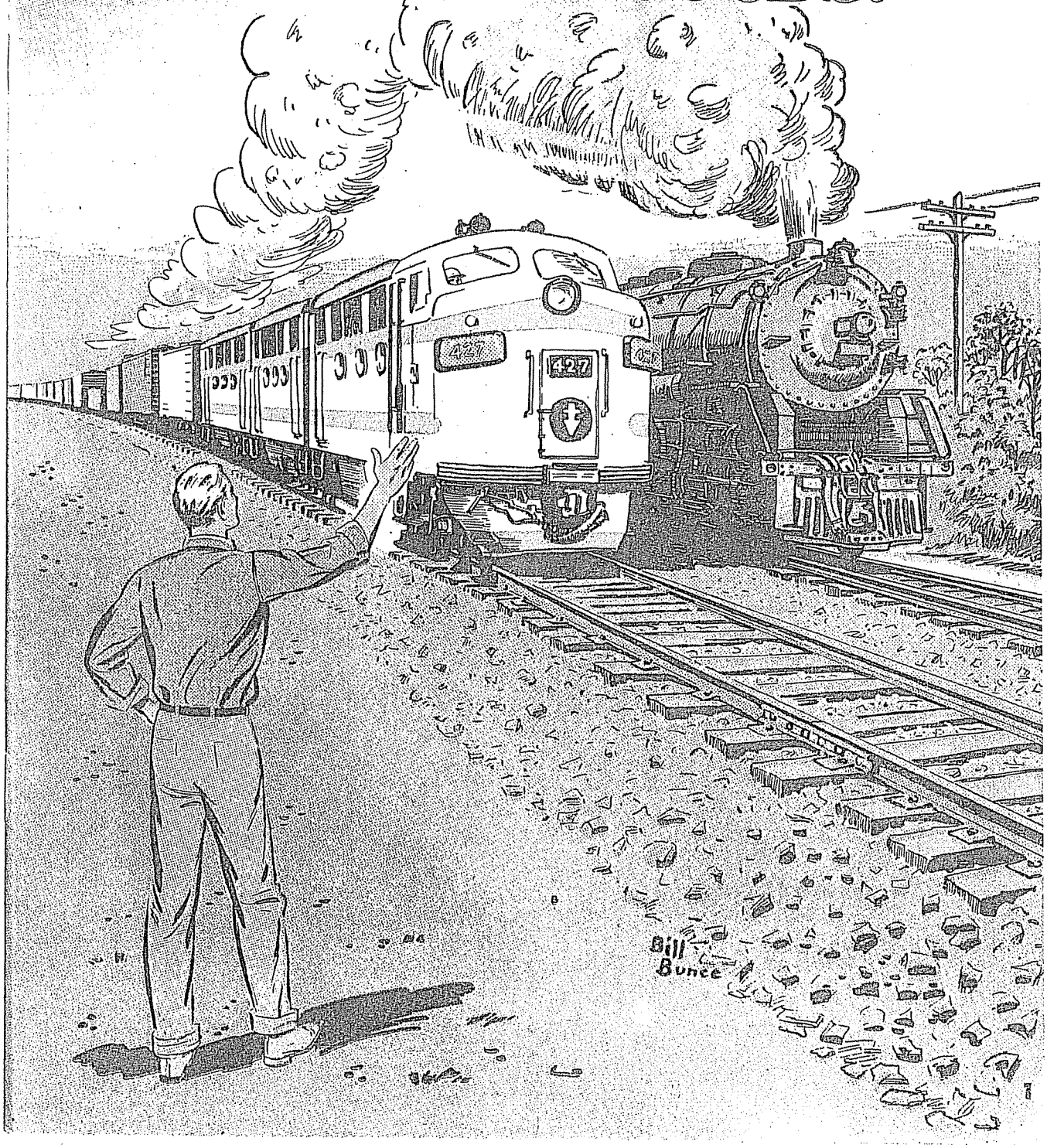
RAILROADS

DELIVER THE GOODS!



…IS STARTING OUT AS A RAILROADMAN, …D BE A BRAKEMAN. HIS FIRST RUN IS …THER, CONDUCTOR ON A FREIGHT TRAIN.

…YOU'VE BEEN …TO MY RUN …/ TO BEGIN YOUR …BRAKEMAN …N. YOU'LL MAKE

GEE, DAD, THAT'S SWELL! I'M ALL SET TO START.

WHAT HAVE WE GOT ON THE HEAD-END -- STEAM OR DIESEL?

WE GET A STEAM LOCOMOTIVE TODAY — A 4-8-4. ED SMITH IS OUR ENGINEER.

EARLY NEXT MORNING IN THE RAILROAD FREIGHT YARD... THEIR TRAIN — No. 70, A FAST FREIGHT — IS ALREADY MADE UP ON THE OUT-BOUND TRACK.

HI, CAP. HELLO, RANDY. ARE YOU GOING WITH US TODAY?

3127

…I SURE AM, …. SMITH. GOING …START LEARNING …THE JOB.

HELLO, ED. I'M BREAKING IN A NEW MAN.

HAULING FREIGHT IS THE RAILROADS' BIGGEST JOB. RAILROADS ARE EQUIPPED TO MOVE ANYTHING, IN ANY QUANTITY, FOR ANYBODY, IN ANY SEASON OF THE YEAR, IN ANY PART OF THE CONTINENT.

BY MEANS OF A STANDARD GAUGE (WIDTH OF TRACK) AND AN INTERCHANGE OF CARS, ANY CAR OF ANY AMERICAN RAILROAD MAY BE SENT ANYWHERE IN THE UNITED STATES, CANADA, MEXICO, AND CUBA IN A TRULY CONTINENTAL SYSTEM OF TRANSPORTATION. ALL CARS COUPLE TOGETHER, BRAKE TOGETHER, AND RUN TOGETHER. EVEN THE LADDERS, STEPS AND HAND BRAKES ARE ALWAYS IN THE SAME PLACES. THERE IS A STANDARD CODE OF OPERATING RULES.

