

*This is* AO *The  
Story of  
American  
Optical  
Company*



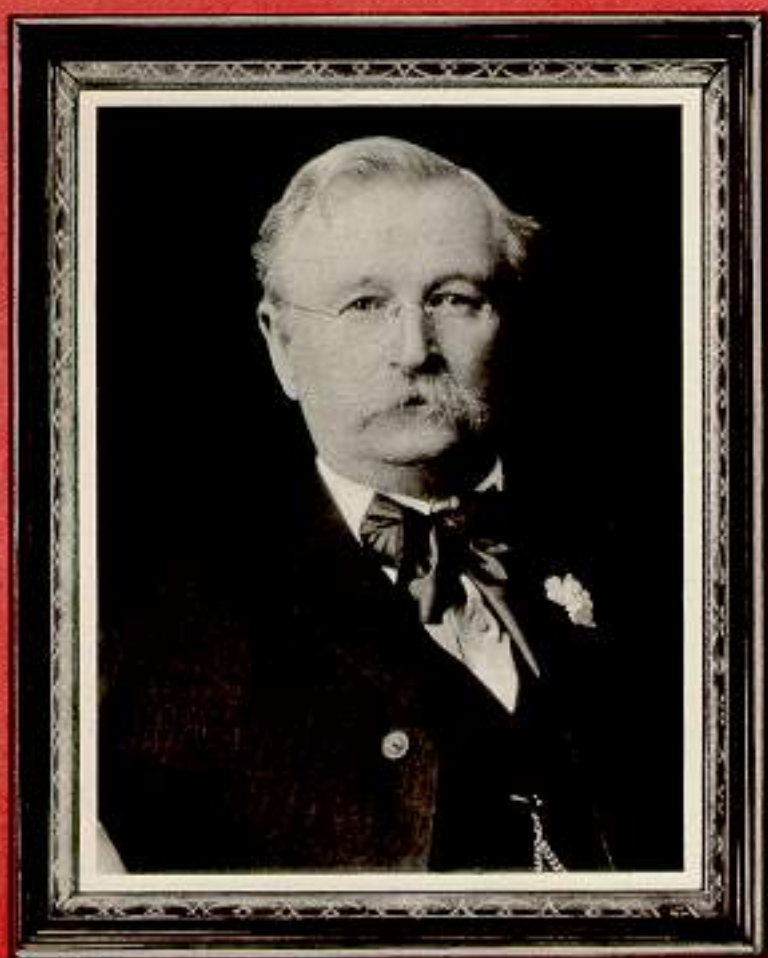
PRODUCTS THAT EXTEND AND  
PROTECT MAN'S PHYSICAL SENSES





WILLIAM BEECHER

*"The Connecticut farm boy who laid the ground work."*

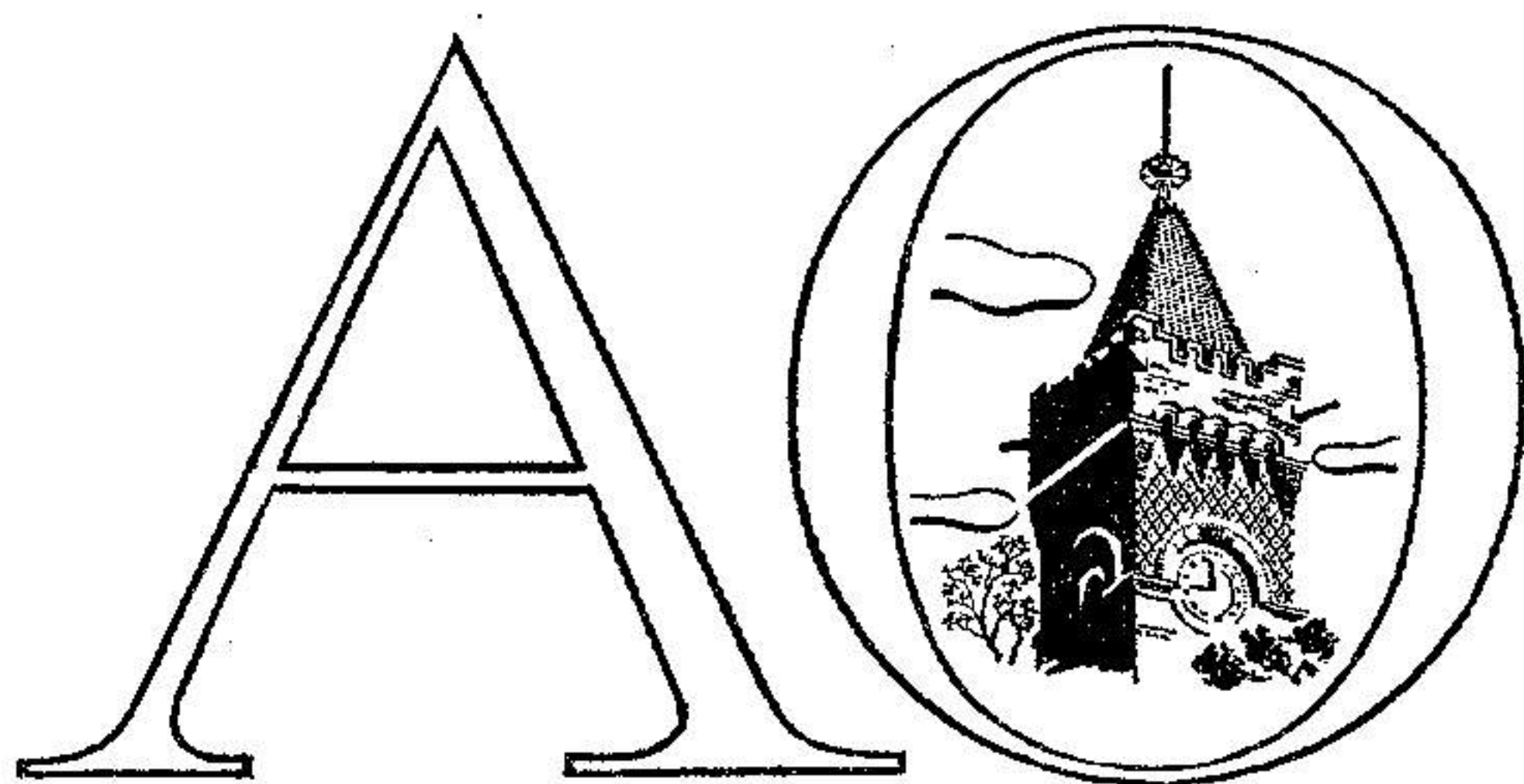


GEORGE W. WELLS

*"For nine decades, the name of Wells was to be synonymous with American Optical."*



# THIS IS



## *The Story of American Optical*

One day in the year 1833, the nimble-fingered son of a Connecticut farmer took a close look at a pair of the typically crude spectacles then current. He said to himself:

“I can do it better.”

Somewhere today, an intent young man looks on as a vastly complicated optical instrument tracks the course of a giant rocket straining out of the earth's gravity towards the unknown.

These two events, separated by more than a century and a quarter, are bound together by the thread of history. They are two moments in the same story, the story of the American Optical Company.

AO, as the company is known to its 10,000 employees, began in a single upstairs room over a small shop in the little town of Southbridge, Massachusetts, U.S.A., and grew to be the world's leading manufacturer of ophthalmic products.

Its 2,000 products are sold in nearly every country in the free world through a vast network of branch offices, subsidiaries, franchised distributors and sales representatives.

The contribution AO has made to improving the sight and safety of the world's billions is



immeasurable. Many men through the years have made this contribution possible, and have added chapters to the story of AO. The broad outlines and a few of the highlights of this story are given here.

The Connecticut farm boy who laid the groundwork for what was to become the world's foremost optical company was William Beecher.

Beecher came to Southbridge in 1826, after an apprenticeship in Providence, Rhode Island, where he had learned the jeweler's trade. This trade he practiced in Southbridge for seven years before his fateful encounter with the crude spectacles. The spectacles Beecher saw were an imported pair, as were most found in America at that time.

"I can do it better," said William Beecher to himself, and he bought the spectacles and went to work.

### **The Beginning**

The American optical industry was truly born at that moment, and at that moment, too, William Beecher put into a nutshell an enduring precept of the company that was to grow into the American Optical Company.

From William Beecher's time on, the men who built AO built it on the foundation of "We can do it better." The Company throughout all of its history has never ceased to insist on the very highest standards of quality for every one of its products. It has spent vast sums on research to develop new products and applications, striving always, as did William Beecher, to do it better.

Beecher first began making spectacle frames as a sideline to his jeweler's business. He had three apprentices at the time. One of them was Robert H. Cole, who was to play a prominent



role in the early development of the business.

