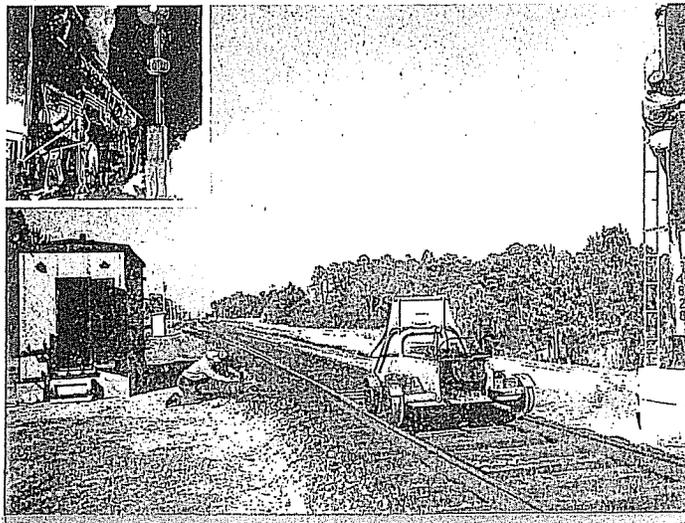


32

THE TRAIN DISPATCHER

The train dispatcher is the man who controls the movements of trains. On the large sheet before him, he keeps an up-to-the-minute record of every train running on his division or district. His train sheet shows the names of the conductor and engineer and the number of the locomotive for each train. If he directs two trains to meet at a certain place, they must do so. In this way, accidents are avoided and trains arrive and depart, meet and pass, safely and without confusion.

Some dispatchers direct train movements by telephone and telegraph. Others use control machines which set signals and switches over many miles of track. This method is called centralized traffic control or C.T.C. On some lines dispatchers send messages to train crews by radiotelephone.

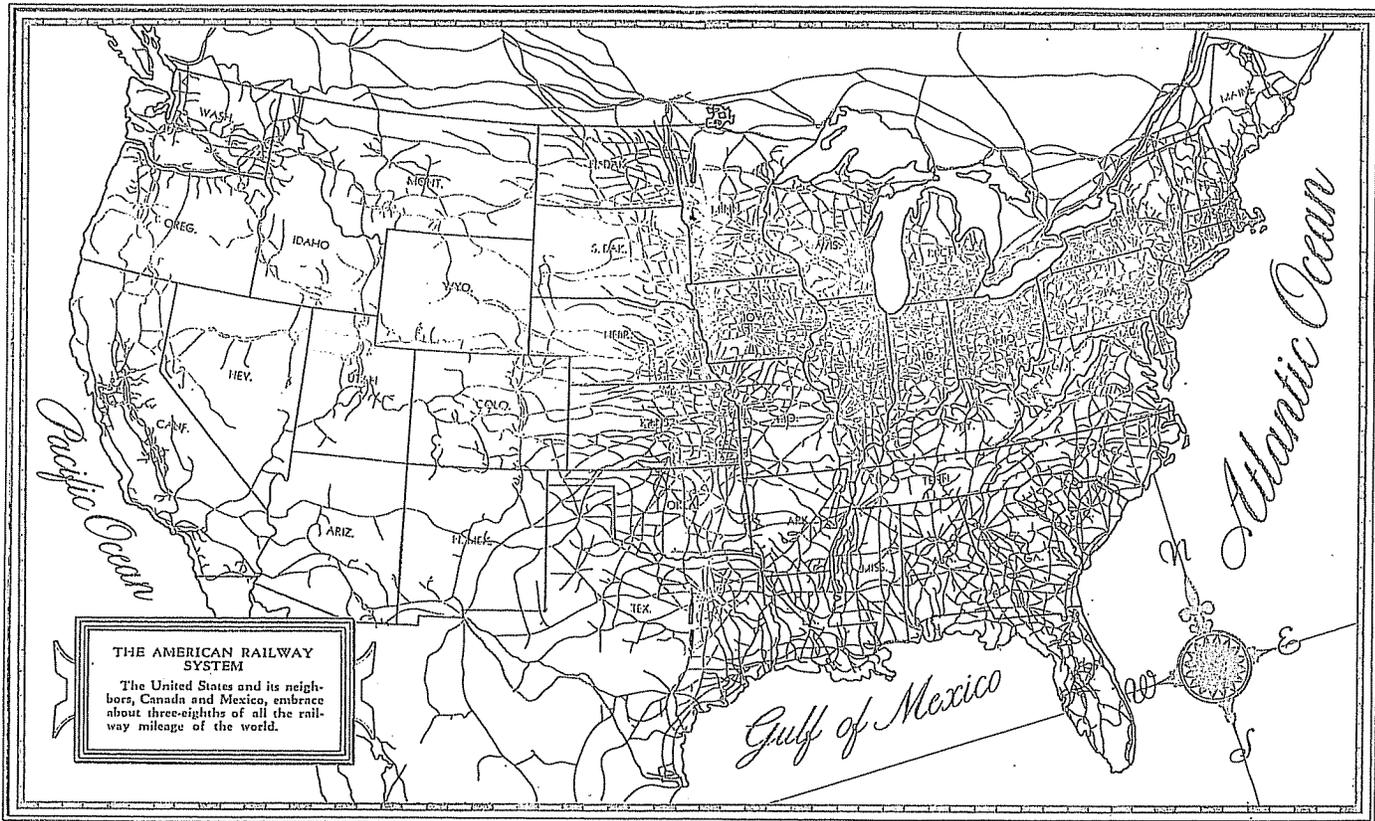


SIGNALS FLASH THEIR MESSAGES

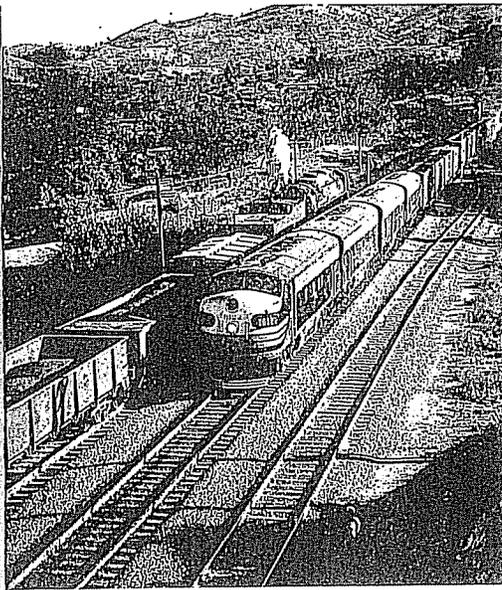
33

Signals give messages. Some signals, like those in the pictures, have messages for the eye. Some signals, like the whistle of a locomotive or the ring of the locomotive bell, have messages for the ear. Men who run the trains know the language of the signals. Signals tell the locomotive engineer when to stop, when to go slow, and when to go ahead at regular speed. Some signals are operated electrically from signal towers or signal stations. Many others are operated automatically by electric current flowing through the track rails. On some railroads, lights flash on a small panel in the engine cab. These are called cab signals and give the same message as those beside the track.

