

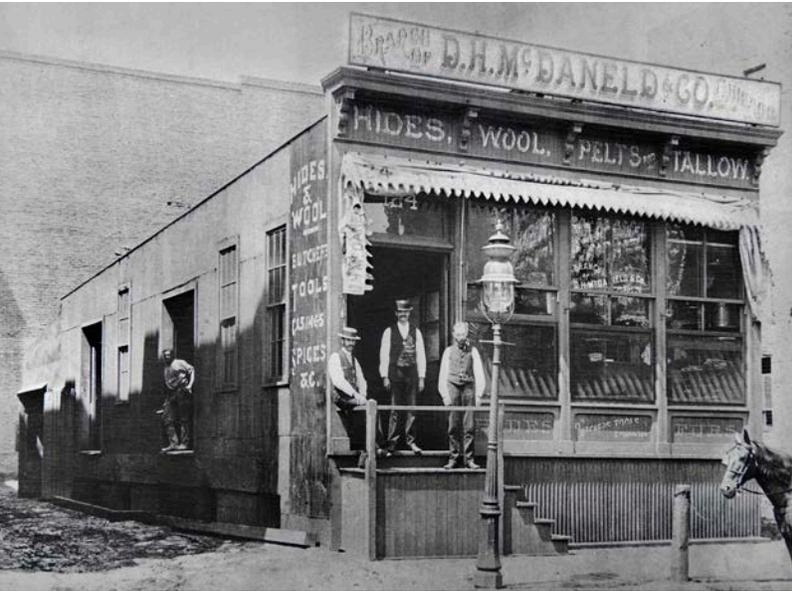


From Butcher Tools to the World's Innovative Research Partner  
**The Percival Scientific, Inc. Story**



*Helping Create Better Science*

**By exceeding ever-changing customer needs — first in the Midwest and now throughout the world — Percival Scientific, Inc. today is a leader in the design and manufacture of controlled environment chambers.**



The first storefront of the D.H. McDanel Company in 1886.

## **C.L. Percival Company**

The company's roots date back to 1886, when Iowa had been a state for only 40 years, and central Iowa's economy was beginning to diversify from agriculture-based to a mix of business, industry and agriculture. It wasn't until May of 1901 that Articles of Incorporation officially created C. L. Percival Company, originally a part of Illinois-based D. H. McDanel Company, and made Des Moines its principal place of business. From a 20 x 50-foot space in a one-story building on Second Street in Des Moines, C. L. Percival dealt in tools and equipment for butchers, furs, sheep pelts and tallows. In the 1920s they began operating a rendering plant and had offices in a building at 11th and Cherry Streets in Des Moines.

## **Pioneering Commercial Refrigeration Firm**

With the need for refrigeration to best preserve some of Percival's products, a 1901 patent for a forced-air and ice-cooled counter-refrigerator made C. L. Percival Co. a "pioneering Des Moines commercial refrigeration firm." The cabinet provided a "means for exhibiting refrigerated meat, vegetables, or fruit to the view of prospective purchasers and customers and at the same time keep said meat, vegetables, or fruit under the influence of the refrigerating medium and protected from dust, air, and microbes." In 1917, a patented "Percival Refrigerator Show Case" in quarter-sawn oak featured a long, low cabinet with a center ice compartment that cooled displayed meats in one end and fruits and vegetables in the opposite end. It was insulated with granulated cork, with glass three times as thick as standard, and featured mirrors on the back wall to give "a pleasing effect from (the) customer's side." The company went on to manufacture a complete line of refrigerated display cabinets for many decades, and in January of 1941, moved its production to a new 24,000-square-foot facility in Boone "to affect a greater manufacturing and operating economy."



C.L. Percival Company in 1906.



The 24,000 square-foot facility in Boone, Iowa in 1941.

## The Challenging Years

The early World War II years proved difficult for C.L. Percival Company. Due to tire rationing, company president and manager Worth H. Percival quit commuting daily and moved from his Des Moines home into a room in Boone. Salaries and government contracts were frozen. Pensions were reduced. Some of the company's Boone manufacturing equipment was repurposed to make ammunition boxes. In 1943, half of the 136 pieces of refrigerator equipment on hand a year earlier had been sold. As soon as government contracts began again, the company's board members contracted with a gentleman to produce a milk cabinet. Soon shipments were being made to practically every state. In 1949, the line of butcher supplies was dropped and full-time manufacturing of commercial refrigerators began.

## The First Self-Service Refrigerated Food Case

The post-war years also had their challenges as Percival competed with other manufacturers and worked to keep production costs in line. In 1950, Vice President A.J. Maas received a patent for a self-service refrigerated food case for meat or vegetables that included a refrigeration system for recirculating chilled air. In patent materials Maas wrote, "One of the objects of the present invention is to provide in a food case of the type described, means for entraining fresh air with its inherent humidity with the recirculating air at such point and in such manner that it passes through the coil and is chilled immediately prior to its discharge into the upper compartment, whereby the benefits of its humidity are imparted to the contents of the upper compartment." Advertising for the food case called it "Not just an improvement. An entirely new principle of air circulation in food refrigeration... The New Way: Percival builds a Return Air Flue in the cabinet behind and extended above the coils. Cold air from coils flows forward and downward. Warmed air flows back and up through the flue, and again into coils. Air thus circulates continuously through the case, with minimum loss of cold air." Savings of up to 30 percent in operating costs were claimed with the new flue capabilities.