At first, only silver spectacle frames were made. Beecher's product was so superior and his prices so reasonable that the business flourished. By 1839, six years after starting his "sideline," Beecher found it necessary to hire more hands and move into larger quarters.

From the modest beginning in silver spectacles, the output was extended to embrace all types of frames then in demand. The first steel frame was made in 1843, and the first gold frame about 1848.

In the thirty years that followed the 1839 move, the ownership of the business changed several times, but William Beecher was a guiding force in the firm during most of this period.

He brought the business — and the American optical industry — a long way. When Beecher first opened his workshop, spectacle frame making was a laborious process. A fair output for a good bench hand was six pairs a day.

Six pairs a day was not enough to satisfy Beecher. He applied his ingenious mechanical mind to the problem of contriving new tools and labor-saving methods to increase production. By 1852, his plant could turn out almost 15,000 silver, steel and gold frames a year.

The production of 15,000 frames is not even a full day's output today, but it was an impressive accomplishment for that time.

In 1862, William Beecher retired from the business, and Robert H. Cole became head of the firm. Two years later, on April 2, 1864, Cole hired 18-year-old George Washington Wells, another Connecticut farm boy. Wells was to have an influence on the American optical industry as profound as that of Beecher himself.

George Wells' great value to the firm was his ability to systematize production and reduce



costs. Through his inventive genius, output began to soar.

Wells became so important to the Company that when he decided to go into business for himself in 1869, he was offered a membership in the firm to persuade him to stay on.

He accepted, and the business was reorganized to become the American Optical Company, a name it has retained ever since.

For nine decades, the name of Wells was to be synonymous with American Optical, as father, sons, and grandsons guided the Company destinies.

Much of the work during the Wells stewardship was of a pioneering nature. George Wells was the first man to apply modern production methods to the manufacture of spectacles. When there were no machines to do a job, AO invented them. When there were no techniques for an operation, AO created them, and kept improving them.

### **Expansion**

An idea of this creative ferment, this constant striving to "do it better," may be had from the fact that patents granted to AO employees over the years number approximately 2,000.

Expansion continued, and, in the middle 1880's, the Company built its own lens factory. Until then, the firm had manufactured only frames, importing its lenses from Europe, chiefly from Holland. This trade, however, had been curtailed by the Civil War, and the Company saw the advantage of assuring its own supply of quality-controlled lenses.

AO went to work and devised new methods and equipment, some of which are still the basis for lens manufacture everywhere. In time, American Optical was to become the leading lens



manufacturer in the world, in both quantity and quality.

AO refined and perfected its lens production to a point where the tolerance is held to within three millionths of an inch — 1,500 times finer than a human hair!

As lens manufacture was being perfected, the Company turned to other fields. At the turn of the century, AO began *protecting* eyes as well as correcting them.

A Chicago optician became upset by the number of artificial eyes he was called on to fit for men injured in industrial accidents. He called on AO to develop a protective device for workers' eyes.

Result: pioneering safety goggles with heavy glass lenses to block flying chips. A Chicago foundry ordered six dozen pairs, and in the first *month* of use they were credited with saving 20 eyes.

These first crude goggles led to the eventual development of the Company as the world's leading supplier of protective devices for the industrial worker.

After its expansion into lens-making and safety goggles, the Company began to see new needs. In the early days of lens manufacture, trial and error was the only way to determine the right lens for a person. One story has it that King Charles II of England had 6,000 lenses made for him by a French optician before finding one that helped his myopic astigmatism.

At one time, AO sold lenses marked simply "40-50" — meaning that they were intended for people in that age bracket. Later, numbers were used to indicate the focal point; for example, a Number 13 lens was one that was focused on a point 13 inches from the wearer's eye.



As the science of refraction developed, so did the need for instruments to measure lenses. AO filled this need by designing and developing ophthalmic instruments during the early 1900's.

### **A Philosophy Emerges**

During AO's expansion into these new fields — lens making, industrial safety, instrumentation — the underlying philosophy of the modern Company began to emerge.

From initial concentration on products needed for better vision — and the protection of that faculty — AO began to see that the full scope of its task was nothing less than the extension and protection of *all* the physical senses of Man.

As the growth of the Company continued apace, sales spread over the world. In 1904, an important British customer put in a rush order for ten gross of AO lenses. Southbridge was a long way from England in those days, and even an order by cable entailed at least a ten days' wait.

