

TRAINS AT WORK



649

w/9/83



WITHDRAWN
Baldwin Library

Library
University
of
Florida
RHB








David
Lyle
Millard





Digitized by the Internet Archive
in 2011 with funding from
LYRASIS Members and Sloan Foundation

<http://www.archive.org/details/trainsatwork00elti>

TRAINS AT WORK





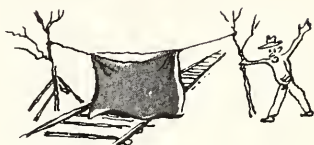
TRAINS AT WORK

By Mary Elting



ILLUSTRATED BY
DAVID LYLE MILLARD

GARDEN CITY BOOKS GARDEN CITY, N.Y.



Copyright 1947, 1953 by Duenewald Printing Corporation.
Lithographed in the United States of America.



SAM IS A FIREMAN:

Sam is the fireman on a big freight locomotive. Like lots of people who work on trains, Sam belongs to a family of railroaders. His father was a locomotive engineer. His grandfather was one, too. And, long ago, grandmother was an "op." That means she operated the fast-clicking telegraph key in a railroad station. Her telegraph messages helped to keep the trains running safely and on time.

When Sam was a little boy, he listened to his father and grandfather talking railroad talk. They used all kinds of words that ordinary people didn't understand. They had wonderful nicknames for each other, and slang words for many of the things they did.

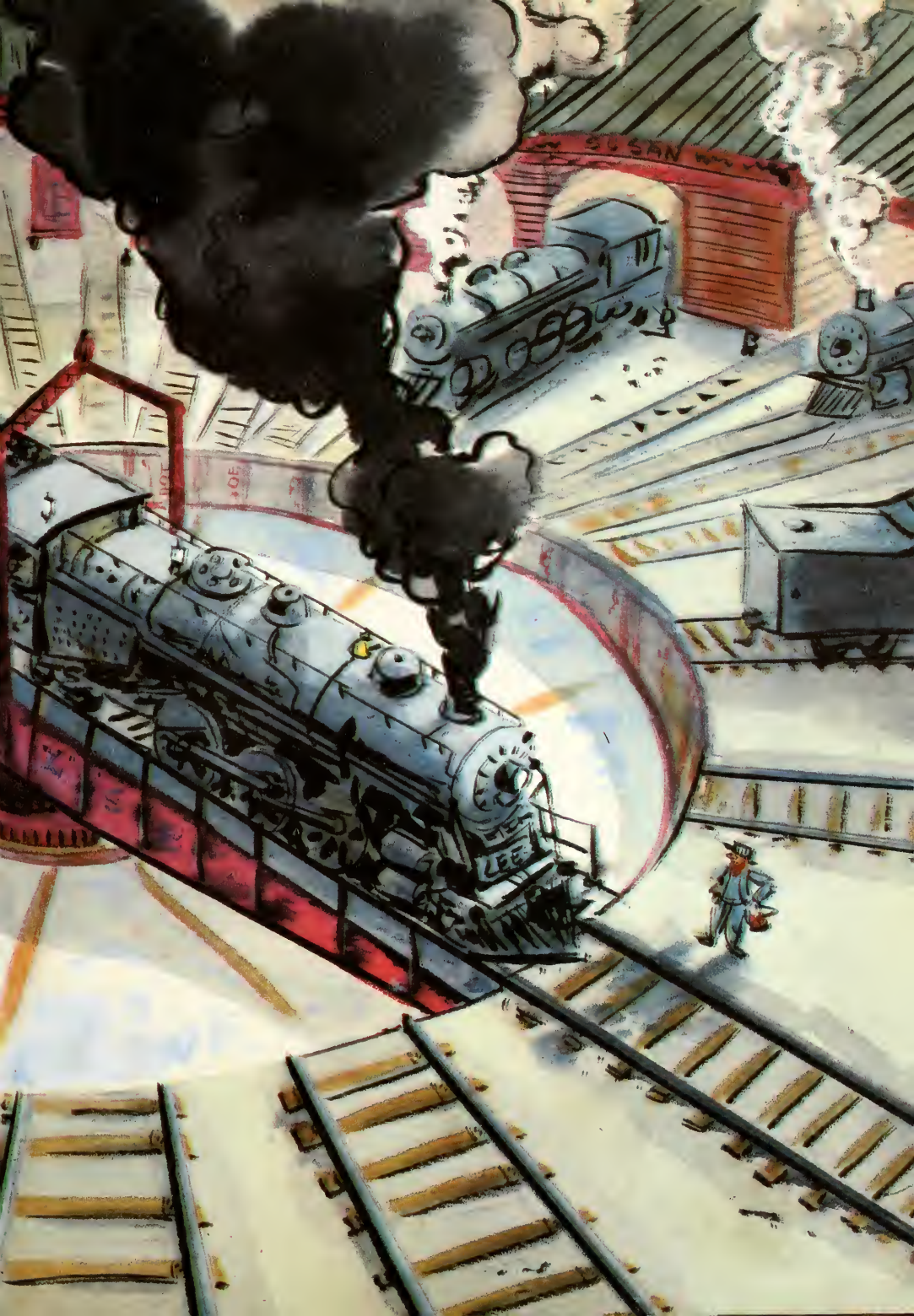
For instance, grandfather called his big locomotive a hog. Since he ran it, he was the hogger. After every trip, he brought his engine to the roundhouse, where men cleaned it and fixed it all up. Pig-pen was one nickname for the roundhouse. Can you figure out why? Another nickname was barn, because people often called a locomotive an Iron Horse. The barn had stalls for the engines. A modern roundhouse does, too.

The lumps of coal that grandfather's engine burned were called black diamonds. Fireman was the regular name for the man who shoveled coal, cleaned out the ashes and helped to grease the wheels with tallow fat. But the fireman also had a whole string of nicknames — diamond pusher, ashcat, bakehead and tallow pot. He called his shovel his banjo.

Once an old-fashioned train began rolling, it was hard to stop it. A man had to run from car to car, putting the brakes on by hand. Naturally, he was the brakeman, but his friends called him the shack.

In the days before electric lights, railroads needed signals just as they do now. The first ones were large balls that hung from a tall post. A black ball hanging halfway to the top of the post meant STOP. A white ball hanging high in the air meant CLEAR TRACK.

Lots of things have changed since then, but a signal



HIGHBALL MEANS-
TO GO FAST,
BECAUSE IN THE
OLD DAYS



WHITE BALL, RUN TO
TOP OF CROSSBAR
MEANT "CLEAR TRACK"



BLACK BALL, RUN
HALF-WAY UP
MEANT "STOP"

to go ahead is still the "highball" because railroaders still use many of the old words. Firemen and brakemen now have machinery that does many of the things they used to do, but they keep their old names. And one thing hasn't changed at all: People still love trains. The men who work on the huge powerful engines would rather work there than almost anywhere else. That's how Sam feels about it.

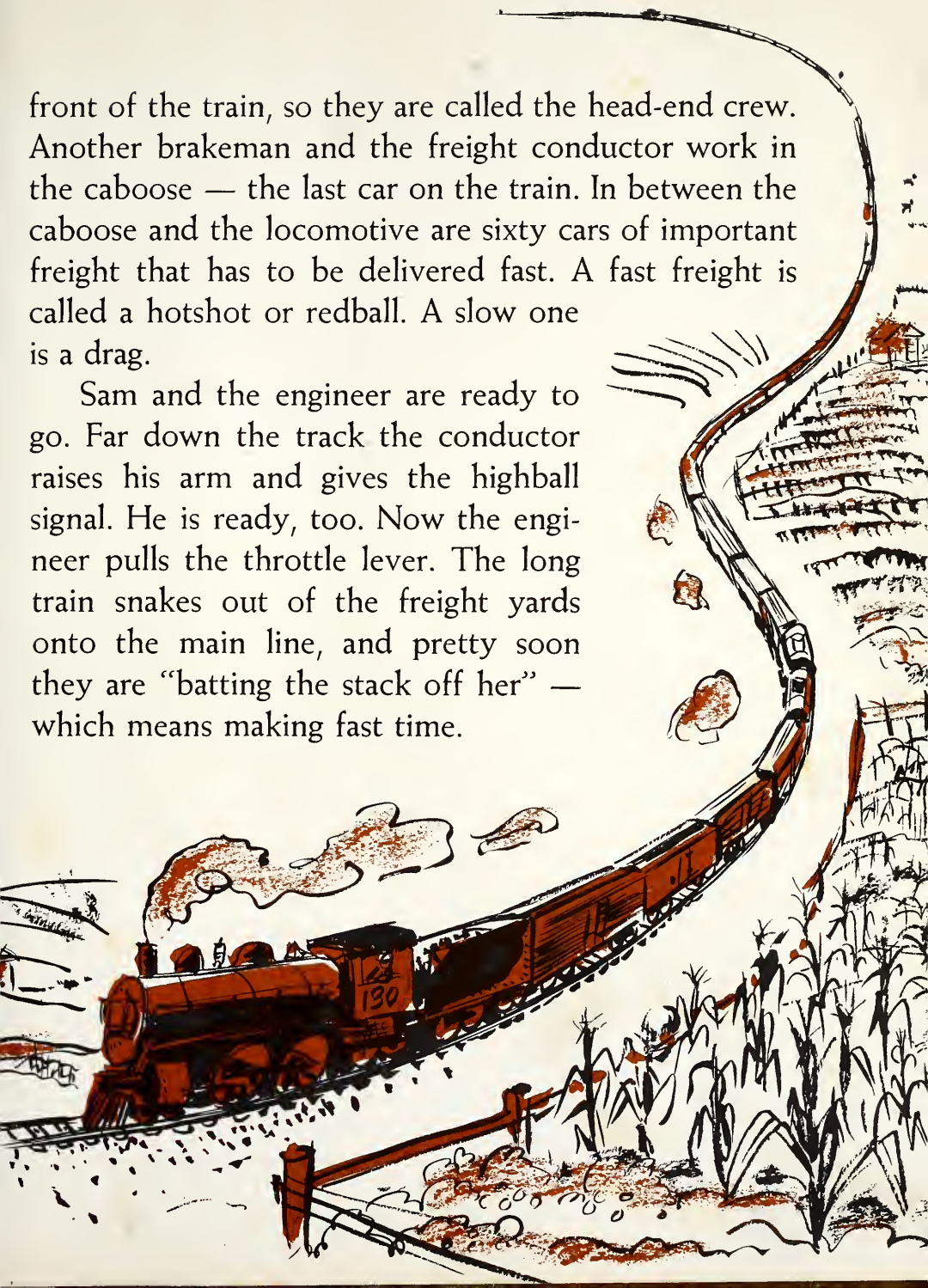
When Sam reports for work, his big steam locomotive is all ready. Men have oiled it and checked it. The fire is roaring in the firebox. In the old days, a fireman spent most of his time shoveling coal. The faster the train went, the more steam it needed and the faster the fireman had to work with his banjo. Sam knows how to use a shovel if he needs to, but that's not his main job. His locomotive has a machine called an automatic stoker which feeds coal into the firebox.

Sam just checks up on the fire. He looks at dials and gauges in the locomotive cab, and they tell him what he wants to know. There is enough steam. Everything is ship-shape.

Sam and the engineer and a brakeman work at the

front of the train, so they are called the head-end crew. Another brakeman and the freight conductor work in the caboose — the last car on the train. In between the caboose and the locomotive are sixty cars of important freight that has to be delivered fast. A fast freight is called a hotshot or redball. A slow one is a drag.

Sam and the engineer are ready to go. Far down the track the conductor raises his arm and gives the highball signal. He is ready, too. Now the engineer pulls the throttle lever. The long train snakes out of the freight yards onto the main line, and pretty soon they are “batting the stack off her” — which means making fast time.





Sam, on the left side of the cab, watches the track ahead. The engineer sits on the right, keeping a sharp lookout. When they come to a curve, Sam looks back along the train to make sure everything is all right.

After a while they see a little town up ahead, and beside the track stands a signal they have been expecting. It looks like a round plate, with places for nine lights in it. But only three of the lights are ever flashed at once. At the top of the page you will see what each set of lights means.

This time three green go-ahead lights are showing.

"Clear signal," Sam calls to the engineer.

"Green eye it is," the engineer replies.

All through the trip he and Sam will call the signals back and forth to each other, just to make sure there is no mistake. The engineer gives one long blast on his whistle to tell the station agent in the little town that the train is coming.

As they go past the station, Sam leans out of the cab and snatches a hoop from the station agent's hand. Quickly Sam takes a piece of paper from it and tosses



the hoop out again. In the meantime the agent hands another hoop to the conductor in the caboose.

The paper that Sam takes off the hoop is a train order, called a flimsy. On the flimsy the station agent has written instructions for the train's crew. Orders come to the station by telegraph. Sometimes they tell the crew that the train must make an unexpected stop at the next station. Sometimes they give information about other trains that have been delayed.

Bigger stations often have train order posts that stand beside the track, but small-town agents hoop the orders up by hand. Usually the agent has to walk along the track and pick up hoops that the crew toss down. But the one who gave the orders to Sam has a dog trained to chase hoops and bring them back!



Sam and the engineer and the brakeman read the orders to be sure nobody makes a mistake that might cause an accident. Back in the caboose the other brakeman and the conductor read their copy of the orders, too. Then the conductor goes to work at his desk again. The caboose is really his



office. There he checks the papers that tell where every freight car in the train is supposed to go.

The brakeman pours himself a cup of coffee that's been heating on the stove in the caboose. Then he climbs to his seat in the cupola — the little tower with windows through which he can watch the train. Squirrel cage is a nickname for the cupola. The caboose has the most nicknames of all. Crib, crum box, crummy, bounce, doghouse, parlor and monkey house are some of them.

Safety is everybody's job on a train, and each man in the crew knows the rules. If the train makes an emergency stop, the men take care that no other train will bump into them. One brakeman runs out ahead and



the other runs back along the track with signal flags to warn the other trains. At night they take along fusees, which look like giant firecrackers and burn with a bright red warning glow. Torpedoes are the best warning of all.

The brakeman fastens torpedoes to the track with little clamps. Then, if a locomotive runs over them, they explode with loud bangs that tell the engineer to stop before he runs into the stalled train ahead.