COUNTING **TONS MOVED ONE MILE**, OR TON-MILES, UNITED STATES RAILROADS CARRY MORE FREIGHT BETWEEN CITIES THAN ALL THE TRUCKS, ALL THE BARGES, ALL THE LAKE BOATS, ALL THE PIPELINES, AND ALL THE AIRPLANES -- MORE THAN ALL OF THEM COMBINED.

AFTER CONDUCTOR AND ENGINEER COMPARE WATCHES, RANDY AND HIS FATHER WALK BACK TO THE CABOOSE. CAR INSPECTORS EXAMINE THE CARS TO MAKE SURE THEY ARE IN GOOD ORDER.

I SEE THAT THE MARKERS ARE UP ON THE CABOOSE — THAT MAKES IT A TRAIN. HOW LONG BEFORE WE START?

IN A FEW MINUTES. FIRST, I'VE GOT TO SIGNAL THE ENGINEER TO TRY THE AIR BRAKES.

COME ON IN, BOY, AND MAKE YOURSELF AT HOME. I'M RED DOLAN, THE REAR BRAKEMAN. YOUR DAD'S SIGNALING 'AIR BRAKES O.K.' — WE'RE READY TO ROLL FROM HERE ON.

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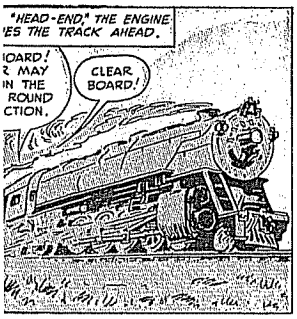
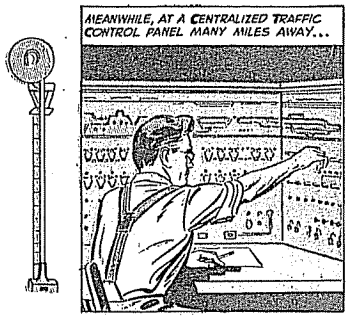
CONDUCTOR DAWS GIVES THE ENGINEER THE "HIGHBALL" No. 70 WITH 49 LOADS AND 11 EMPTIES BEGINS TO MOVE.

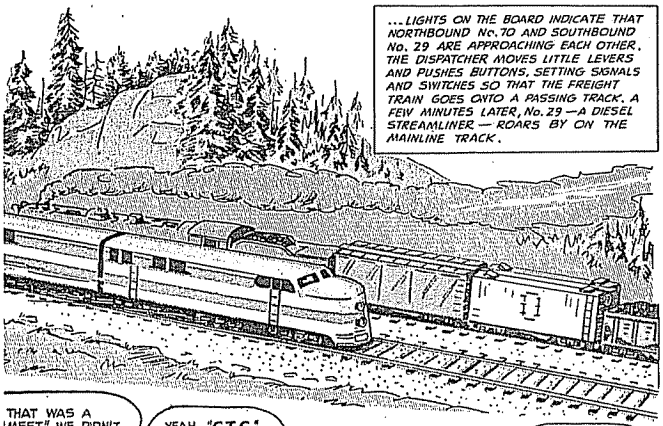
THE TRAIN GETS THE CLEAR SIGNAL AT THE YARD EXIT AND IS SOON ROLLING UP THE MAINLINE BEHIND A BIG 4-8-4 — A LOCOMOTIVE WITH 4 LEADING TRUCKWHEELS, 8 DRIVING WHEELS, AND 4 TRAILING TRUCKWHEELS.

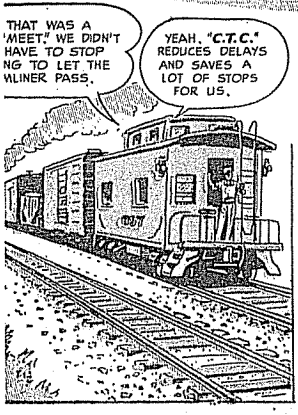
RANDY, YOU GO UP IN THE CUPOLA WITH RED — HELP HIM KEEP AN EYE ON THE TRAIN. I'VE GOT TO DO MY OFFICE WORK — CHECK WAYBILLS AND KEEP MY WHEEL REPORT. THAT'S A LISTING OF CARS ON THE TRAIN — OWNERSHIP, ORIGIN, WEIGHT, CONTENTS, DESTINATION.