Because the customer really wanted the AO lenses, he waited the necessary time. But the incident convinced the Company that overseas business had become important enough to warrant a permanent branch office in Europe. A London office was established in 1905, and a manufacturing plant was added in 1917.

The Company set up a separate Export Sales Department in 1912. Today the Company's International Division controls a vast network of branches, plants, and representatives. There are manufacturing plants in Canada, Great Britain, and Brazil, and there are more than 100 franchised distributors overseas.

After guiding AO through a great period of expansion, George Washington Wells died in 1912. The next year, his son Channing, who had spent ten years in the Company shops learning



the business, took over as president. He held the office for 23 years, being ably assisted by his two brothers, Albert B. and Joel Cheney Wells.

### **New Concepts**

In 1922, the three brothers planned what was to be a marketing revolution in the ophthalmic field. AO until that time had been a manufacturer exclusively, and had distributed its products to a few large jobbers who, in turn, sold them to professional men.

However, by 1922 the product line had become so diverse that the brothers thought some better method had to be found. They proceeded to put together a nation-wide distribution system that is still the basis of the Company's ophthalmic organization today.

After lengthy study, the Company absorbed several jobber firms in 1923. These firms had outlets which became the first AO branch offices. The new system worked, and sales volume grew over the years. AO now has over 280 branches in the United States and Canada.

Another revolution was worked in 1930 — a style revolution. In that year, AO took the "owl-ish look" forever out of eyeglasses by designing the modern type of frame with the temples hinged at the top rather than half-way down the sides.

During this time, AO's instrument operation continued to grow. The modern Instrument Division may be dated from 1935, when the Spencer Lens Company of Buffalo, N. Y., was acquired. Whereas AO had pioneered in ophthalmic instruments, Spencer had concentrated on precision scientific instruments. In fact, Charles Spencer, founder of the Buffalo firm, had made the first American microscope back in 1846.



During World War II, a new AO service was born. German craftsmen had been the chief makers of artificial eyes up until then, but the war cut off this supply.

AO developed a plastic eye that was markedly superior to previous types, and is today the leading maker of artificial plastic eyes (Monoplex). It is estimated that about one in 500 persons wears an artificial eye.

Once AO was called on to make a huge plastic eye for a champion bull who had lost his own in a goring. With his normal appearance restored by his new eye — undoubtedly the largest ever made — the bull was able to resume his blue ribbon career.

After the war, in 1949, George B. Wells, the last member of the family to head the firm, retired. He was the son of Albert B., and the grandson of George Washington Wells. In 1951, the Wells family disposed of all its interests in the Company.

Thus did the Wellses bow out after incalculable contributions to the optical industry, 87 years after Robert Cole put George Washington Wells on the payroll.

### **Today**

American Optical Company is now a publicly-owned enterprise, with its shares listed on the New York Stock Exchange.

Today, AO is a far cry from the modest shop where William Beecher painstakingly produced simple silver spectacle frames.

Now, a patient may wait in a doctor's reception room in which every piece of furniture is from AO's American Beauty line. Every instrument used by the doctor in examining the patient's eyes may be from AO factories. The frames, lenses, screws, and even the *case* for the glasses



may all be AO products. All of the work done on these glasses in the laboratory may be done on AO machines with AO tools.

From the small beginning in goggles for protecting workers' eyes, AO's Safety Division has grown to include products to protect the entire man from head to foot. Quality has kept pace with diversity. The modern counterparts of the crude early goggles are made of armorplate glass so tough that it will not break in drop-ball tests using an ounce-and-a-half steel ball released from a height of 50 inches.

A busy and versatile modern worker wearing AO protective equipment could conceivably be carrying out an extraordinarily hazardous assignment in complete safety and comfort while exposed to flying metal chips and hot sparks (deflected by an AO faceshield), falling objects (impact absorbed by an AO Dura-Guard safety hat), intense radiant heat (reflected by an AO aluminized faceshield), dangerous dust and fumes (filtered by an AO respirator), excruciating noise (shut out by AO Hear-Guards, which let in normal conversation), and molten metal splash of 3,000° F. (intercepted by AO Thermogarb clothing.)

A surgical passion for perfection is seen throughout the manufacture of AO lenses. Sand less than 99.985 per cent pure (with more than three ounces of iron oxide per *ton*) is rejected as not good enough for a fine AO lens. The rods used to stir the molten glass are coated with *platinum*, inert in glass, so that no infinitesimal mote of foreign matter can contaminate the "batch." Each tiny corundum particle used in grinding goes through a grading process to ensure that it is within one five-thousandth of an inch of the size of every other particle.



