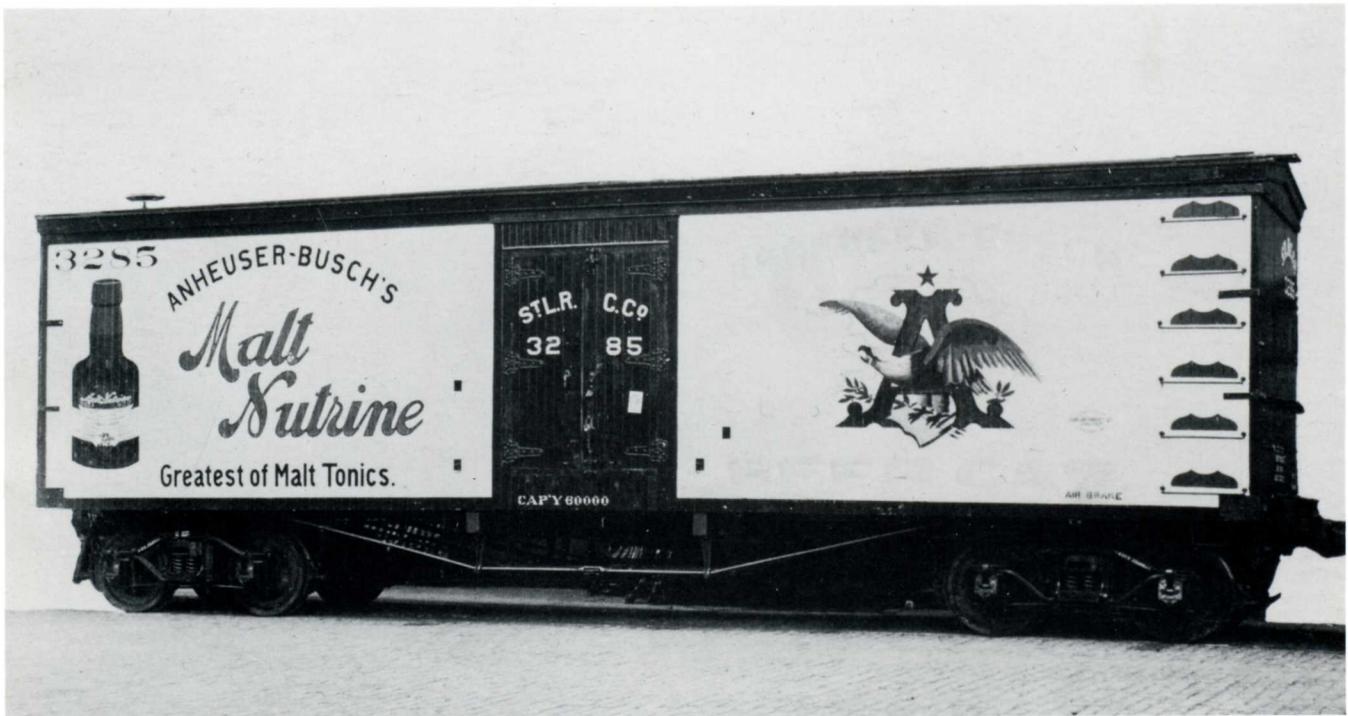


FREIGHT CARS

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Journal



REEFERS:

A Short History of Refrigerator Cars in America 1840-1984

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by William K. Viekman

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FRONT COVER PHOTO

St. Louis Refrigerator Car Co 3285 is an early 1900's "billboard" reefer. The lettering on the right is light because it was painted in light yellow-gold. *Courtesy St. Louis Refrigerator Car Co.*

A REEFER NAMED RASKIN

The railroad reefer, that superlative freight car, is undergoing great and exciting changes.

While today's rail-related refrigerator technology may be holding its own, an old order is fading fast. In fact, one must search the *Official Railway Equipment Register* with diligence to locate those few cars still listed as having "ice bunkers." Consider: Not *one* active wood-sided car remains in revenue service today.

Gone are the fast freights whose cars were marked Central West Refrigerator Despatch (CWTX), Wilson Packing (WCLX); and finished are the National Car Co (NX), Packers Car Line (PCX), and the once-mighty Railway Express Agency (REX) which, as recently as 1970 owned 1,463 refrigerator cars. Hail and farewell to these, or, in the language of the Rochester Independent Packer (RIPX)... Rest in Peace.

Today's picture was forcefully brought home on November 30, 1983, when Amtrak's eastbound *Lake Shore Limited*

(#48) began slowing down for its 7:29 a.m. Syracuse, N. Y., stop. Suddenly, and it was the merest glimpse from the dining car window, there appeared the steel shell of an old reefer car in Marley's Scrap Metal Yard. Downward rust marks from the roof gave the deceiving impression of a wood-side/steel-end car, but it wasn't so.

The orange body was marked Raskin Packing Co, Inc, Siouxland;s Fine Beef, Sioux City, Iowa, URTX 60646. Marley's gracious President Weltman had been holding the unit, hoping that some historical group would come by to rescue it.

The balance of that journey to New York City was filled with questions about the reefer car's quiet heritage: Who built the last wooden refrigerator car in America? Whatever happened to those great packing house fleets? Did interurban lines own reefer cars? How did rail refrigeration begin?....Where is it headed?



URTX 60646. Raskin Packing Co. Marley's Scrap Metal Yard, Syracuse, NY, 1983.

WHEN ICE MET BOXCAR

In 1841 a New York & Erie agent at Chester, N.Y. urged local dairy people to ship milk to New York City. The farmers mocked him to scorn. Everyone *knew* that milk just wasn't sent more than 50 miles, particularly in summer, and that the metropolis was over 55 miles away. A few did try and, sure enough, the stuff spoiled. Then came Jacob Vail of Goshen, N.Y. (about 60 Erie miles from Gotham), who cool-coil chilled his milk with ice in transit. When pre-cooling in springhouses was added to this, a transport revolution took place.

In 1842 a Boston magazine, *The American Traveler*, announced that "refrigerator" cars were being built for the Western Railroad of Massachusetts (Later Boston & Albany, now Conrail), yet no service record on them has ever surfaced. While rumor make thin historical soup, this does seem to be the earliest mention of such vehicles.

Better documented was the car assembled and operated by the Northern Railroad of New York (later part of the Rutland). It was a boxcar of the day, fitted with a second wall, floor and roof, with plenteous sawdust filling spaces between.

On July 1, 1851, this iced-up "reefer" carried eight tons of butter to Boston, the daring farmer realizing a bodacious \$800.00 over local market prices. When word of such untold wealth hit the hills, the Northern built 50 more cars and the Butter Train went Hub-ward on Mondays.

The Pennsylvania Railroad, too, experimented with the technology and these simple, "fixed up" vehicles soon served in the Civil War. Thereafter, in 1865, Parker Earle of Cabden, Illinois shipped produce under refrigeration. More importantly, dressed beef from Chicago moved over the Michigan Central in boxcars crudely fitted with center bunkers. Once removed from the ice, however, everything spoiled rapidly, except in freezing weather.

Enter now a Mr. Hammond of Detroit, who placed ice bunkers at car *ends*. This permitted the transportation of dressed beef in warm weather and awoke other innovative gentlemen in Detroit, home of the developing refrigerator car. Records reveal that J.B. Sutherland was granted what was probably the first reefer car patent, On November 7, 1867. During that same twelve-month period, 35-year old Philip Danforth Armour of Stockbridge, N.Y. set up his Armour and Company in Chicago.

In 1868 Detroit D.W. Davis improved on Sutherland's car and won wide recognition. Some say that the Davis reefer marked the *real* beginning of the dressed beef industry.

Remember the relevant picture: Slaughtering in the 1860's was chiefly a local industry and western regions supplied the east with *livestock*. There were vast yards in cities like Cleveland, Buffalo, Albany and, yes, in Boston, where cattle

in transit were fed...then watered *very generously*. From this came Wall Street's famed expression, "Watered stock." Even so, the 1,000 pound steer ultimately dressed out at a scandalous 550 pounds.

Then came a better process, featuring air currents through ice bunkers. Coolness sank to the car floor, permitting natural circulation. When racks were later installed to keep beef carcasses from swaying (and causing accidents, said the railroads), the basic packer-owned reefer car was home free.

Into these birth pangs came the spike-tapping of 1869 at Promotory Summit, changing everything. By the mid-1870's, Chicago produce dealer F.A. Thomas saw greater potential for railroad refrigeration. Acquiring a car line, he began to carry California fruit to the Windy City.

Success led to his partnership with Carlton B. Hutchins, yet another Reefer City (Detroit) inventor. Now, California Fruit Transportation Company (and) C.B. Hutchins Patent appeared together on the Thomas cars. With no competition developing at first, the partners earned enormous profits.

Back east, meanwhile, the first shipment of peaches moved from Georgia to New York in 1877. Shortly before that, in 1875, 36-year-old Gustavus Franklin Swift of Cape Cod, arrived in Chicago. Ten years later he organized Swift & Company (April 1, 1885), and went after car supply. Asking various railroads to build beef-hauling freighters, he was curtly rebuffed. Such cars were too specialized, he was told, so Gus went out and built his own. The era of the great packer fleets had arrived.

It was during this period that the first shipment of transcontinental deciduous fruit was loaded into a Central Pacific car at Vaccaville, CA for Erie's Jersey City Terminal. The 806 boxes of plums, apricots and peaches arrived June 28, 1887. For some time thereafter, one car of oranges arrived weekly, a great luxury for Easterners.