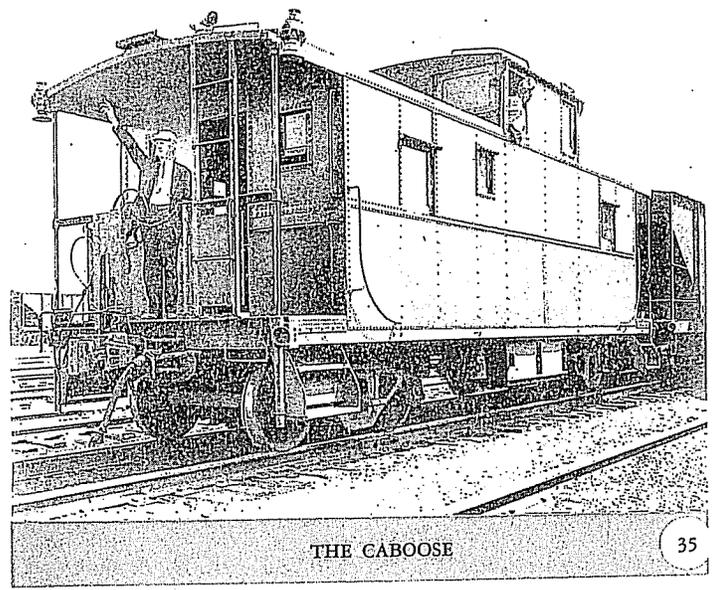
Signals help to make the railroad train the safest form of transportation.



FREIGHT
TRAINS
ON THE
ROAD



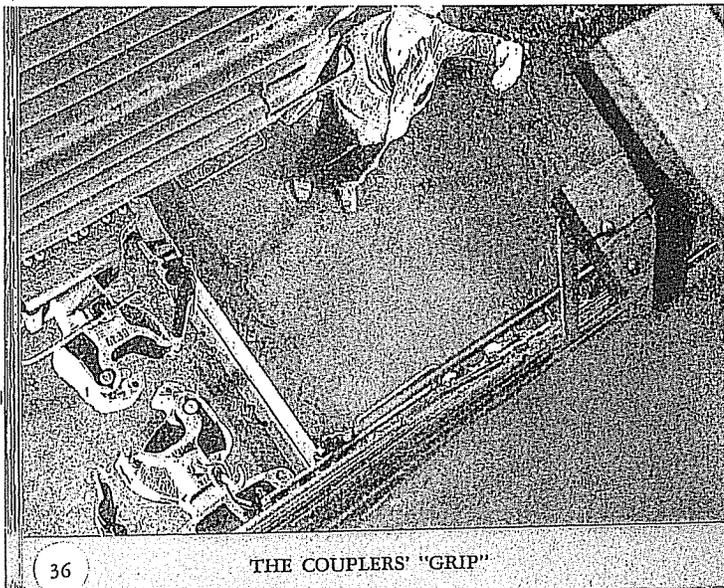
Freight trains bring to our town or city the foods we eat, the fuel we burn, and the materials that are used in building and repairing our homes. They also bring us materials for the construction and repair of streets, bridges, and public buildings. Freight trains help keep our factories supplied with the things they need. Our factories also depend upon freight trains to carry their products to distant markets. Thus, it is seen that freight trains play an important role in our community, our state, and our nation. They form a link between farms and markets, between forests and mills; between mines and factories, and between factories and retail stores. They bridge the gap between producer and consumer.



THE CABOOSE

At the end of each freight train is the caboose, with its odd-looking little watchtower, or cupola. The caboose is the train office and the traveling home of the train crew. Here the conductor has a desk where he keeps his freight tickets or waybills and other train papers, and prepares a report showing the origin, destination, and contents of the train.

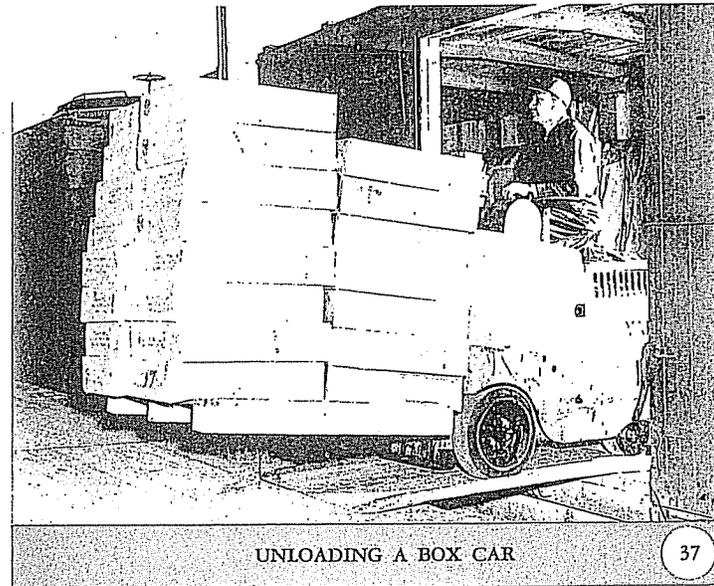
Seated in the cupola, the brakeman keeps a careful watch on the long train of freight cars ahead and keeps an eye out for signals from the brakeman on the head end or from the engineer or fireman. The caboose has a stove for preparing meals, lockers for clothing, and places for flags, lanterns, and emergency tools.



THE COUPLERS' "GRIP"

A train crew is made up of a conductor, a locomotive engineer, a fireman, and one or more brakemen. On a passenger train the baggageman is also a member of the train crew.

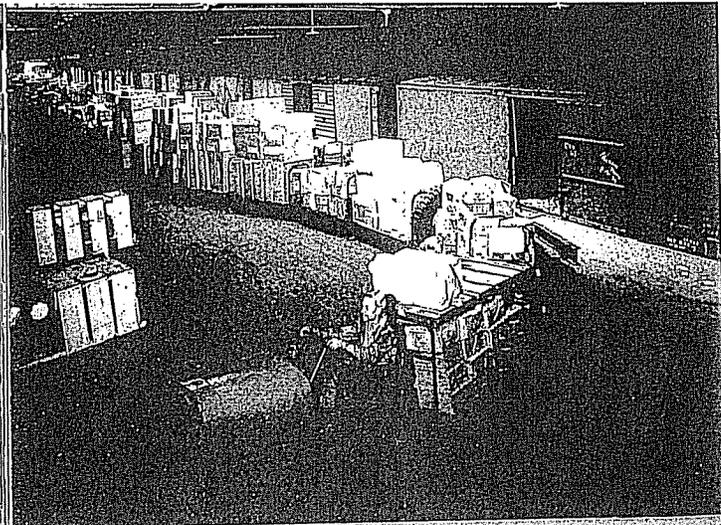
The brakeman assists the conductor. He sees that everything needed for the trip is in place on the train. On local freight trains he helps to load and unload package freight at stations. He also helps to set out and pick up cars along the way. The brakeman in the picture is signalling the engineer to back up so that the couplers, or two "hands," will meet and close in a firm grip, holding the cars together.



UNLOADING A BOX CAR

The little truck coming out of the car with its load of cartons is called a fork-lift truck. The cartons had been placed in the car on "pallets." These are small stands on which several cartons or packages can be placed. The fork of the truck is pushed under the pallet, which is lifted from the floor and taken from the car.

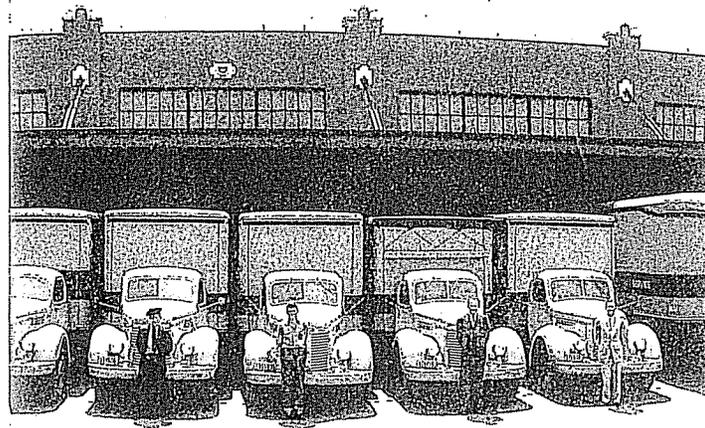
The freight car you see here is called a box car because it looks so much like a box on wheels. Freight cars are great wanderers. A car may be sent to any place in the United States, Canada, Mexico, or Cuba to deliver a shipment of freight or to pick up a load.