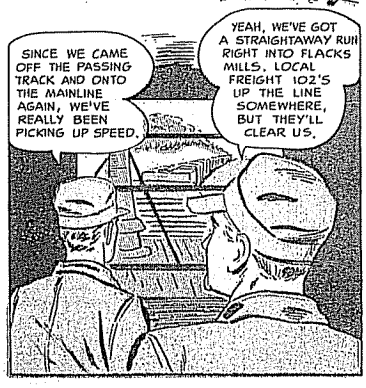
3

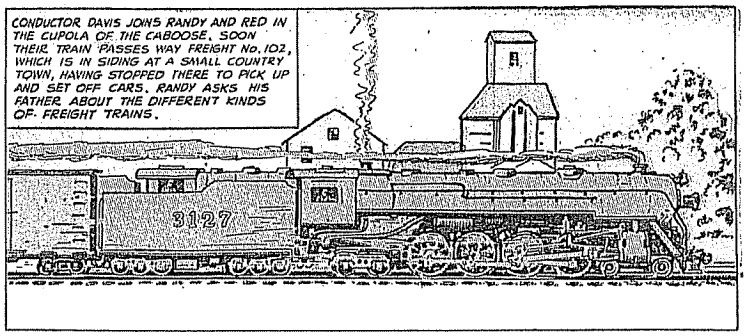




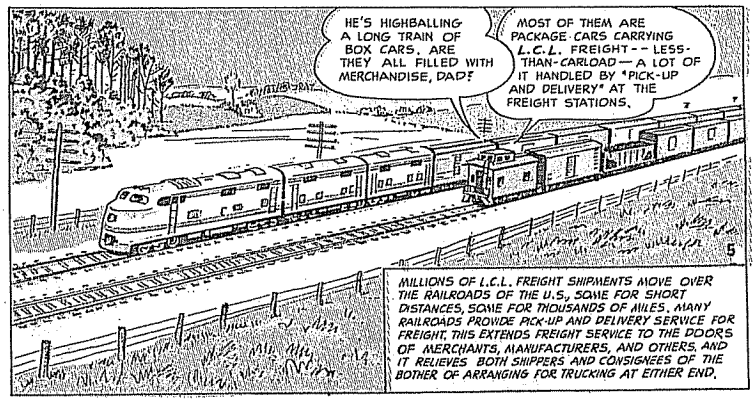




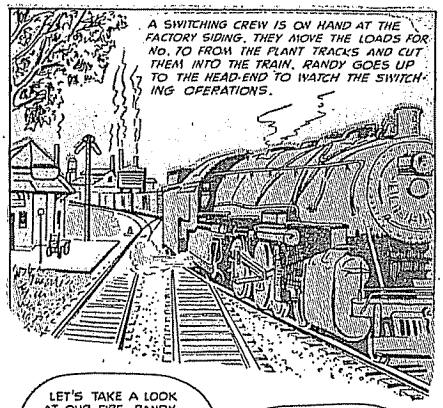


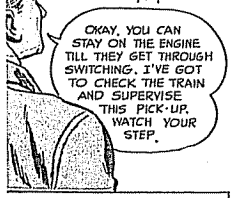


"LOCAL FREIGHTS STOP AT ALL STATIONS AND SIDINGS BETWEEN TERMINALS. TIME FREIGHTS STOP AT LARGER TOWNS. DISPATCH FREIGHTS CARRY PERISHABLES AND OTHER SHIPMENTS THAT REQUIRE REGULAR MOVEMENTS ON FAST SCHEDULES. MERCHANDISE FREIGHTS ALSO RUN ON FAST SCHEDULES. THEY HANDLE LESS-THAN-CARLOAD-LOT SHIPMENTS."

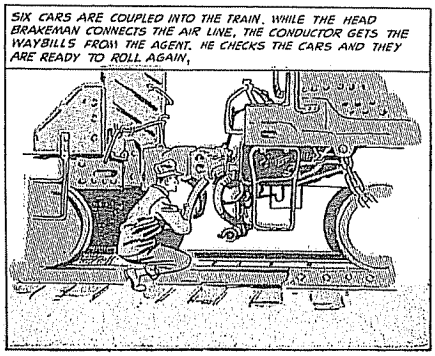


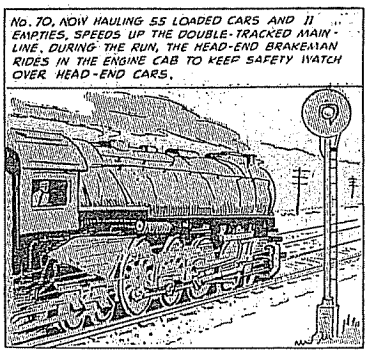
MILLIONS OF L.C.L. FREIGHT SHIPMENTS MOVE OVER THE RAILROADS OF THE U.S., SOME FOR SHORT DISTANCES, SOME FOR THOUSANDS OF MILES. MANY RAILROADS PROVIDE PICK-UP AND DELIVERY SERVICE FOR FREIGHT. THIS EXTENDS FREIGHT SERVICE TO THE DOORS OF MERCHANTS, MANUFACTURERS, AND OTHERS, AND IT RELIEVES BOTH SHIPPERS AND CONSIGNEES OF THE BOTHER OF ARRANGING FOR TRUCKING AT EITHER END.

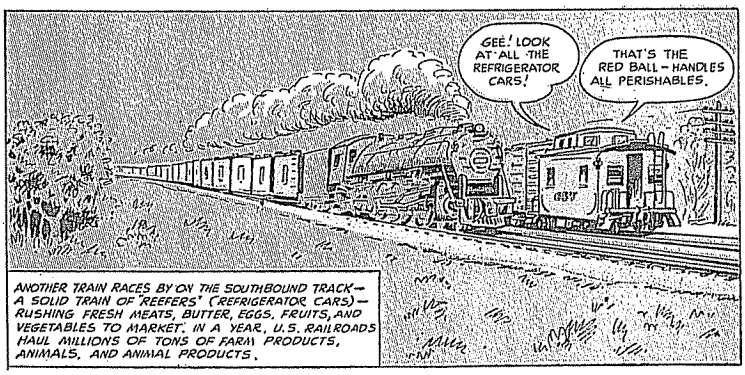


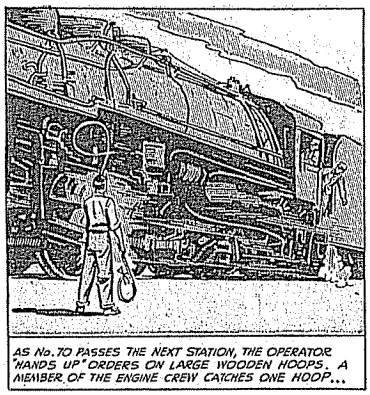


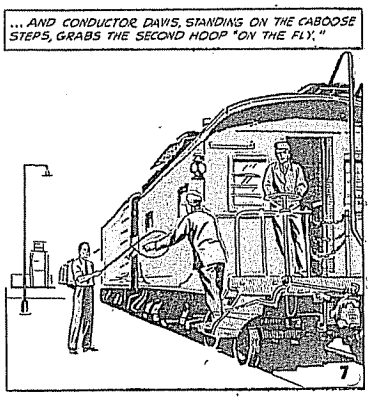
A LOCOMOTIVE CONTAINS THE
EQUIRED IN THE OPERATION OF
AND TRAIN— THE THROTTLE, THE
CONTROLS, THE SAND CONTROLS;
AL GAUGES AND INDICATORS
L THE ENGINEER AND FIREMAN
. THE LOCOMOTIVE IS PERFORMING.
STEAM ENGINE, THE ENGINEER
THE AIR BRAKES AND PULLS
TLE SLOWLY TOWARD HIM. THIS
M FROM THE BOILER INTO THE
AND MOVES THE PISTONS. PISTON-
-HEAD, MAIN-ROD, AND SIDE-RODS
, TURNING THE DRIVING WHEELS.
'S ARE GREAT POWER PLANTS ON WHEELS.