Alas, the 1880's also brought the Great Reefer War, a three-way conflict of no small pretensions. After years of supremacy, Thomas and Hutchins were challenged by The Goodell Line and the continental Fruit Express Company. Armour interests jumped into the fray and the resulting leverage drove Thomas to the wall of no return. When the smoke cleared, Goodell was absorbed by Armour Car Lines, while California Fruit Transportation became part of the Swift Car empire.

As if this wasn't enough, a fierce battle flared between the railroads and the ever-more-powerful packers. The former championed their now-threatened stock cars, while the packers clearly (and rightly) saw success in ice-filled end-bunkers. Rates plummeted, tempers soared, men failed...but others built empires.

Bitterness? During one spell a customer could ship a carload of steers from uttermost Kansas to Chicago for *one silver dollar!* More: if waybilled beyond to New York, the eastern portion was *GRATIS!* Here was a no-holds-barred conflict among giants....but the reefer car triumphed.

Today the stock car has almost totally vanished from the U.S. rails. As of July, 1984, Union Pacific had 237 triple-deckers, Moyer Packing of Souderton, PA owned 16 cattle-loading double-deckers and Ortner Freight Car Co had an experimental Steer Palace car, OFCX 303001 (see *Trains* July, 1985, p 15), designed to turn the tide.

Once peace was restored, the railroads began competing for the business of hauling packer-built cars. Shippers gleefully responded by playing one road against the other, obtaining favorable treatment, rebates and other concessions in the process. These goodies were later killed by restrictive legislation.

By 1900 both railroad and private refrigerator fleets were omnipresent and cars of the Empire Line; the respective Red, White and Blue Lines; The George D. Tracy Co; The Star Union Line and the Combined Refrigerator & Ventilator Company, among others, passed in the night.

During the 1880-1910 period the express reefer also came into its own. While California wine and Milwaukee beer could move in freight service, perishable milk (at an ideal temperature of 35° F) traveled on varnish runs. Boston & Maine was the leading milk hauler in the nation, installing vehicles specifically *built* for that traffic after 1888. By 1900 B&M had over 185 express reefers on its roster. These boasted passenger trucks and steam lines, but seldom ice bunkers.

That carrier also moved a significant fleet of privately owned dairy cars: H.P. Hood; Whiting Milk Co; Sheffield Dairies; Brookside Milk & Cream; United Farmers Cooperative Creamery; Bordens; and Herlihy Brothers, some as billboard express reefers. Hood's GPEX steel cars had two glass-lined tanks per vehicle. When the creamery traffic dried up, they carried orange juice.

An advancing reefer technology then met the demands of World War I, when federalized railroads and private packers *had* to perform. Following that conflict, furthermore, faster trains began to eliminate costly icing stations. A 1919 test shipment in a 40-foot reefer made the 2,470 mile trip from Stockton, CA to Chicago via the Santa Fe in nine days, nine hours. A total of 15,885 pounds of ice had kept the car cooled across the American west. By 1940, fruit was carried from the Golden State clear to New York on a similar schedule (1985's Salad Bowl Express reached Gotham early on the *sixth* morning). In fact, from 1920 to 1940, when the refrigerator technology prospered, insulated boxcars virtually disappeared from private fleets.

The halcyon year of 1922 saw 125 New Haven Railroad milk reefers in passenger service; Maine Central had over 100; the Rutland 75 and Central Vermont 68. In the oddball category were Rutland numbers 337 and 338. Built in 1904 by American Car & Foundry as standard baggage cars, these were equipped with plug doors and lettered "Milk," shortly before World War I. They were sold off in 1961. The more

common practice was to convert 40-foot bunker reefers into such services.

Equally fascinating was refrigeration on the electric rail-ways. The interurbans pioneered the use of mechanical refrigeration in 1924 (North Shore Line) and 1926 (Northern Ohio Traction Lines).

Both companies had freight trailers with plug doors, with one of the latter marked (on the left), Northern Ohio Refrigerator Despatch (NORX) 321; Electric Refrigeration. On the right was the bold advertisement: Wiltshire Hams, Bacon (and) Lard: The Cleveland Provision Co, Cleveland, Ohio.

Sparks flew over reefers on the Yakima Valley as well, but the cars were locomotive-hauled. Ditto for Iowa's famed Waterloo, Cedar Falls & Northern. Another Iowa property, the Fort Dodge, Des Moines & Southern, owned its own locomotive-hauled refrigerator cars, as did the Arkansas Valley Interurban in Kansas. Reefers were also seen on the Pacific Electric; Illinois Terminal; Piedmont & Northern, and on other traction properties.

In 1930 there were 175,262 railroad and privately-owned reefer cars on the nation's rails, producing 1,504,710 carloads of traffic, not counting beverages and canned goods (some 93% of all milk into Boston moved by rail that year). The Depression intervened, however, and by 1940 the figures were down to 144,838 reefers (albeit in 75 varieties, wrote one scholar) and 1,193,593 carload respectively.

Nevertheless, those were the days when, from the window of a favorite local, one might glimpse the solitary, wood-side reefer car standing by a red-brick packing house, in all its sooty-yellow splendor....at sunset....stuff of which railroads historians are made.

On the other hand, solid trains marked Pacific Fruit Express (PFE) were common a the Continental Divide and 100-150 cars of meat products arrived daily in New York for lower west side branch houses of the major packing companies.

Then there was that *other* service over the Continental Divide: An author, writing on the subject just before World War II, confessed, "I never heard of a narrow-gauge reefer." Yet, even as his pen scratched paper, Rio Grande was filling ice bunkers of little yellow cars destined to follow white plumes and mellow whistles over Cumbres Pass. As 2-8-2's dropped cinders on Pagoas Junction, these reefers kept meat, milk or vegetables cool. While the valleys still echo with such Colorado music, those reefers no longer roll in regular service.

Rio Grande was not alone either, for Colorado & Southern had narrow gauge reefers. One still serves, but in a farmer's field. There's more: Until the 1930's, milk was carried by Maine's two-foot-gauge Wiscasset, Waterville & Farmington, some of it in express reefers marked Turner Center Dairying Association. Earlier yet, Mr Tiffany's Summer & Winter cars rode the narrow-track Denver, South Park & Pacific. What a heritage!

The year 1941 brought a classic 8x10: An endless string of newly outshopped reefers led by a pristine 4-8-8-4. Who else but Union Pacific! 1941 also brought World War II, with its extended supply lines to Europe and Asia. Reefers, occasion-

ally graffitied "V for Victory," rushed cases of Spam to coastal ports and brew to thirsty troops.

In the peak war year of 1945 the nation had 137,818 reefers which carried an amazing 2,262,147 carloads of vital goods, hastening the arrival of VE and VJ days.

In the postwar years, *overcapacity*, coupled with changes in American dietary habits, brought upheaval to the packers. Chicago, Omaha, and Sioux City would never be the same again. Cudahy of Omaha? Try Phoenix, Arizona! Armour of Chicago is there too. Rath Packing of Waterloo, Iowa is in reorganization (ditto Wilson), and many of the smaller companies simply vanished altogether.

America's total reefer car ownership in 1954 was down to 124,425.

Time gradually ran out for the great private fleet: Cudahy (CRLX), Swift (SRLX), Morrell (MORX), and Rath Packing (RPRX) cars disappeared. Armour's (ARLX) reefers no longer burnished the switch-points and lesser lines perished quietly.

As for head-end refrigeration, rail's share of milk traffic into Boston shrank to 51% by 1955. While still 15th in revenue of all products handled by B&M in 1958, and that carrier actually purchased thirty-five 50-foot steel cars from GATX in 1957-1958 for Bellows Falls-Boston bottled milk service, it fell to "two extras" by 1963. The traffic died altogether on August 31, 1970. Incidentally, the last known Whiting car, WMKX 11, active for some years in storage

service, was scrapped in 1974 at St. Albans, Vermont.

What was probably North America's last express reefer service (in 1985) operated over VIA Rail/CN Rail on mixed trains 29-291 between The Pas and Lynn Lake, Manitoba. The vehicles, alas, were modern RP mechanical refrigerator cars: CN Rail 222069 and 222173. They were designated to carry groceries to Hudson Bay Store and Indian reserve at Pukatawagan...*once a week!*

Piggybacking, however, staved off disaster. In 1976 the railroads had 4,431 mechanical refrigerator meat trailers and Flexi-Van containers; private lines fielded 2,443 and marine owners had 19,877 (the latter effective November 20, 1975), a grand aggregation of 26,751 units. Railroaders no longer had to ask, "Where's the beef?" Otherwise, the reefer fleet of 1976 stood at 105,872 cars.

Perishables and liquids were subject to similar trends, but sizable fleets of reefers remained: Southern Pacific Fruit Express (SPFE), Tropicana (TPIX - a *newcomer*), Union Pacific Fruit Express (UPFE), Fruit Growers Express (FGER, FGMR, RBNX) and, of course, Pacific Fruit Express (PFE), among others.

Speaking of perishables, the trickiest vegetable was the lowly stringbean, which "overheated" quickly. Such a product required careful watching enroute to market.

The fortunes of railroad refrigeration were eventually improved by the coming of frozen foods, the landmark Staggers Act (1980) --- and by courageous railroad people.

