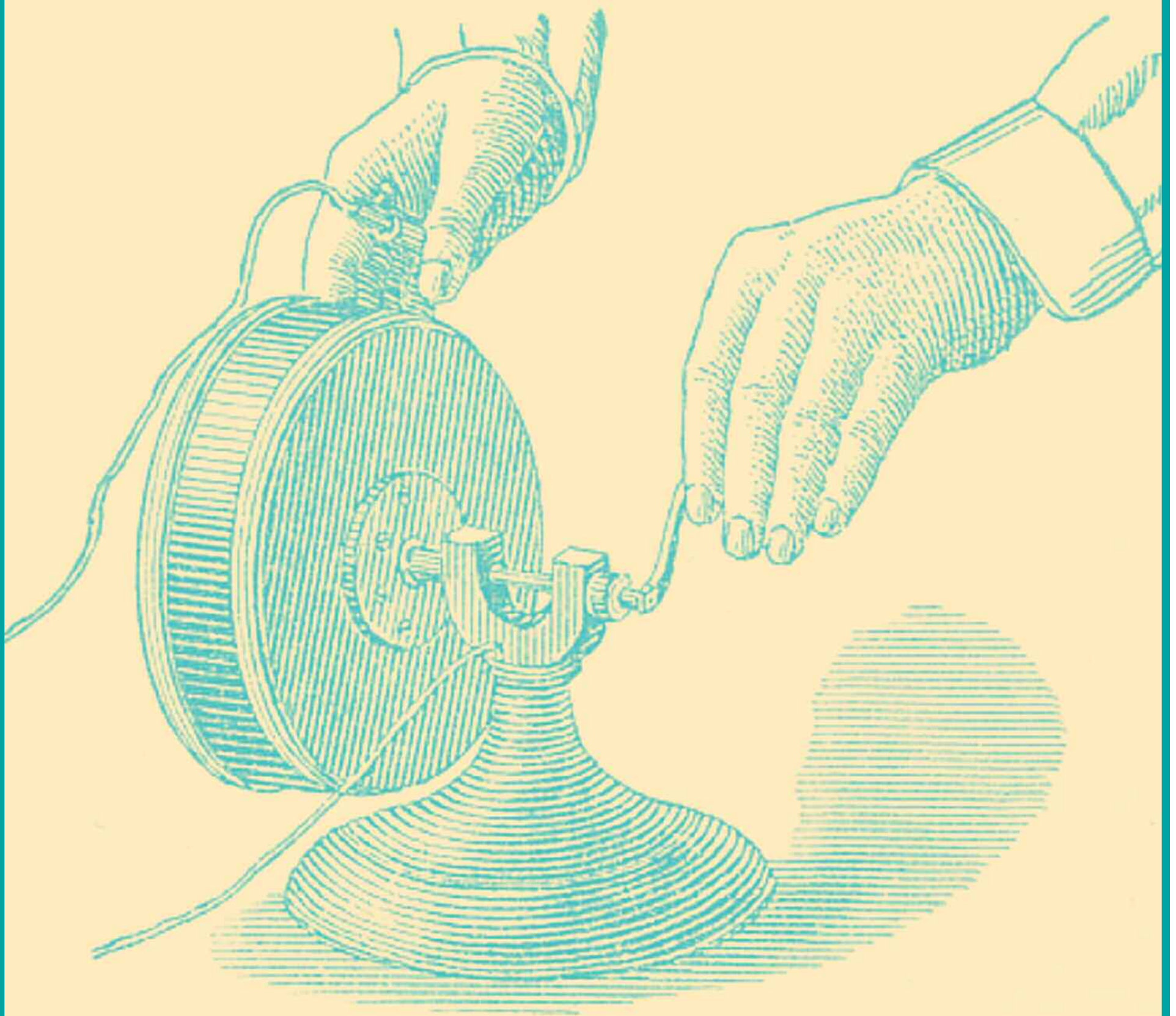


A Spark of Genius:

Local Inventors
and their
Discoveries



Gray's Telephonic Receiver.



Willard Morrison's first wife, Ruth Ansell, died in childbirth. She was the mother of Willard, Jr., and Edwin. In 1928, he married Lois Mae Weidman, a teacher in the Zion public schools. They had four children, Maxine, Harold, Lois and Donald.



The Morrison family moved to Lake Forest in 1930 and lived at 650 Northmoor Road (left). In 1943 they moved to 470 King Muir Road, where Mr. Morrison had a research lab in the backyard.

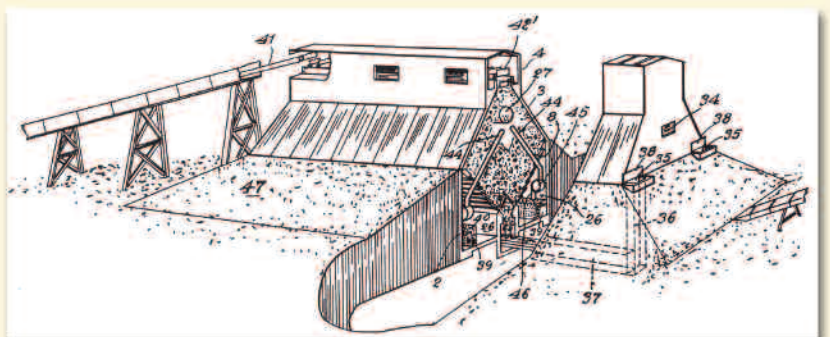
Willard Morrison (1892-1965) was born in Lynn, Massachusetts. His father purchased an early car and by the age of 12, Willard Morrison was teaching people to drive and fix their cars. While at Boston University, he supported himself as a mechanic. He applied these skills to his first inventions which were for the automobile.

Willard Morrison earned 159 patents in a variety of industries. The title of a 1943 article in *Forbes Magazine*, "Morrison: Idea Man in Shirtsleeves," is testament to his ability to solve everyday problems, both at home and in business.



Mr. Morrison invented the air conditioned bed which operated with a compressor and cooling coils hung over the bed. He wrote a fairy tale for his children about two youngsters who are sick with the measles and go into a special cool bed operated by a fairy princess called "Mother."

Willard Morrison invented a manure composter for the Chicago Stock Yards. The fertilizer created was sold under the name "Fertilife." Neighbors complained about the smell emanating from the lab in the backyard of his Lake Forest home. A judge, however, dismissed the case due to Mr. Morrison's fame as an inventor.



