

Contents

Introduction	4
Chapter 1 History of milk and dairy operations.....	6
Chapter 2 Creameries and dairy processing plants	20
Chapter 3 Railroad-owned milk cars	36
Chapter 4 Milk tank cars and containers.....	50
Chapter 5 Milk train operations	65
Chapter 6 Milk and dairy trucks.....	89
Bibliography	95





CHAPTER ONE

History of milk and dairy operations

Many railroads operated solid trains of milk cars or trains that were mainly milk with a coach or two at the rear. Erie train No. 9 totes a string of empty milk cars near Lanesboro Junction, Pa., in the 1940s. They're on their way toward Elmira for reloading at various local creameries along the line. Two of Borden's distinctive "butter dish" tank cars are in the consist. *Wayne Brumbaugh*

Milk was an important, high-priority traffic source for many railroads into the 1950s. Railroads carried milk from creameries and small collection stations in rural areas to bottling and processing plants in large cities. In some areas, especially in the Northeast, this was done by dedicated trains, **1**. In addition, railroads carried—and still carry—finished dairy products, namely butter, condensed and powdered milk, and cheese.

plagued by dramatic price swings, caused by many factors including competition among competing cooperatives, alleged price fixing by large dairy companies, and seasonal production swings (more milk in spring, less in fall). The core problem is that farmers have a daily production that must be sold; it can't simply be stored like grain. Farmers can't simply produce less milk if prices drop or more milk if demand increases—they're tied to their herds.

As the Depression started, demand dropped, and producers lobbied for the government to regulate prices. This initially resulted in the Agricultural Adjustment Act of 1933, which led to raising and leveling prices for milk and other agricultural products. It was eventually struck down by the Supreme Court, but a revised version, the Agricultural Marketing Agreement Act of 1937, took over. The goal was to ensure an adequate milk supply while providing a fair price for producers. It sets a minimum price that processors must pay to farmers and cooperatives (which is adjusted by region and is based mainly on supply and demand, not the cost of production).

Part of this was the government buying excess milk and providing it free or at reduced cost to children in schools across the country (followed by subsidized lunches, through the National School Lunch Act in 1946). This did double duty, providing nutritious meals to children in need and providing a ready market for milk.

Many small creameries did not survive the Depression. In many regions, there were fewer than half the creameries in 1940 as in the late 1920s. As demand increased again in the 1940s, surviving creameries continued to grow and improve efficiency. Dairy herds, which had shrunk in the 1930s, also began expanding as electricity came to most rural areas, with milking machines and bulk tanks made processes more efficient.

Butter and other milk products

Along with market milk (milk intended for resale as such), a great

Milk and Dairy Timeline

- 1611—First cows arrive in North America, to Jamestown Colony
- 1842—First regular shipment of milk by rail (Orange County to New York City)
- 1851—First wholesale ice-cream plant (Baltimore; owned by Jacob Fussell)
- 1856—First patent for condensed milk (Borden's); production began in 1857
- 1856—First commercial butter factory
- 1884—Milk bottle first appears
- 1886—Automatic bottling/capping machine appears
- 1888—First dedicated milk railcars placed in service (Boston & Maine)
- 1895—First pasteurization of commercial milk
- 1903—Modern milking machine introduced by Alexander Gillies
- 1905—First milk-drying plant opens (Fayetteville, N.Y.)
- 1908—Chicago adopts first pasteurization law
- 1911—Rotary bottle filling/capping machine speeds operation
- 1914—First bulk (tank) trucks for milk
- 1919—First homogenized milk sold commercially (in Connecticut)
- 1920—5 million dairy farms in U.S.; 55,000 milking machines
- 1922—First production bulk (tank) railcars placed in service
- 1930—93 percent of milk into Boston arrives by rail
- 1930—13 percent of U.S. farms have electricity
- 1931—Milk rail traffic peaks
- 1932—Cardboard (coated) milk cartons introduced
- 1935—Borden's "butter dish" tank cars first appear
- 1936—Flatcars with detachable milk tanks begin appearing
- 1938—Bulk tanks began appearing at farms, replacing cans
- 1940—70 percent of milk is home-delivered
- 1944—4.5 million dairy farms; 685,000 milking machines
- 1946—Truman signs National School Lunch Act
- 1948—Ultra-high-temperature pasteurization begins
- 1948—Paper milk cartons begin appearing
- 1964—Plastic milk bottles begin appearing
- 1972—Last rail milk operation (on Boston & Maine into Boston)



The Babcock test was developed in the 1890s. It is a simple, accurate method of measuring butterfat content by adding sulfuric acid to a milk sample. *Russell Lee, Library of Congress*



27

Some butter is still being shipped by rail—in this case, at the Dairy Farmers of America creamery in Winthrop, Minn. The cars are Union Pacific mechanical reefers. *Jeff Wilson*



28

A truck is being loaded at the Kraft-Phenix cheese plant in Beaver Dam, Wis., which still had a rail spur in this 1940s photo. The plant was built in 1922 to make cream cheese. *Jeff Wilson collection*



29

Condenseries, which make evaporated or condensed milk, tend to be large buildings. The Helvetia (Pet) plant at Delta, Ohio, had a trio of Merchants Despatch refrigerator cars on its rail spur in the early 1900s. *Jeff Wilson collection*

baby formula, ice cream, baked goods, and other food products.

Dried (or powdered) milk is another way of preserving milk, and it's easier to store and ship than evaporated or condensed milk. Most common in early production was drying the skim milk left over from the buttermaking process (and dried whey from cheese), but there's also dried whole milk and buttermilk.

Drum drying was a common early production method, where milk is applied as a thin film to a heated rotating drum. The moisture flashes off and the dried milk is then scraped off the drum. This method could scorch

Larger tanks

The system worked well, but by 1939 the move was to larger tanks (3,000- and 4,000 gallons), which would quickly become the standard. These larger tanks had additional features compared to the early versions. Along with discharge pipes and plumbing, they included a thermometer, internal agitator, and manway. The initial 4,000-gallon tank, built by Glasco Products Inc., was 20 feet long and had a light weight of 7,300 pounds, making its loaded weight about 41,700 pounds (just over 20 tons).

With these, tanks were now positioned lengthwise on flatcars (up to two to a car), **24**. This time MTI worked with the Pennsylvania Railroad to modify a 70-ton steel flatcar at the railroad's Wilmington, Del., shops. The resulting cars carried MTIX reporting marks. These cars had 10 transverse rails (five per tank) with locking devices at the end of each rail. The significantly longer tanks required semi trailers instead of the straight-chassis trucks of the original design.

The new arrangement required the truck to park parallel to the car for transfer. This simplified truck



21

One of the GPEX car's tanks is visible behind the worker at left (an access window is just to the left of his head). The driver has secured the hose to the inlet valve of the truck tank. *Arthur Rothstein, Library of Congress*



22

A pair of bell-shaped Borden containers on a National Car Co. flatcar are tucked behind the Rutland engine at Alburgh, Vt., in October 1951. *Jim Shaughnessy*