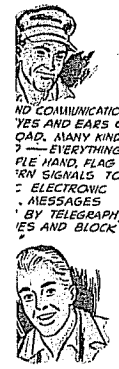






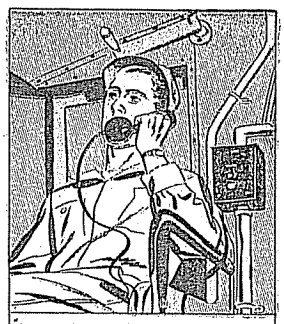






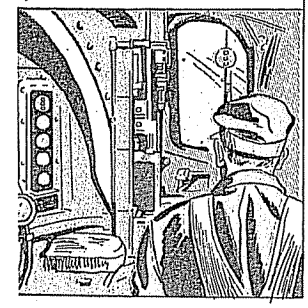
ND COMMUNICATIONS
YES AND EARS OF
OAD. MANY KINDS
? — EVERYTHING
PLE HAND, FLAG
RN SIGNALS TO
ELECTRONIC
MESSAGES
BY TELEGRAPH,
ES AND BLOCK

ON MANY RAILROADS, RADIO IS USED FOR COMMUNICATION BETWEEN MOVING TRAINS AND FIXED POINTS, AND FOR END TO END OF TRAINS, AND IN YARD SERVICE. MANY ROADS USE TWO-WAY, FREQUENCY MODULATION SPACE RADIO, OTHERS USE FIXED POINT TO TRAIN OR 'INDUCTIVE CARRIER' SYSTEM."

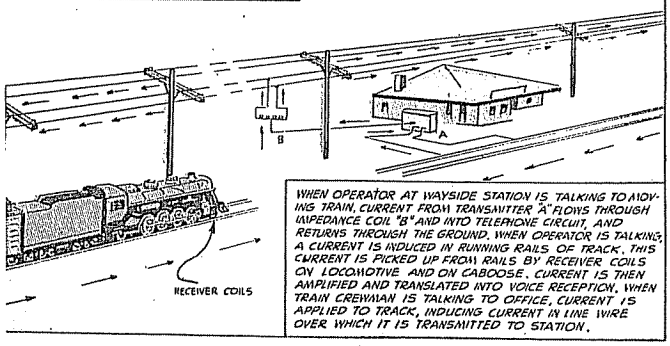


"ON THIS RAILROAD'S RADIO-EQUIPPED DIVISIONS, WE USE THE INDUCTIVE CARRIER SYSTEM FOR OVER-THE-ROAD OPERATIONS."

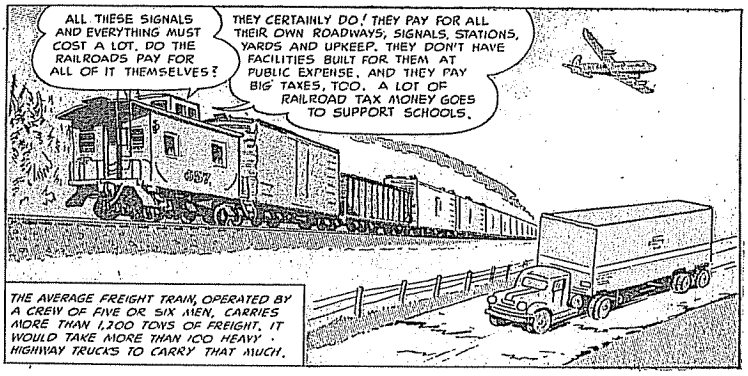
ROADS, SIGNAL INDICATIONS ARE REPEATED
IEL INSIDE THE ENGINE CAB. THE SIGNALS,
Y, ARE GIVEN BY ELECTRIC CIRCUITS IN
S."



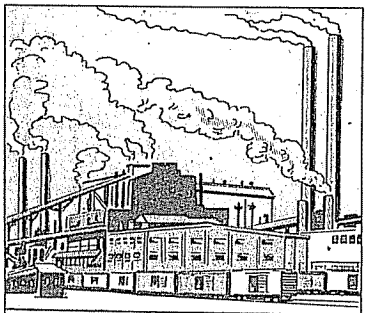
'TRAIN COMMUNICATION'— HOW IT WORKS.



WHEN OPERATOR AT WAYSIDE STATION IS TALKING TO MOVING TRAIN, CURRENT FROM TRANSMITTER "A" FLOWS THROUGH IMPEDANCE COIL "B" AND INTO TELEPHONE CIRCUIT, AND RETURNS THROUGH THE GROUND. WHEN OPERATOR IS TALKING, A CURRENT IS INDUCED IN RUNNING RAILS OF TRACK. THIS CURRENT IS PICKED UP FROM RAILS BY RECEIVER COILS ON LOCOMOTIVE AND ON CABOOSE. CURRENT IS THEN AMPLIFIED AND TRANSLATED INTO VOICE RECEPTION. WHEN TRAIN CREWMAN IS TALKING TO OFFICE, CURRENT IS APPLIED TO TRACK, INDUCING CURRENT IN LINE WIRE OVER WHICH IT IS TRANSMITTED TO STATION.

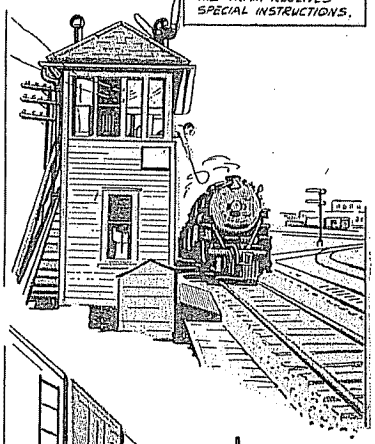


THE AVERAGE FREIGHT TRAIN, OPERATED BY A CREW OF FIVE OR SIX MEN, CARRIES MORE THAN 1,200 TONS OF FREIGHT. IT WOULD TAKE MORE THAN 100 HEAVY HIGHWAY TRUCKS TO CARRY THAT MUCH.

