat on the small, inexpensive ones.

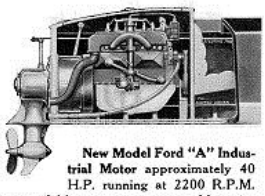
Installation of power plant at stern, back of the passenger load. Small space required allows large, unobstructed space for passengers—(see proportions on boat cut—only 36 inches for **Ford "A" Industrial Motor**). 50% more boat space in the hull.

STERN DRIVE makes possible unit power plant and final drive. This through spiral bevel gear and ball bearings with aluminum water-cooled gear case.

"CAPITOL" REVERSE (one to one ratio—patented **"Capitol"** feature) allows driving backwards at same speed as forward. This gives all the control of four wheel brakes. Boat can be stopped within its length.

MULTIPLE DISC, free running clutch,—quick positive control.

PROPELLER STEER turns boat in shorter space; holds boat to dock by throttling engine. A safety feature before possible only on costly boats.



New Model Ford "A" Industrial Motor approximately 40 H.P. running at 2200 R.P.M. is available at a very reasonable price from all **Ford Distributors.** All parts of **stern drive** are jig fitted for this engine. It is also built for other engines not to exceed 50 H.P. at 3000 R.P.M. which have SAE number four or five bell housing.

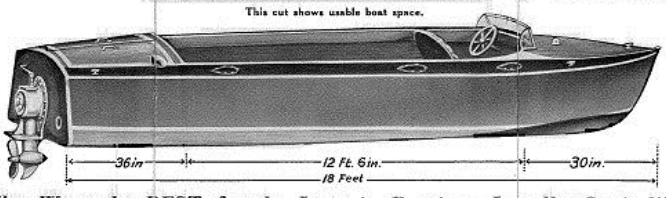
"Capitol" Stern Drive is designed to fit most any standard boat such as the Outboard Deluxe types. The mounting is through the transom and the installation of cross sill anchored to side and bottom. Details on mounting and working prints are furnished on request.

Stop safely within a boat length.

Turn in smallest space.

Drive as you drive your motor car—land with safety.

This cut shows usable boat space.



All the comfort, safety and control of the costly boat on the small, inexpensive one.

For both speed and pleasure boats.

For Those Who Want the BEST for the Least in Boating---Install "Capitol" Stern Drive

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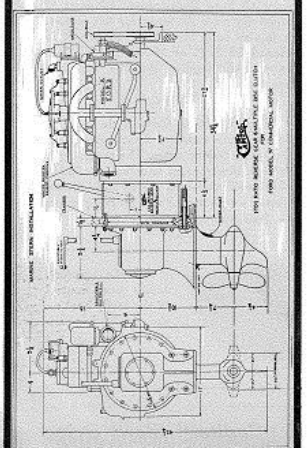
"CAPITOL" STERN DRIVE AND REVERSE GEAR include all necessary parts for installation. The parts are as follows:

- Front engine bracket
- Water pump and bracket (this operates with regular Ford belt and generator adjustment allows for belt tightening)
- Water-cooled exhaust manifold
- All heater connections to manifold and cylinder block (heater not included) extension to drop carburetor so gravity feed is possible
- Carburetor control rods
- Clutch housing to fit engine
- Reverse gear and clutch with levers and fittings
- Stern drive—outside unit complete with propeller, all bolts and gaskets
- Steering rod with two bell cranks to attach to forward steering connection
- All comes packed in sturdy case, weight 175 pounds
- Prints and instructions for installing.



The Story of the Stern Drive

"Capitol" Stern Drive and Reverse are to the boat what front drive and four wheel brakes are to the automobile.

With the trend in boats entirely to V-bottom, flat stern design, many ideal changes are possible. Among these, **Power Plant Installation in the Stern** which adds much to usable boat space.

The bow, or forward, is the ideal place for passengers to ride, but owing to the old standard of getting a shaft through the floor of the boat and into the water without too much angle for the engine, it has been necessary to install the engine forward, use a costly gear box or build the boat longer to do the same thing.

Now, by installing the engine in the stern and operating the propeller with a stern drive, a position square with the travel of the boat is accomplished. The disadvantages of the old installation are overcome without sacrificing the pay or pleasure part of the boat to accommodate the power plant—all this without gear box or added length of the boat. Quiet operation is obtained because all power is at rear.

With this simple, final drive unit and a high-grade, free running, reverse gear, operation and control equal to that of the modern motor cars is to be had. Unit power plant installation is affected. Add to these features the use of the largest production engine with its universal parts service. Here for the first time is a marine job for the public, not confined to the limited marine service.

Product of
Auto Engine Works
Sold Exclusively by
D. W. Onan & Sons
43 Royalston Avenue
MINNEAPOLIS, MINN.