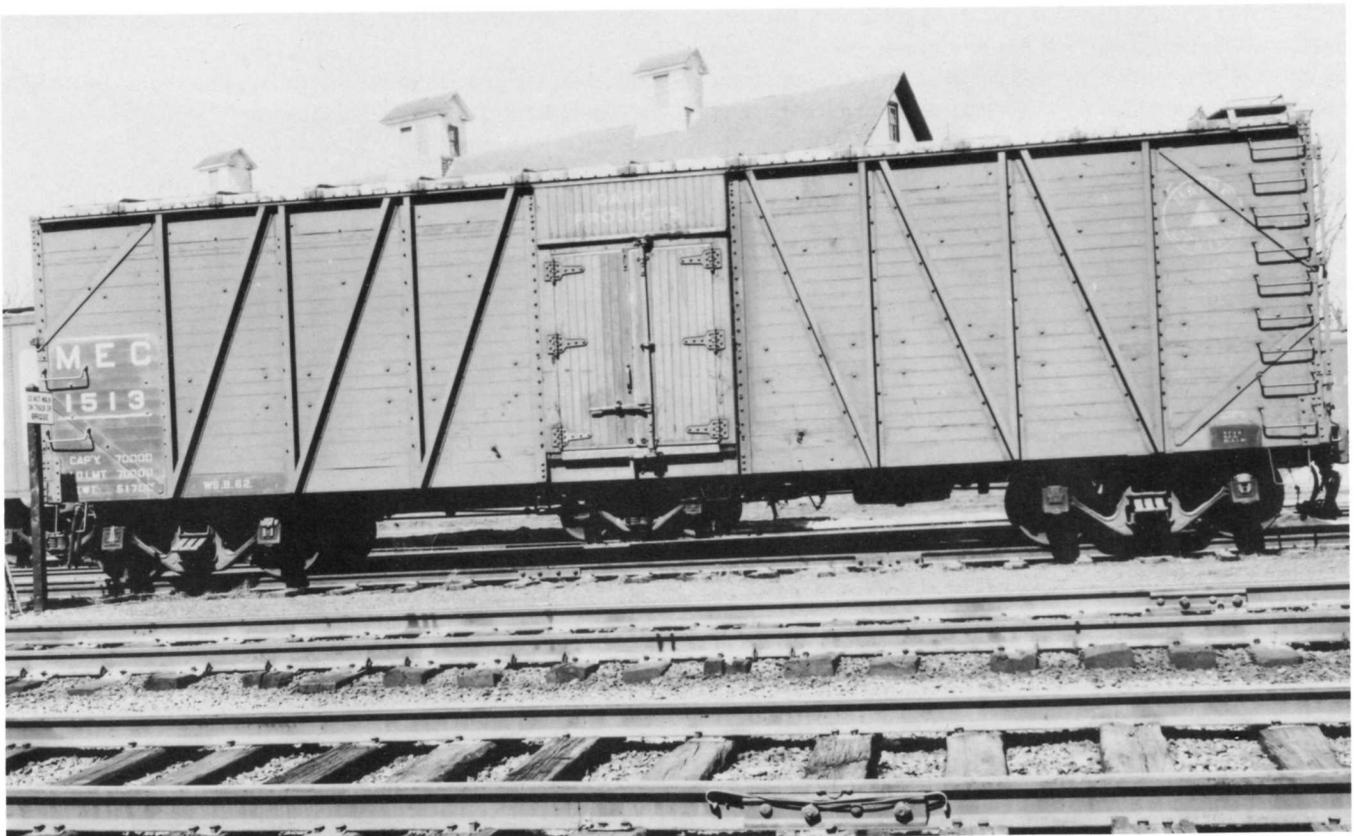


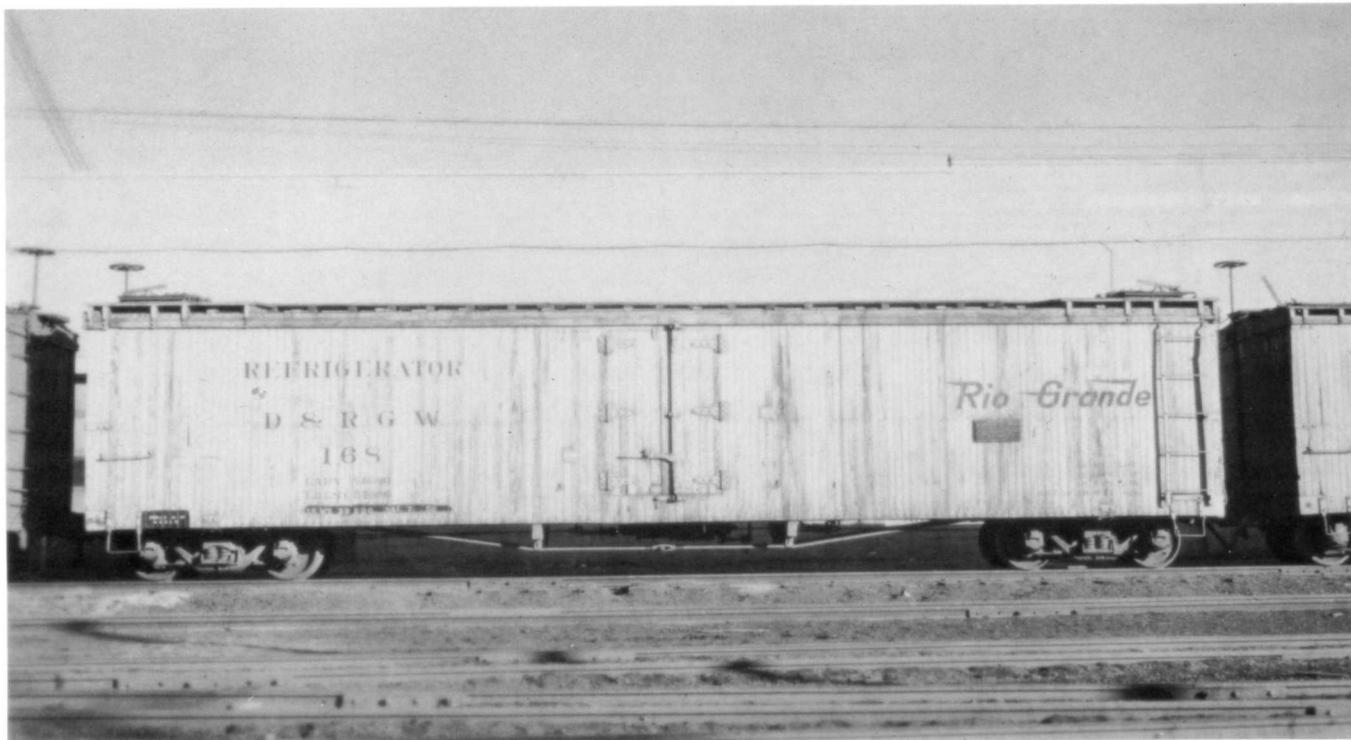
Above. A peek inside a perishables reefer. Below. WFEX 49970 benefits from an instant icing platform (the nation's final bunker reefers were also iced by truck. Both photos by Herschel R. Hudgens.





Above. GPEX 895 at Boston. H.W. Pontin photo. J.E. Lancaster collection. Below. MEC 1513 at Newport Jct., Maine. M.B. Pope photo. J.E. Lancaster collection.





Above. DRGW 168. Narrow gauge reefer. Courtesy R.W.Richardson. Below. C&S 1105, narrow gauge refrigerator car at Denver, Co on July 30, 1938. Richard H. Kindig.



A MATTER OF EVOLUTION

A closer look at the reefer car may be, well, *surprising*. Did the vehicle really develop from all-wood to all-steel? Yes, but not smoothly. Nor was the technology of railroad refrigeration without its problems.

As already seen and, as confirmed by the Builder's Dictionary of 1879, the primeval reefer was simply a heavy boxcar with plug doors.

The evolution of roof-mounted hatches seems to have started inside the vehicle with boxes of ice, baskets, longer baskets and, finally, with permanent ice bunkers. Coldness was enhanced, of course, by the addition of salt.

A rather scarce item, by the way, was a reefer with *two* plug doors on each side. Such, however, was a Santa Fe old-timer lettered Combined Refrigerator and Ventilator Co. The Colorado Midland, in fact, had 20 of them. Known as the Hanrahan System, they also had *center* ice bunkers.

The 1900-era, all-wood refrigerator car cost about \$1,000 (in gold coin), but investment was recouped in three years flat. Despite dampness and its negative impact on car-life, higher earnings per unit lent economic justification to the technology.

Wood gave way little by little, first to steel center sills, then to the steel underframes common in the 1920's.

Metal sneaked up to car-ends, finally permitting exterior wood to grace car-sides only.

By way of parenthesis, there was an experiment with silica gel cars at this time, some 80 units being placed in service about 1930. The idea was to absorb refrigerant by silica gel, reactivated by a propane gas flame. Incapable of providing uniform temperatures much lower than 20°, the trial died. An ammonia absorption system was also responsible for hands being thrown heavenward.

While AAR's efforts to define the "standard" reefer car (lasting to 1946!), only produced heated debate and nasty words in the cloak room, the "transitional" refrigerator vehicle simply *had* to have been the RS-type, wood-side/steel-end car. Born for keeps in the early 1930's, this reefer was widely promulgated right through the steel-short, war-time '40's.

Wood, in fact, died hard and late. The traditional tongue-and-groove, wood-side construction that graced Burlington Refrigerator Express (BREX) 74623, a CB&Q 44'2", yellow and black jewel of the middle 40's. was *not* to play the final role. It was plywood.