The first regular stop for Sam's train is a station where the tender is filled with water. The long string of freight cars waits here on a siding while a fast passenger train goes by.

On the next part of Sam's trip, the train has to climb some steep grades. One engine alone can't do all the work, so a helper engine couples on just ahead of the caboose. On the days when Sam's train is extra long and heavy, two helpers are needed.

Going downhill in the mountains is work, too — work for the brakes. In the old days, the brakeman had to run along the tops of freight cars and "club down."



That means he used a long club called a sap, to turn the wheels that set the hand brakes on each car.

The catwalks or decks along the car roofs made a path for the brakemen. Sometimes they walked up and down inspecting the train. Then they said they were "deckorating."

Fast freight cars, and slow ones, too, now have air brakes which are squeezed against the wheels by compressed air. Every car has an air hose that runs underneath it to the brake machinery. The hose from each car can be joined to the hose on the ones behind and in front, and finally to the locomotive's hose. A pump in the locomotive compresses the air for the whole train. Now if the engineer wants to stop, he just moves a lever. A whoosh of air tightens the brakes on every car.

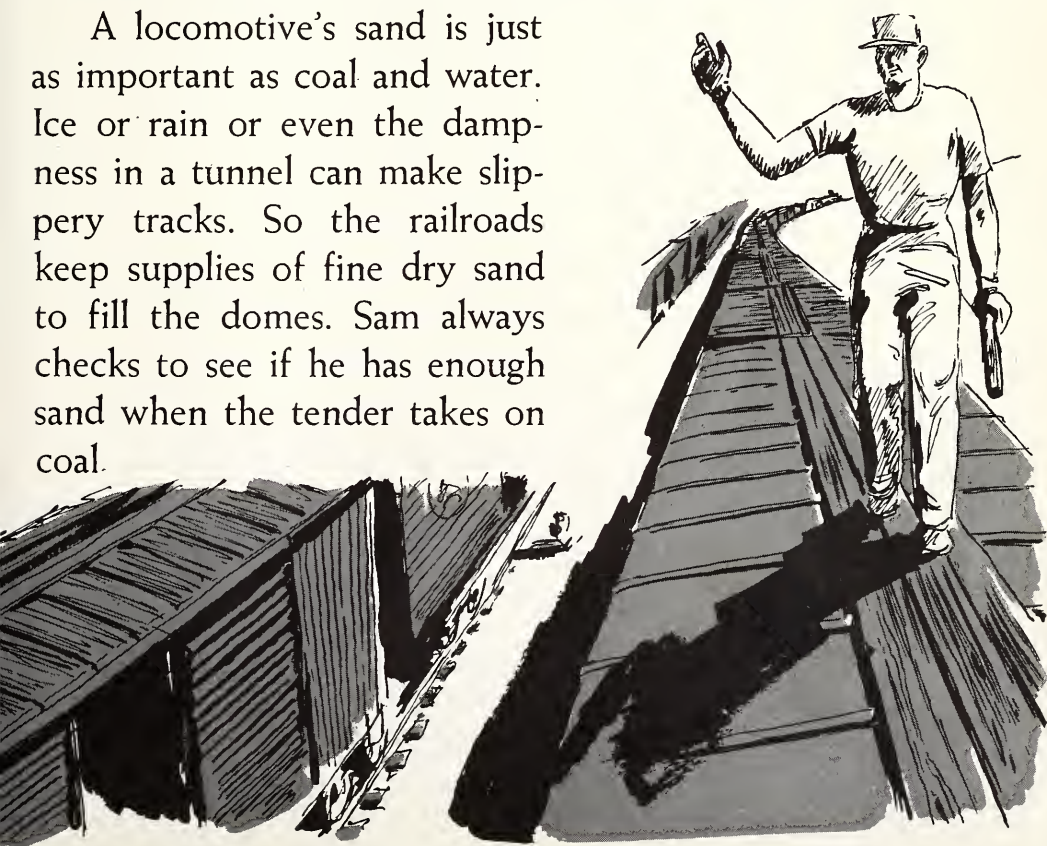
When the train goes down a long hill, the squeezing of the brakes can actually make the wheels get red hot. Some freight trains have to stop and let the wheels get cool. But the cars in Sam's train have a sort of fan built into the brake machinery. The fan cools the wheels, and the redball freight goes right on down.

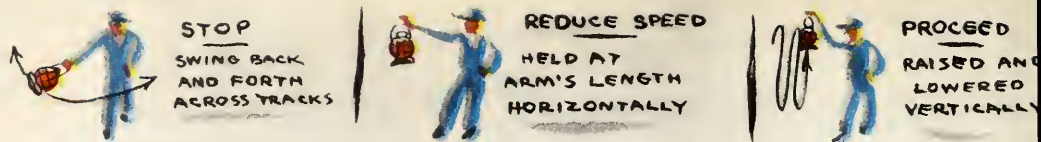
After a while, Sam takes a little scoop and tosses some sand into the firebox. He knows that the engine's flues are likely to get clogged up with soot, and the

sand will clean them out. Later on, sand does an even more important job. The train has run into a storm in the cold, high mountains. Slushy snow has frozen on the rails. Instead of pulling ahead, the engine's wheels begin to slip round and round.

But the engineer fixes that easily. He squirts sand onto the slick track to make the wheels pull again. The sand comes from the dome, which is the hump you can see behind the stack on top of a locomotive. Pipes lead down from the dome on each side and aim the sand onto the track just in front of the driving wheels.

A locomotive's sand is just as important as coal and water. Ice or rain or even the dampness in a tunnel can make slippery tracks. So the railroads keep supplies of fine dry sand to fill the domes. Sam always checks to see if he has enough sand when the tender takes on coal.





The huge coal towers in big freight yards can fill several tenders at once. Often, while the loading goes on, ashes from the locomotive's firebox get cleaned out at the same time. There is a dump pit under the tracks, with little cars that run on their own rails. After a little car is filled with ashes, it can be pushed away and unloaded at the ash heap.

When Sam pulls into the next big freight yard, his part of the run is finished. After a while he will board another engine and take another freight train back to his home station. He has a regular schedule for work. That doesn't seem strange these days, but Sam's grandfather would have thought it was something miraculous.

In the old days, grandfather never knew what time he'd have to leave for work. Sometimes, when he was just ready to blow out the kerosene lamp and go to bed, there would be a knock at the door. On the dark porch stood a boy, still panting from a bicycle ride up the street. He was the railroad call boy, and he'd come to say that an engineer was needed right away. Grandfather had been assigned to the job. So he pulled on his clothes and went off, no matter how sleepy he was.





The place where Sam leaves his train is called a division point. Other men will take over all the cars of redball freight and speed them on another division of their trip. Let's see who these different railroaders are and what they do.

UNSCRAMBLING THE TRAINS

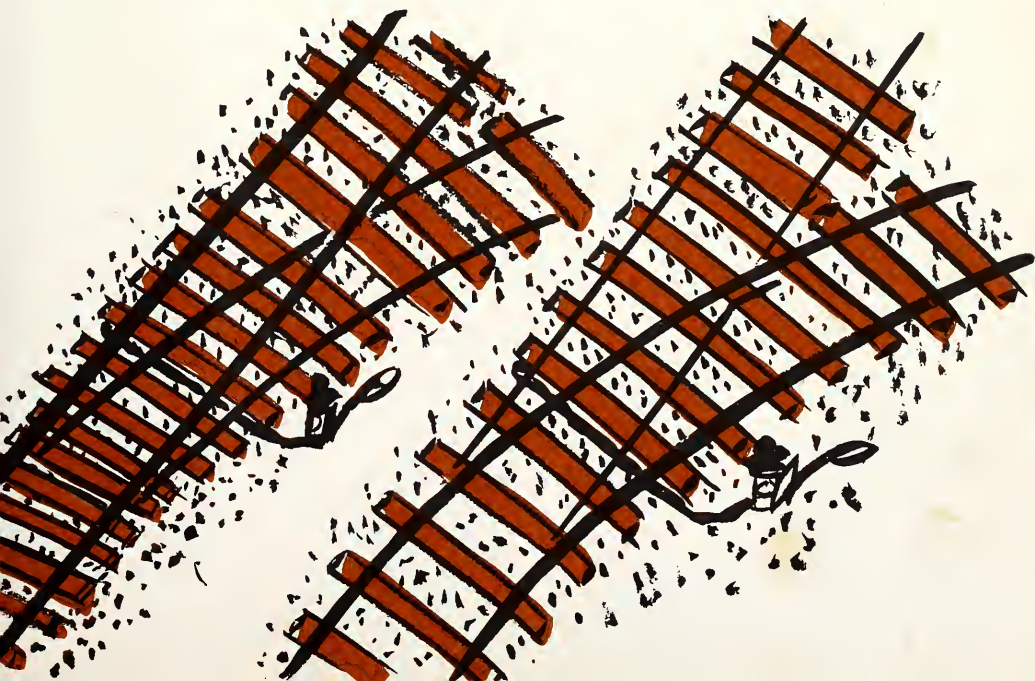
Sixty freight cars have come roaring together over the mountains behind Sam's engine. But now the cars have to be separated. Some of them are going to Baltimore. Some will turn north to Chicago. Others are bound south. Freight cars for twenty different cities are coupled together in one train, and somebody must unscramble them.

Suppose you have a lot of colored beads on a string and you want to separate them into greens and reds and blues. The easiest way is to get three cups and let

the beads drop off one by one, each into its own cup with the others of the same color.

That's just what railroaders do with a freight train. Instead of cups, of course, they have a lot of separate tracks, all branching off a main track. On one branch track, they collect the cars that go to Baltimore; on another, the cars for Chicago; on another, the cars headed south. This system of tracks is a classification yard.

In order to turn the cars from one track to another, there must be a lot of switches. A switch is made up of movable pieces of rail that guide the cars' wheels. Look at the picture and you will see how a switch guides a car either along the main track or onto a branch track that curves off to the right.





Some of the most wonderful inventions in the world have been put to work in the big freight classification yards. First the regular engine leaves the train and a special switch engine couples on. The engineer of the switch engine has a radio telephone in the cab, so he can listen to orders from the towerman who unscrambles the train.

The towerman sits in a tower beside the track at the top of a little hill called the hump. The main track goes over the hump and down. Then it divides into several branch tracks. If you uncouple a car just at the top of the hump, it will roll down the slope by itself.

To make the car go onto the right branch, the towerman works an electric switch. He just pushes little handles on the board in front of him, and electric machinery moves the switches in the tracks.

On the desk beside him, the towerman has a list that tells him where each car in the train is and what city it is headed for. He knows which branch tracks should be used — track number 4 for cars going to Baltimore, track 6 for Chicago cars.



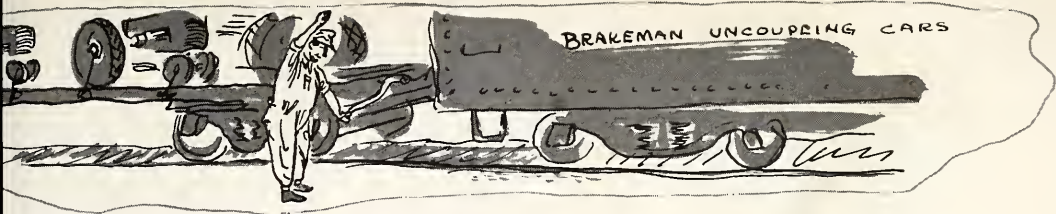


LOOKING OUT OF INSPECTOR'S
PIT AT CAR PASSING OVERHEAD

Slowly the switch engine pushes the train toward the hump. On the way the cars pass over a big hole underneath the track. In the hole sits a man in a chair that can be tipped and turned. And all around are bright lights that shine on the undersides of cars as they pass. This is the inspection pit. The man in the chair tilts this way and that, watching through a shatterproof glass hood to see if anything is broken or loose on the under side of the cars. When he spots a car that needs repairing, he talks with the towerman by radio telephone. And the towerman switches the car off to a repair track.

(Not all yards have radio telephone. In the ones that don't, the inspector pushes a button and squirts whitewash onto a car to mark it for repair.)

Now the cars come close to the hump. A brakeman uncouples the first one. Slowly it starts downhill. Then it gathers speed — faster, faster. If it hits another car there will be a crash. But, like magic, something seems to grab at the wheels and slow them down.

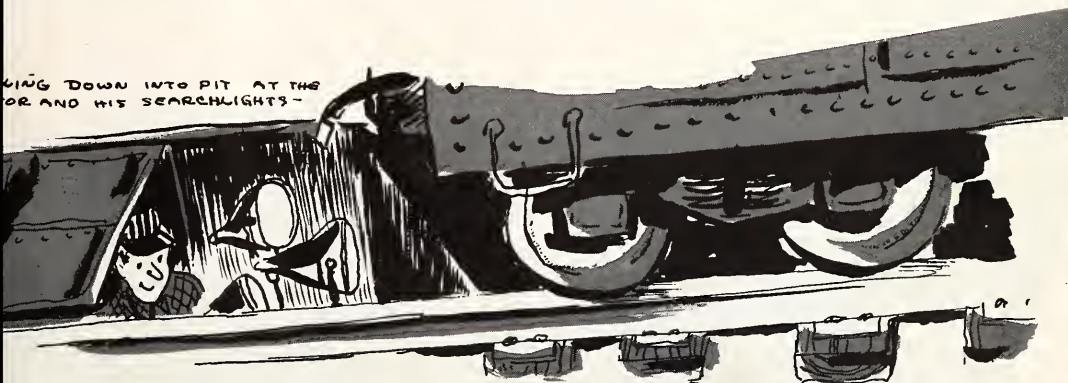


Something does rise up like fingers from the sides of the track. It is the car retarder which squeezes against the wheels and keeps the car from rolling along too fast.

The retarder works by electricity. The towerman just presses a button or a handle in the tower, and far down the track the retarder machinery goes to work. Before railroads had this machinery, brakemen went over the hump with the cars, working fast and hard to put the hand brakes on at just the right time. Brakemen who did this were called hump riders.

Once in a while a hump rider still goes with a car of very fragile freight that might be broken if it banged into another car the least bit too hard.

Car after car drifts down the hump and stops just where it should. When one freight train has been un-



scrambled, another rolls up beneath the tower, and its cars, too, are shuffled. In just a few hours half a dozen trains have been broken up and made into new ones.

