CHAPTER III

DENVER & RIO GRANDE WESTERN

California Zephyrs

The Denver & Rio Grande made history in the West a long time ago. That was in 1871. The pages recording that great era are beginning to turn dim and yellow. Little engines then, hurling their weight at the Rockies in magnificent conquest. And they built a monument in the city of Colorado Springs and set upon it little old No. 168, a narrow-gauge Baldwin in 1883, in everlasting memory—a shrine of iron and steel on the footstool of the range, celebrating the sixty-second anniversary of Colorado statehood in August, 1938.

And then on September 14, 1950, another monument was unveiled—a monument to progress, to a man named Cy Osborn, to a streamlined train with glass rooftops, the California Zephyr.

At exactly the spot where the Vista-Dome was first conceived, at exactly the spot where the east- and westbound California Zephyrs meet in the grandeur and the solitude of Glenwood Canyon, dedication ceremonies were held by the Denver & Rio Grande Western Railroad and General Motors in tribute to the conception of the glass-domed car by C. R. Osborn, now a vice-president of General Motors.

The ceremony took place under the eyes of the passing trains, with the deep-throated Diesels shouting their salutes before this big, new monument cairn surmounted by a nine-foot scale model dome coach, an exact replica of the passing dome coaches that are part of the silver trains gliding past.

God gave Colorado the Rockies and the Denver & Rio Grande Western and Cy Osborn made it possible for the traveler to

enjoy these mountain monarchs by daylight and from a vantage point previously enjoyed by a select few.

To review briefly: In 1944, Cy Osborn, studying wartime freight movements through the Colorado Rockies, was riding the fireman's seat of a Diesel freight locomotive. He was struck by the fabulous mountain scenery and sensed the impact it would make on the train traveler, once he was afforded the opportunity to view it as he had. Cy Osborn took the idea back to the engineering department of the Electro-Motive Company at La Grange, Illinois, and the answer was the Vista-Dome car.

The California Zephyrs made their debut on March 20, 1949, and became the first transcontinental trains carrying Vista-Dome cars. Those who ride them never forget the breath-taking beauty of these Colorado Rockies.

Six sets of eleven-car California Zephyrs cross the Rockies and the Sierra Nevadas, in California, in daylight, which means that six of these trains are constantly roaming the rails between Oakland–San Francisco, California, and Chicago, Illinois.

The California Zephyr makes the run over this Colorado-mid-continent route in fifty hours and thirty-one minutes eastbound, and fifty-one hours and twenty minutes westbound. The California Zephyr replaced the Exposition Flyer, which required sixty-three hours eastbound and over sixty-nine hours westbound. The California Zephyr was scheduled to put the passenger at the points of most spectacular scenery in daylight, where the earlier Flyer passed through this startlingly beautiful high country, both in the Rockies and in the California Sierra Nevadas, during hours of darkness.

Make-up of the Train

Each California Zephyr consists of a baggage car, three Vista-Dome coaches, a Vista-Dome buffet-lounge car, two six-bedroom-and-ten-roomette cars, a dining car, one sixteen-section sleeper, one six-bedroom-and-ten-roomette car, and a Vista-Dome lounge-observation, with one drawing room and three bedrooms.

Each car of the California Zephyrs was given a prefix word "Silver" because of the stainless steel surface of these beautiful and unique trains. The baggage cars have been named for wild animals of the Western plains and mountains, and we find these cars with such names as the Silver Buffalo, the Silver Antelope, the Silver Stag. And then the coaches with such characteristic names of Western life and environment as the Silver Lariat, the Silver Mustang, the Silver Sage.

The names of the buffet-lounge cars, the diners, and the buffet-observation suggest the kind of service rendered, like the Silver Hostel, the Silver Banquet, the Silver Penthouse. The room cars carry names representative of Western scenery—Silver Butte, Silver Pass, Silver Surf. The open-section sleepers have been given the names of trees, like the Silver Maple, the Silver Pine, the Silver Palm.

Everything possible has been done to surround these California Zephyrs with the atmosphere of the great open spaces of the West, the breadth and freedom of life there. Each breath-taking morning raises the curtain on new worlds for the traveler who for the first time is looking at the West.

No. 17, the westbound California Zephyr, leaves Chicago at 3:30 P.M. and the passenger is given a preview of great prairies before darkness closes in. The next morning there are still vast prairie lands spread out but the wide plains of Nebraska are behind, and this is Colorado now, and off there ahead you, from your seat in the Vista-Dome, find something startling and fascinating reaching across the horizon—blue it is, with a white-lace edging. You are getting your first look at the Rockies, and that first look will leave its impression strongly in your memory.

From that moment every waking hour will be filled with such sheer, titanic grandeur as dreams are made of. You can ride these trains again and again and find something new every time —new cloud effects, new snow formations, new green meadows, leaves set aflame in the high country, new waterfalls, storms driving down, sudden sunny vistas opening up.

You haven't seen America until you have seen it from "up-

stairs" on a train, from a seat in one of these modern railroad penthouses, the Vista-Dome cars.

The Budd people, of Philadelphia, built the California Zephyrs, and they turned out cars capable of meeting the wide variation of requirements that have made them truly "blue ribbon" trains, with many innovations and improvements incorporated in their structure and design.

Few trains, as this is set down, have as many varied "downstairs" as the Vista-Domes of the California Zephyrs, for here we find not only domes on the coach cars but on the mid-train buffet-lounge, the rear room-buffet-observation car. In other words, there are no two Vista-Dome cars alike in the train's consist, which has five Vista-Domes altogether.