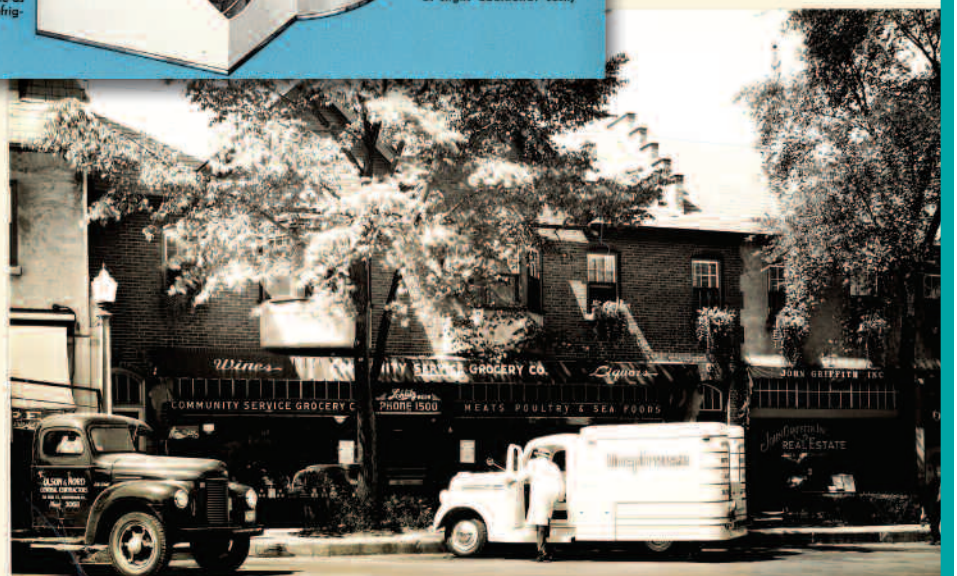
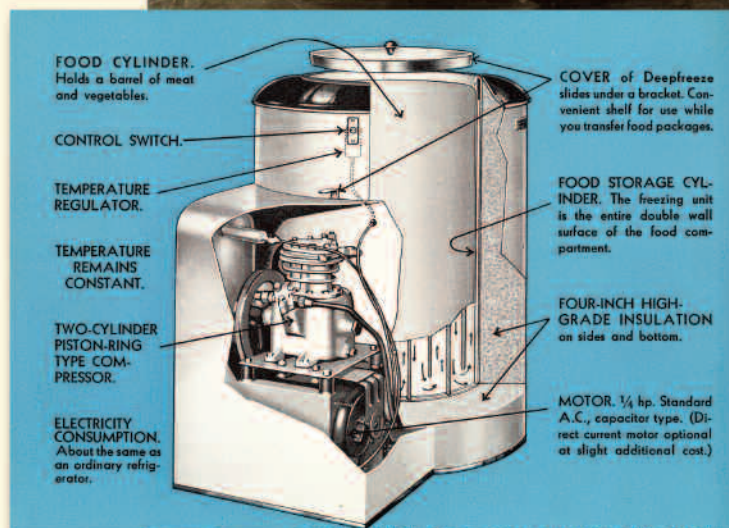
With six children and two maids, the Morrison household had many mouths to feed. Looking for a practical solution to avoid the number of trips to the grocer, Willard Morrison developed a home freezer right in his own basement. Soon, friends were asking him to make a freezer for them. He convinced the Detroit Motor Products Corporation to invest in this product, and the Deepfreeze home freezer was born. Over 400,000 were produced in the 1930s and 1940s at the Deepfreeze plant on Davis Street in North Chicago.

Mr. Morrison also adapted the Deepfreeze to industrial uses. Under extreme cold, metal parts shrank, creating a perfect fit as the parts warmed to room temperature. During World War II, it was used to harden bullets, making them stronger and more successful at piercing armor.

Before her Hollywood days, actress Kim Novak (Miss Deepfreeze 1952) was a model for the Deepfreeze. She is showing a rectangular freezer, produced about the time the Deepfreeze line was sold to Amana.



Freezers were made in two styles — single barrel (priced at \$288) and double barrel (priced at \$375).



Deepfreeze initiated a frozen food home delivery service. Local residents Sam Rogodino and Thomas Christophero drove the trucks, shown here in downtown Lake Forest.



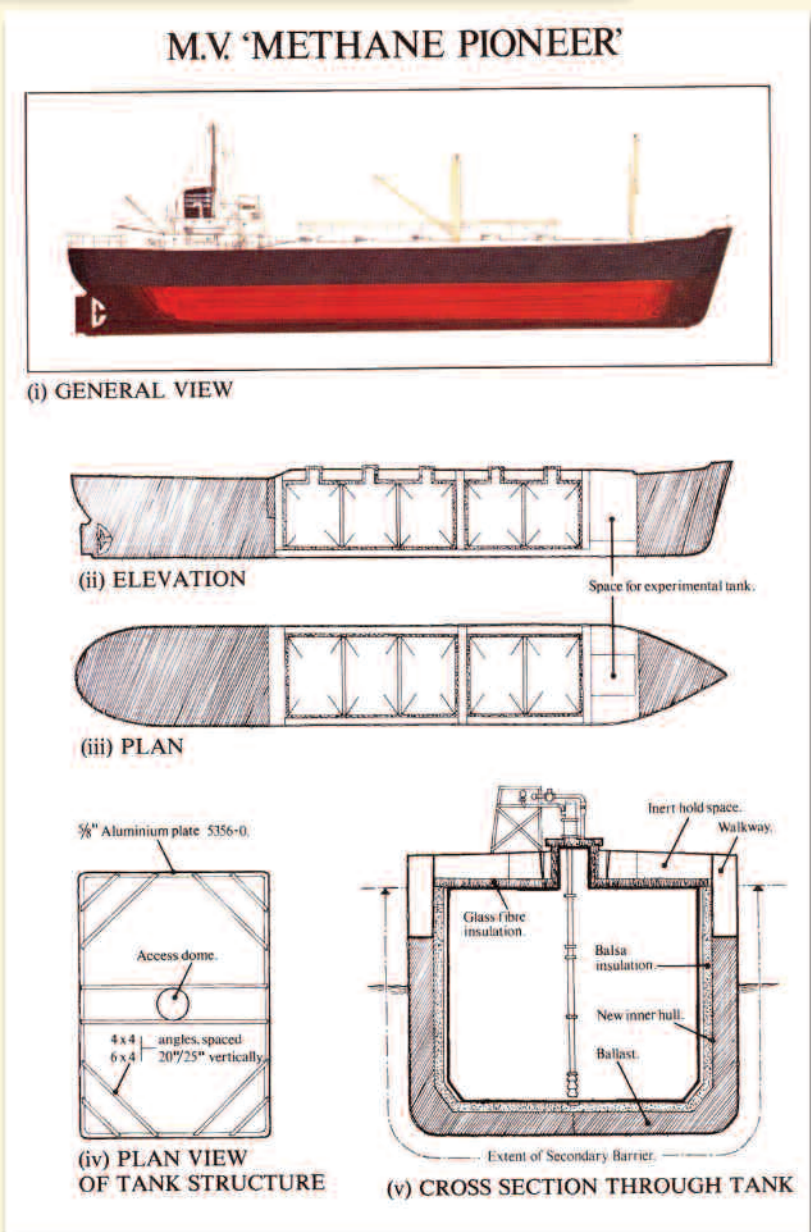
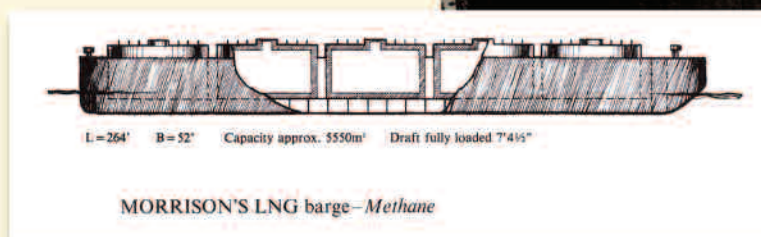
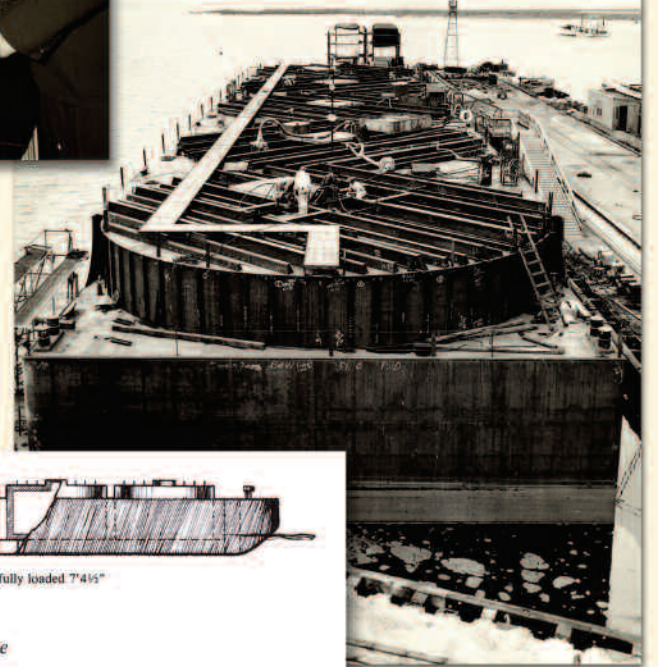
Willard Morrison was a pioneer in the liquefaction and transportation of methane gas. At the request of the Chicago Stock Yards, he developed a refrigeration method to store natural gas and transport it from the Gulf of Mexico. His invention included an innovative barge lined with balsa wood. The intended route, via the Mississippi River, was soon abandoned. Lucrative markets for Liquid Natural Gas (LNG) were instead developed in Europe, Asia, and the Middle East.