AO instruments today carry out myriad complicated tasks in many fields. AO telescopes extend man's sight far into the universe, and AO microscopes let him probe deeply into the hidden world around him. A space-age rocket tracker enables him to distinguish objects only three inches apart at a distance of 20 miles.

Old King Charles and his French optician would be amazed at AO's modern instruments for selecting the right lens for an eye condition. An AO Rx Master Phoropter can duplicate 80 quadrillion different lenses for prescriptions. That is 80 followed by 15 zeros. That many lenses, if made, would cover the land mass of six continents.

A dozen plants in the United States develop and produce these and other products to extend and protect man's physical senses.

Other than the main factories at Southbridge, where metal frames, lenses, cases and furniture are manufactured, there are plants at Brattleboro, Vermont (special lenses, including those for safety equipment); Keene, New Hampshire (precision instruments and devices); Chelsea, Massachusetts (sun glasses); Frederick, Maryland (plastic frames), and Putnam, Connecticut (safety products).

The J.W. Fecker Division in Pittsburgh, Pennsylvania, develops sophisticated optical systems and space-age equipment such as astronomical instruments and satellite and missile tracking devices. Another Fecker plant is at Santa Monica, California.

The main instrument plant is in Buffalo, New York. Here a complete range of ophthalmic instruments is produced, as well as microscopes and other scientific instruments. Here, too, the Company is making important devices in the



electronics field.

One of the many remarkable instruments made at Buffalo is the AO High Temperature Microscope which permits scientists to peer into raging infernos and photograph what is going on at temperatures as high as 4,700° F. Another Buffalo product is a knife sharpener that turns out an edge capable of making slices so thin that over a quarter million of them would have to be piled up before they would be an inch high. Such a knife is not for the housewife, of course, but for the scientist who slices biological tissue for examination under the microscope.

AO's Buffalo plant turns out instruments useful in the classroom as well as in the laboratory. And teaching microscopes from AO are helping many a budding doctor or scientist learn his profession.

Of course, only a few representative products turned out by AO's American plants have been mentioned here. And, as noted before, AO has other plants abroad.

### **Tomorrow**

At Southbridge, the Company has the best research center in the optical industry, with over 100 scientists and technicians. Much of the work done there is on pure research which someday may be of untold benefit to man. A development of great potential and many amazing applications is Fiber Optics.

Fiber Optics deals with hair-like glass threads so fine that it takes as many as a quarter million to make a bundle half an inch in diameter.

When these glass threads are gathered together into "ropes," they will carry light and even images around corners and in and out of inaccessible places, performing tasks hitherto considered impossible.



One application is a device which instantly alerts a pilot to engine fire. Another use is for coding and decoding signatures. Medical instruments of great sensitivity and versatility may be made with fiber optics. An AO fiber optics process now makes it possible to make photographic prints directly from the face of a cathode ray tube without using a camera — at speeds up to 50 times faster than heretofore possible.

A new field now being explored by AO is that of optical masers, or lasers, which some day may revolutionize communications.

A 10-acre research park at Briarcliff Manor, N.Y., is set aside for research in this field, the responsibility of Laser, Inc., an AO subsidiary.

The name “laser” comes from the initial letters of “light amplification by stimulated emission of radiation.” Basically, a laser is a device for amplifying electromagnetic waves such as light.

In time, use of such a device may make it possible to use light beams for carrying enormous amounts of information such as telephone calls, television programs and data messages. Also, sun-powered lasers may permit the use of direct sunlight as a power source.

Out of AO's research centers are coming a stream of ideas that will benefit the people of the world, and that will enable AO to develop further its goal of extending and protecting the physical senses of man.

This development of tomorrow rests on the same foundation as did that of yesterday. The growth of the American Optical Company has been possible only because in each succeeding generation the men of AO have been true to the spirit of William Beecher, the spirit summed up in the words:

“I can do it better.”