38

LITTLE "TRAIN" TRANSFERRING FREIGHT

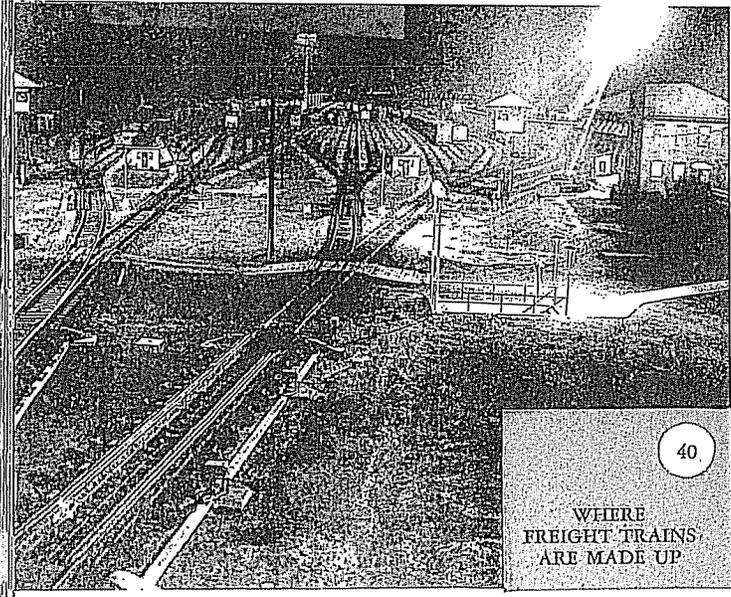
There are stations for freight as well as for passengers. The size of a freight station depends upon the amount of business to be handled. This is a picture of a large freight station platform which is just as high as the freight car floor. A little "train" of trailers pulled by a small electric truck is moving boxes, cartons, crates, cases, and packages from the cars into the freight station. Sometimes they take the freight to another platform on the opposite side of the station, where it is loaded into city delivery trucks, for transportation to the persons or companies to whom it is addressed. Many of the things which we buy in the stores come through our local freight station.



PICK-UP AND DELIVERY SERVICE

39

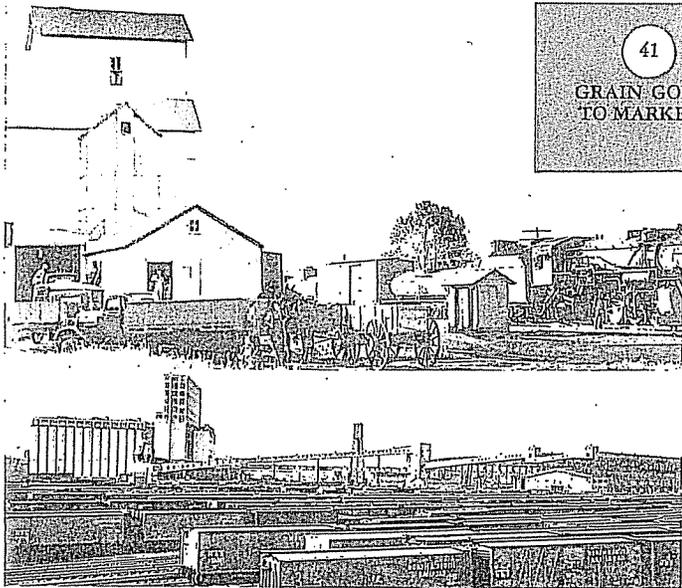
If a local merchant wants to send a package of freight by railroad, he delivers it to the freight station. If a package for the merchant is received at the station, a notice is sent to him and he sends for it. Many railroads maintain a pick-up and delivery service. In addition to the freight which is brought to the freight station by shippers or carried away from it by receivers, the railroads in many cases pick up and deliver shipments—in the same way that the Railway Express Agency collects and delivers express packages. These railroads have their own or hired motor trucks to maintain this service to the doors of factories, stores, and other places of business.



40

WHERE FREIGHT TRAINS ARE MADE UP

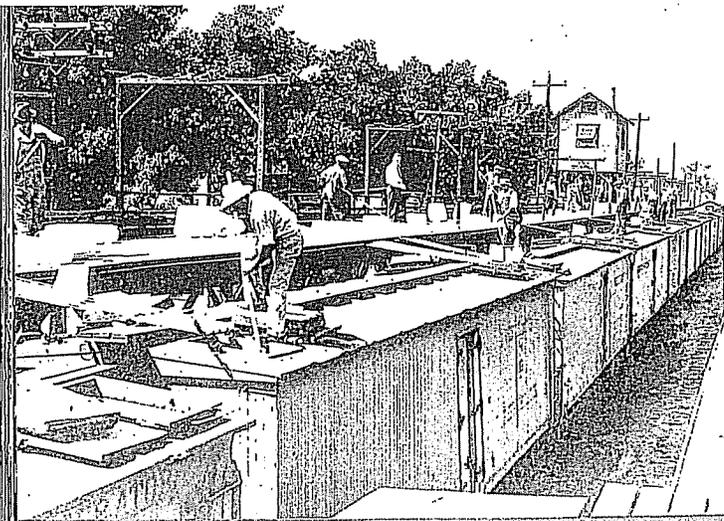
The freight yard is a busy place. Here, cars are sorted and made up into trains. The freight train starts its run from a freight yard and completes its run in another freight yard many miles away. In the freight yard, cars are run over the "hump" and put together in trains. The "hump" is a track that passes over a slight elevation of the ground, forming an incline. When a car is "cut" from the train on the hump it runs down hill by gravity. A man in the tower sets the switches so that each car goes to the track where it is wanted. To slow down or stop the car he pushes a button which causes car retarders in the track to press against the sides of the moving car wheels as they pass.



41

GRAIN GO TO MARKET

Nearly every town in the grain-producing areas has a tall grain elevator. It is usually called a country elevator to distinguish it from a terminal elevator. The country elevator is located on the railroad so that grain can be loaded directly into freight cars. Farmers bring wheat and other grains to the country elevator. The grain is lifted into the elevator bins by conveyors. From the bins it is poured or blown into freight cars through large tubes. Freight cars take the grain to a terminal elevator in the city. There it is cleaned, dried, and graded. Then it is again loaded into freight cars and taken to a mill to be made into flour, cereals, or other grain products.

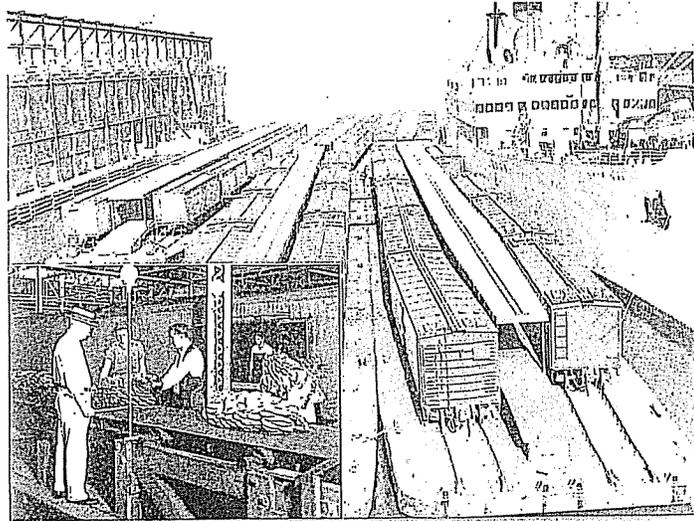


42

ICING THE REFRIGERATOR CARS

Refrigerator cars serve the same purpose as refrigerators in our homes. They keep fresh fruits, vegetables, dairy products, meats, fish, and other foods cold, so they will not spoil on the way to market.