A Japanese colleague noted that Mr. Morrison deserved decoration from the Japanese government as “the man whose vision became the basis for a new industry giving comfort and convenience to 9 million homes in every corner of this island nation from the rugged mountains to isolated islands.”

William Wood Prince financed Mr. Morrison's development of LNG. The Chicago Stock Yards and Continental Oil formed Constock for this purpose. Shell Oil then joined the project, and the company was renamed Conch. Conch financed the first oceangoing vessel, the “Methane Pioneer.”



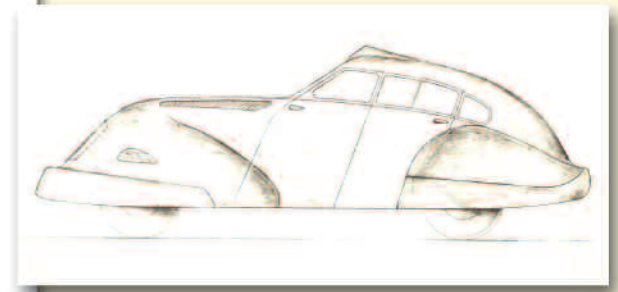
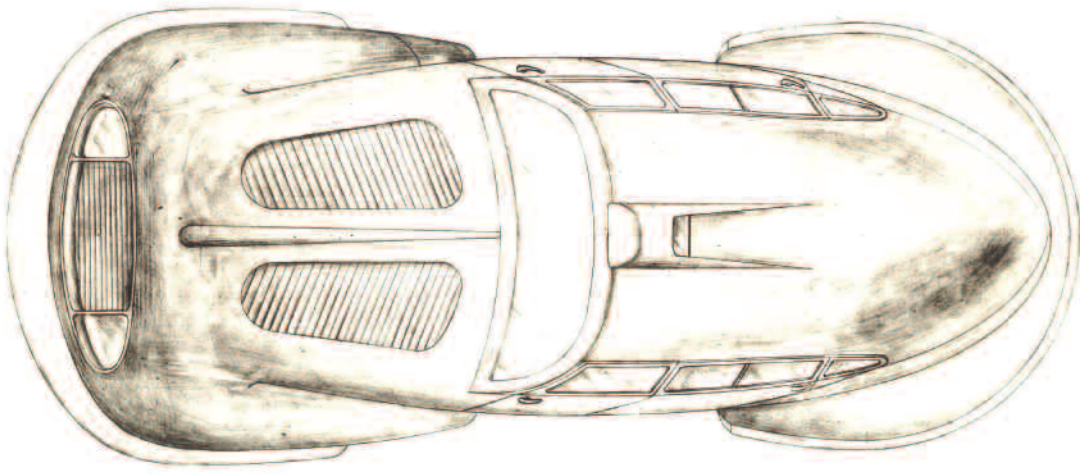
Willard Morrison's wife, Lois, christened the first barge, the “Methane.” Morrison's method reduced the volume of gas by a factor of 600 and provided for transportation at -258 degrees F. and at atmospheric pressure. Experiments proved that transport was no more hazardous than for gasoline.



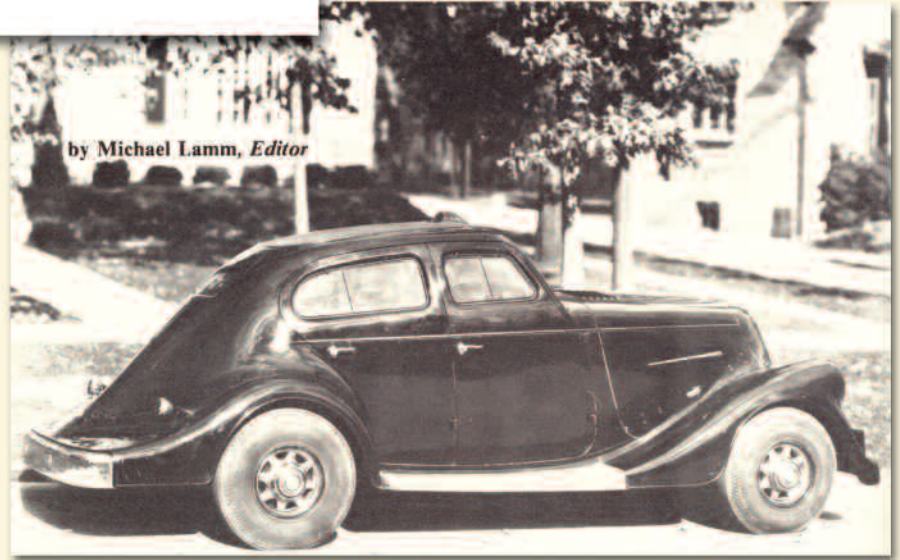
Balsa wood provided insulation and structural support and resisted expansion and contraction from temperature changes. Shown here is the balsa-wood kiln at the LNG offices located at Clavey Road and old Route 41.

Mr. Morrison is pictured here with Japanese Prime Minister Hatoyama about 1955.





The bug car, of which only one was produced, was driven to Lake Forest High School by Mr. Morrison's son Harold.



Willard Morrison defined an inventor as “someone who does something about his ideas.” His childhood interest in cars led to the invention of several improvements to the styling and safety of automobiles.

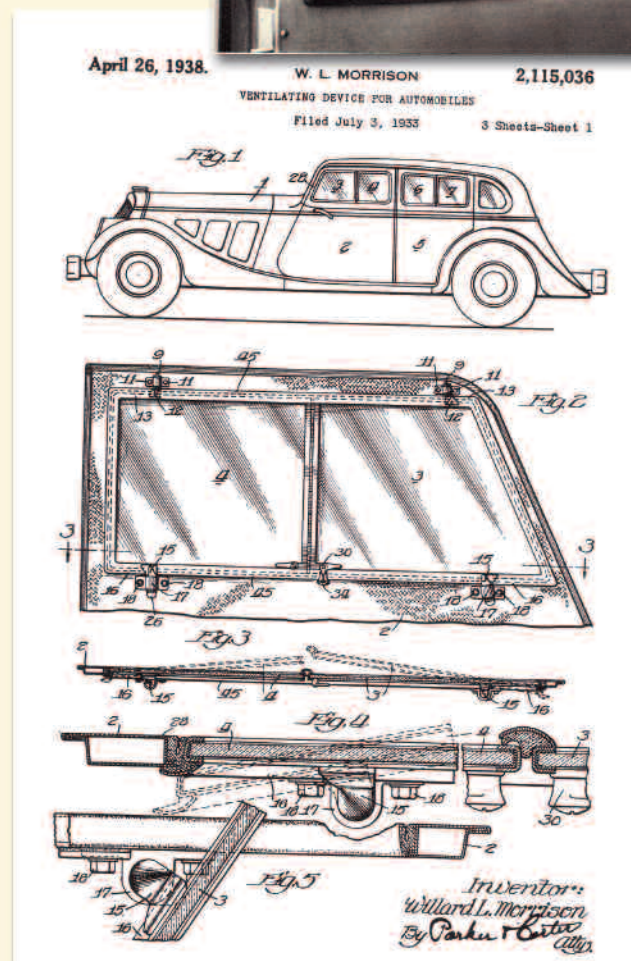


His most visible invention locally was the “Bug” car built in 1934. Its forward-looking streamlined design had wraparound bumpers and cavities in the inner door surfaces. Innovations in the car included a periscope rearview mirror in the roof, ventilation via windows that swing outward from the bottom, and a spare tire mounted ahead of the rear bumper to absorb impact.

Willard Morrison designed and patented a special bumper that prevented lock-ups between cars. The product was produced and marketed by the Biflex Bumper Company.



Licenses under Willard Morrison's patents were sold to several automotive manufacturers.



The “No Draft Window” provided improved ventilation in an era before air conditioning.



Two of A. B. Dick's children, Mabel and Albert Dick, Jr., are pictured in front of their Lake Forest estate, Westmoreland.