Some yards have extra inspectors who stand on top of a building and look down at the cars from above. They can see broken parts that the man in the inspection pit might miss. In other yards, a man is stationed beside the track that leads up to the hump. In his hands, he holds something that looks like a gun. It is — an oil gun. As each car passes, he takes aim and fires a stream of oil straight into the car's journal box. (You'll read about the journal box on page 42.)

Not every freight yard has a hump or car retarders or radio telephones. Only the biggest ones have all these



things. In many yards the switch engine pushes the whole train first onto one track and then onto another, dropping a car each time.

There are several kinds of switch engine, built especially for their jobs. But switching is often done with very old engines that aren't fast enough for regular runs any more. Railroad men call an old wheezy engine a teakettle. An ordinary switch engine is a bobtail or a yard goat.

If the yard doesn't have switches that work by electricity, switchmen work them by hand. A switchman is sometimes called a cherry picker, because of the red lights on the switches. Another nickname for him is snake. That's because he used to wear a union button



Diesel Switcher



Electric Switcher



"Teakettle"



back
in

hot
box



cross
over

train
should
back
away



come
in
on
track
four



with a big snaky S on it. Many railroaders belong to unions called Brotherhoods. Part of the safety of their work was brought about by the unions which helped to get laws passed and rules established to make railroading as free from danger as possible.

In the old days, one great danger came from the big, heavy gadget called a link-and-pin that joined the cars together. The switchman or the brakeman had to reach in and fasten it when a train was being made up. If the cars began to move while he was at work, he might get his fingers cut off.

All cars now have automatic couplings which clasp together and hold tight when one car bumps another. To uncouple, the switchman works a handle that keeps his fingers safely out of the way.

A railroad yard is a noisy place. Usually the engineer can't possibly talk with a switchman down the track, no matter how loud he shouts. So railroaders have

worked out a whole sign language in which they can talk to each other from a distance. The pictures tell what some of these special signals mean.

After a new freight train has been made up at the classification yard, a car inspector puts a blue flag on the engine and another on the caboose. Then he checks up carefully on the whole train to make sure everything is in good working order. An old nickname for inspector is car toad, because he often squats down to look for broken parts. While he is at work, the blue flags are a warning that the train must not be disturbed. If the inspector finds a car that needs repairs, he reports that it is a "bad order car."

THE BACKSHOP

Locomotives get their regular inspection in the roundhouse. Small repair jobs are done there. But if there's something seriously wrong, off the engine goes to the backshop for a complete overhauling.

cut
off
car
or
engine



bad
order
car



take
water

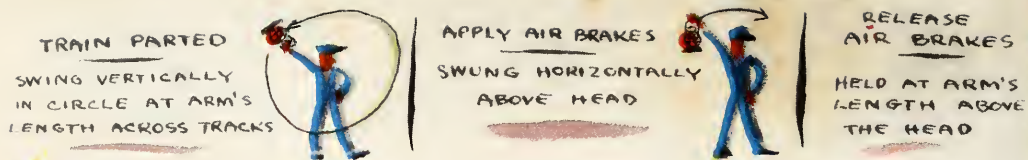


couple
cars



time
to
eat

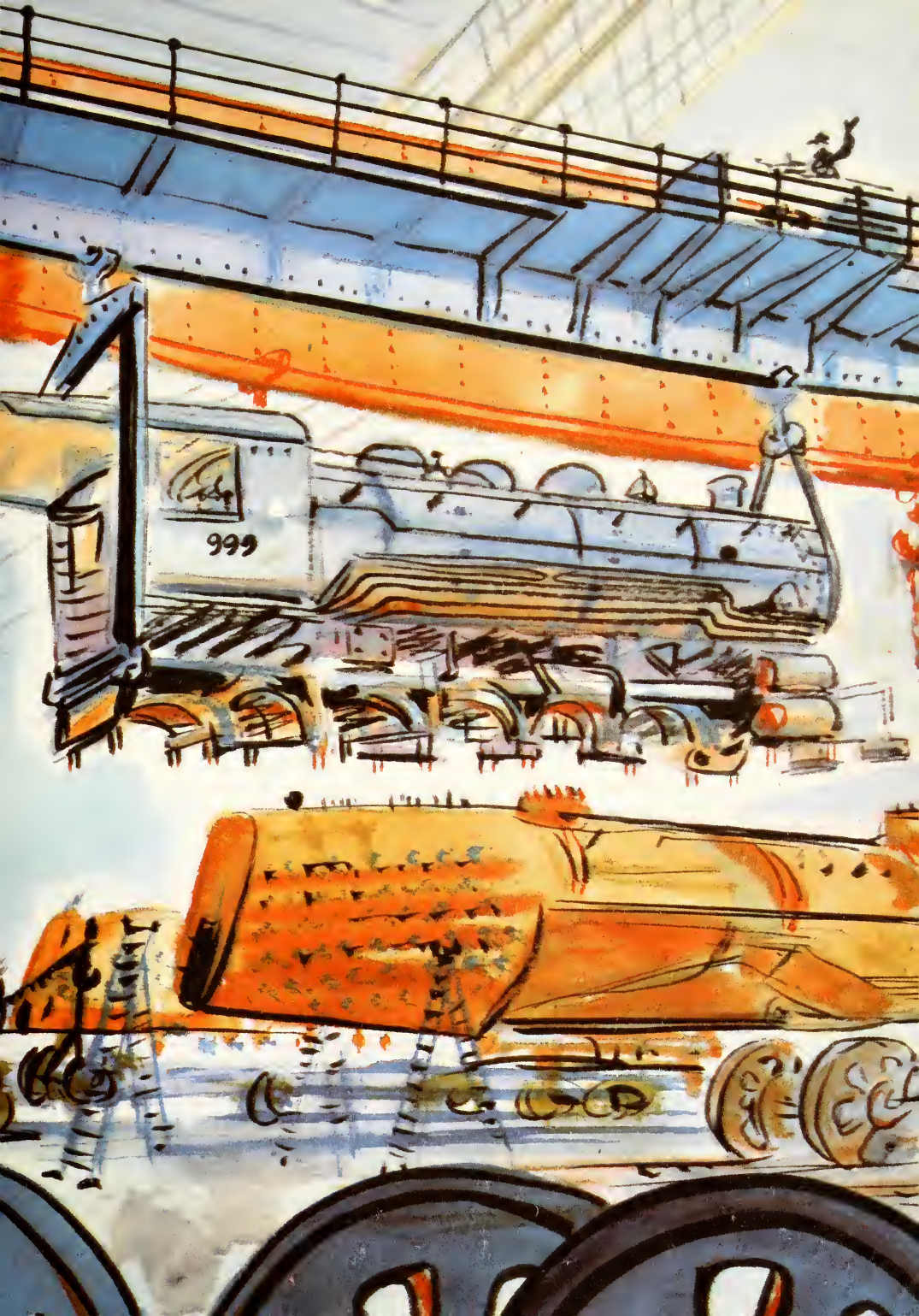




The backshop for locomotive repairs has rails on the floor — and rails up in the air, too. An engine chuffs in on its own tracks and stops. When it has cooled down, an overhead crane travels on its rails high above the floor. It swoops down, picks up the body of the locomotive and carries the whole thing away, leaving the wheels behind.

Now a dozen men swarm over the engine's body, and before long it looks like an old piece of junk. Some parts get thrown away. But many of them just need cleaning or mending. As the hundreds of parts come off, they are marked with the engine's number. Then they scatter all over the shop to be inspected and cleaned or fixed and tested.

Meantime, other workers take charge of the wheels. In the old days, they had one particular way of testing a wheel. They gave it a good sharp rap with a hammer. If the metal rang out clear and bell-like, it was supposed to be all right. Inspectors in railroad yards went about tapping car wheels, too. And that's how repairmen and inspectors got their nicknames — car knocker, car-whacker, car-tinker, car-tink, car-tonk. Wheel experts in the backshop now have scientific tests to make sure



that wheels are in good condition. Sometimes they even do X-ray tests, looking for cracks hidden deep inside the metal!

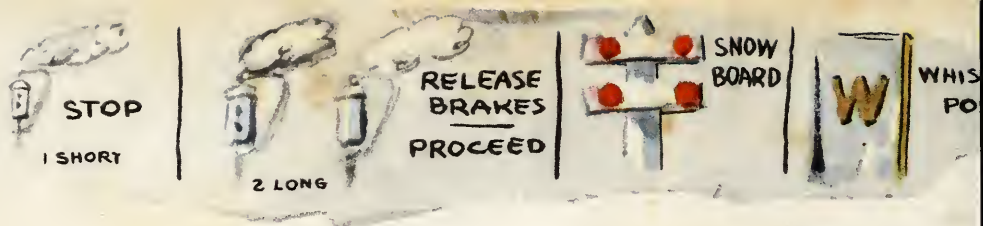
When you walk around a big railroad shop, everything seems noisy and helter-skelter. Noisy it is. Wheels screech, hammers pound, fires roar. But the work is really planned out in a very orderly way. And nothing goes to waste. When big machine parts get worn down, they can often be shaved and smoothed and made over into smaller parts for a different purpose.

Even the shavings have their uses. A machine with a magnet in it sorts the tiny bits of metal. The iron bits stick to the magnet and other kinds drop through into containers. Later, each kind of metal is melted down to make new parts. Iron dust from one engine's axle may turn up later in one of the thousands of new car wheels that railroads keep in huge yards.





All of this fixing and testing and making over takes a lot of time. A locomotive may spend a month or more in the shop. But at last it is all put together again, complete with a new coat of paint. Now it goes out for a test on the slip-track. This is a greased track where the engine's wheels whirl round as if it were going at top speed while it is really almost standing still. If everything works all right, its old number is put in place, and an almost new locomotive is ready to highball again.



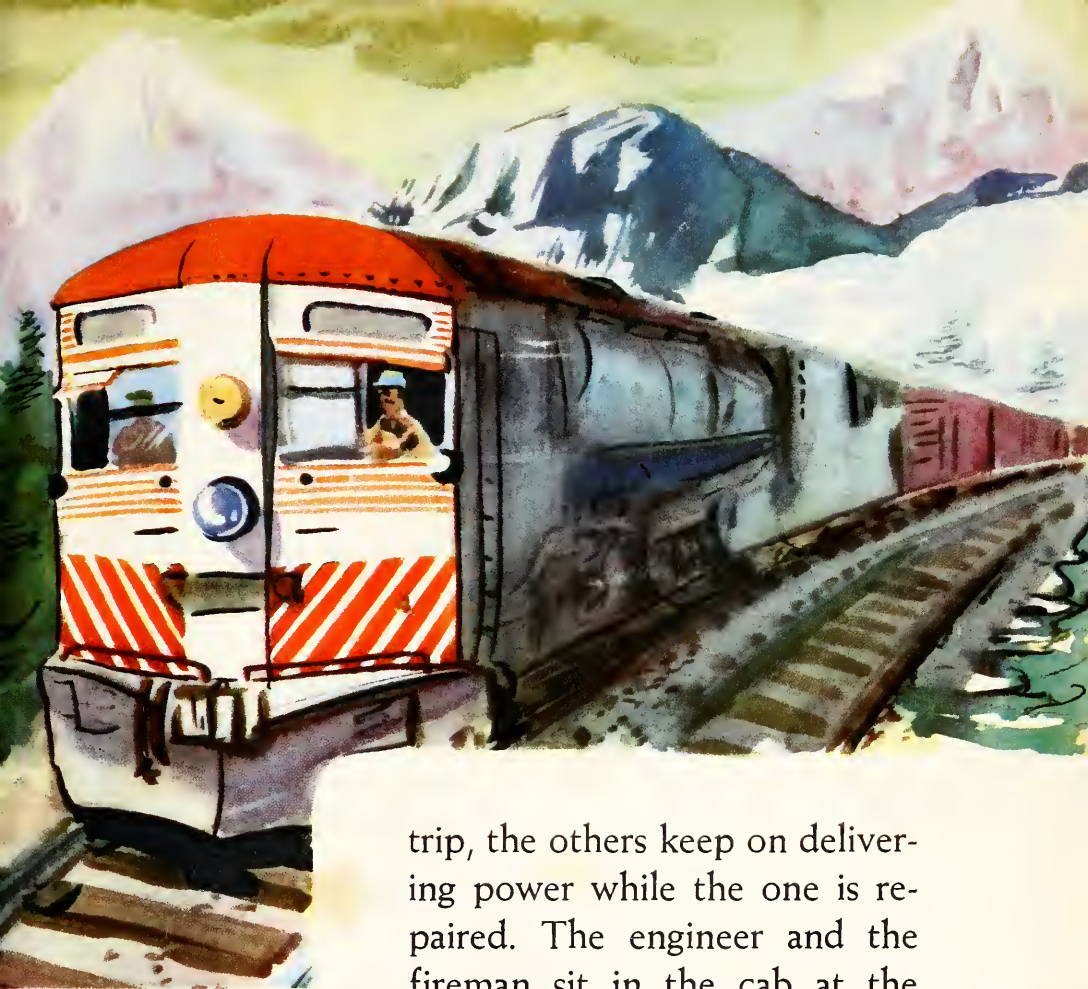
LOCOMOTIVES

More than forty different kinds of locomotive work for the railroads. Some of them haul freight, and some are passenger train engines. Some are steam locomotives, some are not.

Steam locomotives all need water to make the steam that makes the wheels turn. But they don't all get it in the same way. One kind never has to stop and wait for its tender to be filled. Instead it has a scoop that dips down as the engine passes over a long track-pan of water set between the rails. With no time lost, the scoop sucks up water into the tank. The men say, "She's jerked a drink." In winter, the track-pans are heated to keep the water from freezing.

Two kinds of locomotive don't even need water. Electric engines use electric current instead of steam to turn the wheels. They get the current from wires along the tracks. Diesel-electrics are more complicated. They have oil-burning engines that make electric current right in the locomotive, and this current runs motors that turn the wheels.