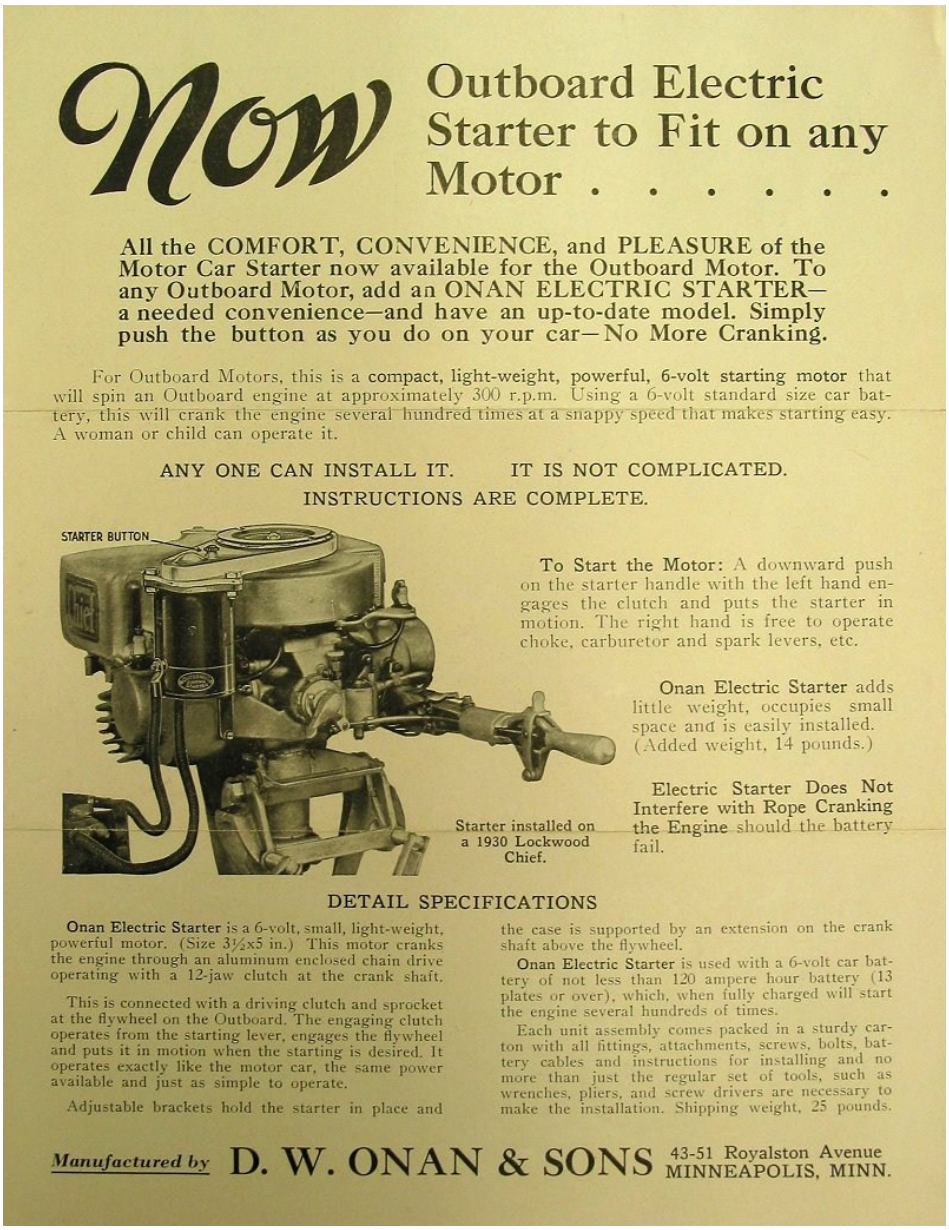
Stern Drive
Your
Boat- - - -

Enjoy all the
Riding Space

Have Positive
Control

OUTBOARD MOTOR STARTER

A lot less grandiose and closer to what Dave could realistically handle was the outboard motor starter of 1931. The price was $42.50 and no sales figures are available. Chances are it was too much for the market and a few were sold. He printed literature for dealers and that was going to be his marketing outlet.



Now Outboard Electric Starter to Fit on any Motor . . . . . .

All the COMFORT, CONVENIENCE, and PLEASURE of the Motor Car Starter now available for the Outboard Motor. To any Outboard Motor, add an ONAN ELECTRIC STARTER—a needed convenience—and have an up-to-date model. Simply push the button as you do on your car—No More Cranking.