A. B. Dick married Alice S. Mathews of Galesburg, Ohio, in 1881 and they had a daughter, Mabel. After Alice's death, he married her sister, Mary Henrietta Mathews, and they had four sons.

Albert Blake Dick (1856-1934), inventor of the mimeograph, was born in Bureau County, Illinois. In 1863, the family relocated to Galesburg, Ohio, where young Albert attended public schools. As a young man, he worked for farm equipment manufacturers in Ohio and Moline, Illinois, and then became a partner in the Moline Lumber Company.

In 1884, he established his own Chicago-based lumber enterprise, A. B. Dick Company. After the first mimeographs were marketed in 1887, Mr. Dick abandoned the lumber business to turn his full attention to the mimeograph. At the time of his death in 1934, the Edison-Dick mimeograph had become virtually indispensable to every kind of public and private institution.



A. B. Dick, whose office is shown here, ran the company until his death in 1934. His son, A. B. Dick, Jr., and then his grandson, A. B. Dick, III, continued owning and running the company until it was sold in 1980 to General Electric Great Britain.



In 1902, the A. B. Dick Company moved to the 700 block of Jackson Boulevard in Chicago and later acquired several adjoining buildings.



In 1949, the A. B. Dick Company moved to a new plant and headquarters in Niles, Illinois.

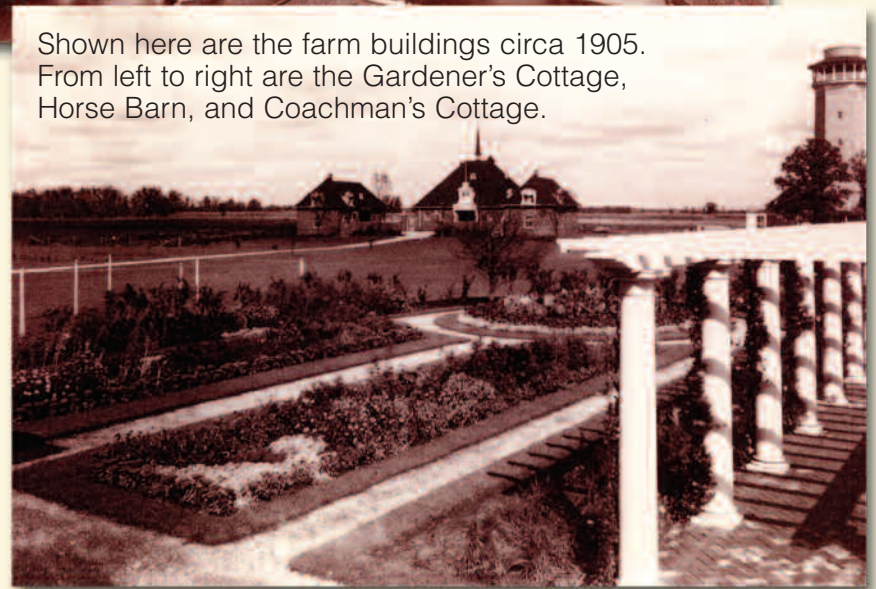


The main house was designed by James Gamble Rogers in 1902. The brick and stone house had twenty rooms, many of which looked out onto a pergola and gardens. Sleeping porches were added around 1910.

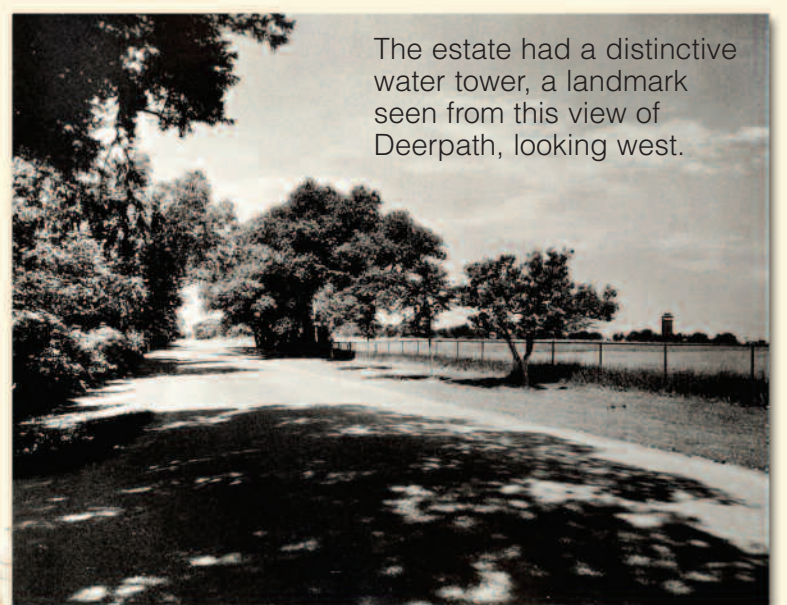


In 1902, Albert B. Dick, Sr., built a forty-acre summer estate near Deerpath and Waukegan Road. The name “Westmoreland” was taken from Westmoreland County, Pennsylvania, where Mr. Dick’s father and grandfather lived.

The estate included a manor house, cottages for the gardener and coachman (later chauffeur), barns for the horses and cows, an implement building, a chicken coop, a potting shed, and greenhouses. Crops such as hay, barley, and wheat were planted east of the estate to support the farm. The main house was razed in 1948. Several of the outbuildings have been turned into residences, however.



Shown here are the farm buildings circa 1905. From left to right are the Gardener’s Cottage, Horse Barn, and Coachman’s Cottage.



The estate had a distinctive water tower, a landmark seen from this view of Deerpath, looking west.

Albert Dick’s widow, Mary, donated 84 acres of the estate (including property containing the manor house) as a site for a new hospital. When Lake Forest Hospital was built, architect Stanley Anderson copied the manor house for the original hospital building.

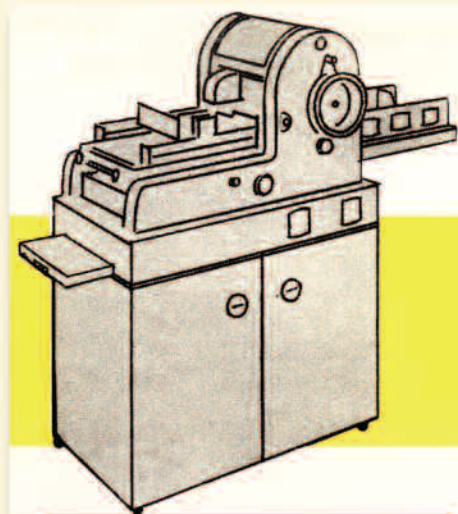


A. B. Dick discovered the beginnings of the mimeograph process one day as he drew a tool across a piece of wax paper and created a stencil. He soon used this process to duplicate price change notices for his lumber business. He applied for a patent, only to find that Thomas Edison had received a patent for an electric pen that performed a similar, but more cumbersome, process. Mr. Dick contacted Thomas Edison who gave him a license under the electric pen patent. A. B. Dick marketed his product as the “Edison Mimeograph,” using Edison’s name for star value. Mimeograph comes from the Greek words meaning “to imitate” and “to write.”

The A. B. Dick Company continued to improve and automate the process. Mimeograph reproduction was the preferred office method of copying from a master copy until electrostatic copiers were introduced in the 1960s.