In 1940 and 1947 the Saint Louis Refrigerator Car Co (SLRX) outshopped a fleet of plywood-side reefers. Then, on October 16, 1950, the Pressed Steel Car Company's Laminate Division displayed a car in New York that amazed the industry. It was an *all-wood*, mechanical refrigerator-box car

of cellular-laminated plywood, 50 tons of nominal capacity and a light weight of 46,000 pounds. PSCX 1951 was known as the "Unicel" car (see p.62, August 1952 *Trains*). Under the eye of the Armour Research Foundation, furthermore, it demonstrated *better* resistance to all stresses than conventional steel equipment. A critical point had been proven, except for one thing: By 1950 the railroads were retiring their carpentry shops and refused to belabor wooden cars.

This, however, is worthy of note: Pressed Steel had built the first *all-steel* railroad car in 1897 (a hopper car for a B&LE predecessor ---- 53 years before outshopping PSCX 1951!

Then there was aluminum. The April 1948 *Railway Mechanical Engineer* included a clear photo of Fruit Growers Express (FGEX) 40000, a reefer of aluminum alloy weighing five tons less than a similar FGEX steel car. That metal still has possibilities.

Enter now the shortcomings of the traditional RS-type, 40' bunker reefer. Herschel Hudgens, late BN Perishables Chief, indicated that the primary fault was the corrosive damage done by dripping salt brine to the bridges, rails, reefer car undersides, wheels, axles and other hardware.

Then followed the matter of competition. Pricing, customer management and heavier loads were weapons needed to meet trucking's challenge. However, while the narrow 4' doors and 7'8" wide interiors of the RS type icer cars discouraged much backhaul traffic, another priority cancelled out this fault: The vehicles were usually so badly needed in loading territories that car distributors were forever bugging destination carriers to return the reefers *immediately* after unloading.

While light loading, particularly in standard 33'3" or 33'4" (interior) reefers, was also a negative factor, most perishables were of light density, adds Mr Hudgens. Filling such vehicles to full load capacity with canned goods, for example? No problem. Then came frozen foods, however.

ITEM: while the rails successfully hauled rock-hard, frozen peas, corn, meat, etc, at 10-15°, they discovered that frozen concentrate poured like syrup at that temperature, starting a slow decaying process. Maintaining 0°, or lower, was the new imperative.

Meaningful research had gotten underway in 1946, beginning with the bunker reefer itself. A cooperative American Refrigerator Transit Co (ART), had responded with six state-of-the-art units which ran in highly-monitored trials in 1947, brought up by a business car fitted with instrumentation.

Next, attention turned to mechanical refrigeration. The friendly race of 1949 was notable: John C. Rill, President of FGE-BRE-WFE worked with Frigidaire (GM), to produce a mechanical car with a Detroit Diesel 271 engine and Frigidaire components. Meanwhile, Hudgens and the CB&Q outfitted a

WFE reefer with Thermo-King technology and carried frozen cream to New Orleans at -10 to 20° F in the dead of that summer. Frigidaire lost the race by just 30 days.

In the long run, however, such revamped icers proved to be a mixed bag. CB&Q's first 100 new mechanical reefers were built in company shops not long afterwards. By October 1, 1957, this country's railroads had a roster of 2,563 mechanical refrigerator cars.

Then, on December 1958, came the "miracle" insulation of Polyurethane Foam via CB&Q and the Thermo Control Co of Minneapolis.

Sprayed on the interior surfaces of National Car Line's MNX 2389 as a liquid mixture of 11 chemicals at 85° F, the material expanded into every crack and crevice. This formed an airtight, watertight layer of protection, much like the inside of a Thermos jug. It was twice as efficient as conventional insulation and even strengthened the car structurally.

When that reefer emerged from the Q's Havelock Shops (Lincoln, NE), Hudgens remarked to reporters, "I think this will revolutionize rail car refrigeration." He was right. Tests taken *four years later* revealed a heat transmission rate substantially unchanged from day one. Reason: The foam never sagged or settled with car movement.

Ten Trailmobile refrigerator trailer vans then received the treatment and Burlington pioneered the piggybacking of fresh meat produces.

More importantly, the breakthrough was quickly followed by an order for one-hundred 50' mechanical reefers capable of carrying 70 tons of *frozen food*. Bingo! Beef shippers and beer distributors too hailed the new reliability and, for a time, the Havelock Shops could scarcely keep up with the demand.

By the 1970's, the great packer fleets were in full retreat, Merchants Despatch Transportation Corp (MDT) had MFVX-marked refrigeration "Train Van" units in Flexi-Van service and refrigeration went far afield. NOTE: In 1976 Santa Fe reported 100 mechanically refrigerated *covered hoppers* (32-70° F) on its roster, for bulk perishables.

Mechanical refrigeration and piggybacked reefer trailers spelled the end for the massive RS bunker fleet across America. The RS type fell to less than half the total by 1966 and lost dominant category status altogether by 1968.

The largest remaining fleet of RS, R120-type bunker reefers in 1984 was the roster of 315 cars (200-649 series) owned by Colorado's San Luis Central R.R. Co. Built in 1957, these steel 50-footers were, by then, in very limited demand at harvest time (last iced in 1975) and part of the collection was up for sale. NOTE: These cars had passenger trucks, thus qualifying as express reefers.

Canada, meanwhile, went for cars with overhead bunkers. With *eight* hatches each, the popular reefers took hold in the 1940's. Our northern neighbor built nearly 3,000 vehicles in eleven years (by 1950), all owned and operated by railroads. An order for 300 such all-steel cars in 1948 and 1949, outshopped by Transcona and numbered in the 210100 series, featured underslung charcoal heaters to keep cargo from freezing ... the other side of the reefer coin. These were eminently successful and eleven of them remained on Cana-

dian National as of July 1984. One, #210148, was the sole survivor of the 1948-49 order. Here, then, the afterglow of steam-powered symbol freights darkening blue skies over Canadian Rockies and whistling through vernal woods of deepest green.

Another steam-era postscript involves the billboard reefers and a real oddball. Strange, indeed, was North American Car's NADX 10000, built for Hormel in November 1932. She was a *four-wheeler* and resembled an English goods van. Minimum rail freight rates had driven depression-era shippers to gypsy truckers and the railroads wanted these smaller-sized shipment back. Alas, the concept floundered in 36 months, for the cars tended to derail on cross-overs.

Billboarding, however, lasted much longer, being based on a practical philosophy: Why not lading *inside* the car and advertising on the *outside*? Modest logo work aside, whole car-sides were covered with massive lettering extolling products like Canada Dry, Swift Packing, Clicquot Club and many others. Of particular note were the six, classic, Oppenheimer Casing (OPPX), light gray-blue reefers that proudly billboarded the carriage of "Sausage Casings."

Railroads, too, saw virtue in billboarding ---- at first. They put road marks on one side and, on the other, such products as Ralston Purina, Arm & Hammer, Lipton Tea, Krogers (Groceries) and Old Gold, a beauty seen in the eye of today's model railroader.

The thing got out of hand, however, when too many shippers demanded that carriers decorate 10 or 12 *railroad-owned*, assigned service cars. The rails saw too many reefers being held out of service (read, in the paint shop), so called a halt to the process shortly after World War II. Such, however, was, and is, the fascinating, innovative world of railroad refrigeration!