Self-service food case

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***Not just an improvement. An entirely new principle of air circulation in food refrigeration...***

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First walk-in chamber

## First Controlled Environment for Plants

And with challenges came an opportunity that eventually would change the course of the company. In the early 1950's, at the request of Iowa State University, Percival built its first chamber with a controlled environment for growing plants. This led to its initial controlled environment product line, the I-35 series of refrigerated chambers. Yet research and development of chambers with controlled environments remained a sideline for the firm for nearly 40 years, as the company kept commercial display equipment its primary focus.

With its sights on commercial display equipment, the company continued to provide chest-type and meat counter equipment necessary for small grocery stores, delicatessens and neighborhood “mom and pop” businesses. Orders continued for those products, as well as frozen food cabinets, milk and dairy reach-in cabinets, and even florist cases. Wine cases were being made and shipped to California. But as convenience store chains became popular and corner grocery locations disappeared, sales of Percival's refrigerated commercial display equipment — and its cash flow from equipment financing — dwindled.

## Controlled Environment Chambers Sales Soar

By 1981, production of controlled environment chambers had grown to nearly half of the company's business.

The Agronomy Department and College of Agriculture at Iowa State University, which had nearly 100 Percival chambers in use at that time, enjoyed a reputation that encircled the globe. As professors and students through the years shared research findings with national and international peers, the quality and innovation behind the Percival name became known. James Curvin, the company's general manager, said in 1988 that display cabinet sales were “average,” but he described sales of environment-controlled chambers as “very good.”

*The quality and innovation behind the Percival name became known*

## New Owners Chart New Course

The company changed ownership through the years, but its purchase in 1988 by LHC, a Barrington, IL, holding company representing a trio of owners, would solidify its present day path. In 1989, with the no potential for growth existing in commercial refrigeration, Percival ceased manufacturing its commercial display equipment, and focused its resources entirely on growing its controlled environment expertise. The company name was changed to Percival Scientific, Incorporated on December 31, 1992. In 1993, Gary Wheelock, current company president who served as president and sales manager at the time, attended Biotechnica in Hanover, Germany, to identify a European distributor for Percival's chambers and began a relationship with CLF Plant Climatics that continues today.



**Today, Percival manufactures more than 100 different models of plant growth chambers, biological incubators, plant tissue culture chambers and many special application chambers..**

## Pushing the Technology Envelope

When Percival Scientific's I-36 series of chambers premiered in 1995, the company's commitment to providing plant growth chambers was solidified. In that year, Percival began designing and manufacturing an Arabidopsis chamber. Arabidopsis is a popular organism in plant biology and genetics. The mid-1990s also saw an upgrade in Percival's chamber technology. The company introduced the Intellus control system platform, built the first tissue culture chambers, and partnered to produce a plant research chamber with an LED lighting system for terrestrial agricultural and scientific application on NASA's space shuttle. The company saw itself as "setting the standard of excellence for the environmental control industry." Percival Scientific had transitioned from being an incubator company into a leader in the design and manufacture of controlled environment chambers. Before the 1990s ended, the company was producing more than 40 different models of plant growth chambers, biological incubators and its exclusive dew chambers. It also had begun providing chamber accessories and customizing its designs to meet specific customer needs.



Percival's PGC-10 Model



All Percival product is proudly made in the current 60,000 square-foot production facility in Perry, Iowa.

## New Home. New Facility

With the company's growth through the 1990's, Percival outgrew its Boone location and moved to Perry, Iowa, just 40 miles northeast of the state capitol. Perry provided a rich supply of professionals, engineers and factory workers.

In May of 2000, the company moved to a newly constructed industrial park warehouse in Perry, then doubled the facility's size to 60,000 square-feet and created the state-of-the-art structure it today calls home. That year it received the Iowa Area Development Group's Venture Award.

Percival Scientific's headquarters encompass all engineering, design, fabrication and construction of

the extensive product line, allowing the company to maintain complete control of the manufacturing process and the special needs of its clients for reliable plant growth chambers, biological incubators and unique application research chambers. Percival manufactures all of its controlled chambers on a build-to-order basis, typically customizing within the framework of a series of standard models. Frequently, chambers for export are built with unique combinations of lamp banks, humidifiers and other components. This allows them to be used for multiple types of experiments at the same time. The company's environmental control rooms can be built to any size or configuration.



Water-cooled environmental control rooms at Cornell University.

## Industry Partners

Percival chambers have become the preferred choice among universities, colleges, government institutions and leading biotechnology businesses both domestically and internationally.

### Cornell University

Percival partnered with Cornell University to design and manufacture 22 growth chambers employing an advanced technological use of lake water to regulate chamber temperature without sacrificing performance.

### Iowa State University

Percival's nearly 70-year relationship with Iowa State University continues. Percival is currently partnering with Iowa State University on a project funded by the National Science Foundation. Faculty members are developing a data collection facility, Enviratron, which utilizes a roving robotic arm to gather data on early plant growth under different environmental conditions, thus serving to accelerate climate change research.

### U.S. Department of Agriculture

Percival Scientific also developed WeatherEze chamber control software in 2009, in a cooperative agreement with the U.S. Department of Agriculture-Agricultural Research Service, to allow a chamber to have real-time

or simulated environment duplication of the temperature, relative humidity and solar lighting for any global location.



## Helping Create Better Science Around The World

Today, Percival manufactures more than 100 different models of plant growth chambers, biological incubators, plant tissue culture chambers and many special application chambers. The company's products are found in all 50 states and in more than 79 countries around the world. It has distributor relationships throughout the globe and now has business partners on every continent, with the exception of Antarctica.

Products shipped to all 50 states and to 79 countries



*Helping You Create Better Science*

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