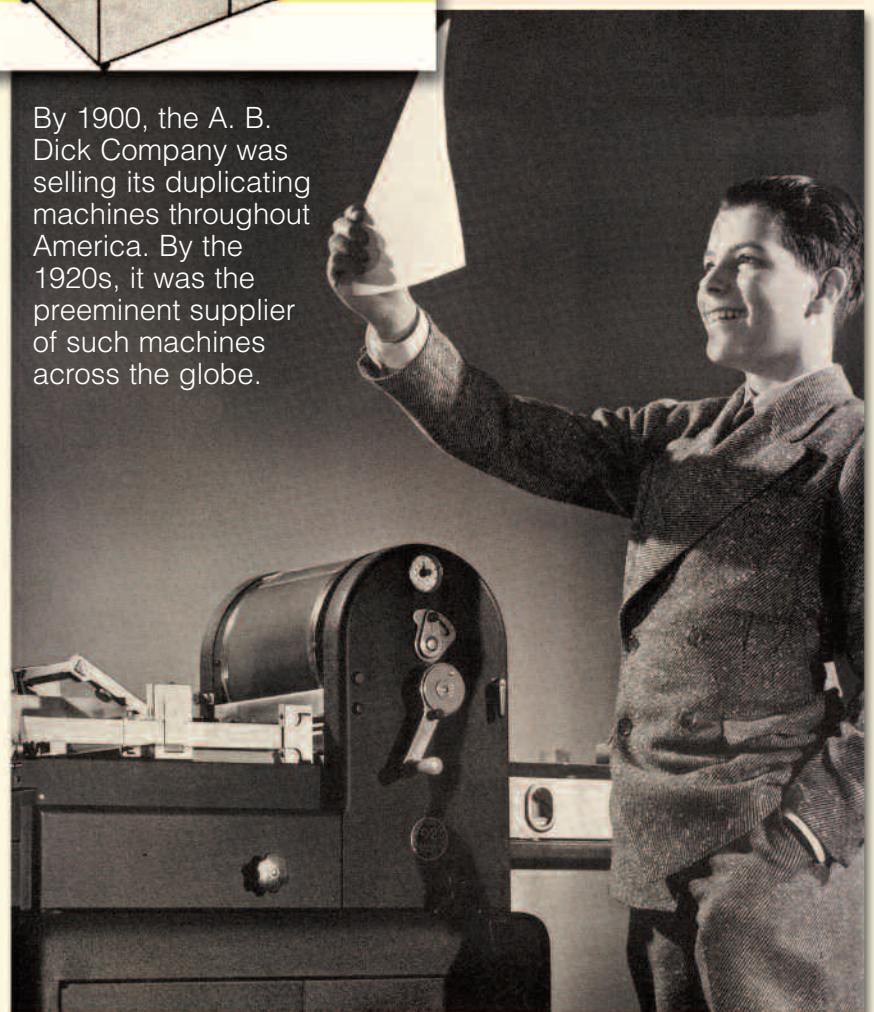


Thomas Edison and A. B. Dick became lifelong friends. Mr. Dick named his third son, Edison Dick. The Edison name was used on products until 1940.



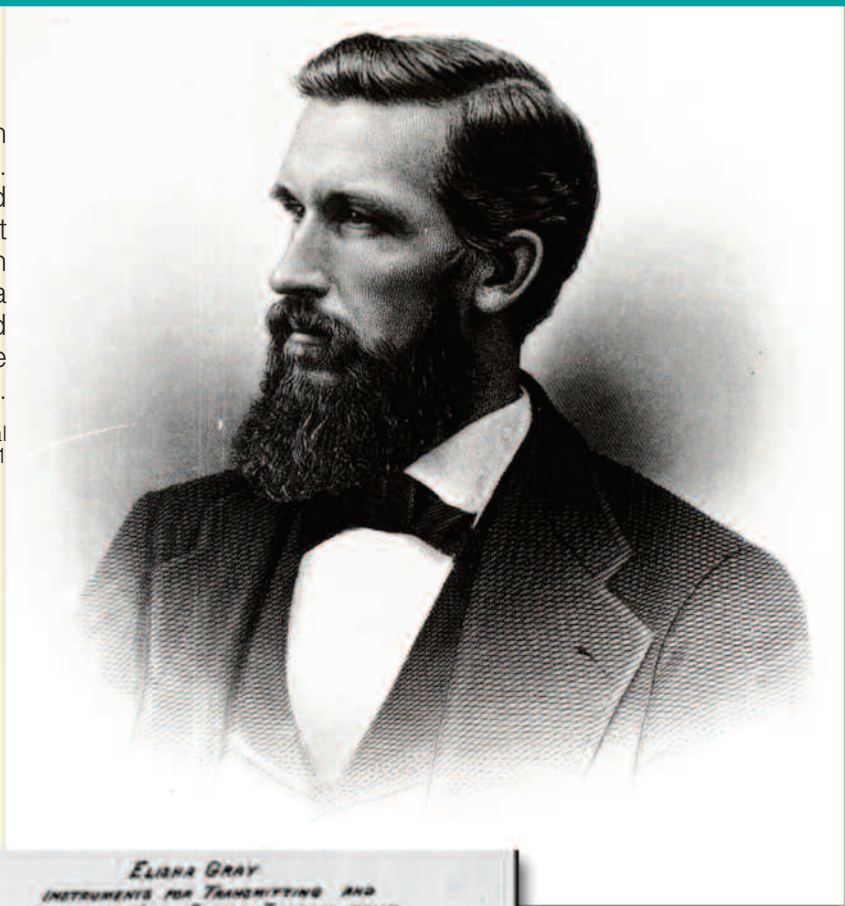
Initially, typewriters tended to damage the stencil. A.B. Dick solved this problem by purchasing the rights to an 1888 patent for a new, sturdier stencil that could be used successfully in a typewriter. This created the potential to produce thousands of copies from one original. In 1894, A. B. Dick Company also began marketing the Edison-Mimeograph Typewriter to create stencils.

By 1900, the A. B. Dick Company was selling its duplicating machines throughout America. By the 1920s, it was the preeminent supplier of such machines across the globe.



Elisha Gray was born in Barnesville, Ohio, in 1835. Raised on a farm, he worked as a blacksmith and built boats. He attended Oberlin College, earning his way as a carpenter. Elisha Gray moved to Highland Park with his wife and four children in 1871.

From Portrait Biographical Album of Lake County, 1891

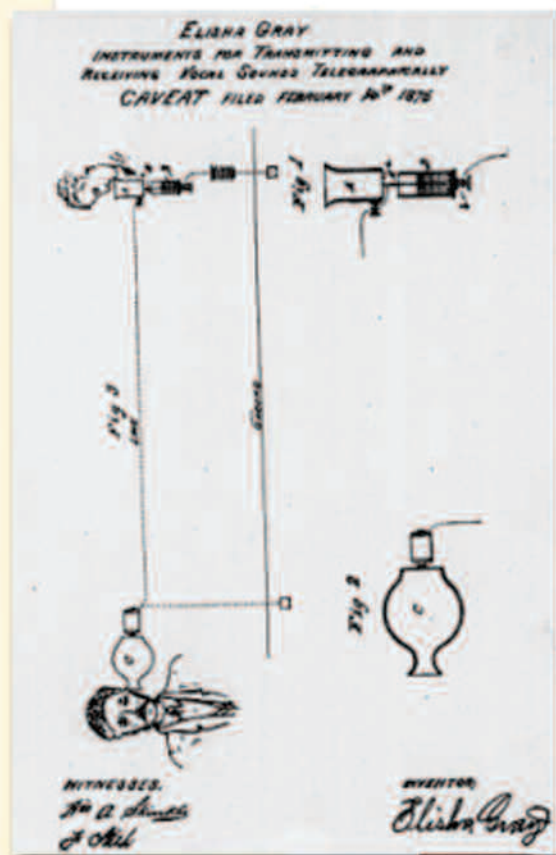


Elisha Gray (1835-1901) is best known as the person who almost invented the telephone. He was a lecturer in physics at Lake Forest College between 1882 and 1892.

Gray invented a number of telegraphic devices and in 1869 was one of two partners who founded what became Western Electric Company (now Lucent Technologies). On February 14, 1876, Alexander Graham Bell filed an application for a patent for a telephone. Just hours later, Gray applied for a caveat announcing his intention to file a claim for a patent for the same invention within three months.

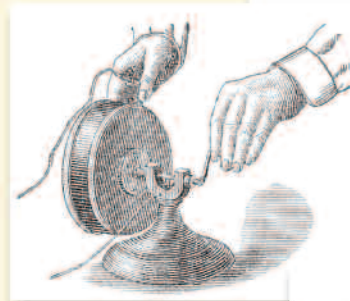
In the legal cases that followed, the claims of Gray and Bell came into direct conflict, and Bell was awarded the patent.