The men in the picture are putting ice into the refrigerator cars. A moving chain belt brings cakes of ice from the ice house to the icing platform. The men then drop them through trap doors, called hatches, into the ice bins or bunkers. The floor and walls of the car are insulated like those of an ice-box—so that when the doors and hatches of the car are closed, the ice will keep the interior of the car cold for days. In winter, heaters are placed in the cars to prevent the contents from freezing.

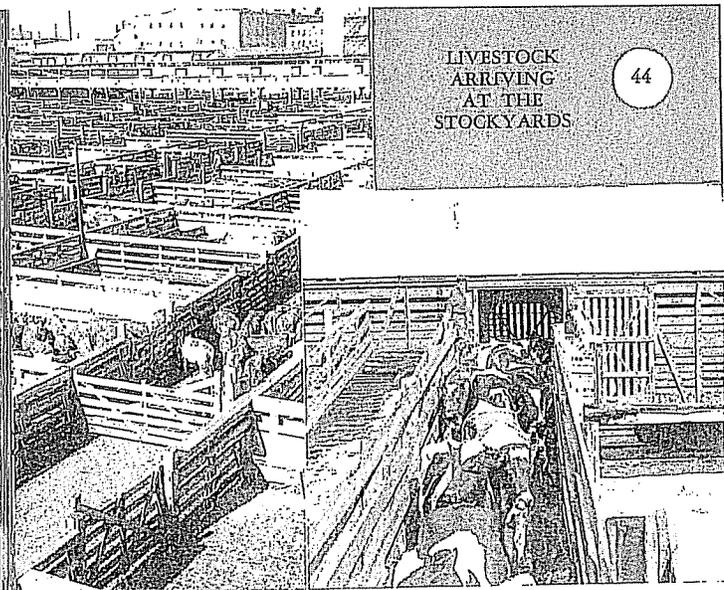


43

BANANAS COME BY SHIP AND RAIL

Bananas travel thousands of miles to reach our tables. Most of the bananas we eat grow in Central America, the north coast of South America, and the West Indies. They are first shipped over little railroads to the seaports; then by steamships to our ports; then over our railroads to cities and towns all over the United States.

Sometimes bananas are unloaded from a steamship to refrigerator cars on large car floats, or "lighters," as seen in the larger picture. The floats are then towed to another dock, their tracks are connected with railroad tracks and the cars are hauled away to a freight yard. There a banana train is "made up" and sent on its way. Sometimes one ship will bring enough bananas to fill two or more trains.

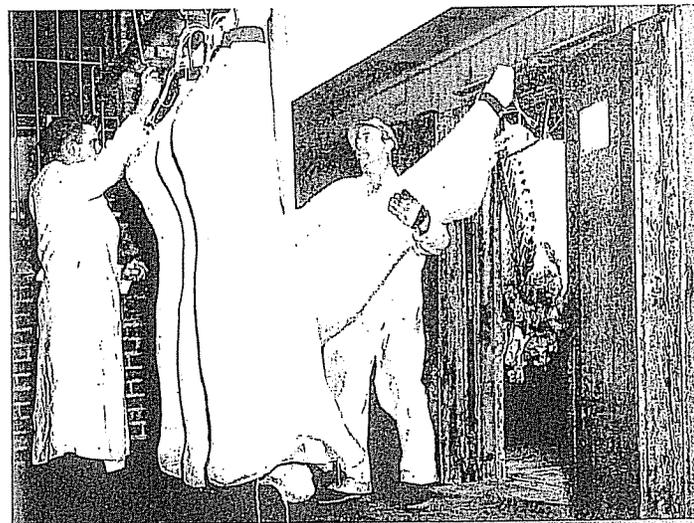


LIVESTOCK
ARRIVING
AT THE
STOCKYARDS

44

Our railroads carry cattle, calves, hogs, sheep, and lambs from the farms to the stockyards in the cities. Stock cars used for this purpose are like box cars except that the side walls are made of slats set two or three inches apart to give the animals plenty of fresh air. Many cars that carry hogs and sheep have two decks. Cars used for carrying poultry have sides of wire net and several decks.

Animals and poultry on their way to market are fed, watered, and looked after by caretakers who travel on the train. On long journeys, the animals are removed from the train somewhere along the way and kept for several hours in "resting pens."

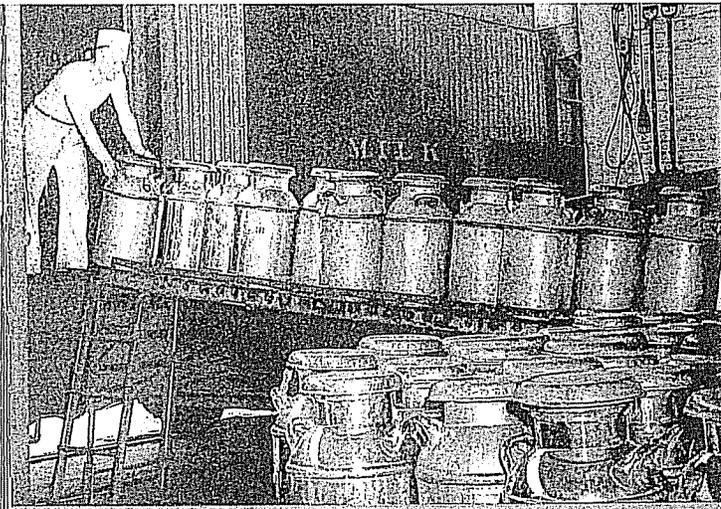


FRESH MEATS ON THE WAY TO MARKET

45

Fresh meats are chilled or frozen in meat packing plants and wrapped before being loaded into cars. In the picture, men are loading sides of beef into refrigerator cars. Refrigerator cars used for carrying meats are similar to those used for carrying fruits and vegetables except that they are equipped with steel bars upon which to hang the meat. Often ham, bacon, sausage, butter, eggs, dressed poultry, and other food products are loaded and shipped in the same car with fresh meats.

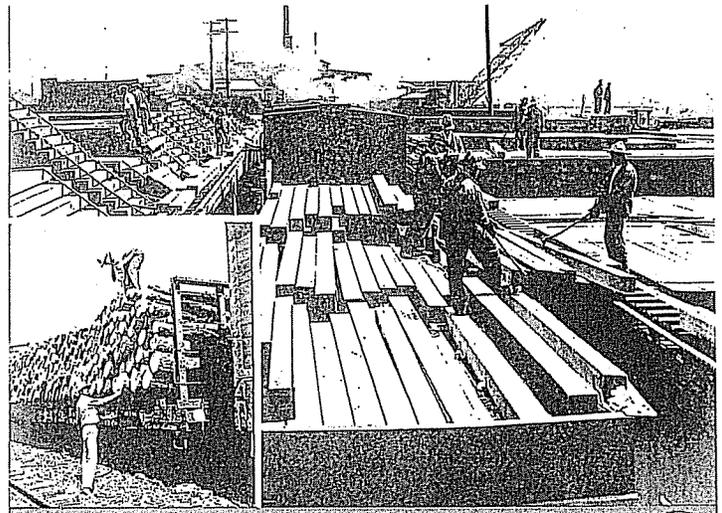
Before there were refrigerator cars, fresh meats could not be shipped long distances without spoiling. Today, railroads bring us fresh meats and other perishable products no matter how far we may live from the places where they are produced.