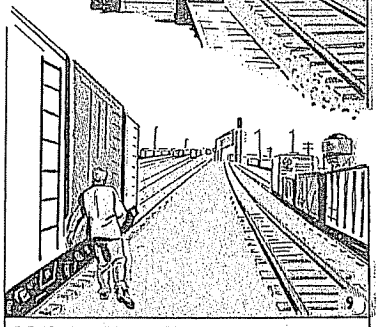


AS No. 70 NEARS RIVERSIDE, FACTORIES AND FREIGHT SIDINGS INCREASE ALONG THE RIGHT-OF-WAY. FREIGHT CARS CARRYING RAW MATERIALS AND FUEL ARE BEING UNLOADED; OTHER CARS ARE BEING FILLED WITH MANUFACTURED GOODS.

APPROACHING THE YARD, THE TRAIN RECEIVES SPECIAL INSTRUCTIONS.

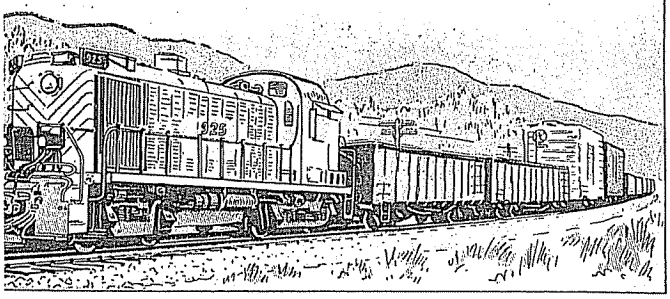


THE TRAIN SLOWS SPEED AND "DRIFTS" INTO RIVERSIDE, AN INTERCHANGE POINT WITH TWO OTHER RAILROADS, AND HEADS FOR THE YARDS ON THE OTHER SIDE OF THE CITY.



THE TRAIN STOPS. A YARD BRAKEMAN CUTS OFF THE ENGINE AND FIRST TEN CARS. LOCOMOTIVE PUSHES THEM ONTO No. 9 TRACK. TEN MINUTES FROM TIME SHE ARRIVES, No. 70 IS ON HER WAY AGAIN.

OR DAVIS SAYS, "LOOK OVER THERE, RANDY, WHERE THE WESTERN ION BRANCHES OFF THE MAINLINE. THAT'S ONE OF OUR NEW OAD-SWITCHERS HAULING A LOCAL FREIGHT."



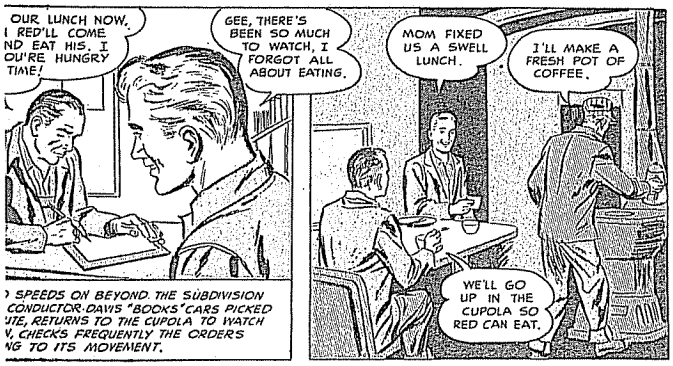
OUR LUNCH NOW. I RED'LL COME ND EAT HIS. I OU'RE HUNGRY TIME!

GEE, THERE'S BEEN SO MUCH TO WATCH, I FORGOT ALL ABOUT EATING.

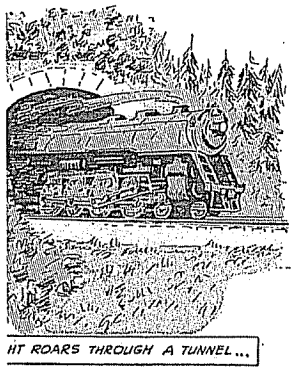
MOM FIXED US A SWELL LUNCH.

I'LL MAKE A FRESH POT OF COFFEE.

WE'LL GO UP IN THE CUPOLA SO RED CAN EAT.

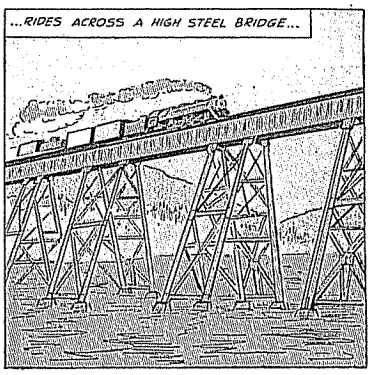


SPEEDS ON BEYOND. THE SUBDIVISION CONDUCTOR-DAVIS "BOOKS" CARS PICKED ITE, RETURNS TO THE CUPOLA TO WATCH , CHECKS FREQUENTLY THE ORDERS NG TO ITS MOVEMENT.

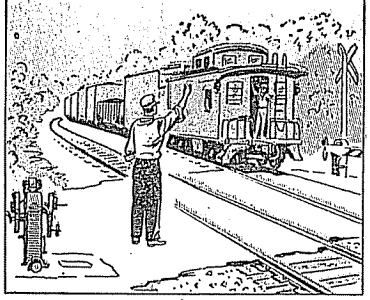


HT ROARS THROUGH A TUNNEL...

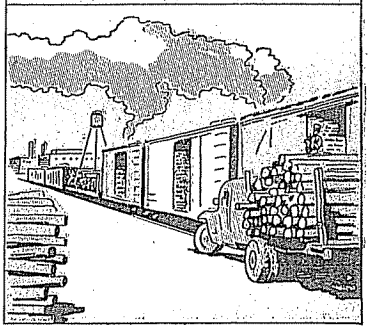
...RIDES ACROSS A HIGH STEEL BRIDGE...