Alexander Graham Bell and Elisha Gray corresponded about their inventions in a cordial way, including this telegram dated February 24, 1877. Bell Telephone Company later acquired the patents of Gray and others.



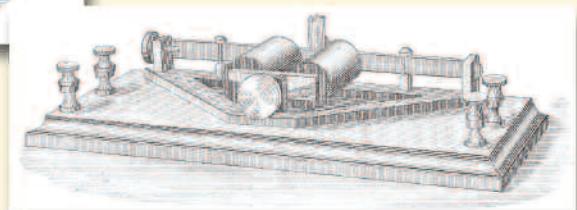
Gray's patent caveat described an apparatus "for transmitting and receiving vocal sounds telegraphically." Indeed, Alexander Graham Bell's patent used a metal-diaphragm receiver built and publicly used by Gray months earlier. Bell's device depended on microphone elements credited to Gray.

Gray was the accidental creator of the first electronic musical instrument, the "Musical Telegraph." He toured with the instrument in 1874.

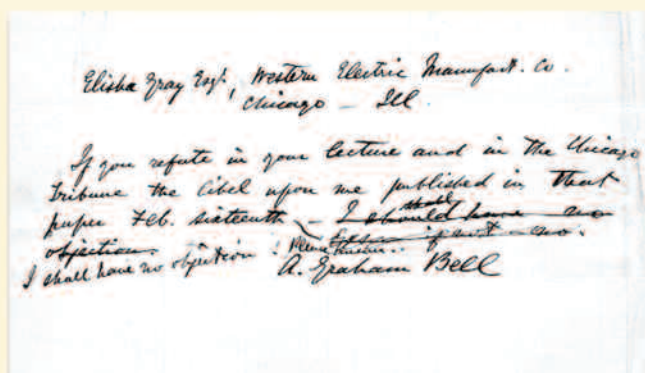


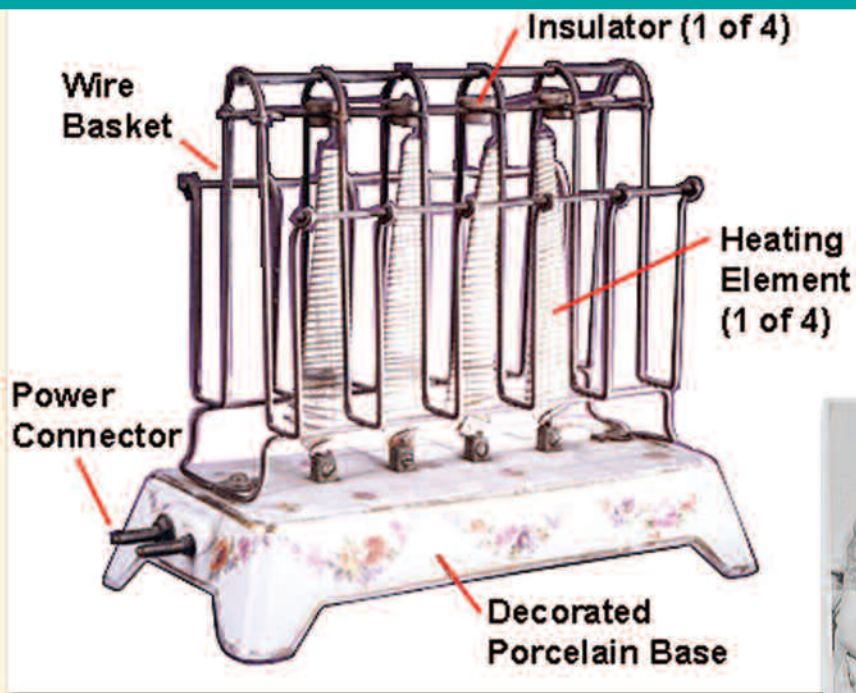
From American Mechanical Dictionary by Edward H. Knight, 1880. Courtesy Lake Forest College

In 1880, Gray became a professor of dynamic electricity at Oberlin College in Ohio. He obtained over 70 patents, mostly related to the telegraph and telephone.



One patent was for the "telautograph," a type of facsimile machine. Gray won awards for his electrical achievements at the 1876 Centennial Exposition in Philadelphia and at Paris expositions in the 1870s and 1880s.





Nichrome wire was pliable and could be produced inexpensively. Within a few years of Marsh's patent, several companies were producing electric toasters.



Albert L. Marsh was granted a patent in 1906 for a new alloy that combined nickel and chromium. The new material, called "Nichrome" glowed cherry-red when heated with an electric current. It was revolutionary because it could be heated and cooled many times without breaking. Unlike a light bulb filament, it did not need to be enclosed in a vacuum.

Marsh formed the Hoskins Manufacturing Company to develop the new material. It was marketed under several names, including "Chromel."

BREAD IS YOUR BEST FOOD. TOASTED...IT IS MORE NOURISHING.

Toast is good and does good

YOUR child's presence in health and happiness gives values to life which are immeasurable. By more attention to the proper food... food that supplies a child's energy needs and safeguards his digestion... many of the handicaps which are found among growing children can be lessened.

Bread is good for children because it is nourishing and contains vitamins. Toasted, the fuel value of bread is increased. Important in the growth of a child is also the development of teeth. Toast promotes training in mastication and exercise of the gums.

Decide now to serve toast at every meal... between meals... or whenever the man calls for bread. An electrical toaster enables you to serve toast crisp, piping hot, and fresh, right at the table.

Electric Toaster: \$3.75

Pay for it monthly with your electric bill.

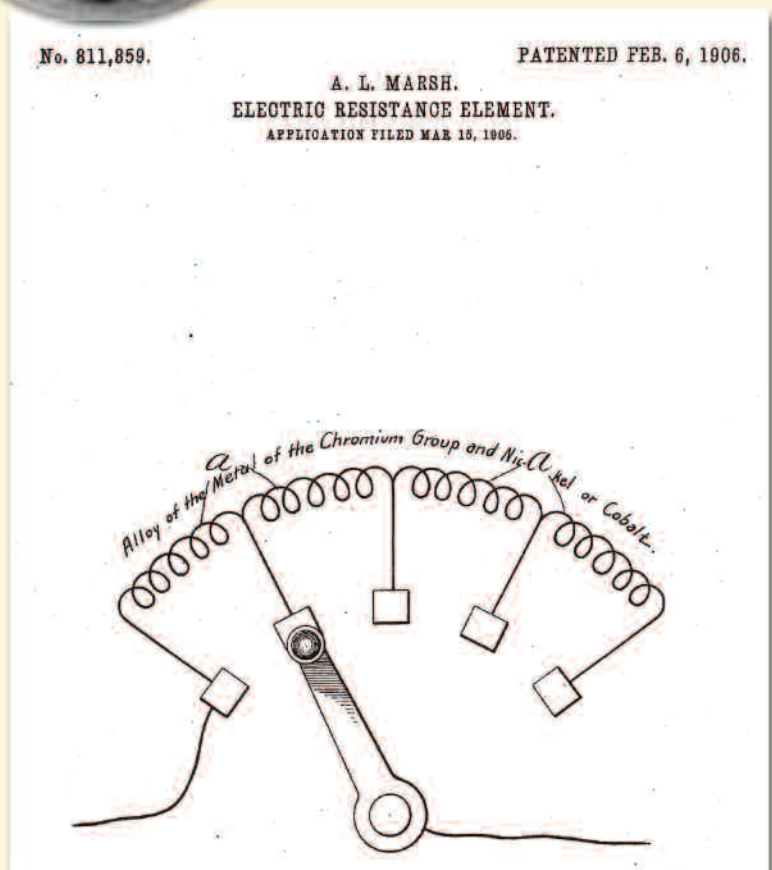
One cent apud for electricity will heat an electric toaster for twenty minutes.

WISCONSIN POWER AND LIGHT COMPANY



By the 1920s, the morning toast, made in an electric toaster, became a staple for the growing middle class. The benefits of toast were promoted by electrical companies which, of course, benefited from the increase in electrical service.

Marsh's discovery made the electric toaster possible. In 1941, Albert Marsh was awarded the Albert Sauveur Achievement Award, which recognizes pioneering materials science and engineering achievements. Albert Marsh and his wife, Minnie, lived on North Avenue in Lake Bluff.