There are several engines inside a Diesel-electric locomotive. If one of them gets out of order during the

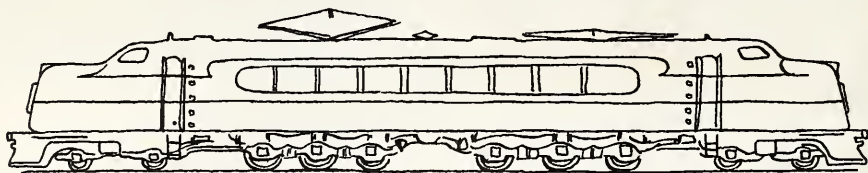


trip, the others keep on delivering power while the one is repaired. The engineer and the fireman sit in the cab at the very front of a Diesel-electric. They can watch the track through front windows.

The cab is at the front of the engine shown on this page, too, but it is a steam locomotive. It burns oil instead of coal, so the cab doesn't have to be right next to the tender. The men call it the Big Wamp. It hauls tremendously long freight trains across the Rocky



SANTA FE 6000 DIESEL



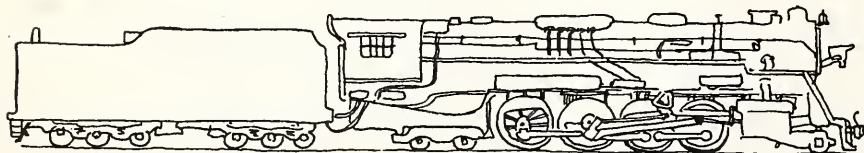
NEW HAVEN EP 4

Mountains. One siding where the men stop to eat is so long that there has to be a restaurant at each end!

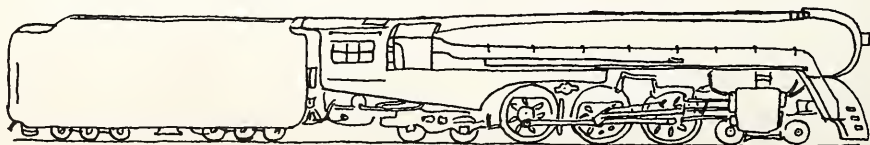
Many railroads are buying more and more Diesels as their steam locomotives wear out. The Santa Fe Railroad's Diesel at the top of the page is called a 6000 because it has six thousand horsepower.

The New York, New Haven & Hartford uses electric locomotives because it can get power for them easily. The one above is called the EP-4 because it is the fourth model of electric passenger engine the road has used.

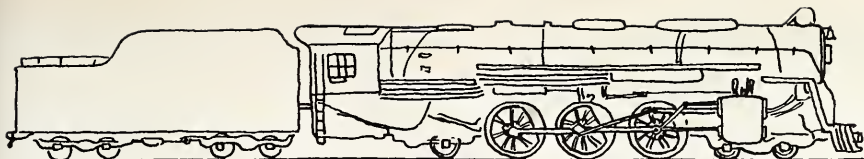
All the others in these pictures are steam locomotives, but the T-1 is a special kind. Its name means that it is the first of a type called a turbine locomotive. An



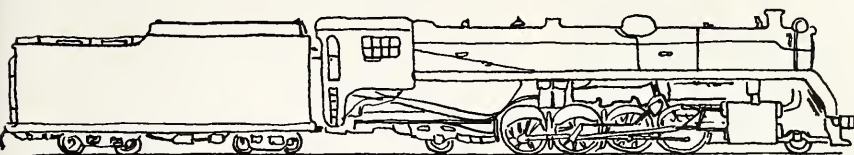
PERE MARQUETTE BERKSHIRE



NEW YORK CENTRAL HUDSON



ERIE PACIFIC

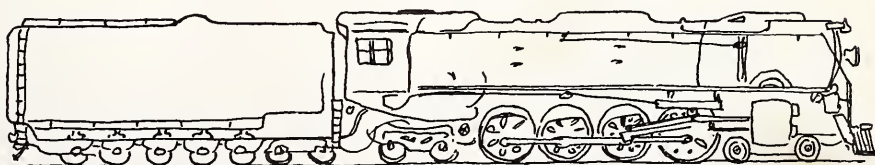


CANADIAN PACIFIC MIKADO

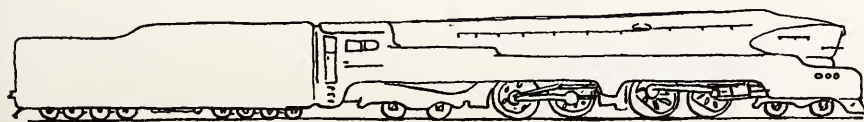
ordinary engine lets out its used-up steam in puffs, as if it were panting. A turbine doesn't, and so it never makes the familiar chuff-chuff noise.

The name on each of the other steam locomotives shows that it belongs to a type that has a particular arrangement of wheels. All Pacific-type engines have four small wheels in front, then six big ones, then two small ones in back. Mikados have two small, eight big, then two small ones. The way to write these wheel arrangements is 4-6-2 and 2-8-2. If an engine is called a 2-6-0, that means it doesn't have any small wheels at the back. A 2-8-8-2 has two sets of big wheels and two sets of small ones. And 0-8-8-0 means there are no small wheels at all.

41



UNION PACIFIC NORTHERN



PENNSYLVANIA T1



~~H~~OT BOXES

~~N~~ Have you ever been on a train that stopped suddenly between stations? Perhaps one of the cars had a hot box. Here is how it happened:

~~N~~ Car axles must be kept well greased if they are going to move smoothly. They are fixed so that each end of the axle turns in a bed of oily stringy stuff called waste. The container that holds this bed of oily waste is the journal box, and there's one for every wheel on a car.

Inspectors always check journal boxes carefully, but it sometimes happens that the oil gets used up while the car is moving. The unoiled axle grows hotter and hotter until the waste begins to smoke and burn. Then the car has a hot box, which railroaders also call a stinker. Hot boxes can be dangerous. If an axle goes too long without grease, it may break off and cause a bad accident.

When the train goes around a curve, the engineer or the fireman looks back for smoking journal boxes. The brakeman in the caboose keeps an eye out for

them, too. On many new freight trains the conductor or the brakeman can call immediately by radio telephone and tell the engineer to stop for a stinker. But on older trains, the conductor can only pull the emergency air-brake, which stops the whole train fast.



Although a hot box is dangerous, it's easy to remedy. The box only needs to be re-packed with fresh oil-soaked waste.

Everybody who works on a railroad watches for smoking journal boxes. Suppose a freight train has stopped on a siding to let a fast passenger train go by. The head freight brakeman stands beside the track. If he sees a hot box on the fast train — or any loose, dragging part — he signals to the passenger engineer.

When railroad workers give a good look at a running train, they say that they've made a running inspection. Telegraph operators and station agents come out on the platform and make running inspections whenever trains go by.

The newest, fastest cars on both passenger and



freight trains get fewer hot boxes than old ones. Their axles have roller bearings to help them turn smoothly, and the oil in their journal boxes is supposed to last for a long time. Still, an inspector may forget to check the oil, or it may leak out.

There's no waste packed around roller bearings. So, how is anyone going to tell when one of the new cars gets a hot box? Some railroads have solved the problem with bombs! Into every journal box go two little gadgets that explode when an unoiled axle begins to heat up. One bomb lets out a big puff of smoke that can easily be seen. The other spills a nasty smelling gas that is sure to make passengers complain, in case the conductor doesn't notice it himself.

GREENBALL FREIGHT

Roller-bearings are usually put on the freight cars that need to run at passenger train speed. Greenball



freight always travels fast. A greenball train carries fruits and vegetables in refrigerator cars, which are also called reefers or riffs.

At each end of a reefer are containers called bunkers. These hold ice to keep the food cool while it travels. At ordinary stations, men load ice into the bunkers by hand. But a big loading station has a giant icing machine to do the job. It rides along on its own rails, poking its great arms out and pouring tons of ice into the cars.

Suppose you are sending carloads of spinach to market. The icing machine also blows fine-chopped ice, which looks like snow, on top of the spinach to



keep it fresh. But suppose you have a lot of peaches that must go from the orchard to a big city hundreds of miles away. First, the reefers have to be pre-cooled. Onto the loading platforms roll machines with big canvas funnels that fit tightly over the reefers' doors. These are blowers that force cold air into the cars. Now the crates of fruit can be loaded quickly, and the doors sealed shut.

When fruit trains from California go across the high mountains in winter, there is danger that the reefers may get too cold. So the men lower charcoal stoves into the bunkers for the mountain trip. Then the bunkers are filled with ice when they get down into warmer country again.





Some fruits, such as bananas, have to be inspected on the road to make sure they are not spoiling. The inspectors are called messengers.

Reefers also carry meat and fish, butter, eggs, cheese and even fresh flowers.

When a reefer's cargo is bound for a big town or city, it goes straight through, with as few stops as possible. But there are many small towns that couldn't use up a whole carload of butter or meat before it spoiled. So the railroads have peddler cars to supply these towns with small quantities of food. The cars stop at station after station, just the way a peddler would. The storekeepers get only what they need, then the car moves on.



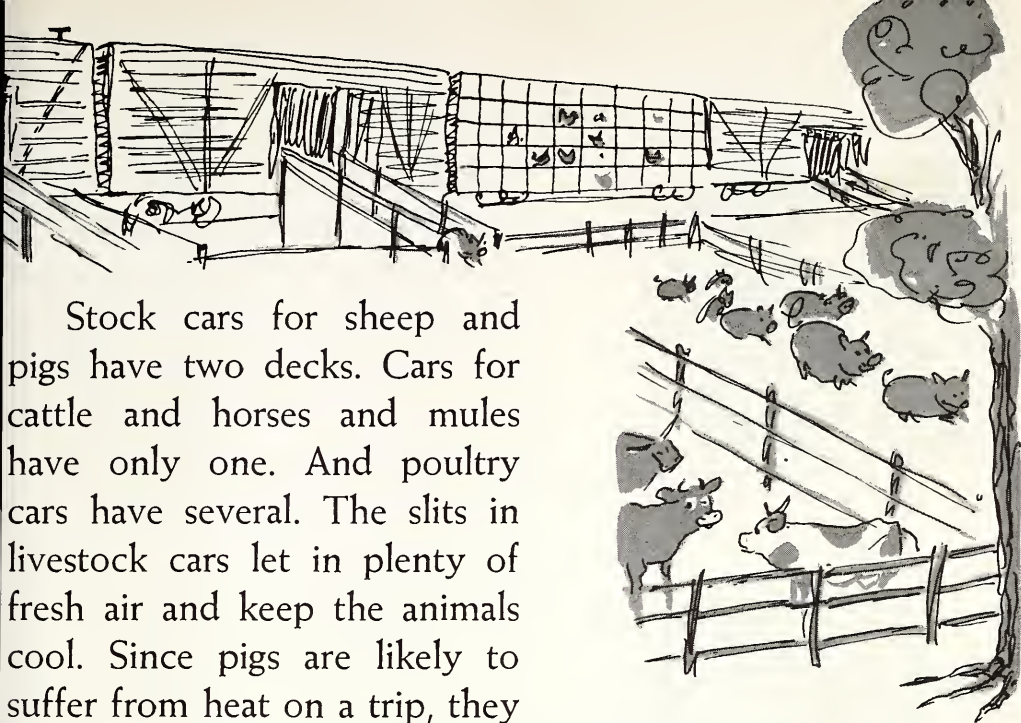
TO MARKET, TO MARKET

These two black sheep are railroad workers riding to work in Texas. They really do have jobs at stock pens, helping the men load other sheep into the livestock cars that carry them to market. If you have ever tried to drive sheep along, you know that they get confused and contrary. They will scatter in every direction except the

right one. But, if they have a leader to show them the way, they will follow quietly behind him.

So railroaders and stockyard workers often teach certain sheep to lead others up the ramp and into the stock car. When the last one is in, the lead sheep runs out, and the door slams shut. Black sheep are best for the job because they stand out from the usual white ones, and they don't get sent off to market by mistake.

Perhaps you wonder how it is possible to teach sheep to do this kind of job. The answer is that they get a treat every time they finish loading a car. Some pets like sugar or a carrot, but these two were fondest of a big piece of chewing tobacco.



Stock cars for sheep and pigs have two decks. Cars for cattle and horses and mules have only one. And poultry cars have several. The slits in livestock cars let in plenty of fresh air and keep the animals cool. Since pigs are likely to suffer from heat on a trip, they often get a soaking bath before they go into the cars.

There is a rule that animals must not travel more than a day and a half cooped up in a car. So trains stop at resting pens along the way to let the animals out for exercise and food and water. After a few hours they are loaded again. Meantime the cars have had fresh clean sand or straw spread around on the floor. Some very fast stock trains zoom along at such high speed that they reach the market before the animals need to stop and rest.

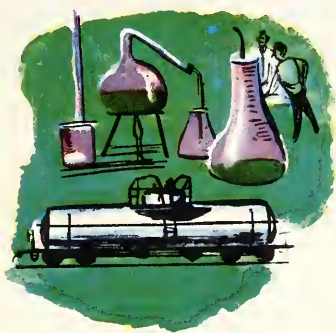
Veterinaries and inspectors often work at stock stations, looking out for animals that are sick. Caretakers for poultry and animals usually go along in the caboose.

TANK CARS

Railroaders call a tank car a can. It really is an enormous can with different kinds of lining for hauling different liquids. Milk tanks have glass or steel linings. Tanks for certain chemicals are lined with rubber or aluminum or lead.

Altogether there are more than two hundred types of tank car, and here are some of the things that travel in them: fuel oil, gasoline, and asphalt; molasses and sugar syrup; turpentine and alcohol; lard, corn oil and fish oil for vitamins.

Some tank cars have heating coils that warm up lard or molasses and keep it from getting too stiff to flow out easily. Most tank cars have a dome on top. If they didn't, they might burst open at the seams when the liquid inside them begins to



expand in hot weather. Instead, the liquid bulges up into the dome, and no harm is done.

Wine tank cars have four compartments for carrying different kinds of wine.