46

BRINGING MILK TO THE CITY

Millions of Americans depend upon the railroads to bring their daily supply of fresh milk and cream. In many instances, milk and cream are carried hundreds of miles to market. Philadelphia, for example, receives milk and cream by train from as far away as Minnesota and Wisconsin. Milk and cream require the utmost care from the time they leave the farms until they reach our tables. They must be kept perfectly clean. They must be kept cold, but not too cold. Some milk is transported in insulated glass-lined steel tank cars; some is shipped in large cans like the ones in the picture. Cars are sometimes fitted with shelves so that the cans can be loaded in tiers.



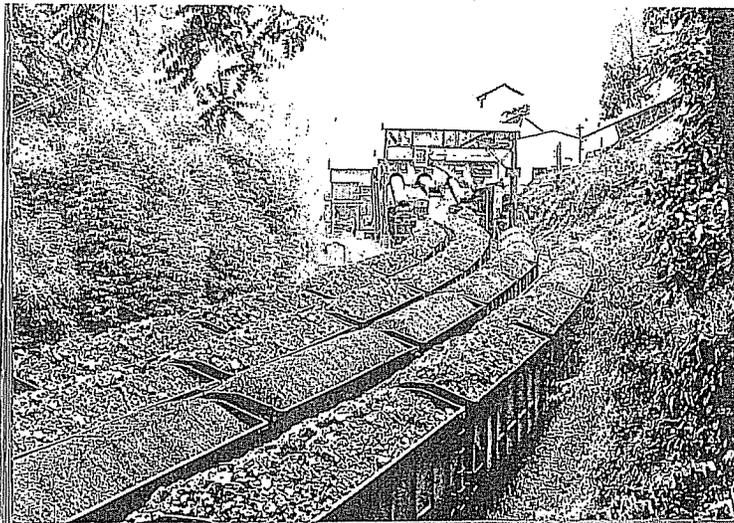
FOREST PRODUCTS MOVE BY RAIL

47

The forest industry is a large user of transportation. After trees are felled and trimmed in the forest, they must be taken to the mills. Then the lumber and products of the mills must be taken to the places where they are needed. Railroads take things from where they are produced and deliver them to places where they are needed.

In the larger picture, lumber from the mill is being unloaded from freight cars and stacked in neat piles in the lumber yard. Each pile in the yard is made up of lumber of a certain size.

The smaller picture shows a carload of pulpwood being made ready for shipment to the paper mill. Lumber is usually loaded on flat cars, in box cars, or in gondola cars.



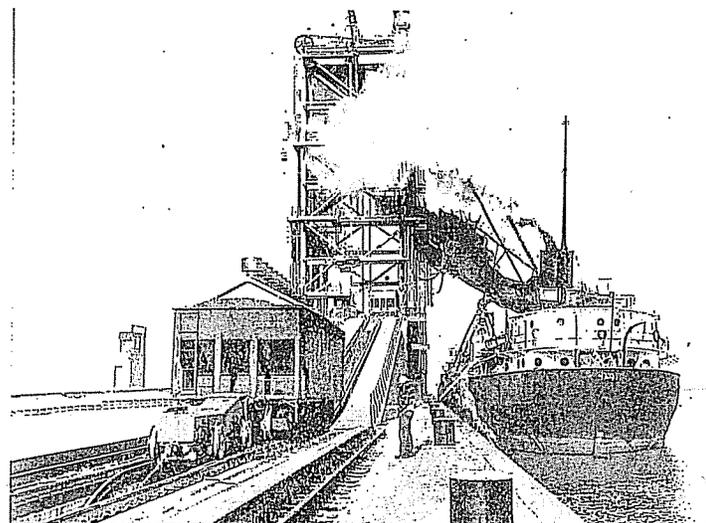
48

LOADING COAL CARS AT THE MINE

Coal mines and railroads work together. Each depends upon the other. Coal mines help the railroads by supplying them with fuel for their locomotives, shops, stations, and offices, and by furnishing them with coal to haul.

Railroads help the coal mines by bringing them machinery, tools and other supplies, by purchasing large quantities of coal for railroad uses, and by hauling coal to places where it is needed.

In this picture, coal is being loaded into freight cars at the mine. Both hopper cars and gondola cars carry coal. The average car holds about 57 tons. Railroads take the coal—sometimes for hundreds of miles—to factories and mills, to railroad coaling stations, to coal yards in cities and towns, and to seaports and lake ports.

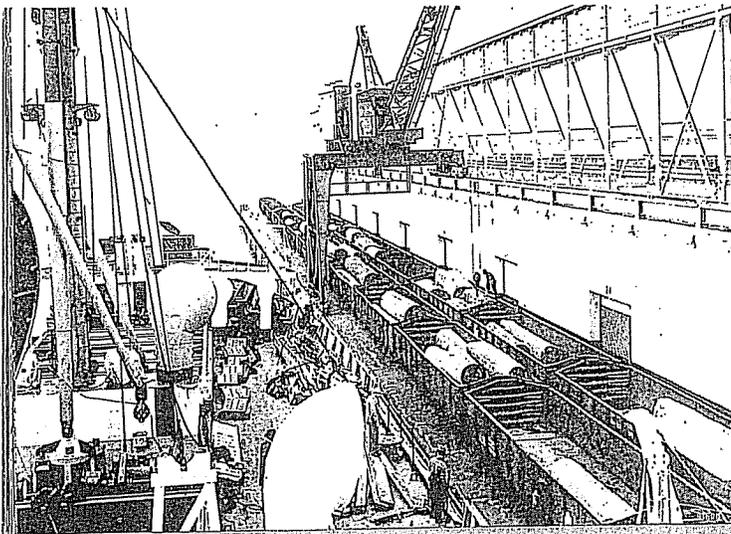


DUMPING COAL FROM CARS INTO SHIPS

49

Many years ago a large crew of men toiled for days and days to take coal from cars and load it into the hold of a ship. The modern way is to use a coal-dumping machine like the one in the picture.

This machine grips a loaded coal car firmly, lifts it 50 or 75 feet above the track, and then turns it over, dumping the coal into a "pan" attached to a chute leading to the ship's hold. The empty car is then returned to the track, and as soon as it is pushed out of the way, another loaded car is brought into position for dumping in the same manner. The astonishing thing is that all of this takes only about a minute.

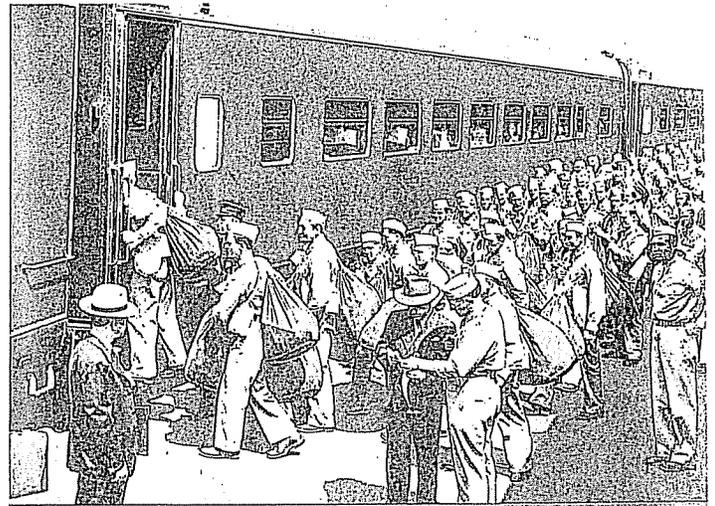


50

RAILROADS SERVE THE SEAPORTS

The United States trades with nations all over the world. Thousands of ships are employed to carry the products of our farms, forests, mines, and factories to other lands and to bring the many things we need from other lands. Many trainloads of freight arrive and depart at our seaports each day.