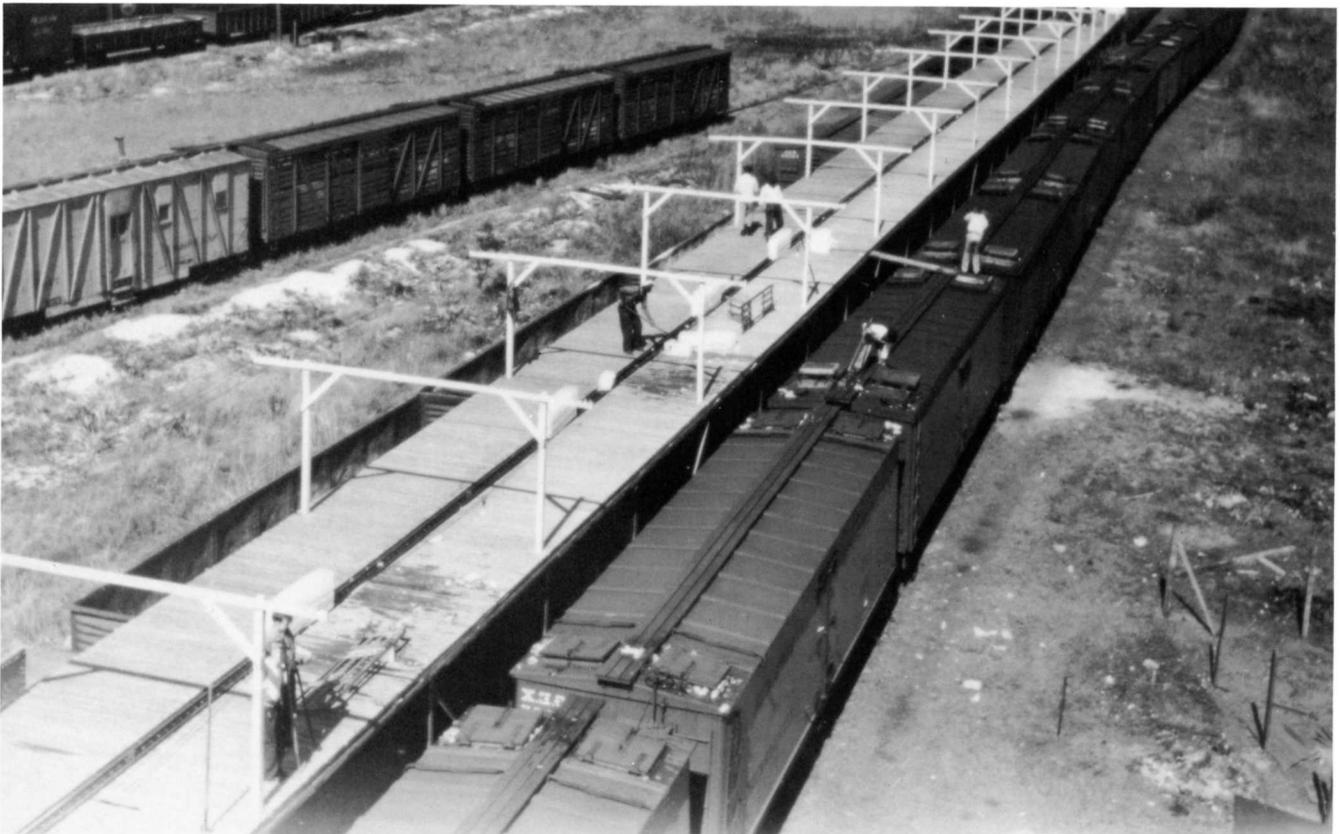


Above. BREX 74471. Steel End/plywood-side reefer car. Just out of the shop. 1947. Herschel R. Hudgens photo. *Below.* BREX 74471 with doors shut. Herschel R. Hudgens photo.



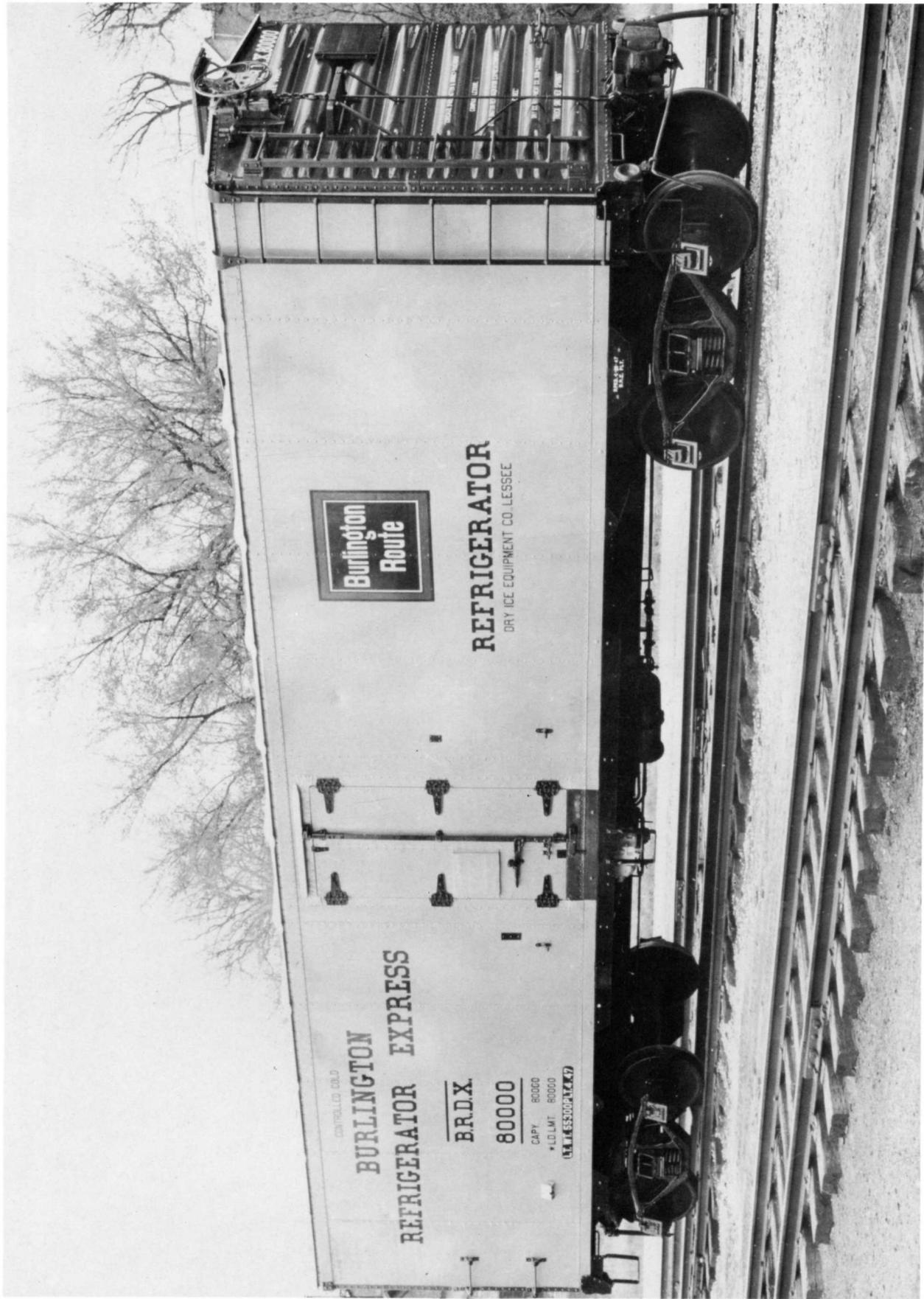


Above. The 1947 test run (AAR sponsored) with six state-of-the-art reefer cars from A.R.T. all wired up to FEC business car 90. Herschel R. Hudgens photo. *Below.* Men at work at an icing station. 1947. Florida. Herschel R. Hudgens photo.

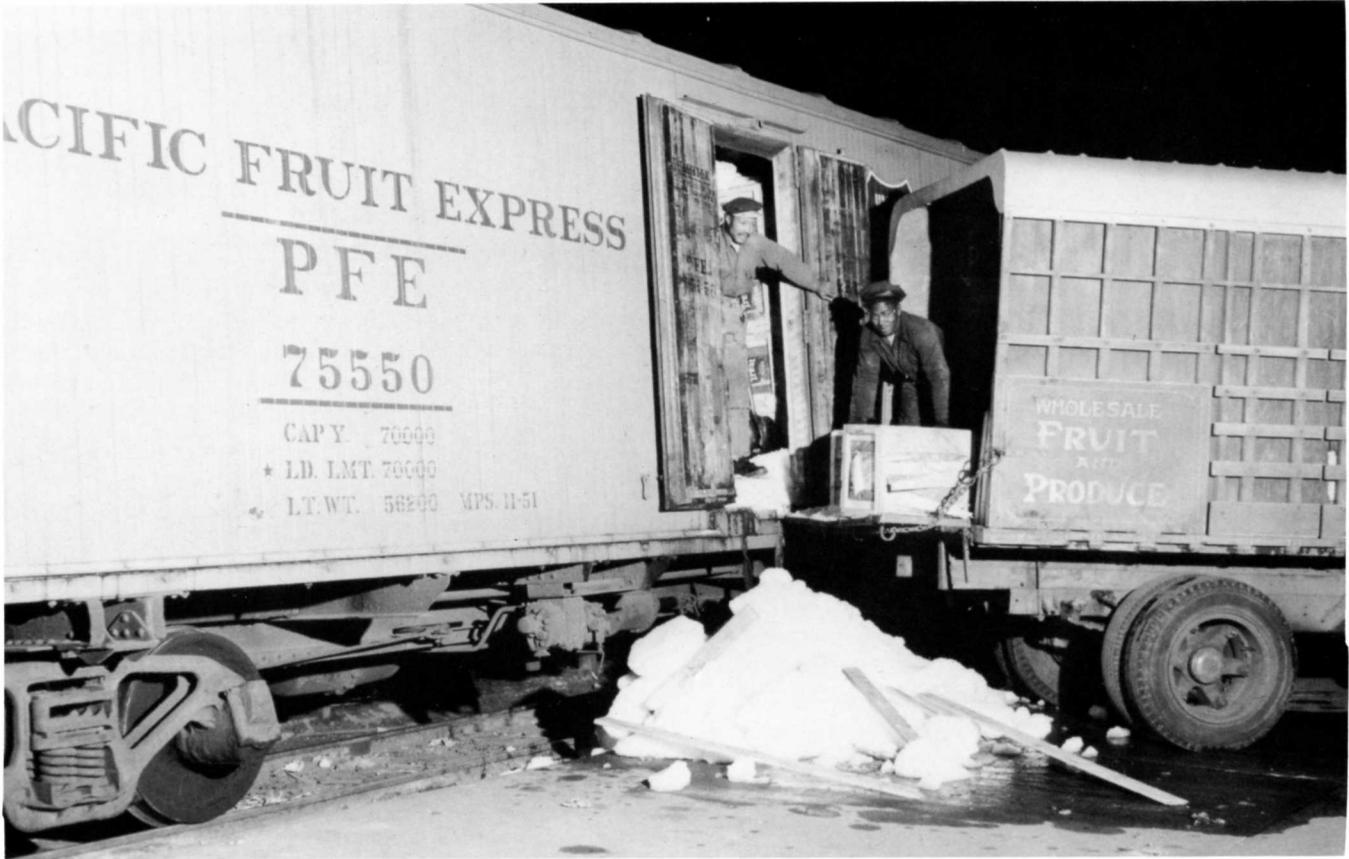




NADX 10000. This unusual (for American railroads) four-wheel car was built in November 1932. Courtesy Geo. A. Hormel & Co.