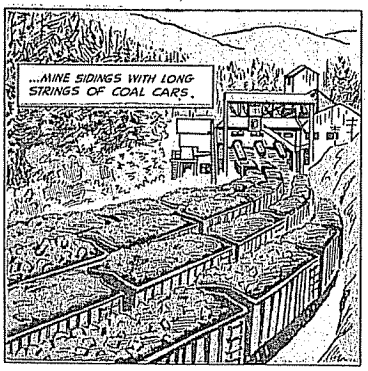
...PASSES THROUGH LITTLE VILLAGES, CLICKING OVER CROSSINGS...



...GOES BY SIDETRACKS WHERE CARS ARE BEING LOADED WITH LUMBER AND PULPWOOD...

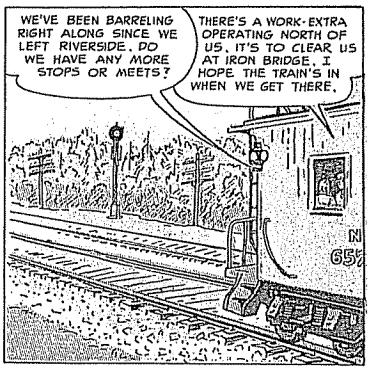


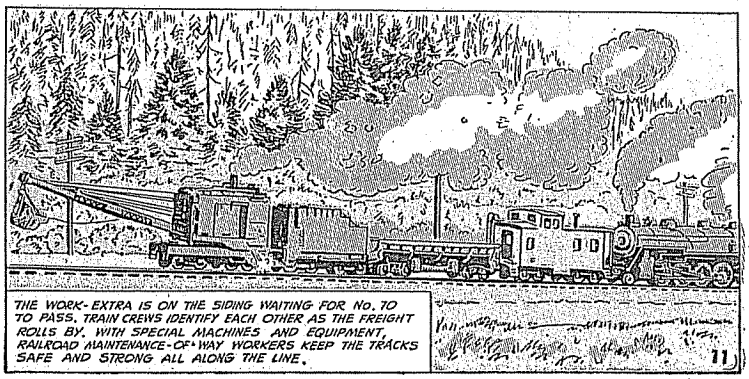
...MINE SIDINGS WITH LONG STRINGS OF COAL CARS.



WE'VE BEEN BARRELING RIGHT ALONG SINCE WE LEFT RIVERSIDE. DO WE HAVE ANY MORE STOPS OR MEETS?

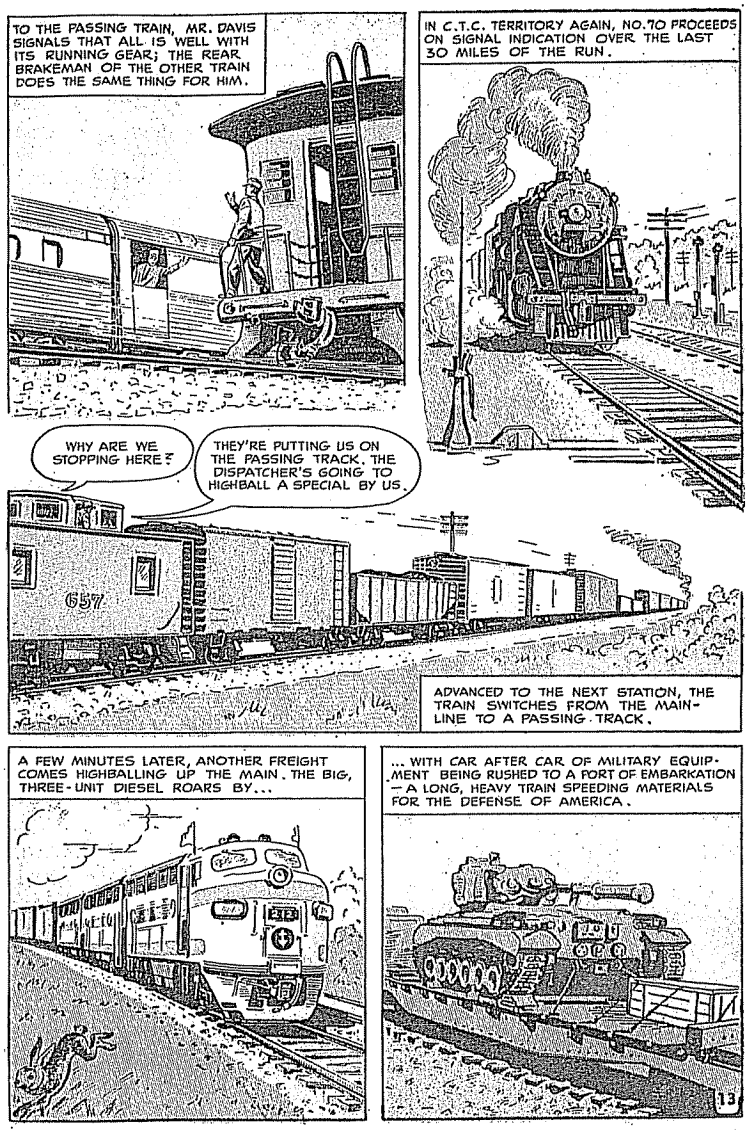
THERE'S A WORK-EXTRA OPERATING NORTH OF US. IT'S TO CLEAR US AT IRON BRIDGE. I HOPE THE TRAIN'S IN WHEN WE GET THERE.





THE WORK-EXTRA IS ON THE SIDING WAITING FOR NO. 70 TO PASS. TRAIN CREWS IDENTIFY EACH OTHER AS THE FREIGHT ROLLS BY. WITH SPECIAL MACHINES AND EQUIPMENT, RAILROAD MAINTENANCE-OF-WAY WORKERS KEEP THE TRACKS SAFE AND STRONG ALL ALONG THE LINE.