This picture shows logs being unloaded from ships into gondola cars on a railroad dock. The dock is where freight is transferred from ship to car or from car to ship. At every seaport the railroads have freight yards and warehouses. Many railroads have their own docks and other buildings.

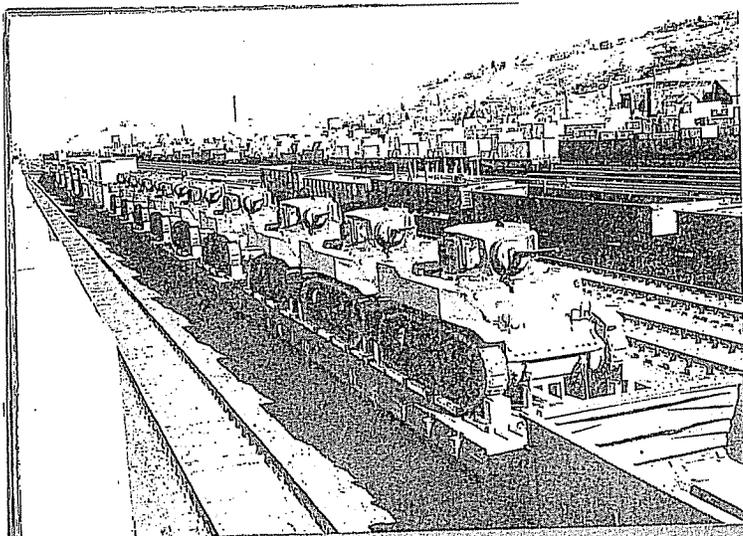


SOLDIERS ON THE MOVE

51

During and after World War II the railroads handled 97 per cent of all organized military travel. They carried millions of soldiers, sailors, marines, and coast guardsmen to and from training centers and seaports. They carried millions of members of the armed forces on trips to and from their homes and recreational areas. They also operated numerous hospital trains carrying wounded servicemen and many other trains carrying prisoners of war.

In peace, as well as in war, our government maintains an Army, a Navy, and an Air Force, and the railroads must be prepared at all times to carry military personnel and their equipment and provisions where and when needed. Servicemen are great travelers, on as well as off duty.

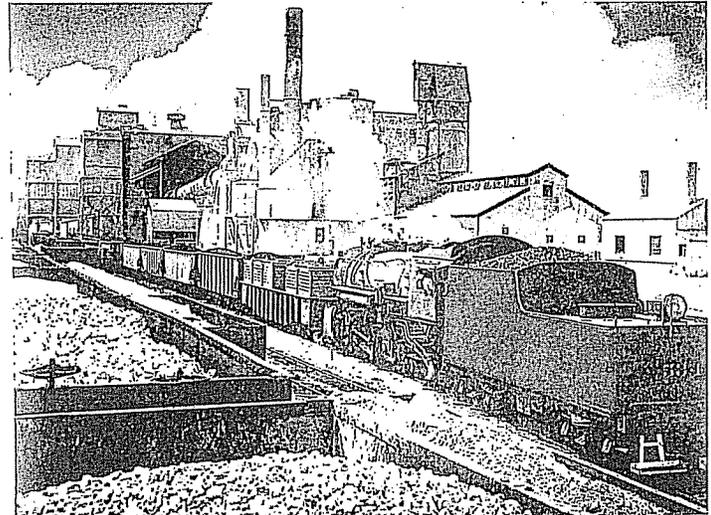


52

SPEEDING MILITARY EQUIPMENT BY RAIL

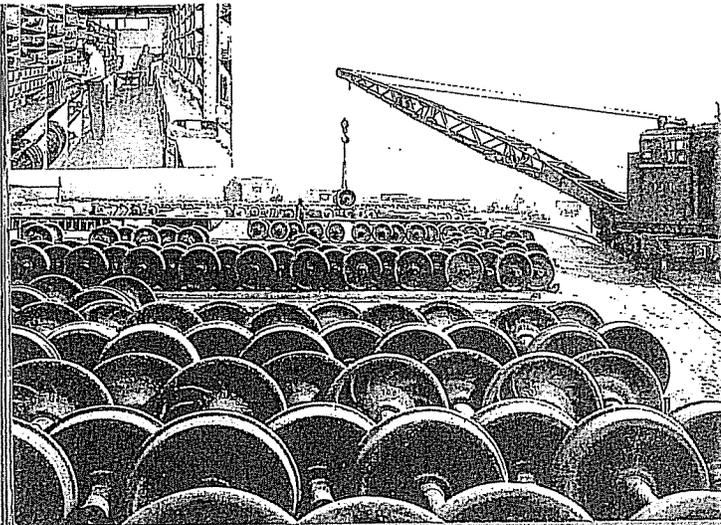
In wartime, railroads are the vital life lines of the nation. Only the railroads are equipped to transport in great quantities heavy war goods such as tanks, big guns, steel for battleships, engines, boilers, turbines, and many other things.

During World War II our railroads carried 90 per cent of all military freight. They delivered millions of carloads of materials and supplies to Army and Navy camps and bases. They brought raw materials to our mills, arsenals, and manufacturing plants, and they took the products of mills and factories and arsenals to military bases and to the seaports for shipment overseas. This nation could not wage a war successfully without the services performed by our railroads.



FACTORIES ARE FED RAW MATERIALS BY TRAINS 53

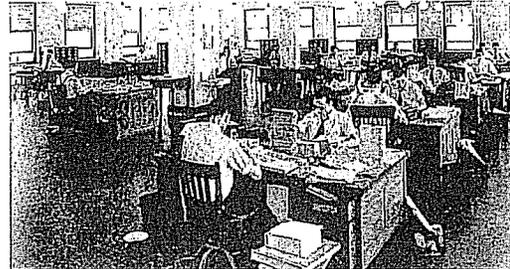
Nearly every important factory or mill is located on a railroad, as this one is. The railroad and the factory work together. Neither one could get along without the other. The railroad brings fuel and raw materials to the factory and takes the products of the factory to markets, far and near. To make one article—such as a bicycle, a sewing machine, or a radio—dozens of different materials are needed, and these may come from places hundreds of miles away. Often the parts are made in different factories in different cities and assembled in a factory in still another city. Railway transportation makes this possible. Railway tracks usually run directly into a factory where cars can be loaded and unloaded conveniently.



54 A RAILROAD STOREHOUSE AND MATERIAL YARD

All sorts of things are needed to keep our railroads running. In fact, the railroads buy and use thousands of different items—and these purchases are made in many thousands of cities and towns throughout the country. Railroads use fuel, tools, and machines. They use iron and steel products, forest products, and a wide variety of manufactured products. The railroad storehouse resembles a big hardware store where everything is neatly kept on shelves, as seen in the smaller picture.

Storage yards are used to keep the big, bulky things which railroads use such as rails, pipes, springs, and wheels. The larger picture shows how wheels are kept outside.