BRDX 80000. Dry ice car built for CB&O, Indiana Harbor, Indiana (FGE Shops, 10 miles south of Gary). William K. Vieckman Collection.



Above. Unloading a car of lettuce from Watsonville, CA in St. Louis on the Gratiot St. perishable tracks of the Missouri Pacific Lines in October 1952. With ice removed from the door area, unloading proceeded. About 20,000 pounds had been blown into the car at Watsonville. It was re-iced by adding blocks to the end bunkers at Pueblo, CO, where the car was delivered to the Missouri Pacific by the Denver and Rio Grande Western. Wayne Leeman photo. *Below.* The way it is today loading boxed fruit at Fresno, CA into a SPFE reefer. No piece of ice in evidence. SP photo.





Above. BN 965517. A 1947 built reefer now painted box car red (brown) and marked "ice service." Denver Union Station August 30, 1984. *Below.* San Luis Central 535 at the Monte Vista, CO Shops on September 26, 1984. SLC had over 300 such reefers, but their use is restricted to harvest service. Note passenger trucks. Both photos by William K. Viekman.



WHAT'S LEFT/WHAT'S COMING

Deregulation in 1980 permitted the railroads to pursue California produce traffic with success. The Salad Bowl Express (Roseville, CA to New York City) was one result. The formula: Large blocks of railroad or privately-owned cars between major population centers and the tide continues to turn.

Figures for 1983 revealed, for example, that 900,300 tons of produce arrived in Chicago by piggyback railcar (vs. 573,680 tons by truck) and 44,440 tons by refrigerated freight car.

The Salad Bowl Express was inaugurated with modern, 130,000-pound-capacity reefers. At peak harvest times (April and May) two 100-car trains were carded daily, requiring five 3,600 hp locomotives to mount Espee's 7,000' Donner Pass in the High Sierras. Union Pacific picked up the Express at Ogden, C&NW at Fremont and Conrail at Chicago.

On the other hand, Seaboard System's Orange Blossom Special and Santa Fe's perishable runs were all-TOFC from the start. In October 1983, Seaboard added another piggybacker, this one from Florida to Cincinnati and Chicago, as part of an established mixed-freight schedule. Talk followed of a *solid* produce train on that route.

Missouri Pacific had the truckers hauling perishables from the Rio Grande Valley to Houston, from whence, they went TOFC to Chicago in 41 hours ... non-stop ... six days a week!

Piggybacking today is flourishing. Great Dane Trailers, Inc, a specialist in refrigerated piggyback services, has benefitted accordingly.

After 1979, Conrail's TOFC perishables traffic burgeoned by a whopping 600%, to 38,000 trailerloads in 1984. For that lone reefer at the independent packing house, however, ...sunset indeed!

The AAR's estimated total of refrigerator cars on July 1, 1984, was 61,923. Railroad owned (or controlled) refrigerator lines showed an increase, over the previous year, but other categories were still declining.

A sampling of the breakdown from the Equipment Register (July 1984) showed that railroad fleets ran the gamut from just *one* reefer on the Genesee & Wyoming to 10,479 cool cars on the Espee, including 4,660 marked Southern Pacific Fruit Express. Union Pacific was a close second with 9,879 reefer, including 4,183 labelled UPFE. This carrier, by the way had the single largest grouping of cars: 1,026 RPL-class mechanical refrigerators with cushion underframe and load-dividers, AAR car type code R470 of the 457601-458700 series.

In the 1970 Equipment Register some 23 private carlines were listed as owning reefers. Surprisingly, the number in July 1984 was still 23, though not, of course, reflecting exactly the same firms. The field ran from just two (later

three) reefers owned by AFFCAR, Inc of Portland, OR, to the 4,701 belonging to Fruit Growers Express. G.E. Railcar (nee North American), showed 2,224 reefers.

Some curiosities: Though split up between owners U.P. and S.P. in 1978, PFE still had 63 cars in its own right. American Refrigerator Transit (A.R.T.) owned 235 freight cars, but not a single reefer listed among them. However, MoPac operated 371 reefers "leased through A.R.T. Co" and N&W did likewise with 162 units. Contrariwise, Western Refrigerator Line Co (Green Bay & Western) owned 21 reefers, but nothing else; St Louis Refrigerator Car, now a freight equipment maintenance/repair company is still capable of building reefer cars ... *new or old!*

While a Budweiser billboard reefer survives in the St. Louis Transport Museum, the brew still bubbled along by rail in 653 reefers of the Busch-related Manufacturers Railway Co.

Two news items from the latter 1980's deserve special mention: One is FGE's 100-ton "Chiller" car for shipping 157,700 pounds (maximum capacity: 18,600 gallons) of wine, citrus concentrates, beer or other liquids in an interior stainless steel container. Advance publicity indicated a 26% saving in transport costs for shippers of temperature-sensitive bulk liquids.

Then there is that whistle-worthy development, AFFCAR's cryogenic reefer, the CO² - "snow"-on-ladings concept. Ten tons of such "snow" on a load of frozen food reached a temperature of -85°F and resulted in the American Frozen Food Cryogenic Association for Railcar Research (AFFCAR). A Canadian joined in and formed "Con Cool." Interest within the railroad industry enabled some \$260,000 to be raised for extensive, advance testing. An elaborate refrigeration car (AFFX 2001) was built, utilizing storage tanks of *liquid* CO². This was injected on lading as needed, a few seconds at a time.

The Association then obtained two used 50-footers from affiliate B-N and converted them into *overhead bunker reefers*, not unlike those Canadian 210100's. Thus, in October 1984, AFFCAR had three units, the one injector model AFFX 2001 and two bunker cars, AFFX 2002 & 2003. These reefers were tested carefully with various ladings during transcontinental moves, being monitored every few hours. The Trials were an unqualified success, and principals planned for a fleet of 75 *cryogenic bunker reefers*. Will this, then, turn out to be *the* development of rail-related refrigeration for the 1990's?

It does seem to come together, Deregulation in 1980 plus the proven worth of overhead bunkers plus non-corrosive CO² plus today's refrigeration technology equals a possible second wave for the railroad ice-hatch reefer.



Above. MRS 2647. Modern refrigerator car passing Colorado Springs DRGW station. MRS is the Budweiser Road - carries the suds. William K. Viekmán photo. *Below.* FGEX 281 mechanically-cooled refrigerator car. Courtesy *Railway Age*.



EPILOGUE

The meditations which began aboard the Lake Shore led to some rather refreshing discoveries: The railway museums across America have rescued a rather fair sampling of historic refrigerator cars and, secondly, one must lift the fez to the model railroading fraternity (in all gauges) for its preservation of the reefer car's glory. Just note the gems for sale in *Model Railroader*: Wood-side and/or billboard reefers marked Commercial Express; Dairymen's League; Lindsay Bros (Binder and Twine); Old Dutch Cleanser; Schlitz, Baby Ruth (NADX 5342); Gold Medal Flour and a host of others.

Finally, there's Mr Floyd Reed of Arkansas, Colorado. This rare individual, to whom so much of the discarded

narrow gauge rolling stock of the Denver & Rio Grande Western was sold for disposal, saved every last unit possible for posterity. Thanks largely to this kind and helpful person, samples of the Rio Grande's home-built, all wood reefer 150-161, outshopped in 1924; and 162-169, of 1926, survive today on *three* rail properties in Colorado: Cumbres & Toltec Scenic; The Georgetown Loop Line; and at the Colorado Railroad Museum near Denver.

In the passage of North American reefer cars, then, the faithful have really lost *nothing*. Not only have we gained richly in historic perspective, and cautious optimism for the future, but a nearly complete representation of major car types is still with us if one will but search them out.

APPENDIX A: BOX: *CHUNK, COARSE OR CRUSHED?*

Remember the great reefer car icing stations across America? The passing of those facilities, with their lengthy service platforms, reminds one of what the diesel did to coaling towers and water tanks. But who could have foreseen such a trauma?

In 1896 MoPac and Wabash assembled the American Refrigerator Transit Co. Then, in 1907, Espee and U.P. organized the Pacific Fruit Express Co (PFE) with an initial roster of 6,000 reefers. This, of course, demanded icing facilities, which grew ever larger as related traffic increased.

Regular icing stations were located at main junction points, where crews changed and where car running gear was inspected. The icing of bunkers and top-icing of car interiors were major functions of such depots.

Emergency icing stations, on the other hand, were simply contracts with local ice companies to perform icing services on short notice at locations where a car "got into trouble" and was unduly delayed.

Topping-off depots were common in vegetable growing areas. There the crates of perishables were topped off with snow-ice by mobile equipment near loading points, in transit (at stations named in the tariff), or on an emergency basis. Cauliflower, carrots, lettuce, endive were top-ice users applied by opening the side side and blowing snow-ice over the load.

In the 1940's and 1950's, U.S. railroads still carried 80-90% of the perishables. Thanks to cheap-fuel trucking, however, that figure plummeted to a pitiful 8% before ascending to about 14% in post-Staggers 1981. Back to those icing functions, however.

In the peak year of 1946 PFE fed more than two million tons of ice into voracious reefer bunkers. In fact, at one time the company had seven installations using *natural* ice (Laramie, the last, converted in 1950), and 18 that manufactured the artificial variety. These, of course, were on the lines of the parent companies. Then came the mechanical refrigerator car.