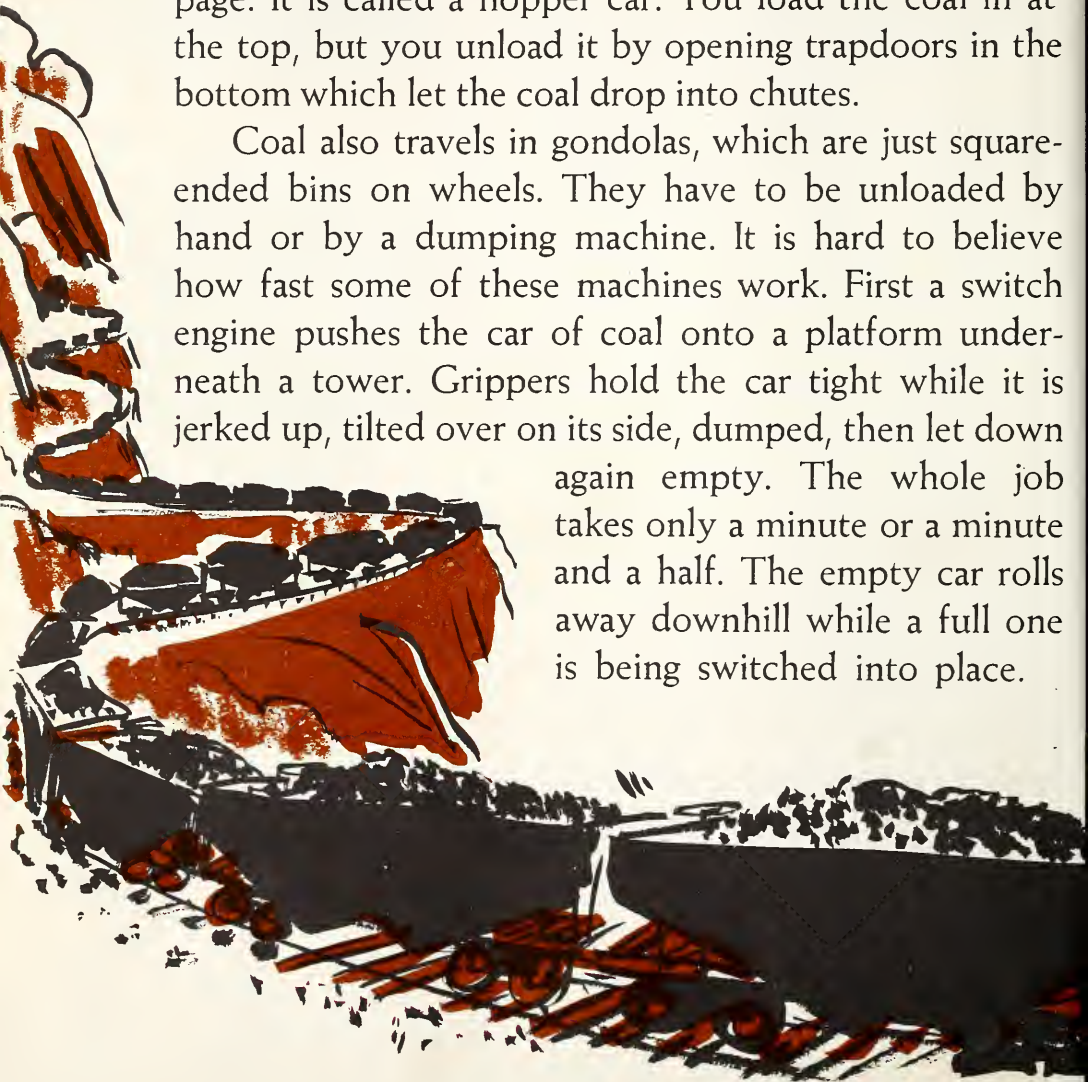
Milk tank cars are built with two compartments that tip slightly toward the center so that every bit of milk will flow out. Each compartment is rather like a thermos bottle, with special wrapping around it to keep the milk from getting warm and sour. And the tanks are always filled brim full so the milk won't slosh around and churn up a batch of butter on the road. Can you guess why milk tanks don't need domes? Remember the milk must stay cool. Even when the sun is hot outside, the cool milk doesn't expand, so no dome is needed to keep the tank from bursting.



HOPPERS AND GONDOLAS

A whole train made up of nothing but cars loaded with coal is called a black snake. Since rain and snow won't hurt coal, it travels in cars without tops. One kind of coal car has sloping ends like the one on this page. It is called a hopper car. You load the coal in at the top, but you unload it by opening trapdoors in the bottom which let the coal drop into chutes.

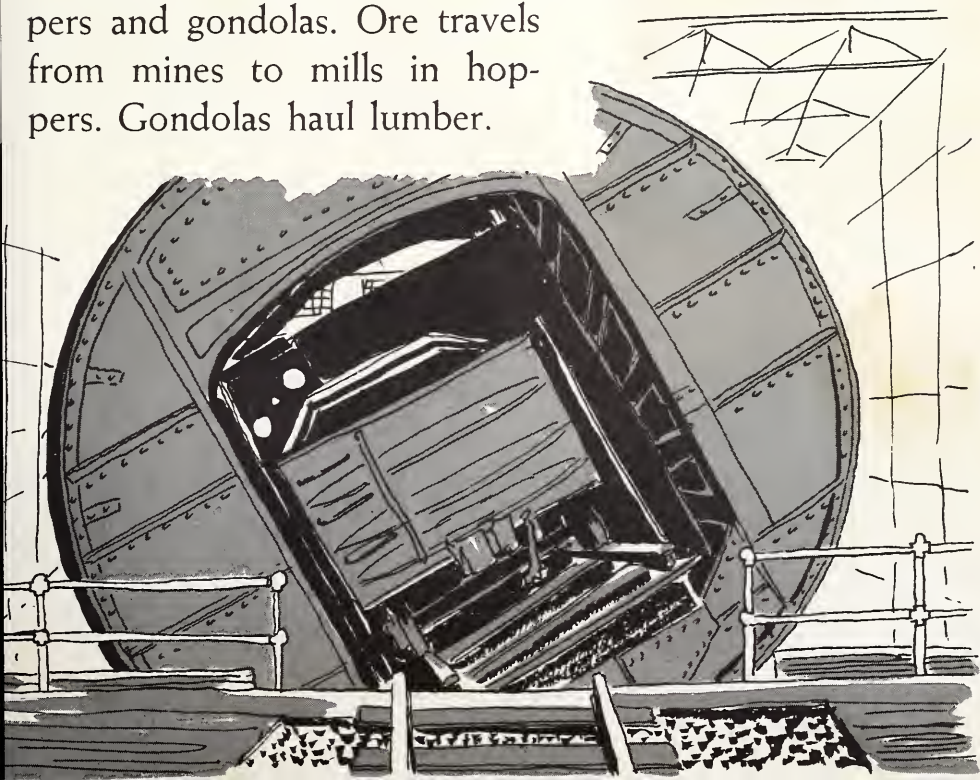
Coal also travels in gondolas, which are just square-ended bins on wheels. They have to be unloaded by hand or by a dumping machine. It is hard to believe how fast some of these machines work. First a switch engine pushes the car of coal onto a platform underneath a tower. Grippers hold the car tight while it is jerked up, tilted over on its side, dumped, then let down again empty. The whole job takes only a minute or a minute and a half. The empty car rolls away downhill while a full one is being switched into place.



Another kind of dumper, the one you can see in the picture, looks rather like a barrel that can roll from side to side. It, too, tips the car over on its side so the coal can run out into a chute. Then the machine swings back and lets the car drift downhill.

Locomotives and shops use almost a fourth of all the coal the railroads haul. It takes much less coal now to run an engine than it used to take, because engineers and scientists have thought up ways to make locomotives better and better. They figure things so closely they can even tell how much it costs to blow an engine's whistle — three toots for a penny.

Other things besides coal are often carried in hoppers and gondolas. Ore travels from mines to mills in hoppers. Gondolas haul lumber.





Things such as sugar and chemicals are sometimes carried in covered hopper cars. Of course, these hoppers have tight lids and special linings, and they're kept very clean, so you won't find coal dust mixed with your candy.

GRAIN CARS

Early every summer the railroads put a lot of boxcars in the bank. That means they switch the cars off onto sidings all through the wheat-growing part of the country. Then, when the wheat is harvested and ready to be shipped to market, the cars can be drawn out of the bank, filled up with grain, and hauled away.

The wheat gets ripe in the south first. When harvest is finished there, the cars move along. All through the summer the grain cars work their way farther north.

Special grain doors have to be fitted in tight, just behind the regular sliding doors of the boxcars, to keep

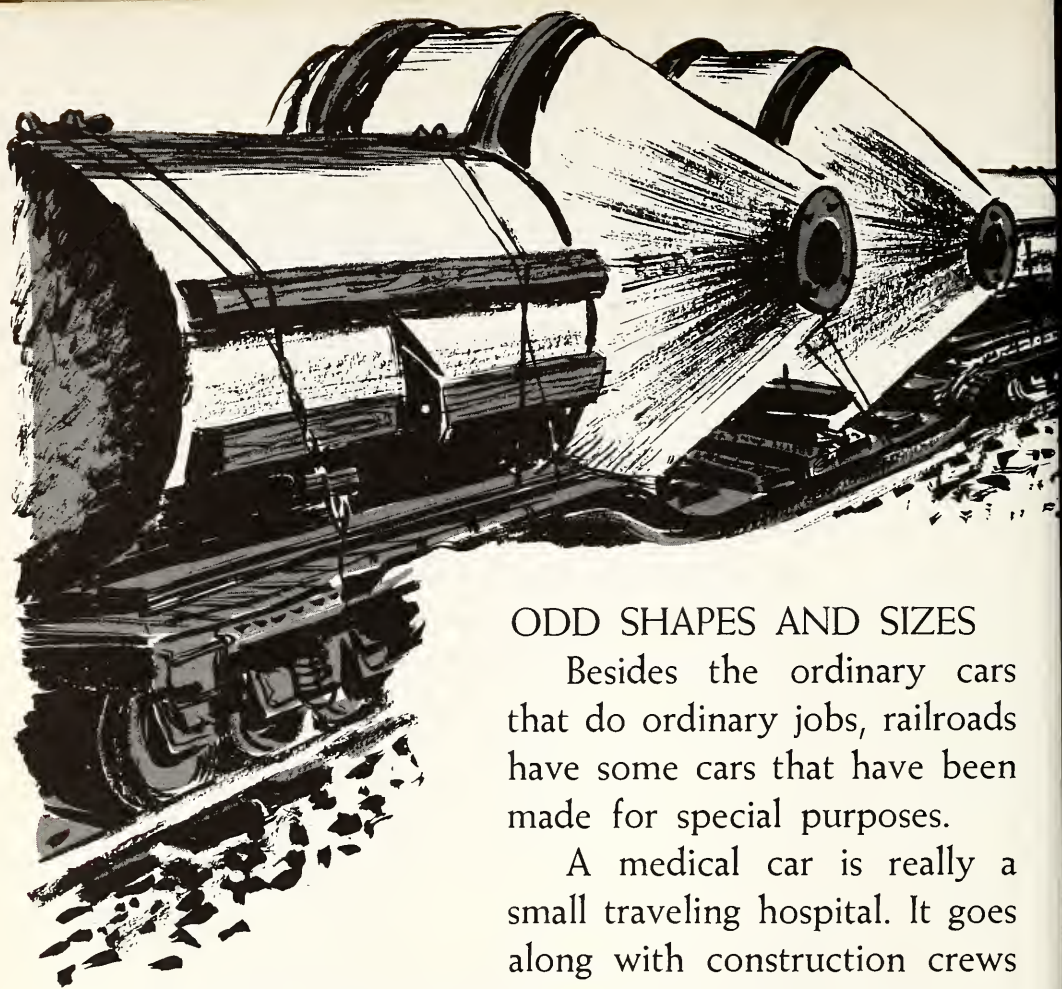
the wheat from leaking out. The grain doors go almost all the way to the top, but not quite. In a minute you'll see why.

After the farmers thresh their wheat, they take it to an elevator, which is an enormous storage tower close to the railroad tracks. Then, a chute from the elevator loads the wheat into the cars through the space at the top of the grain doors.

When a car is loaded, a man crawls in on top of the grain and hunches himself along with elbows and toes. He is the grain sampler who works for the companies that buy the wheat. Every once in a while he pokes a gadget down into the grain and brings up a sample from various parts of the car. These samples are enough to tell him whether the whole car is fair, good, or excellent wheat.

There is only about a two-foot space between the top of the grain and the roof of the car. So grain samplers have to be skinny men who can creep about easily.





ODD SHAPES AND SIZES

Besides the ordinary cars that do ordinary jobs, railroads have some cars that have been made for special purposes.

A medical car is really a small traveling hospital. It goes along with construction crews when they have a big job to do far from a station. A trained nurse has her office in the car. She can take care of small injuries or give first aid until a doctor arrives.

One special car looks like a load of big sausages. It is really a sort of boxcar frame into which long, heavy pipes have been fitted so that they wind back and forth. The pipes carry a load of helium gas. Helium is used in balloons and blimps, because it is very light and it

can't catch fire. Even when this car is fully loaded with all the gas that can be squeezed into the pipes, it weighs only a ton more than an empty car. Most loaded freight cars weigh between forty and eighty tons.

Sometimes a factory wants to ship a very tall machine by freight. So the railroad has it loaded onto an underslung flat car that looks as if it had had a bite taken out of its middle. It's called a depressed center car.

But still the machine may stick up too high to go through underpasses. Then a special department gets to work figuring out what to do. Men who know every mile of track work out a route that has no low underpasses. This sometimes means that the machine will make a dozen detours before it is delivered.

Circus cars are sometimes just flat cars which carry the animals' cages. But some of them are specially built



like stables, with stalls and a storage place for food. Fancy race horses ride in padded stable cars, too.

A pickle car is made of six separate wooden tanks. Men at the pickle works fill them with cucumbers and brine. Then the car delivers them at the factory to be bottled.