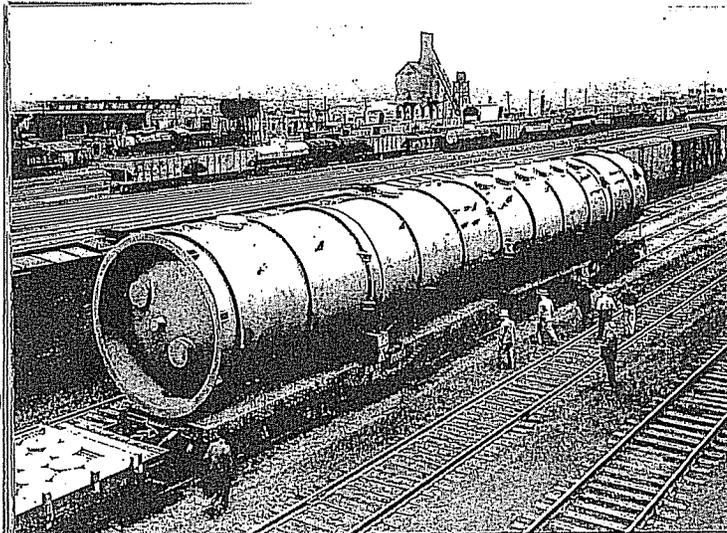


55
IN A
RAILROAD
OFFICE



Most large railroads are made up of several major departments—Executive, Operating, Engineering and Maintenance of Way, Traffic, Law, Treasury, Accounting, Purchases and Stores, and others.

The top picture gives us a glimpse of the Accounting Department, where a railroad's records are kept and the bookkeeping is done. The bottom picture shows one of the newer methods of sorting waybills or documents used for all shipments of railroad freight.

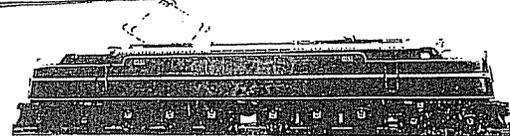


56 RAILROADS CARRY "ANYTHING, ANY TIME"

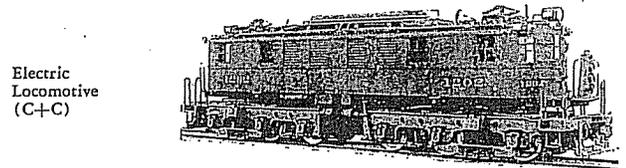
The railroads are equipped to handle any and every kind of shipment—big or little. The huge steel bubble tower in the foreground is 92 feet long, 18 feet high from the top of the rails, and weighs about 490,000 pounds. It was shipped by railroad from a manufacturing plant in Missouri to an oil refinery in Texas. Railroads have carried single freight shipments up to 183 feet in length.

Among the many other big unit shipments handled by the railroads are engines and turbines for steamships, guns for the Army and Navy, generators for power plants, and heavy machinery for mines, automobile factories, steel mills, and other manufacturing plants.

ELECTRIC AND DIESEL-ELECTRIC LOCOMOTIVES



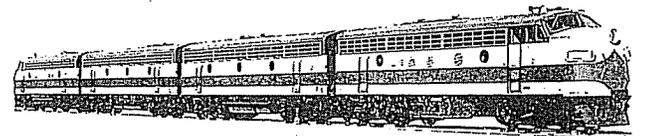
Electric Locomotive (2C+C2)



Electric Locomotive (C+C)



Diesel-Electric Road Locomotive

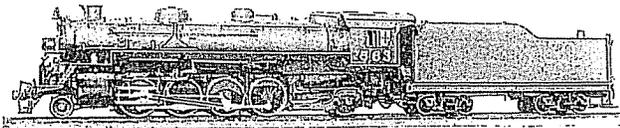


Diesel-Electric Road Locomotive

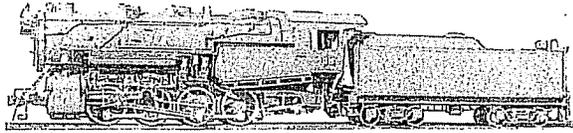


Diesel-Electric Switching Locomotive

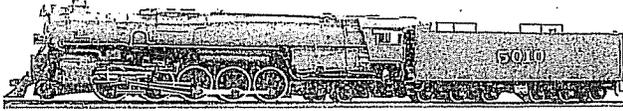
STEAM FREIGHT LOCOMOTIVES



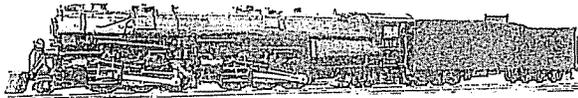
2-8-2 (Mikado)



0-8-0 (Eight-wheel Switcher)



2-10-4 (Texas)

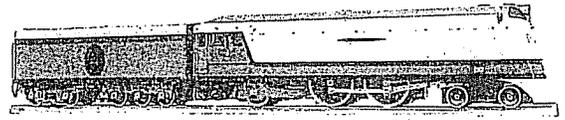


2-6-6-4 (Moller; Articulated)

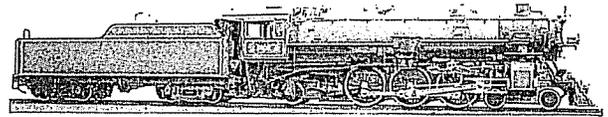


2-8-8-4 (Yellowstone)

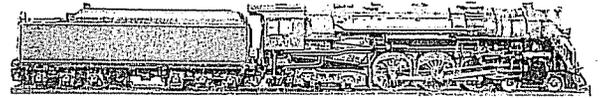
STEAM PASSENGER LOCOMOTIVES



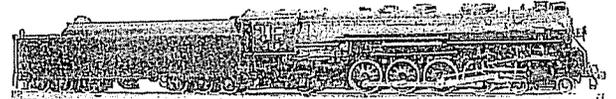
4-4-2 (Atlantic)



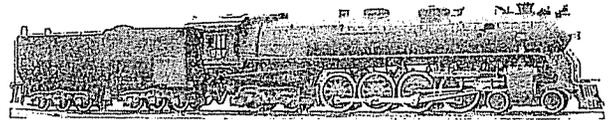
4-6-2 (Pacific)



4-6-4 (Hudson)

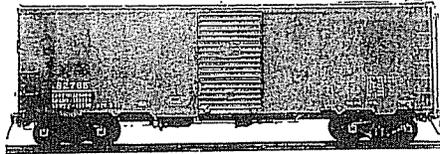


4-8-2 (Mountain)

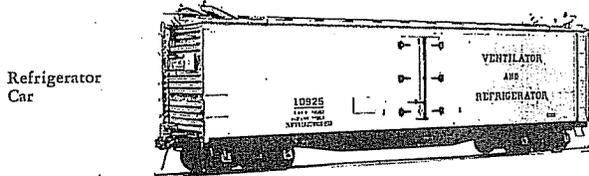


4-8-4 (Northern)

FREIGHT TRAIN CARS



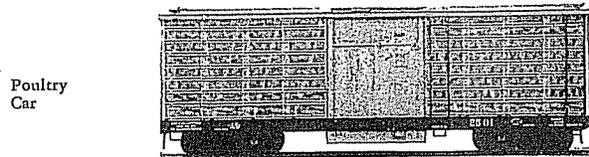
Box Car



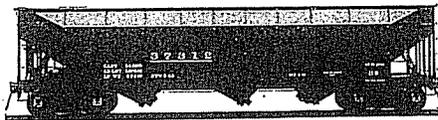
Refrigerator Car



Stock Car



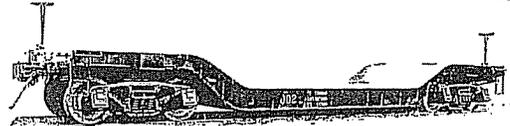
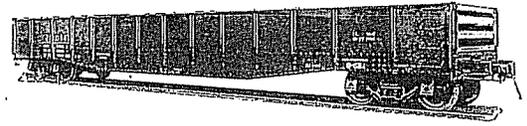
Poultry Car