Out went icing facilities, which had gradually been improved to a fine art, some of which had turned out more than 1,000 tons per day. At Laramie, PFE had installed a new type of mechanical ice-loader in the 1950's. The cost totalled a then-whopping \$669,000, but the hour was late and ice soon began to melt away. When it did evaporate, the salt industry lost a big market indeed.

One example of a major icing station was Espee's Roseville, California installation. This facility could hold 45,000 tons of ice in storage, and adjoining dock tracks accommodated 300 cars at a crack. In a 24-hour period the plant could turn out 1,100 tons of ice. On good days as much as 2,500 tons of the coolant would cascade into bunkers ---- chunk, coarse or

crushed, depending on cargo and waybill. Alas, the Roseville facility came down in 1974. It was among the last.

Icing, by the way, didn't always mean filling bunkers to the brim. Adjusting the grates permitted partial loading. Such "half-stage icing" saved plenty of money. After all, why fill 'em up when the destination was just a half-bunker-load away!

In 1952 PFE was running solid 100 car trains of perishables from Roseville to Ogden, Utah with nothing but bunker cars. The first mechanical unit for regular service was still a year away. As late as 1967 that firm yet had 12,356 bunker reefers.

Then, in 1974, when a car of lettuce was followed out of Watsonville Jct to Ogden, every vehicle was mechanically cooled. Today PFE owns nary a bunker reefer.

G.E. Railcar, however, had three noteworthy reefers of the RS, R120 type as late as 1985. These were NWX class 6905-6909 survivors, listed thus: "Refrig., steel underframe. Capacity: Crushed ice: 11,286 lbs.; coarse ice: 10,881 lbs; chunk ice: 10,260 lbs. Half stage icing grates in position. Capacity: Ice bunkers: 5,643 lbs. crushed ice; 5,440 lbs. coarse ice; 5,130 lbs. chunk ice."

After those great platforms disappeared, remnant bunkers were iced from motor trucks. This practice continued, for example, on the San Luis Central Railroad (Monte Vista, CO) at least until 1975. Now that, too is gone.

The change-over had been rather dramatic in its totality.

Wayne Leeman

As told to William K. Viekman

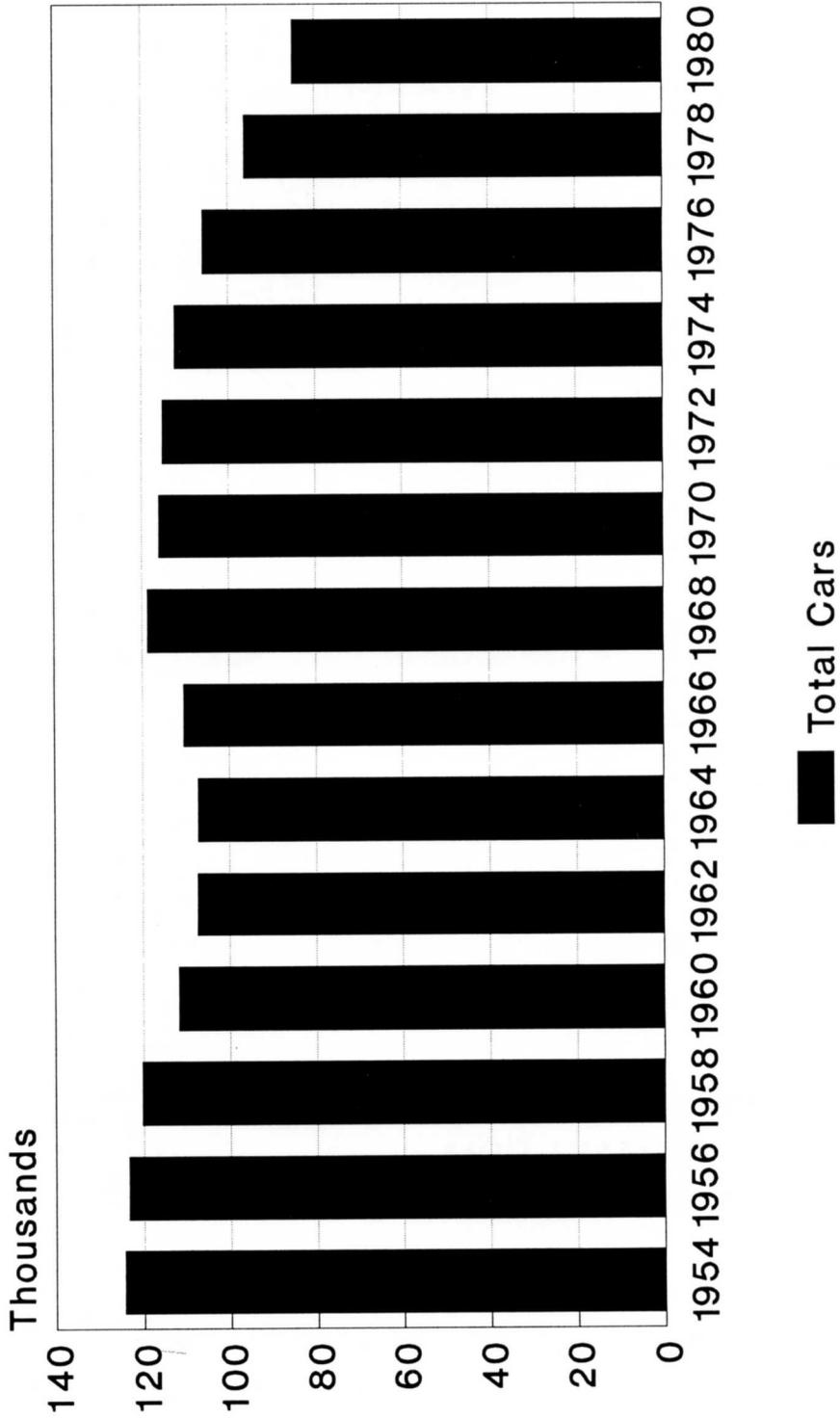
**APPENDIX B:
STATISTICS MISCELLANY 1954-1980**

REFRIGERATOR CAR TYPES

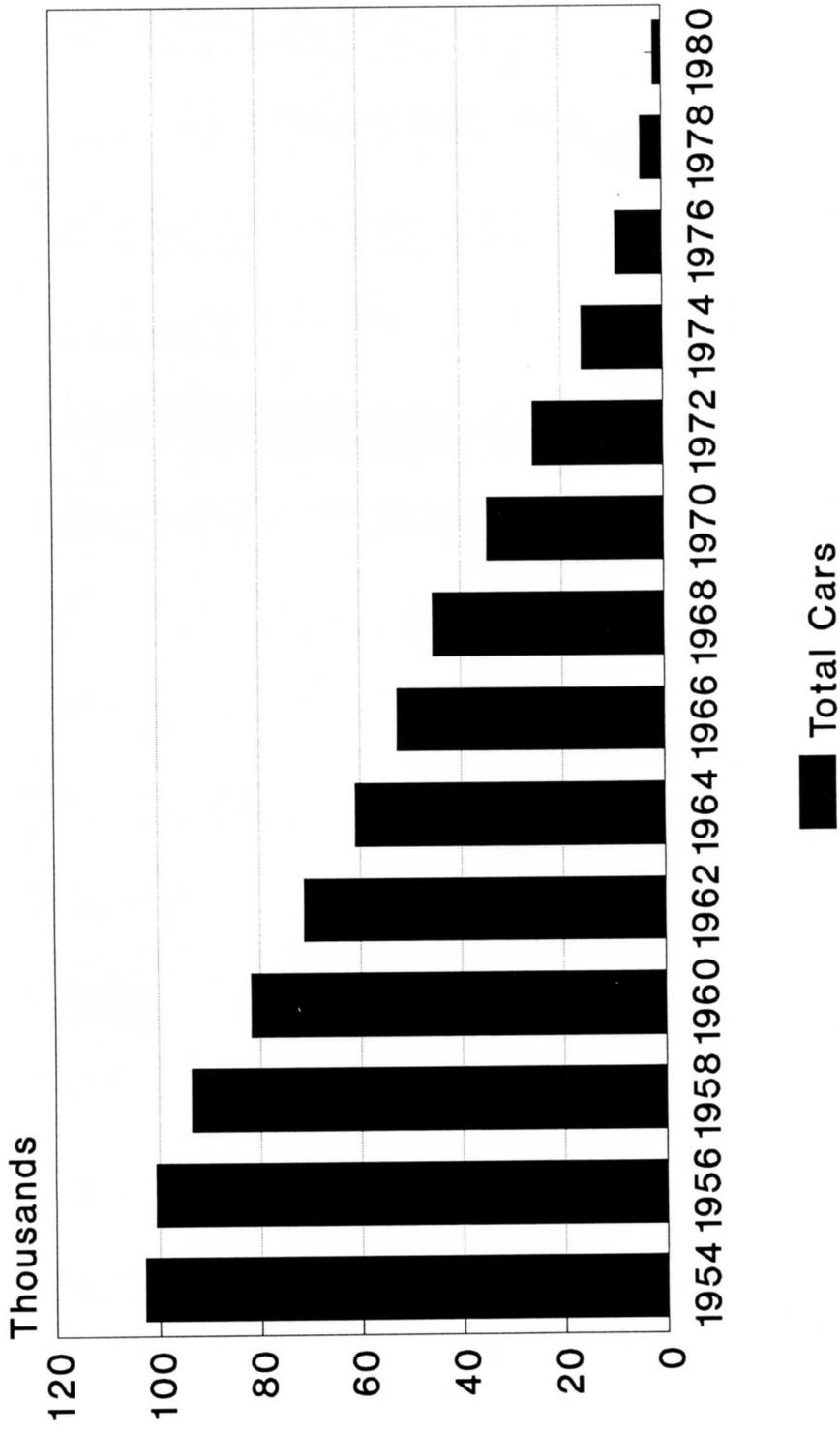
Quantity Comparison 1954 & 1980

<u>CAR TYPE</u>	<u>1954</u>	<u>1980</u>
RS	102724	1606
RAM-RAMH-RSM	16656	326
RB-RBL-RBH-RBLH	4659	62154
RP	361	1246
RPL	0	20504
RPM	25	1151
RAH-RSMH-RPB-RSB	0	733