RANDY LEARNS THAT U.S. RAILROADS OPERATE MORE THAN 354,000 MILES OF ALL TRACK . . CROSS SOME 190,000 BRIDGES... GO THROUGH 1,500 TUNNELS... CLIMB MOUNTAINS TO A HEIGHT OF 10,000 FEET... REACH A POINT 200 FEET BELOW SEA LEVEL!
ILROAD IS AR HIGHWAY EL, ISN'T IT?
THAT'S EXACTLY WHAT IT IS — A ROAD OF STEEL RAILS, CUSHIONED BY TIES AND BALLAST. SEE THAT QUARRY DOWN THERE? THAT'S WHERE WE GET CRUSHED ROCK FOR BALLAST.
GER TRAIN APPROACHES OPPOSITE TRACK...
THAT'S THE FAST MAIL AND EXPRESS — NO. 11 — MAKING UP TIME.
... AND CONDUCTOR DAVIS TAKES A POSITION ON THE CABOOSE PLATFORM. RANDY NOTICES THAT THE CONDUCTOR OR REAR BRAKEMAN ACKNOWLEDGES SAFETY SIGNALS FROM STATION AGENTS, TOWERMEN AND OTHER RAILROADERS WHO INSPECT TRAIN AS IT PASSES.


TO THE PASSING TRAIN, MR. DAVIS SIGNALS THAT ALL IS WELL WITH ITS RUNNING GEAR; THE REAR BRAKEMAN OF THE OTHER TRAIN DOES THE SAME THING FOR HIM.
IN C.T.C. TERRITORY AGAIN, NO. 70 PROCEEDS ON SIGNAL INDICATION OVER THE LAST 30 MILES OF THE RUN.
WHY ARE WE STOPPING HERE?
THEY'RE PUTTING US ON THE PASSING TRACK. THE DISPATCHER'S GOING TO HIGHBALL A SPECIAL BY US.
657
ADVANCED TO THE NEXT STATION, THE TRAIN SWITCHES FROM THE MAIN-LINE TO A PASSING TRACK.
A FEW MINUTES LATER, ANOTHER FREIGHT COMES HIGHBALLING UP THE MAIN. THE BIG, THREE-UNIT DIESEL ROARS BY...
... WITH CAR AFTER CAR OF MILITARY EQUIPMENT BEING RUSHED TO A PORT OF EMBARKATION — A LONG, HEAVY TRAIN SPEEDING MATERIALS FOR THE DEFENSE OF AMERICA.
13

DK AT
ARMY
GUESS
)S ARE
IPORTANT
ONAL
ISE.

THERE WOULDN'T BE ANY NATIONAL DEFENSE WITHOUT RAILROADS! DURING WORLD WAR II, RAILROADS CARRIED MORE THAN 90 PERCENT OF ALL MILITARY FREIGHT. THEY ALSO HANDLED 97 PERCENT OF ALL ORGANIZED MILITARY TRAVEL.

'OSE WHIZZES BY. "MARKERS OKAY!" D, MEANING THAT IT IS A COMPLETE). 70 ROLLS AGAIN...

...AND SOON RUMBLES ACROSS A BRIDGE INTO THE TERMINAL.

AHEAD OF THEM IS THE VAST YARD WITH INBOUND AND OUT-BOUND TRACKS, CLASSIFICATION TRACKS, SWITCHES, TOWERS...

...STORAGE TRACKS, SHOPS, ICING PLATFORMS WHERE ICE FROM CONVEYOR BELTS IS PUT INTO REFRIGERATOR CARS, AND OTHER FACILITIES.

No. 70 CLEARS MAINLINE INTO RECEIVING YARD. ON THE CLASSIFICATION TRACKS, "HUMP OPERATIONS" ARE IN PROGRESS.

THIS IS A BIG YARD, RANDY. IT HAS A HUNDRED MILES OF TRACK AND HANDLES A COUPLE OF MILLION CARS A YEAR. AUTOMATIC DEVICES, TWO-WAY RADIO AND SIGNALS KEEP SHIPMENTS MOVING IN RIGHT TRAINS AND ON RIGHT TRACKS.

I'LL SAY! LOOK AT ALL THE TRACKS AND CARS. YOU'D THINK THEY'D GET ALL MIXED UP.

SWITCH ENGINES PUSH CARS TO TOP OF MAN-MADE HILL FROM WHICH UN-COUPLED CARS COAST DOWN ONTO THE TRACKS WHERE THEY ARE WANTED, THEIR SPEED CONTROLLED BY CAR RETARDERS.

A TOWERMAN CONTROLS THE HUMP, OPERATES SWITCHES AND CAR RETARDERS.

THIS IS THE RECEIVING YARD — THE END OF OUR RUN. NOW I'LL TURN MY WAYBILLS OVER TO THE YARDMASTER'S OFFICE. THAT'S WHERE SWITCHING LISTS ARE MADE UP.

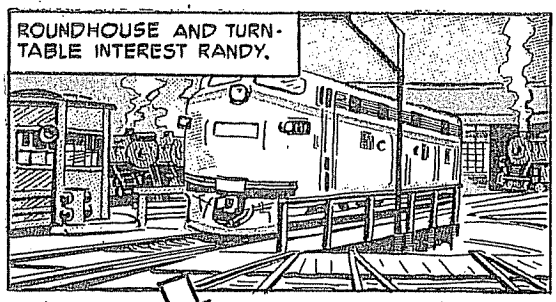
SAY, DAD, LOOK AT THAT GREAT BIG SHIPMENT OVER THERE — IT TAKES THREE FLAT CARS TO CARRY IT.