*Quick Facts  
about  
American Optical*

**THEN (1833)**

**EMPLOYEES:** 4

**FACILITIES:** A small village shop.

**PRODUCTS:** One—silver spectacles.

**MARKET:** New England.

**NET SALES:** Unknown.

**NOW**

**EMPLOYEES:** Approx. 10,000.

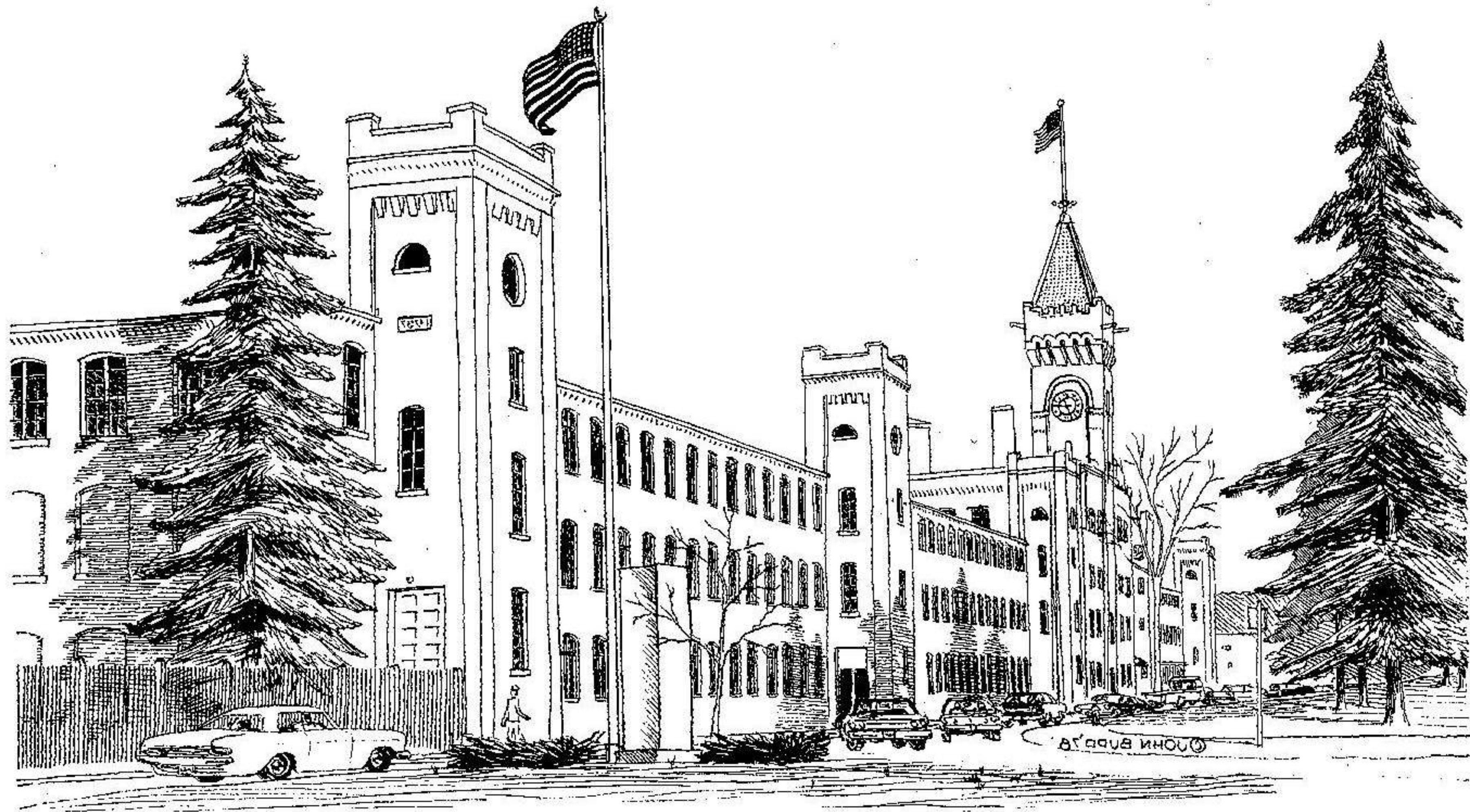
**FACILITIES:** 13 plants and approximately 300 branches the world over.

**PRODUCTS:** More than 2,000—from spectacles to missile trackers—to extend and protect the physical senses of man.

**MARKET:** The World.

**NET SALES:** Nearly \$100,000,000.







American Optical Company, Southbridge, Massachusetts

Founded in 1833 by William Beecher, a Southbridge jeweler who first made silver frames for eyeglasses and later made them of steel, Incorporated in 1869 and affectionately known as the AO, it has grown from four to over 3,600 employees in Southbridge. The main office building shown with the flag on the tower was built in 1902.

Published by Center Farm Publishing Co., Eastford, Connecticut

AO