Refrigerator Car Ownership 1954-1980

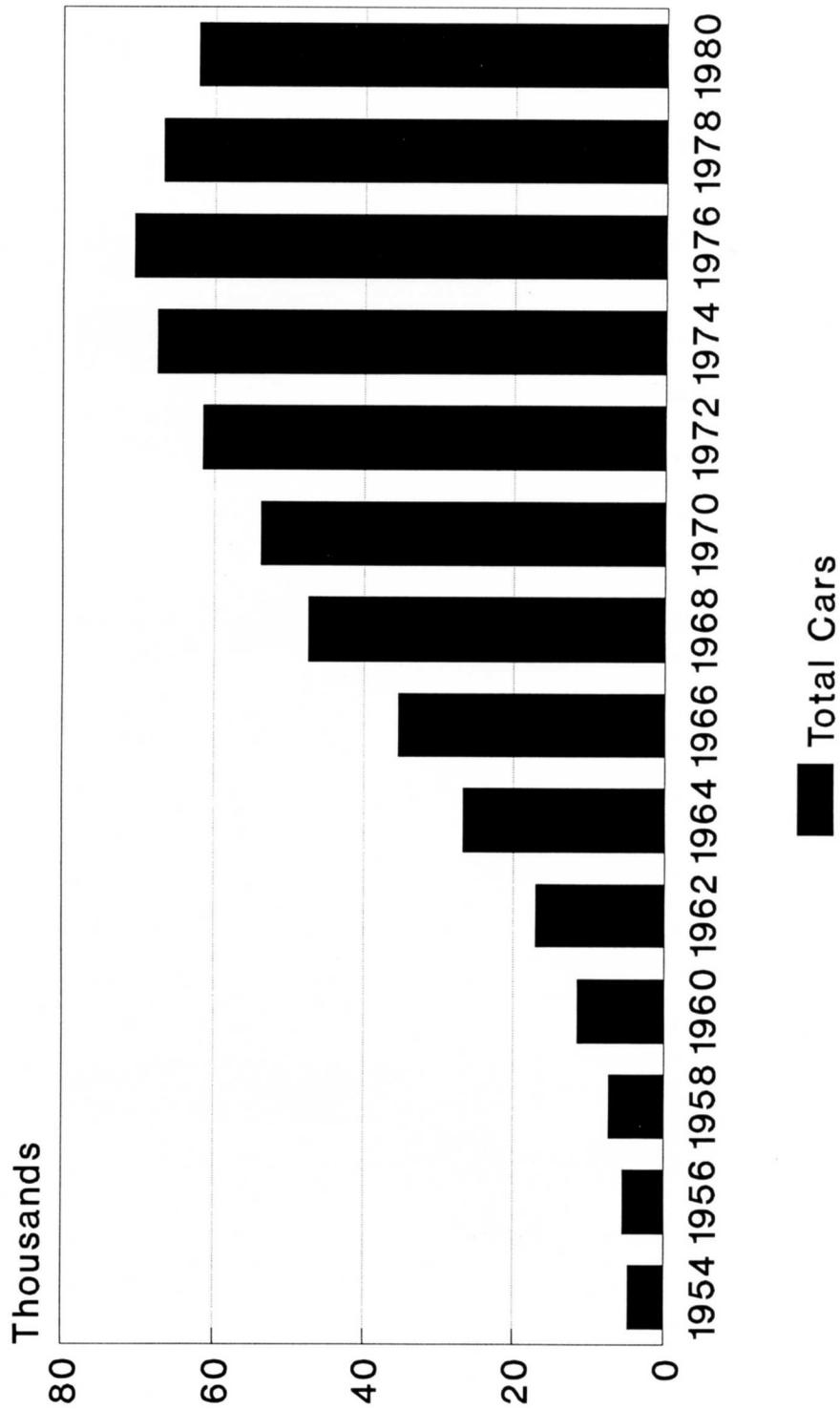


Bunker-type (RS) Cars 1954-1980



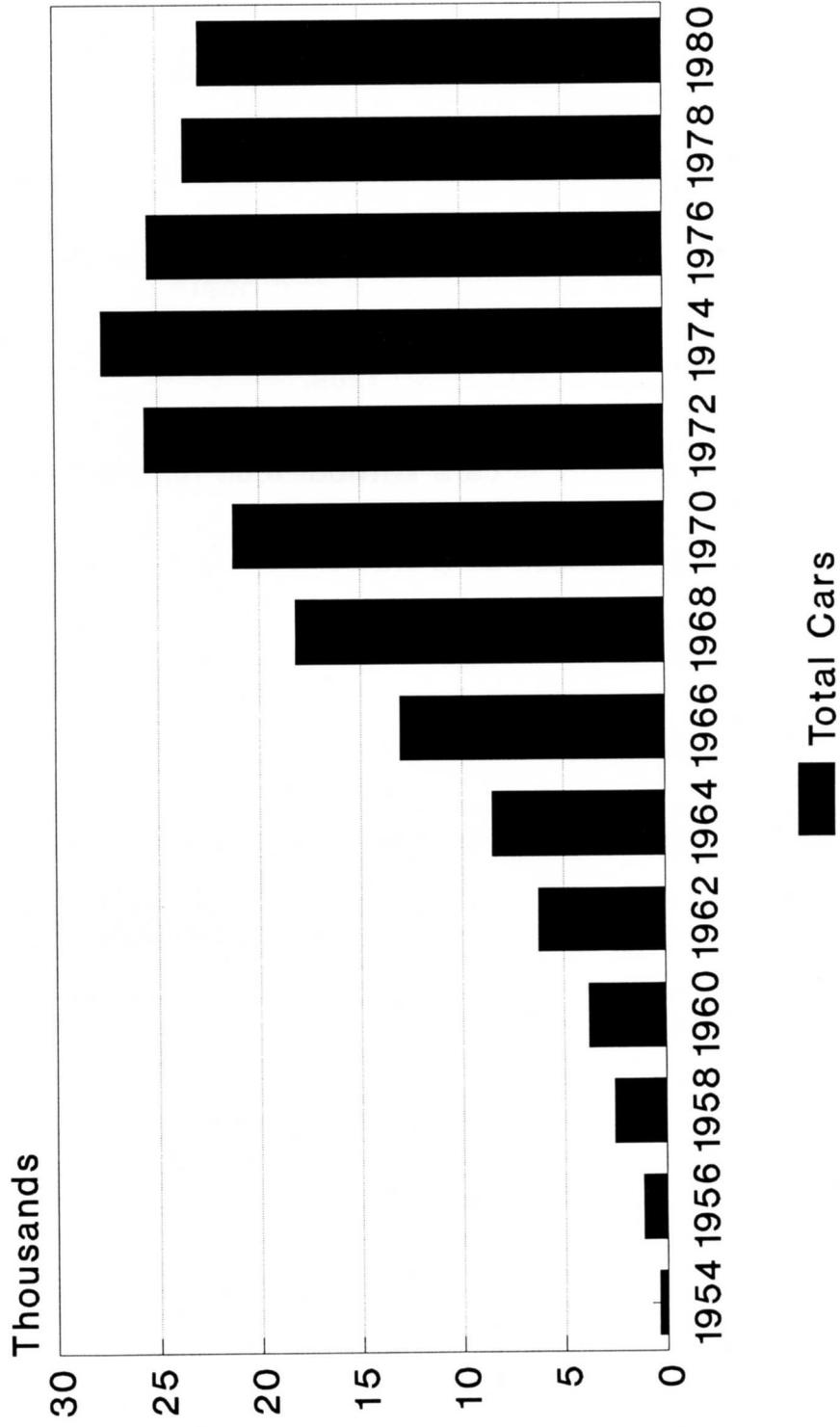
Insulated Bunkerless Cars

RB-RBL-RBH-RBLH 1954-80



Mechanical Refrigerator Cars

RP-RPL-RPM 1954-1980



APPENDIX C: AAR MECHANICAL DESIGNATIONS

<i>AAR</i>	<i>DESCRIPTION</i>
RS	Bunker-type cars.
RAM	Brine tank cars with meat rails.
RAM	Brine tank cars with meat rails and heaters.
RSM	Bunker-type cars with meat rails.
RB	Insulated bunkerless cars without load restraining devices.
RBL	Insulated bunkerless cars with load restraining devices.
RBH	Insulated bunkerless cars with heaters.
RBLH	Insulated bunkerless cars with load restraining devices and heaters.
RP	Mechanical cars without load restraining devices.
RPL	Mechanical cars with load restraining devices.
RPM	Mechanical cars with meat rails.
RAH	Brine tank cars with heaters.
RSM	Bunker-type cars with meat rails and heaters.
RLO	Mechanical covered hopper cars for bulk loading.
RPB	Mechanical Cars equipped for bulk loading (convertible to conventional loading).
RSB	Bunker-type cars for bulk loading.