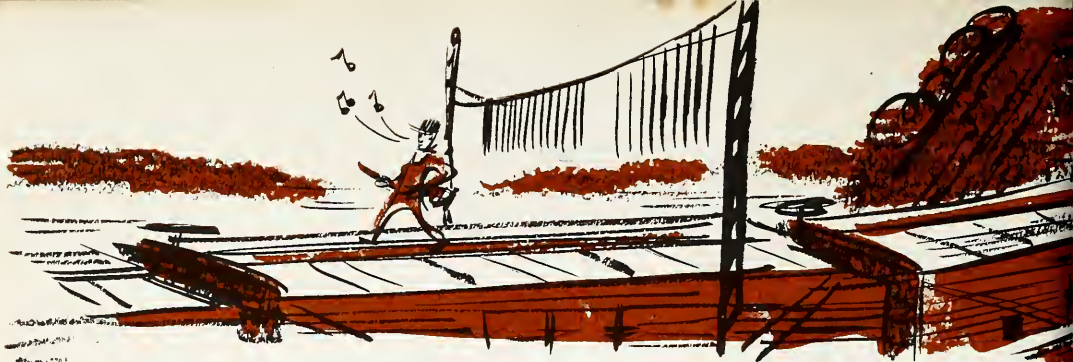
TRESTLES, TUNNELS AND THINGS

Have you ever wondered why some railroad bridges across rivers are so very high, while automobile bridges are quite low? The trains look a little scary, rushing along way up in the air. But there's a good reason why they do it, and those tall trestles are so wonderfully planned and built that they are very safe.

Trains can't climb hills nearly as well as automobiles can. The slopes that trains go up must be very gentle ones. Even a little bit of up-and-down grade slows a train a great deal. So the men who build railroads try to make the tracks run along as nearly level as possible. Next time you see a high bridge across a river, look at the rest of the country around. You'll see that the river cuts deep down between two hills. The bridge is built on tall stilts that make a level path for the train from one hilltop to the other.

When trains have to go up or down a very long hill, the builders have a problem. They must slope the





tracks very gradually. In mountains this means that the tracks zig-zag back and forth, with long, wide curves between the zigs and the zags. If you look back at the picture on page 19, you will see how one railroad solved the problem. The rails are laid so that they spiral upward, making a loop. When a very long train travels along the loop, it's like a huge snake coiled around over its own tail!

Unless it's absolutely necessary, the builders try not to make curves. Trains run faster along rails that are straight as well as flat. Every bend means that the engineer has to slow down a little.

And so there are two reasons why railroads often have tunnels right through mountains. Instead of climbing far up and then coming down in long, slow curves, the train can run quickly straight through.

Tunnels are hard to dig. They often have to be blasted out of solid rock. So the builders don't make them any bigger than they have to. Of course, there's not room for a man to stand up on top of a freight car

as it goes through a tunnel. To protect brakemen who might forget, there is a device called a tell-tale close to the mouth of a tunnel. It is simply a fringe of cords hanging down from a tall bar across the track. The cords touch the careless brakeman and warn him to get down right away before he's scraped off and hurt.

If you started in the morning, it would take you till night just to name the inventions that have made rail-roading more safe than it was a hundred years ago. Some of them are simple things like a tell-tale. Others, such as air brakes, are complicated. The most wonderful invention of all took hundreds of scientists a long



time to work out. It's called Centralized Traffic Control, or CTC.

To see what CTC does, you'll first have to imagine a stretch of railroad way out in the country, thirty miles from any station. There's just one main track, with sidings where trains running in opposite directions can pass each other. Each engineer has his train orders, so he knows whether he's supposed to go onto the siding or continue straight through. But unexpected things can always happen. If a train is late, it may not get to the siding on time. Then there will be danger of a collision



That's where CTC comes in. Trains cannot bump into each other when CTC is at work. It is a wonderful system of electric wires that run along the tracks, all the way to an office building in a railroad town. The wires end in a long board that's dotted with lights and small levers. Now when train wheels travel over the rails, the wires carry electric messages to that long board. Lights flash on and tell the man who watches the board exactly where the train is. If he wants it to go onto a siding, he pushes a lever. Electric switches miles away guide the train's wheels off the main track. At the same time, signal lights tell the engineer to stop.



What's more, CTC has extra safety machinery, just in case the man at the board makes a mistake. If he pushes levers that might make two trains bump into each other, stop signals go on all along the line. All trains come to a halt until the mistake is corrected.

In the old days, trains that ran through western ranch country were often late. The crew who had or-



ders to pull onto a siding knew they might have to wait a long time. So they could just take a walk to the nearest house, wake the rancher and settle down for a visit. If their host was in a good humor, he'd build a fire and cook them a meal. Then, when they heard the whistle of the approaching train, they'd start back in plenty of time to signal as it passed their siding. Railroaders have fun talking about those early times, but they'd really rather have the safety of Centralized Traffic Control.

CTC helps to keep passenger trains moving safely into big cities, too. The man at the board — he's called the dispatcher — decides which track each train should use. He pushes the levers. Electric switches move. Signals flash to the engineer, and lights on the board show every train moving along.

THE CAPTAIN AND THE CARS

Maybe you think the conductor of a passenger train is only the man who takes tickets and says "All Aboard." But he really is the boss of the whole train. Even the engineer must follow his signals. That's why they call the conductor the Captain.

The brakeman is the conductor's helper. Together they collect tickets or fares and help passengers on and off at stations.

On the slick, fast trains called streamliners the conductor has quite a job to do. Many of the passengers are making long trips, so they have complicated tickets that allow them to stop at several places and then come home again. The conductor has to check the tickets and make sure they are right.

For short trips, conductors and brakemen take care of everything. But a streamliner needs a lot of other people who do special jobs.

The first one you're likely to meet is the stewardess. She makes passengers comfortable. She answers questions and points out things that are particularly interesting to look at through the window.

At night the stewardess brings pillows to coach pas-





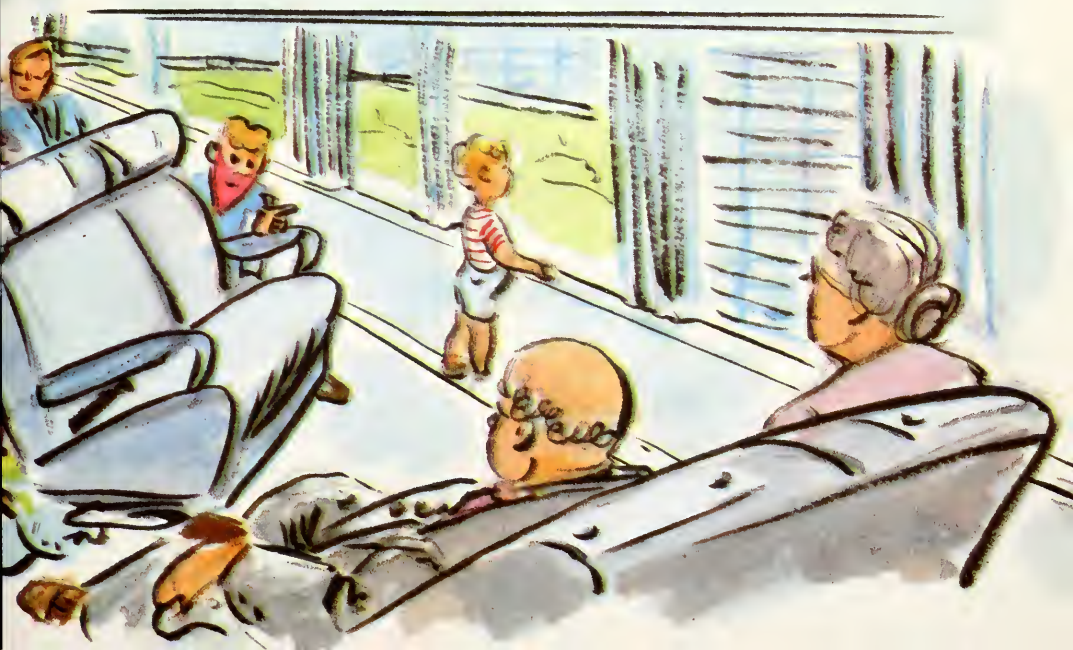
sengers and helps them tilt their seats back. In some cars, each seat has a leg-rest that pulls out, making a sort of couch for anyone who wants a nap.

The stewardess usually gives extra attention to children. She may read them stories in the playroom at the end of one car, or give them crayons and coloring books, or play records for them. She even has a supply of diapers for small babies and a refrigerator to keep their milk cool.

A streamliner is really a sort of hotel on wheels. The

observation car is like a lobby, with big soft chairs and sofas, tables full of magazines, a radio and desks for writing letters. At one end is a telephone booth where you can call up anyone you want to. This telephone works by radio. The radio operator on the train connects you with a regular telephone operator who completes the call over ordinary phone wires.

If you need a haircut, you can visit a barbershop on the train. Porters will press your clothes and shine your shoes for you. You can buy ice cream sodas at the snack bar. A businessman who wants to do some work can ask the train's stenographer to type out letters for him. And no matter how disagreeable the weather is outside, a streamliner is comfortable for it is air-conditioned.



Most fun of all are the streamliners that have double-decker cars called Vista-Domes and Astra-Domes. The dome sticks up above the car like an over-sized caboose cupola. Like the freight brakeman, you can sit in the upper deck, look out through the windows in the dome and see everything around you. Day-times there may be mountains. At night, you can lean back in the adjustable seat and watch the stars.

Streamliners go very fast, but not too fast for safety. Beside the track are signs that tell the engineer what the speed limits are. For extra safety, the locomotive may have a powerful headlight that sends out its beam like a searchlight. The beam travels across the sky in a figure-eight movement far ahead. People on highways





see it and are warned to stop at grade crossings in plenty of time.

EATING

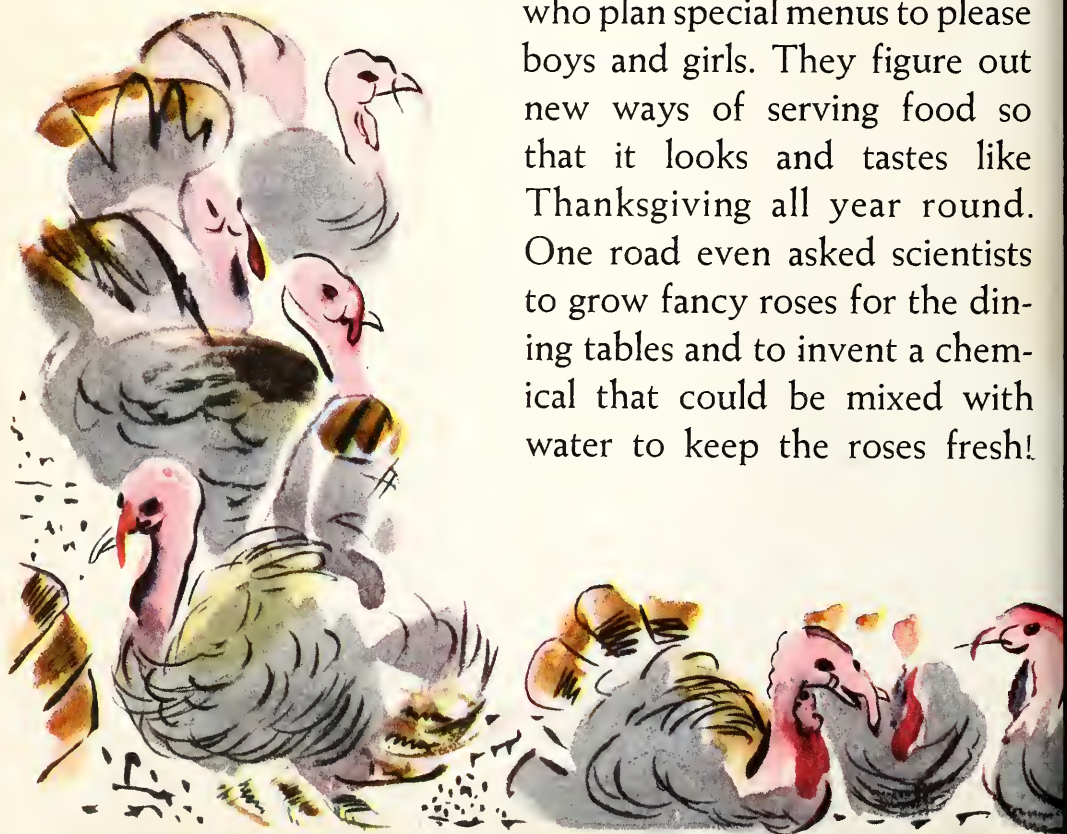
The galley is the kitchen in the dining car. It has to be worked like those puzzles that won't come out right unless you move the pieces in just the proper order back and forth into one tiny little space. When you see all the food being loaded into the diner for one trip, you can't believe there's any space left over for cooking.

But everything has been planned ahead of time so that it all fits inside the car. The cooks and the waiters have all gone to school where they learned how to prepare and serve food for dozens of people without getting the small galley cluttered up and out of order. Many diners have mechanical dishwashers.

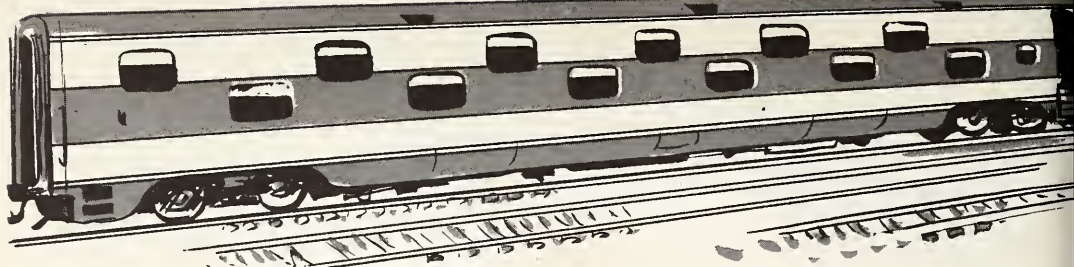
People eat so much on diners that railroads buy bananas by the boatload, meat and butter and coffee by the carload. One road has its own potato farm and turkey ranch.

A table for two people in a diner is called a deuce. One for four people is a large. When a waiter has customers sitting at all his tables, he says that he is flattened out. And if he makes a mistake or gets nervous, the others say he has gone up a tree.

It is fun to eat on a train, but the railroads themselves are very serious about food. They have experts who plan special menus to please boys and girls. They figure out new ways of serving food so that it looks and tastes like Thanksgiving all year round. One road even asked scientists to grow fancy roses for the dining tables and to invent a chemical that could be mixed with water to keep the roses fresh!