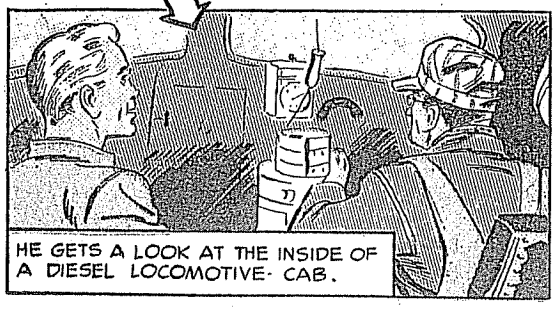
AS No. 70 ROLLS TO A STOP, RED TAKES DOWN THE MARKERS. THE RUN IS OVER. CARS WILL BE SWITCHED TO CLASSIFICATION YARD AND SORTED ACCORDING TO DESTINATION.

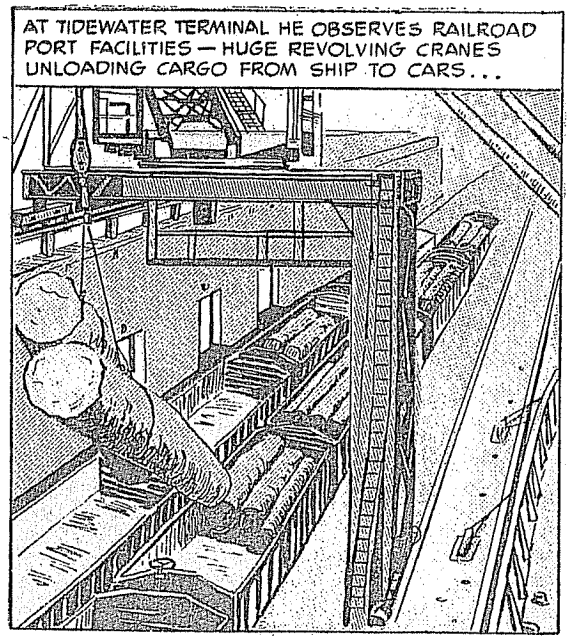
"THAT'S A BIG SHIPMENT, ALL RIGHT. IT'S A 'BUBBLE TOWER'. ONLY RAILROADS ARE EQUIPPED TO HANDLE BIG STUFF LIKE THAT. WE'LL CARRY ANYTHING, ANY TIME."

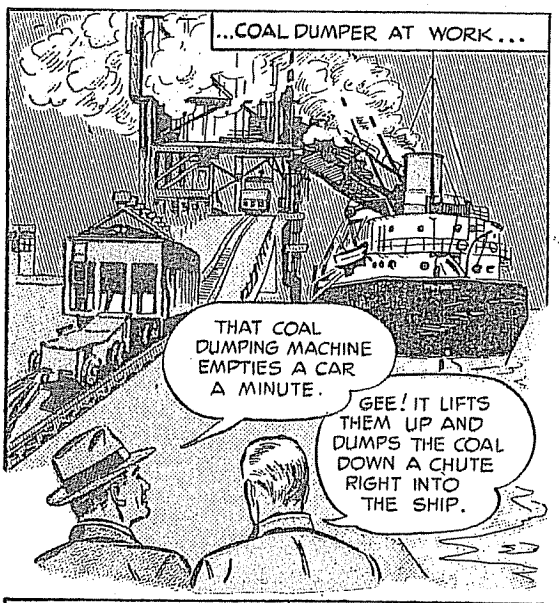
THERE ARE SOME OF THE CARS THAT WERE ON OUR TRAIN.

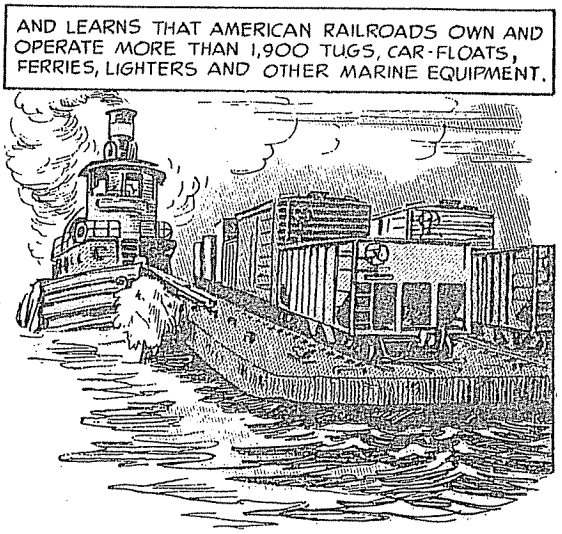
No. 70'S CREW HAS A ONE DAY LAY-OVER. THE NEXT MORNING, MR. DAVIS TAKES RANDY ON A TOUR OF THE TERMINAL AREA — FIRST TO THE FREIGHT STATION, WHERE FREIGHT IS BEING UNLOADED AND TRANSFERRED.

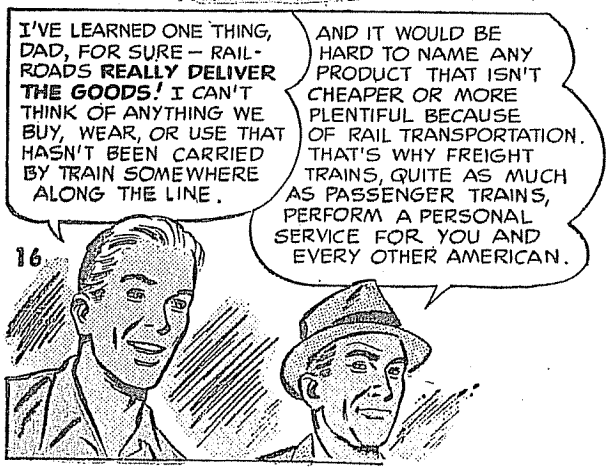












Each of the various means of transportation has its value and its use. But basic among them, and essential to the operation of **all** the others, is the train of cars on tracks.

There is nothing else in existence, and nothing in sight, which can do what the railroads do — every day — in moving people and freight.

That's why railroads are essential to the nation's economy in time of peace — vital to its safety in time of war.

PRODUCED BY THE ASSOCIATION OF AMERICAN RAILROADS
TRANSPORTATION BUILDING, WASHINGTON 6, D. C.