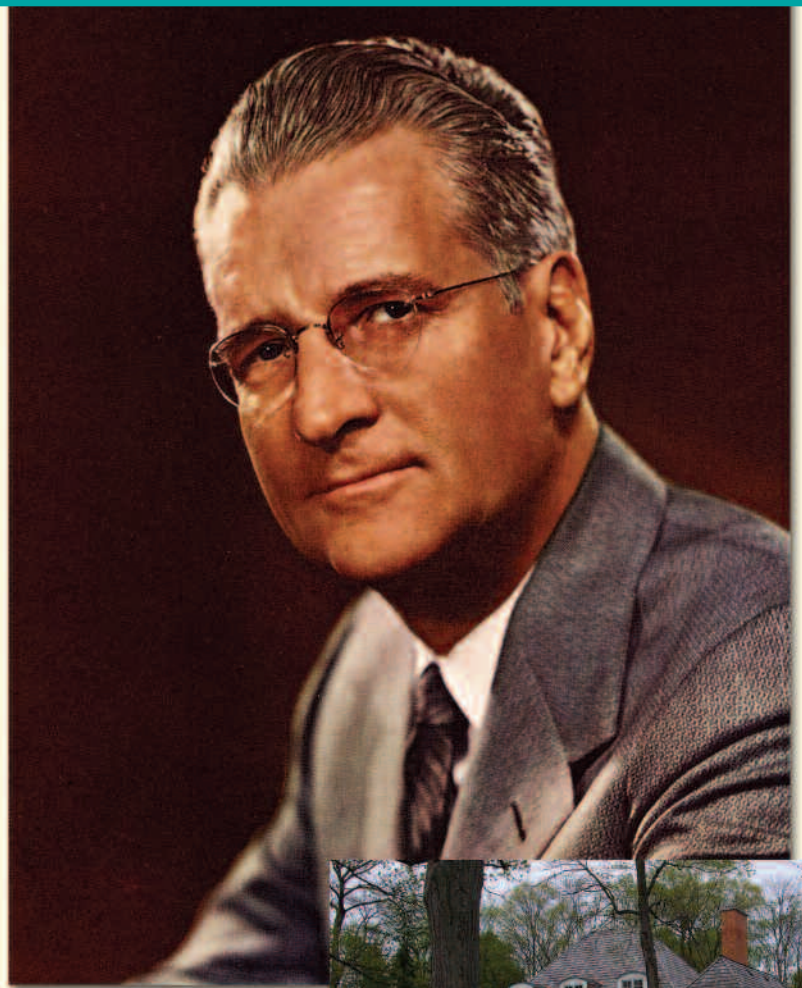
Dr. Ernest Volwiler (1893-1992)

was inducted into the Inventors Hall of Fame in 1986 for his work on Sodium Pentothal, among other medical achievements.

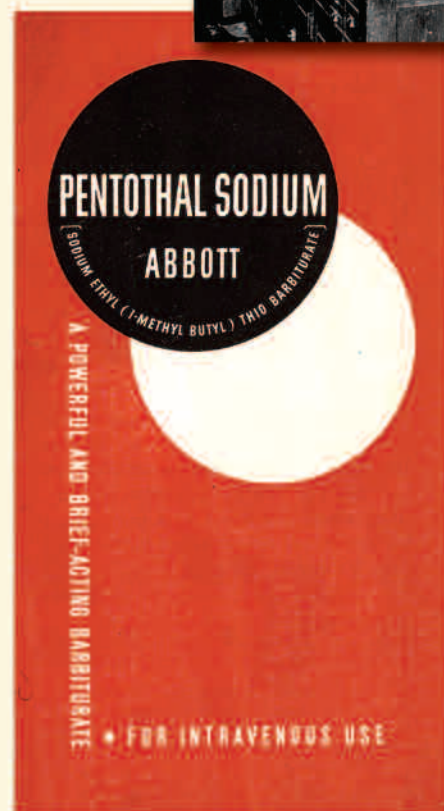
Ernest Henry Volwiler was born in Hamilton, Ohio and grew up on a farm. After graduating from high school at 16, he taught for a year at a rural one room school. He graduated from Miami University of Ohio and received a Masters Degree and a Ph.D. in organic chemistry from the University of Illinois. He joined Abbott Laboratories in 1918, one of six laboratory employees.

Dr. Volwiler became director of research at Abbott Labs in 1930 and held a number of positions culminating in Chairman of the Board in 1958. In addition to several honorary degrees, he was awarded the prestigious Priestly Medal from the American Chemical Society in 1958.

Just two years after joining Abbott Labs, Dr. Volwiler was named chief chemist. He accelerated a program to synthesize medicines (as opposed to extracting them from natural products). Abbott Labs emerged as a leader in this new era of pharmaceutical chemistry.



Dr. Volwiler and his wife Lillian had three children, Doris, Marjorie, and Wallace. Their house at 900 Lake Road in Lake Forest was designed by Jerome Cerny in 1957.



The son of German immigrants, Dr. Volwiler was fluent in German. This enabled him to read German chemical literature easily. Towards the end of World War II, he was selected by the War Department to be part of a group that followed closely behind the armies advancing into Germany. Their task was to collect chemical information that might be of military value in the war against Japan. As a civilian expert serving in combat areas, he received the rank of Colonel.

Photograph courtesy Abbott Laboratories.

Dr. Donalee Tabern (1900-1974) was inducted into the Inventors Hall of Fame in 1986 for his work on Sodium Pentothal, among other medical achievements.

Donalee L. Tabern was born in Bowling Green, Ohio. He obtained three degrees, including his Ph.D. in chemistry, from the University of Michigan. He joined Abbott Laboratories in 1926, after two years teaching at Cornell University, and quickly distinguished himself as one of the company's outstanding scientific minds.

In addition to his advances in the field of sedatives, Dr. Tabern pioneered the use of radioactive materials in biology and medicine. He held more than 50 patents and was given a Senior Abbott Research Award in 1956 in recognition of his outstanding work in radioactive drugs.



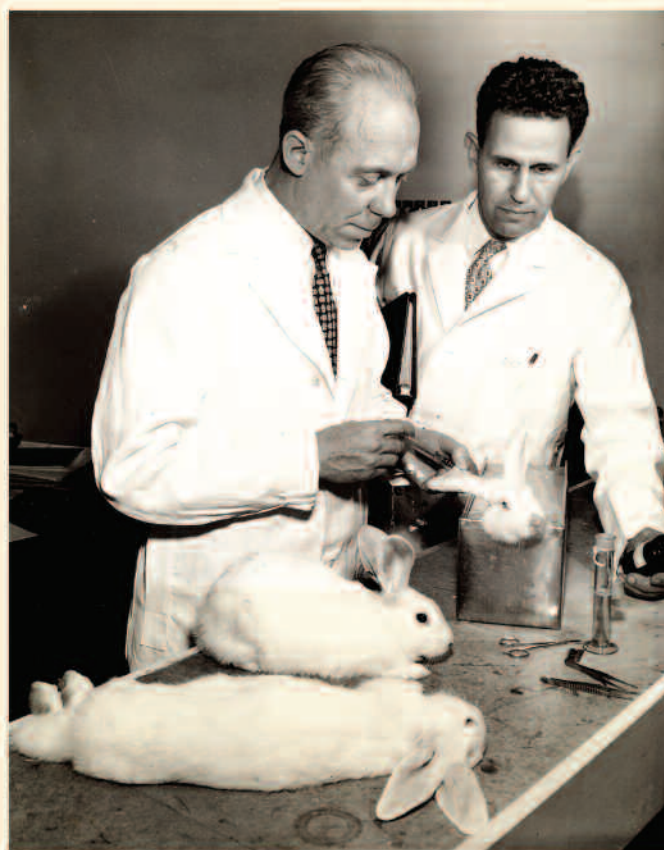
Photo courtesy Jerome Tabern.

Dr. Tabern and his wife Beatrice had two sons, Jerome and Thomas. The family lived at 300 Sheridan Place, Lake Bluff, and then moved to 210 Witchwood (pictured here) in 1951.