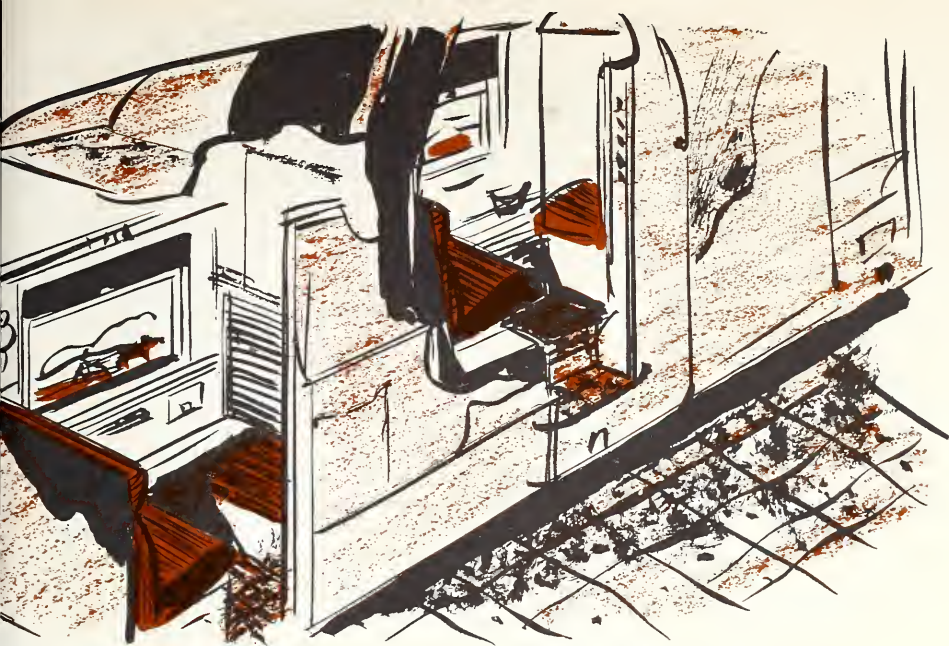


SLEEPING

Sleeping cars are called Pullman cars, because they are built and owned by the Pullman Company. For a long time, one sleeping car was just about like every other. It had two rows of double seats and an aisle going down the middle. At night, the porter changed each pair of seats into a lower berth, and he pulled an upper berth down from its storage-place in the wall. Then he made the beds and hung green curtains from the ceiling to the floor all along the aisle.

People who slept in upper berths climbed up and down a ladder. A button in each berth flashed on a light to call the porter. A little hammock hung against the wall. In it, you put your clothes and small packages. Your shoes went on the floor beneath the berths, so

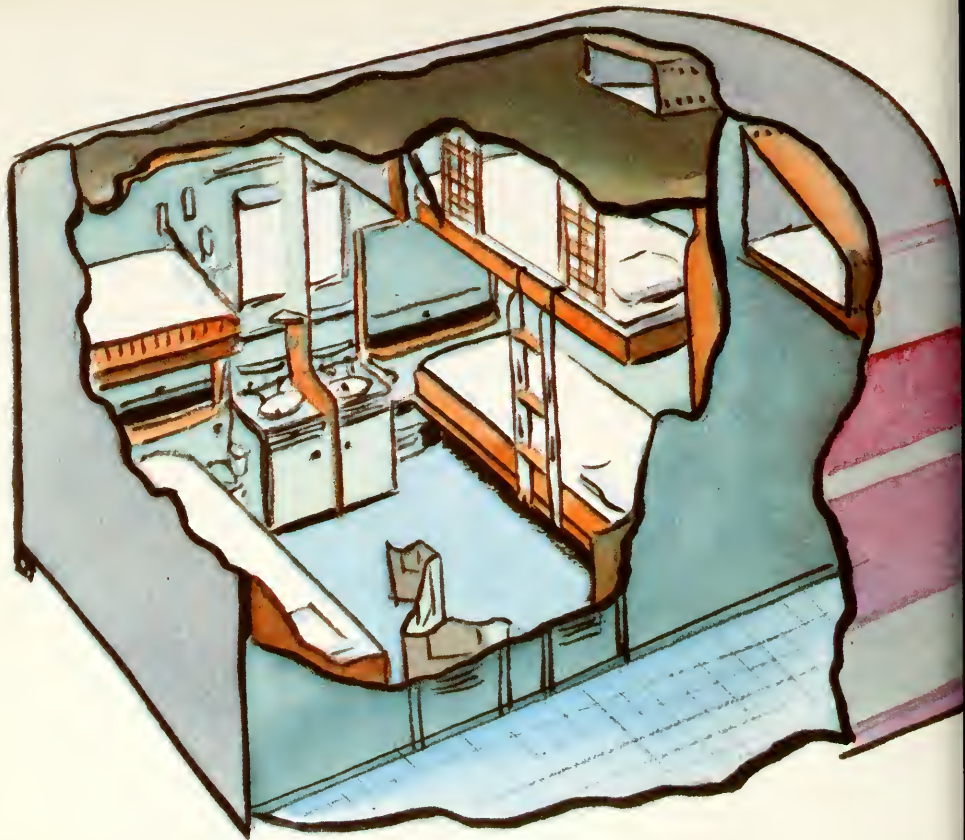




the porter could shine them while you slept. At the ends of the car were dressing-rooms and toilets.

Many Pullman cars are still built like that. And it's still fun to climb the ladder to the upper berth. But more and more people are travelling in different kinds of sleeping cars. One kind is called a duplex. It has peculiar looking checkerboard windows outside. Inside are little private rooms, some on the lower level, some on the top level, with stairs leading to a corridor along the side. The rooms have sofa seats for daytime. At night, when you pull a handle in the wall, out slides a bed all made up and ready to be slept in.

Another kind of sleeping car, called a roomette, has a row of small rooms all on one level. Each room has



its folding bed. There's also a washbowl, toilet and clothes closet. An air-conditioner switch will make the room warmer or cooler, and you can even turn on a radio.

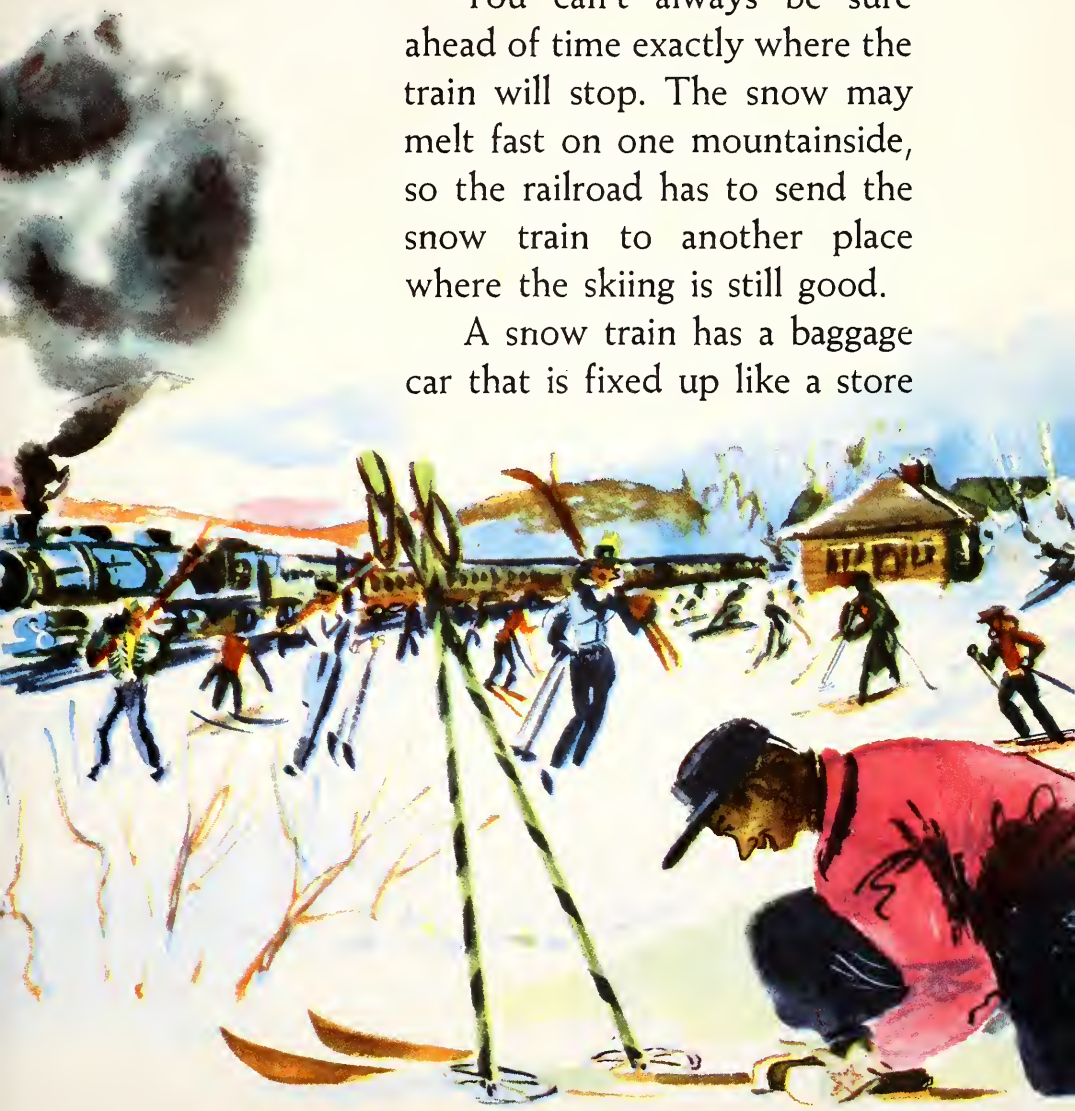
Roomettes are big enough for only one person. But several kinds of Pullman car rooms have beds for two or three people. Some are called drawing rooms. Others are called compartments. They have arm chairs as well as sofas. And connecting double bedrooms can be turned into a traveling home for a whole family.

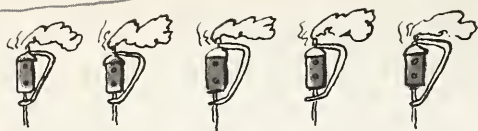
SPECIAL TRAINS

Snow trains carry people who want to go skiing. They leave early Sunday morning, wait all day on a siding at a station near a good skiing place, and come back in the evening.

You can't always be sure ahead of time exactly where the train will stop. The snow may melt fast on one mountainside, so the railroad has to send the snow train to another place where the skiing is still good.

A snow train has a baggage car that is fixed up like a store





ALARM FOR ANIMALS
OR PERSONS ON TRACK.
(SERIES OF SHORT TOOTS)

where you can buy or rent any kind of skiing equipment. It also has a diner where you eat breakfast, lunch and dinner or have hot soup when you get cold.

For long trips to deep-snow country, you start Saturday night in a sleeping car and get back early Monday morning.

AT THE HEAD END

At the head end, a streamlined train has several cars that are different from passenger cars. One of them is built for the people who work on the train. It has berths where they sleep, shower rooms, lockers for clothes. The stewardess and the conductor may have offices there, too. (The men in the engine crew, of course, don't stay with the train. They change at division points.)

Some trains take a Railway Post Office car along at the head end. It does the work of a small post office. Regular mail clerks in the car sort letters and cancel the stamps. They toss out bags of mail at stations where the train doesn't stop. At the same time, a long metal arm attached to the car reaches out and picks up mailbags that hang from hoops beside the track.

The men who work in the Post Office car have

learned to be very accurate and fast. They need to know the names and locations of hundreds of towns and cities, so they can toss each letter into exactly the right sorting bag.

The Railway Express car carries packages of all kinds. It has refrigerated boxes for small quantities of things like fresh flowers and fish.

The idea for express cars started long ago, before the government's regular post office system had been worked out well. In those days, people often wanted to send valuable packages or letters in a hurry, but they had no way to do it. So some young men, who were known to be very honest, took on the job. Sometimes they carried parcels or letters in locked bags — sometimes in their own tall stovepipe hats! Gradually



they got so much business that they had to hire a whole car from the railroad. They were the grandfathers of the Railway Express that now owns hundreds of cars.

In springtime, the express man often travels with noisy cargo. That is the season when chicken farmers begin sending baby chicks in boxes all over the country.

Pet animals usually ride in the baggage car, along with suitcases, trunks and bicycles. All kinds of pets travel on trains. You check them, just the way you check a suitcase, and the baggageman takes care of them. He is used to dogs and cats and birds, but once a baggageman had to mind a huge sea cow all the way from New York to St. Louis.



Sometimes dogs get so fond of trains that they spend their whole lives riding with friendly engineers or baggagemen. Cooks and waiters in the diner save scraps for them to eat.

The most famous traveller of all was a Scotch terrier named Owney. During his long life he covered more than 150,000

miles, riding in Railway Post Office cars. The men put tags on his collar showing where he had been. Finally he collected so many tags that he had to have a harness to hold them. When he died, the Post Office Department had him stuffed and put in its museum.

NARROW GAUGE TRAINS

When your grandmother was a little girl, fast trains ran from coast to coast and slower ones climbed to towns high in the mountains. Super-highways for automobiles and trucks were something that only a few people even imagined then. So — if freight and passengers were going very far, they had to travel by train. Mountains gave the railroads a lot of trouble, because it was hard to dig wide roadbeds along the steep, rocky





hillsides or to push them through tunnels in solid stone.

One answer to the problem was to make the tracks not so wide and the tunnels not so high and the trains not so big! These railroads were called narrow gauge. (Gauge means the distance between the tracks.) The trains looked like toys, but they carried on their jobs perfectly well. A narrow-gauge engine and cars could whip easily around sharp curves, hugging the side of the cliff. The pint-sized locomotives pulled heavy loads. Elegant ladies and gentlemen used to travel in the tiny cars which were just as fancy as the big streamliners are now — maybe even fancier.

When good highways and huge trailer trucks came along, most of the narrow gauge railroads stopped run-



ning. A truck and trailer cost a lot less to operate than even a toy-like locomotive and freight cars. But in a few places you can still see the little giants at work. For instance, there is the Edaville Railroad which runs through the cranberry bogs in Massachusetts.

The narrow gauge Edaville trains haul boxes into the bogs where pickers fill them with berries. Then the loaded cars take the berries out to a cleaning and sorting shed for shipment to canneries and stores.