Hopper Car

FREIGHT TRAIN CARS

Gondola Car

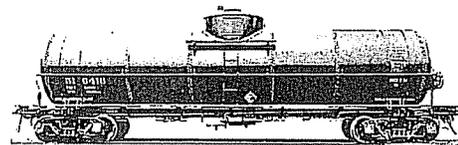
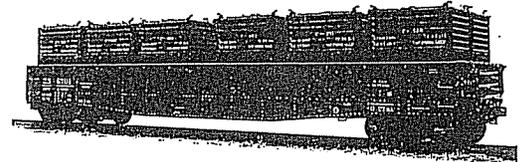


Depressed-Center Flat Car



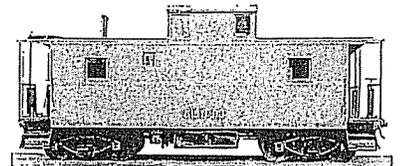
Flat Car

Container Car

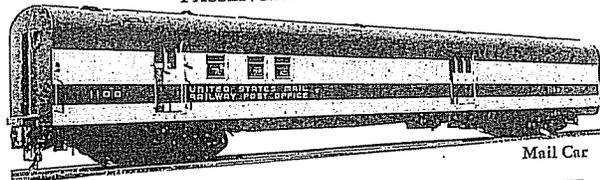


Tank Car

Caboose



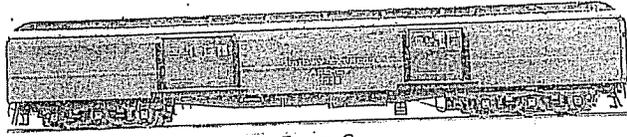
PASSENGER TRAIN CARS



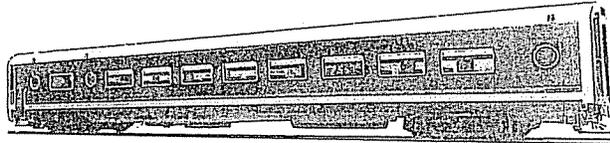
Mail Car



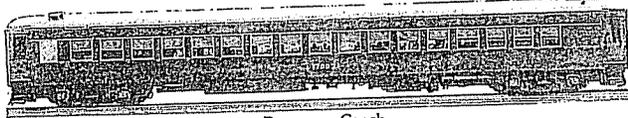
Baggage and Mail Car



Express Car



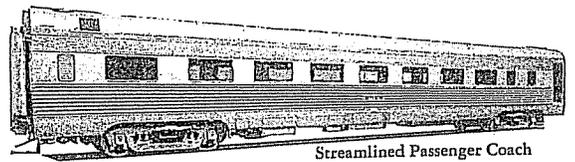
Passenger Coach



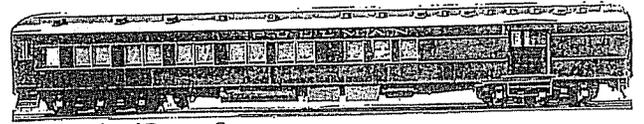
Passenger Coach

66

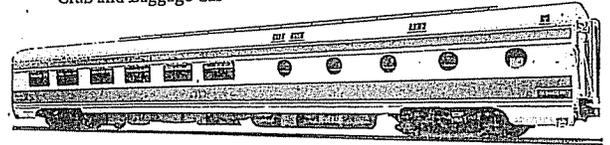
PASSENGER TRAIN CARS



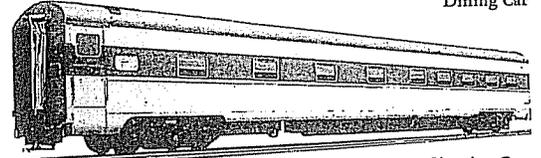
Streamlined Passenger Coach



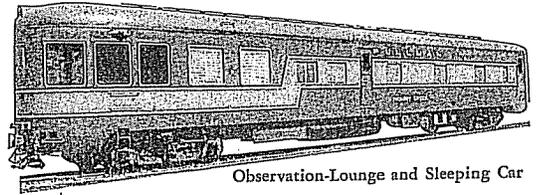
Club and Baggage Car



Dining Car

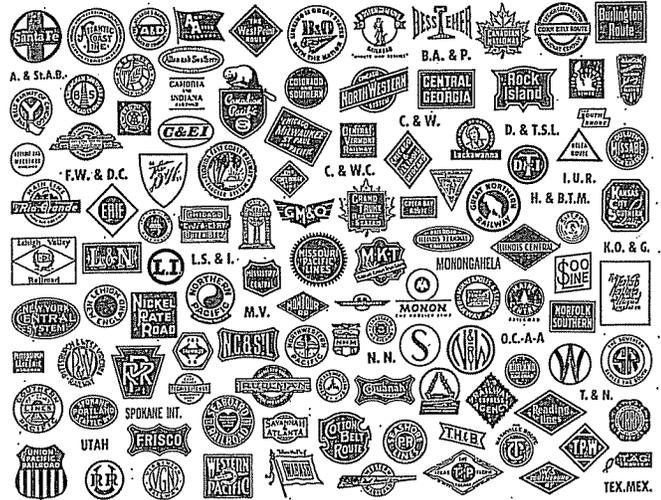
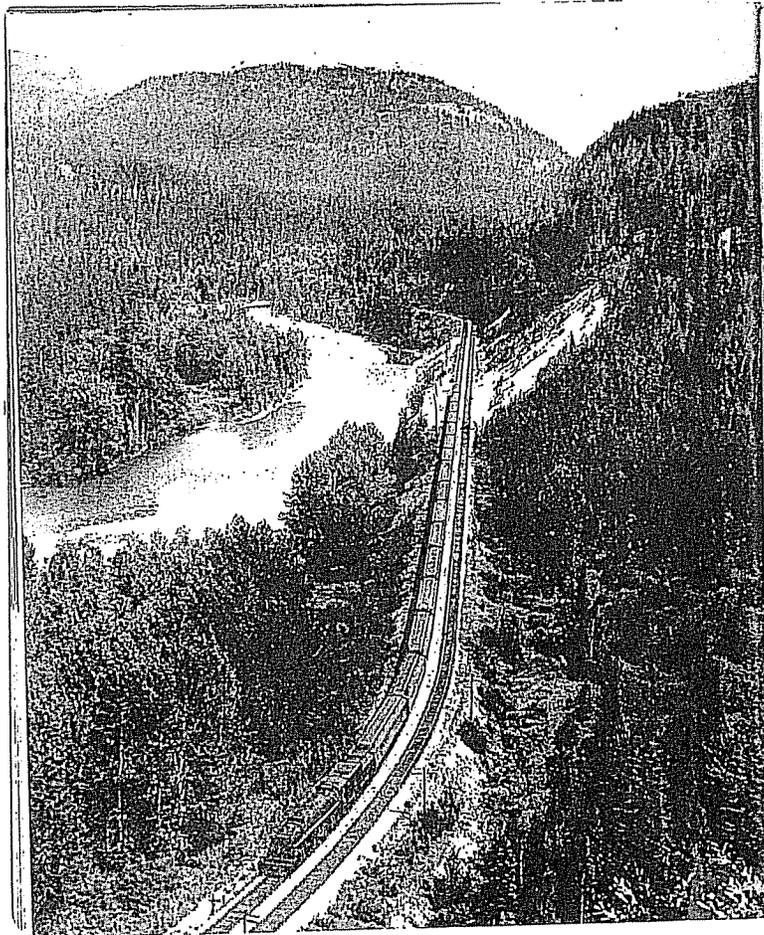


Sleeping Car



Observation-Lounge and Sleeping Car

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