In 1946, Dr. Tabern started a research department to develop medical uses for radioactive materials. As a result of his efforts, Abbott Labs became the first pharmaceutical company to supply radio-pharmaceuticals to medical and research institutions.

Photo courtesy Abbott Laboratories.



An enthusiastic and intense salesman for his products, Dr. Tabern presented lectures, movies and slide presentations for researchers, scientists, and medical students across the country. A sidekick for his show to introduce sodium pentothal was a rabbit who was sedated and miraculously awakened in front of live audiences.

Photo courtesy Tom Tabern.

Over the course of three years, Dr. Tabern and Dr. Volwiler screened over 200 compounds to arrive at thiopental sodium (trademarked "Sodium Pentothal®"). The chosen compound was a sulfur-bearing analogue of Nembutal®, a successful oral sedative-hypnotic, also developed by Drs. Volwiler and Tabern.



The collaboration of Dr. Volwiler and Dr. Tabern produced several new sedative and anesthetic compounds that contributed significantly to better medical and surgical treatments throughout the world. Key among these was the discovery of Sodium Pentothal® in 1936.

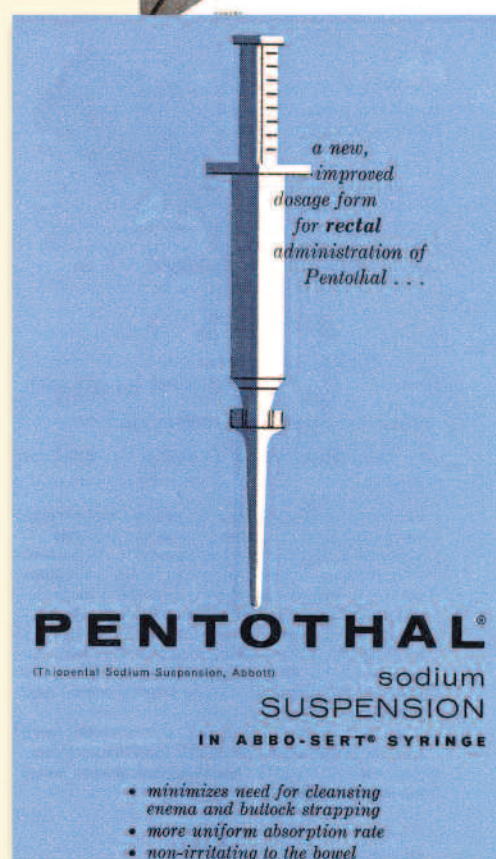
The two scientists were seeking a substance which could be injected directly into the blood stream to produce unconsciousness.

Pentothal had several advantages over other anesthetics. Induction was smooth, free of muscle twitching, and did not result in frightening psychic effects.

Recovery was swift with little or no postoperative nausea. Pentothal was also safer to handle than gaseous compounds.

Few agents in medicine have played such an outstanding role in improving the well-being of patients.

Sodium Pentothal only causes a few minutes of sedation (it leaves the bloodstream quickly), so it is followed up with a gaseous anesthetic, such as nitrous oxide. It has become one of the most widely used anesthetics in the world.



The drug has received the incorrect nickname "Truth Serum." Since World War II, it has been used, in small doses, by psychiatrists to make their patient more relaxed and communicative. It does not compel the patient to reveal information he or she does not want to, however.



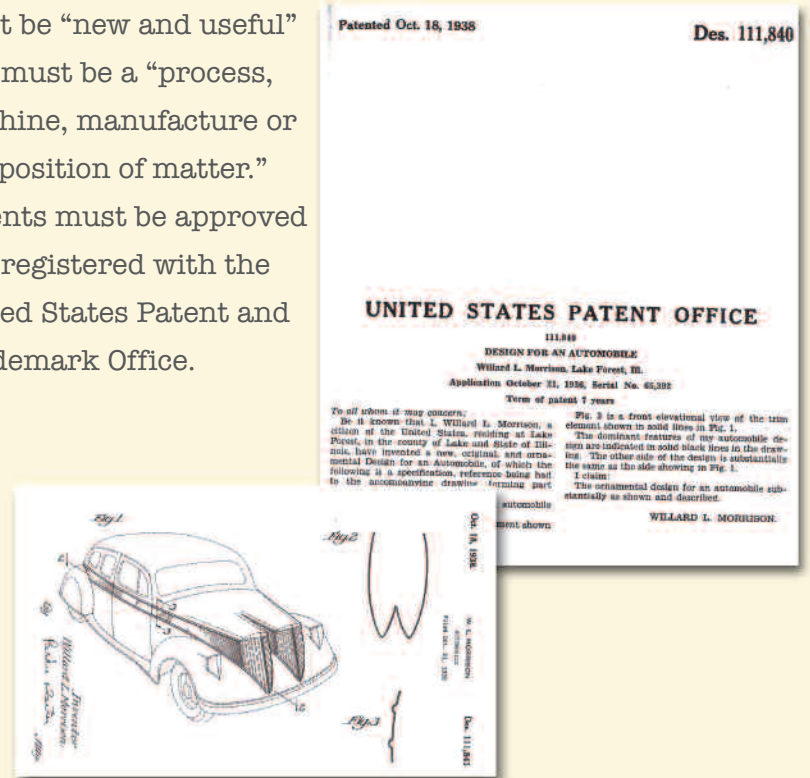
Early Abbott IV bottles were made with its logo. Thousands of wounded soldiers during World War II owe their life to Sodium Pentothal. It was injected either on the battlefield or on the way to field hospitals to ease pain and shock.

Patents, Trademarks, and Copyrights

Intellectual Properties are products that come from the creative mind. Just like other kinds of property, such as bank accounts and real estate, intellectual property needs to be protected from theft or misuse. Patents, trademarks, and copyrights provide this legal protection. The importance of protection was recognized by the drafters of the Constitution who included the provision that “Congress shall have power...to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.”

Patents

Patents provide exclusive rights to make, use, and sell an invention for up to 20 years. A license to use the patent rights can be sold to many users. The inventions must be “new and useful” and must be a “process, machine, manufacture or composition of matter.” Patents must be approved and registered with the United States Patent and Trademark Office.



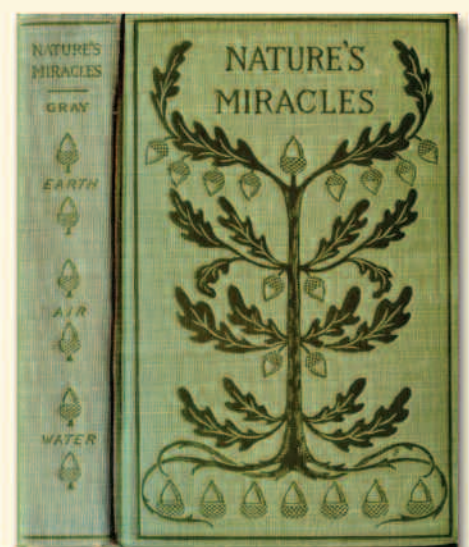
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A Spark of Genius:

Local Inventors and their Discoveries

June 10, 2005 to February 5, 2006

Curated by Janice Hack, Elizabeth Hedsund, and Harold Morrison

This exhibit was made possible by the generous support of the Dick Family Foundation, Thomas and Maxine Hunter, Hunter Family Foundation, Willard Hunter, Marjorie Grinnell, Donald and Jean Morrison, Edwin Morrison, Harold and Adeline Morrison, Willard Morrison, Jr., Doris Semler, Harrison and Lois Steans, Jerry and Kay Tabern, and Wallace Volwiler.

The Lake Forest-Lake Bluff Historical Society thanks the following people who contributed to the success of this exhibition: Abbott Laboratories, Allen Davies, John Dick, Gail Dristle, Edward Hayman, Carrol Herber, Emily Lambert, Rob Medica, Arthur Miller, Edwin Morrison, Jerry Tabern, Tom Tabern, and Eugene Woroch.

Exhibit panels and booklet designed by Dino Robinson of

Robinson Design