On many trips the Edaville trains carry passengers, too, for people love to ride behind the old-time engines. The man who owns the railroad lets everyone travel free, but if you want a souvenir ticket, you can buy it for a nickel!



ALONG THE TRACKS

The section crews are the men who lay new railroad tracks and keep the old ones repaired. Railroaders call them gandy dancers, and the boss of the crew is the king snipe.

In the old days, all the section work was done with hand tools. Men lifted the heavy rails with tongs. They chipped out the notches in the wooden ties for the rails to rest in. They hammered down the spikes that held the rails. The crew rode to work on a handcar, pumping a lever up and down to make the wheels turn.

Now there are motor cars instead of handcars, and wonderful machines help with the work. A rail-laying crane lifts the rails and swings them into place on the ties. An adzer with whirling knife-blades cuts the

notches. The spikes still have to be started into their holes by hand, but then a mechanical hammer that runs by compressed air finishes the pounding job.

Perhaps you've noticed that there seem to be a lot of cinders along railroad tracks. But they didn't come from the engines. They were put there on purpose. Railroads also use chipped stone or gravel or even squashed-up oyster shells under the tracks and ties.

All of these things are called ballast, and they make a good firm bed for the rails. When it rains or snows, the loose pebbly ballast lets the water run off quickly, so that the ties will dry out and keep from rotting.

Grass and weeds don't grow very well in ballast, but when they do a motor car with a chemical spray comes along and kills them off. When lots of rubbish has collected, a cleaning machine goes to work. The machine is called the Big Liz. It moves down the track, scooping up ballast and sifting out all





the dust and junk. Then it squirts the cleaned ballast out again, leaving a clean roadbed behind.

Section crews often have portable telephones or walkie-talkies that save a lot of time. If they need materials, they call up the office and put in the order right away. And if the job takes longer than they expected, they phone a warning to the nearest station where trains can wait until it's safe to go ahead.

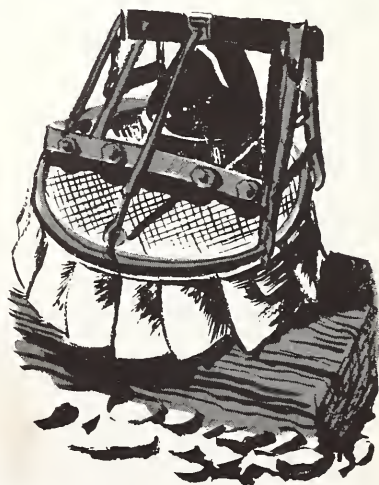
How does the section crew know when it is necessary to put in a new rail? In the old days, they got orders from an inspector who walked or rode slowly along in an inspection car, looking for cracks or breaks. That's still the way it is done in many places. But some railroads have a machine-detective that finds cracks so small a man couldn't even see them.

The machine rides in a detector car, and it works

by electricity with tubes something like radio tubes. The men who run it simply look at wavy lines drawn on paper by pens that are part of the machine. Whenever the car passes over a cracked rail, the pens make a different kind of line. And right away the section crew is asked to put a new rail in. Summer and winter, the detector cars creep along, making sure that tracks are safe.

In winter, of course, the tracks must be kept clear. If there's just an ordinary snowfall, a powerful locomotive can run through it with no trouble. But when drifts get deep and heavy, the snow plow must go to work.

The man who first invented railroad snow plows got the idea from watching a windmill. He saw how the windmill blades tossed snow around as it fell. Why couldn't blades at the front of an engine cut into drifts and toss the snow off to one side? Of course they could. Railroads began using powerful rotary plows. The whirling blades chewed the drifts away. Even in lower country, there's often plenty of work for the snow eaters to do.





OLD-TIME TRAVEL

The very first passenger cars were really stage-coaches with railroad wheels, and that's why we still use the name coach. Some old-time passenger cars had two decks. All the cars were fastened together with chains, so they banged and whacked each other when the train started or stopped. Sparks from the woodburning locomotive flew back and set clothes on fire. Rails were only thin strips of iron nailed to wood. Sometimes the strips broke loose and jabbed right up through a car.

In the beginning, an engine had no closed-in cab for the engineer and fireman. They didn't want to be closed in. It was safer to stand outside so they could jump off quickly in case of accident. Cows on the track often caused trouble. Then a man named Isaac Dripps invented a cowcatcher made of sharp spears. But farmers complained that it killed too many animals, so scoop-

shaped cowcatchers were installed. The name for a cowcatcher now is pilot.

The first headlight was a wood fire built on a small flat car pushed ahead of the engine. Later, whale-oil and kerosene lamps showed the way at night.

Engineers were once allowed to invent and tinker with their own whistles, and they worked out fancy ways of blowing them. This was called quilling. People along the tracks could tell who the engineer was by listening to the sound of his whistle. Some great quillers could even blow a sort of tune.

One engineer fixed his whistle so that people thought it was magic. Every time he blew it, the kerosene lights in the station went out! What happened was this: The whistle made vibrations in the air that were just right for putting out the lamps. But they did the same thing to signal lights, and so the engineer had to change his tune.



The first sleeping cars had rows of hard double-decker and even triple-decker bunks, with a stove at each end. Passengers brought their own blankets and pillows, and their own candles to see by. Nobody really slept much.

Trains were uncomfortable — even dangerous. But people needed them, and they were excited about them, too. All over the country men built new railroads as fast as they could. Each new company built as it pleased, and trains owned by one company didn't run over another's tracks. Of course, that meant you had to change trains often — wherever one railroad line stopped and another began. There were no railroad bridges over rivers, either. So you got off and took a ferry across.

One by one, men made inventions for trains, so that traveling became safer and more comfortable. En-





gines began to burn coal instead of wood. A piece of wire screen in the smokestack stopped the flying sparks, although cinders came through — and they still do to this very day. Coaches and sleepers had softer seats, but they were still noisy for a long time because they had wooden bodies that creaked while the wheels clattered along.

Thirsty travelers at first had to buy drinks from the water boy who walked back and forth through the train. Later, cars had a tank of water and one glass for everyone to use. The glass sat in a rack, and it had a round bottom so that it wouldn't be of much use to a passenger who was tempted to steal it.

Lots of things about trains were different in the old days, but one thing was the same. They were just as much fun to ride in then as they are now.

A colorful illustration on the left side of the page shows a railroad worker in a green shirt, red vest, and dark pants standing on a wooden platform. He is pulling a rope that runs vertically up a tall wooden post. At the top of the post, the rope is attached to a pulley system. A lantern hangs from the rope, suspended in the air. The background shows a simple landscape with a yellow path and green hills.

RAILROADING TALK

Here are more of the slang words that railroaders have made up:

BALLING THE JACK — this is what they say when they mean a train is going very fast. Highballing means the same thing.

BOOMER — a railroad worker who moves from place to place without sticking very long at any one job. There are still a few boomers, but in the old days there were thousands.

BUCKLE THE BALONIES — this means fasten together the air brake hoses which run underneath all the cars.

CHASE THE RED — this is what the flagman says he does when he goes back with a red flag or lantern to protect a stalled train.

CRACKER BOX — a Diesel streamliner. Glowworm means the same thing.

CRADLE — a gondola or hopper car.

DOODLEBUG — a little railroad motor car that the section crew uses.

DOPE — the oily waste that is packed in journal boxes.

GARDEN — a freight yard.

GIVE HER THE GRIT — squirt sand onto a slippery track.

GREASE THE PIG — oil the engine.

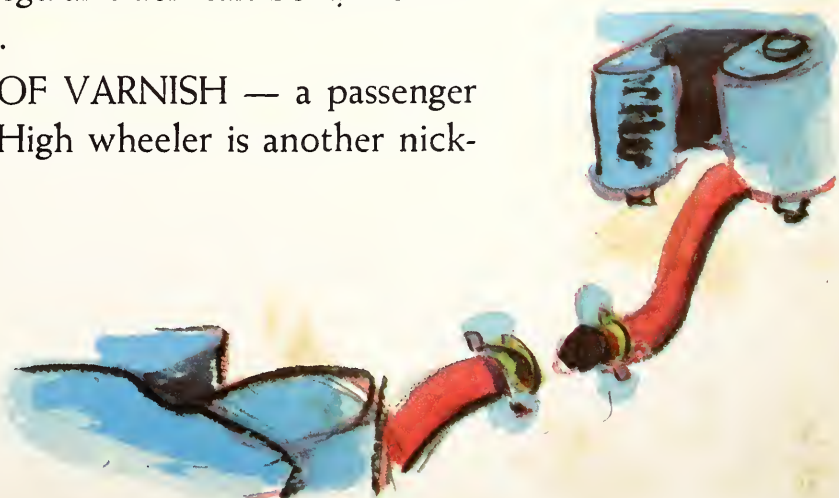
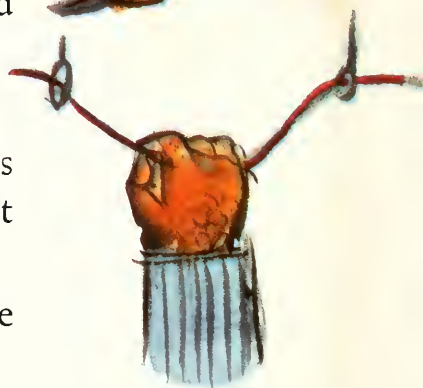
HIGH IRON — the track that makes up the main line of a railroad, not switching track or station track.

PULL THE CALF'S TAIL — jerk the cord that blows the whistle.

RATTLER — a freight train.

SHOO-FLY — a track that is used only until regular track can be laid or repaired.

STRING OF VARNISH — a passenger train. High wheeler is another nickname.



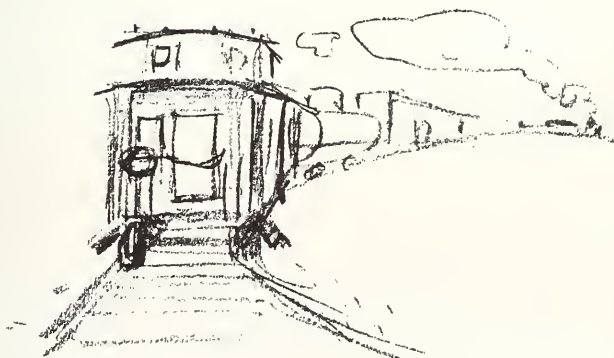
INDEX

ashcat, 10
Astra-Dome, 68
backshop, 33-37
bad-order car, 33
baggage car, 78
bakehead, 10
ballast, 83
banjo, 10
barn, 10
Big Liz, 23
Big Wamp, 39
bobtail, 31
boxcars, 54-55
brakeman, 10, 20, 28,
 65
brakes, 20
bridges, 58
Brotherhoods, 32
CTC, 62-64
caboose, 13, 16, 17
call boy, 22
car knocker, 34
car retarder, 29
car tinker, 34
cattle cars, 49
Centralized Traffic
 Control, 62-64
cherry picker, 31
circus cars, 57
classification yard,
 25-29
"club down," 18
compartment, 74
conductor, 65
couplings, 32

cowcatcher, 86
crum box, 17
crummy, 17
cupola, 17
"deckorating," 20
depressed center car, 57
detector car, 84-85
diamond pusher, 10
Diesel locomotive,
 38-40
diner, 69-70
dispatcher, 64
division point, 24
dog, 16, 78
doghouse, 17
dome, 21
drag, 13
duplex, 73
Edaville Railroad, 81
engineer, 9, 12-15, 21,
 43, 87
fireman, 9-22
flimsy, 16
fusee, 18
galley, 70
gandy dancer, 82
gondolas, 52-53
grain cars, 54-55
greenball, 44-47
hand signals, 32-33
head end, 76
head-end crew, 13
helper engine, 18
"highball," 11
hog, 10

hogger, 10
hoop, 14, 16
hoppers, 52-54
hot box, 42-44
hotshot, 13
hump, 26-28
hump rider, 29
icing machine, 45
inspection pit, 28
inspector, 29, 33, 34
Iron Horse, 10
journal box, 30, 42-44
king snipe, 82
link-and-pin, 32
livestock cars, 48-49
locomotives, 33-41
Mikado, 41
narrow-gauge trains,
 79-81
oldfashioned trains,
 86-89
"op," 9
Owney, 78-79
Pacific, 41
parlor, 17
peddler car, 47
pig-pen, 10
pigs, 49
porter, 67
Pullman cars, 72-74
quilling, 87
radio telephone, 28, 43,
 67
Railway Express car,
 77-78

Railway Post Office	signal lights, 14	switch, 25
car, 76-77	slip-track, 37	switchman, 31
redball, 13	snake, 31	tallow pot, 10
reefer, 44-47	snow plow, 85	tank cars, 50-51
refrigerator cars, 44-47	snow train, 75	teakettle, 31
roller bearings, 44	special cars, 56-58	tell-tale, 61
roomette, 73	squirrel cage, 17	torpedoes, 18
roundhouse, 10	station agent, 14-16	towerman, 26-28
running inspection, 43	stewardess, 65	track-pan, 38
sand, 20-21	stinker, 43	trestles, 58
sap, 20	stock cars, 48-49	train order, 16
section crew, 82-83	stoker, 12	tunnels, 60
shack, 10	streamliner, 65-74	Vista-Dome, 68
sheep, 48	switch engine, 26, 28,	waste, 42
signal flags, 18	31	yard goat, 31



Many railroading people helped to make this book. Here are some to whom the author and the artist want to give special thanks: Margaret Gossett; Inez M. DeVille of the Baltimore & Ohio Railroad; the late Lee Lyles of the Atchison, Topeka & Santa Fe Railway; C. J. Corliss and A. C. Browning of the Association of American Railroads; K. C. Ingram of the Southern Pacific Railroad; Eugene DuBois of the Pennsylvania Railroad; the staff in the President's office, Brotherhood of Railway Trainmen; Frank J. Newell of the Chicago, Milwaukee, St. Paul and Pacific Railroad; J. R. Sullivan of the New York Central Railroad; Howard A. Moulton of the New York, New Haven and Hartford Railroad; and finally to Harry Hall of the New York, New Haven and Hartford, through whose good offices the artist and his children spent a memorable day on the Edaville Railroad.



David
Lyle
Millard