For Outboard Motors, this is a **compact, light-weight, powerful, 6-volt starting motor** that will spin an Outboard engine at approximately 300 r.p.m. Using a 6-volt standard size car battery, this will crank the engine several hundred times at a snappy speed that makes starting easy. A woman or child can operate it.

ANY ONE CAN INSTALL IT. IT IS NOT COMPLICATED.
INSTRUCTIONS ARE COMPLETE.

STARTER BUTTON

Starter installed on a 1930 Lockwood Chief.

To Start the Motor: A downward push on the starter handle with the left hand engages the clutch and puts the starter in motion. The right hand is free to operate choke, carburetor and spark levers, etc.

Onan Electric Starter adds little weight, occupies small space and is easily installed. (Added weight, 14 pounds.)

Electric Starter Does Not Interfere with Rope Cranking the Engine should the battery fail.

DETAIL SPECIFICATIONS

Onan Electric Starter is a 6-volt, small, light-weight, powerful motor. (Size 3½x5 in.) This motor cranks the engine through an aluminum enclosed chain drive operating with a 12-jaw clutch at the crank shaft.

This is connected with a driving clutch and sprocket at the flywheel on the Outboard. The engaging clutch operates from the starting lever, engages the flywheel and puts it in motion when the starting is desired. It operates exactly like the motor car, the same power available and just as simple to operate.

Adjustable brackets hold the starter in place and the case is supported by an extension on the crank shaft above the flywheel.

Onan Electric Starter is used with a 6-volt car battery of not less than 120 ampere hour battery (13 plates or over), which, when fully charged will start the engine several hundreds of times.

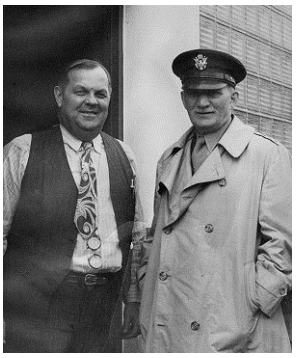
Each unit assembly comes packed in a sturdy carton with all fittings, attachments, screws, bolts, battery cables and instructions for installing and no more than just the regular set of tools, such as wrenches, pliers, and screw drivers are necessary to make the installation. Shipping weight, 25 pounds.

Manufactured by **D. W. ONAN & SONS** 43-51 Royalston Avenue MINNEAPOLIS, MINN.

PAYDAY FOR EXPERIMENTATION

When World War II began the government had a large demand for small, lightweight, generator sets. This 1939 promotion sheet has the answer in the bottom right hand corner. The 1500 watt unit is powered by a two cylinder opposed aluminum engine. Called the OTC, it was light weight, smooth, and too costly for the civilian market of the time. When the government came calling in 1941 this is just exactly what they were looking for. And they could have it right now and they bought by the thousands.

After the war, a variant of the OTC called the CK, became the mainstay 10hp engine. Made of aluminum, it powered the Thermo-King truck refrigeration units as well as generators.



When his co-workers remembered Dave Onan, they have a picture of a working man very much like themselves. He met people where they were and could talk about any function of the business. With outsiders he showed them equal respect by not changing his habits. The facts would speak for themselves. When his biggest customer came to the door, this is how he was greeted.

By the time the war was over Dave had spent 43 years working. He was an innovator in a time of great innovation — automobiles, electricity, radio, tall building construction, safety razor, crop rotation and Wheaties. His innovative days ahead were humanitarian. He started the Onan Foundation and a profit sharing plan for employees. He facilitated the hyperbaric chamber at Minneapolis General Hospital where many of the first organ transplants took place, was a founding father to the Minneapolis Aquatennial and Minneapolis Chamber of Commerce. The business daily operations were handed down successfully to family and other employees. Many he had personally hired.

Business was important, but this is not to say that he ignored his family. Grandpa was a regular Sunday visitor making his rounds with Grandma in the Buick. He best related to adults. To us he was a terrible tease. He made good use of leisure time and never denied himself a day off when he needed it. Dave lived a balanced and productive life — he lived well and made a difference to many.

For the last 20 years of his life, until he died in 1956, Dave got a Christmas present from the employees. They passed the hat and Dyke and Nell did the shopping. There was gold jewelry and Zippo lighters, platinum watches, engraved hunting knives and a few things he could take home to the house. Wartime made many things scarce. Art wasn't one of Dave's big interests but this piece stayed in his office with pride. It is a bronze statue of the cowboy philosopher Will Rogers on his horse Soapsuds by Hughlette Wheeler. The plaque reads.

TO ANOTHER HOMESPUN GUY
WHO HAS DONE THINGS WITH
HIS HANDS & HIS NATIVE WIT
DAVID W. ONAN
FROM HIS EMPLOYEES CHRISTMAS 1944

David Onan II Oct 23, 2012