The eleven-car trains provide 138 seats for coach passengers, plus seventy-two in the Vista-Domes and 107 in the sleepers. To provide care for certain of the passengers, ten young women have been specially trained to serve as hostesses on the six sets of equipment. They are known as the Zephyrettes and they devote themselves to looking out for women, children, and aged people who are traveling alone. Each train also provides valet service.

In the dormitory car, the steward has a bedroom; also the hostess. Back of these two bedrooms are the dormitory quarters with three sets of three-tier bunks. There are also toilet and shower facilities in addition to the separate washroom.

Lighting features on the California Zephyrs include a cylindrical magnifying ceiling unit in the coaches which is formed to control the light to the aisle only. This design produces a low level of soft light in the seat area without glare.

As you go up the stairs to the dome for night observation, lighting gradually changes from a high to an extremely low level so that the reflections on the glass dome do not restrict the passengers' ability to see out. Two small lights are concealed on the sides of the stairway on each tread. Smaller lights of a similar design illuminate the leading edge of the elevated platform on which the seats are located.

A continuous row of lensed glassware, built into the ceiling

on each side of the air duct, makes the Vista-Dome an outstanding feature of the car when the train is in a terminal.

Night lighting has come to occupy a most important niche in our lives, and the lighting of a modern train is, indeed, a far cry from the days of the Pintsch-Burner lamps or even the later electric lighting systems. Lights on the train of today make easy reading and also provide the same atmosphere of luxury you find in the finest of hotels.

We have in the dining car on the California Zephyr a soft glareless light and cheerful ceiling illumination from a continuous row of Luminator lensed glassware mounted in the coves on the side of the ceiling. The steward's desk in the foyer is accented by a special ceiling light.

A row of Luminator lensed glassware is used in the buffet-lounge, similar to the arrangement in the diner. In the double-seat sections at the end of the car a small cornice light is employed transversely over the seats in a way that directs the light over the passenger's shoulder. Individual fluorescent ceiling units are located over the tables and seats.

In the open-section sleeper individual fluorescent ceiling lights are located opposite each section. This unit has large prisms pressed into the side walls of the controlled lens to give additional illumination to the ceiling. The down lighting floods the car from side to side, with ample light for reading but still no glare to disturb your relaxation. The upper and lower berths have incandescent lights.

In the roomettes two fluorescent tubes are placed one on each side of the mirror, with the lensed glassware controlling the light so it does not disturb the occupant while using the mirror, or while sitting beside it. The main light source is in the ceiling over the reading area. An incandescent berth light at the side can be used either in the daytime or at night.

In the observation-lounge the lighting is from a continuous row of lensed glassware in the soffit over the top of the windows, directing the light to the reading area. The ceiling is illuminated by lights over the seats. The buffet ceiling units are arranged

to illuminate the various seating arrangements in the proper manner.

We have referred here to "Luminator lensed glassware," as some stress has been placed on the lighting of the California Zephyr. Streamlining of the lighting system of the train was accomplished in a very pleasing manner by the Luminator manufacturers. Their engineers and designers created a lighting that accented tremendously the modern trend of the interiors. The combination of lensed glassware and fluorescent light produced both softness and a fascinating highlighting of detail.

The entire lighting system was developed especially for this streamliner. Travelers are immediately impressed by these modern developments in lighting technique. You have only to stand on a station platform to know that there have been far-reaching achievements in putting glamour aboard this new kind of train.

We find pleasure in the underdome sections of the California Zephyr. There is particular charm and coziness here—it is a kind of snug-harbor feeling, enhanced by murals and kindly surroundings.

Needless to say, the artists, when they start to work on these interiors, do something that has never been done before—they take the background colors of the country beside the track and weave them into something as warm as a blanket. Here we have gold and Indian red; there it is nut pine and light dust. Eight major color schemes are employed. The coaches and the various types of car have their own distinctive combinations.

An outstanding feature in the buffet-lounge is a series of large stylized maps of cities along the route, carved and painted on linoleum.

The California Zephyrs, of course, are equipped with radio and public-address systems. Two two-spool wire reproducers can give twelve hours' continuous entertainment. A train telephone system allows members of the crew to communicate with each other. The radio system consists of two sets, each having seventeen pretuned crystal receivers, thus making available as many as thirty-four broadcasting stations.

Modern air conditioning and heating provide for the sudden temperature changes that may be encountered.

How much modernity enters into the make-up of these California Zephyrs is exemplified in a slender control panel we find conveniently located to the berths in the rooms. These are for: (1) air conditioning, (2) push button for porter service, (3) switch for ceiling light, (4) four-position fan switch, (5) potentiometer for heat control, (6) volume control for radio, and (7) selector switch for radio and public-address system.

There is one car in the train that has just about everything in the way of accommodations, and that is the last car. At the rear end of this car there is the luxurious lounge and observation section, with accommodations for thirteen passengers. From this section stairs lead to the Vista-Dome. The underdome section provides a luxurious buffet and service bar. There are seats here for twelve. Forward is a drawing room and three bedrooms, and, next to the vestibule the porter's seat and berth. The drawing room offers outstanding de luxe appointments.

Big Diesels pull the California Zephyr over the entire distance. Usually a three-unit Electro-Motive locomotive of 4,500 horsepower goes through from Chicago to Denver. In the Rockies the motive power is normally the only two 6,000-horsepower Alco Diesels the Rio Grande are running between Denver and Salt Lake City. Across the western deserts and over the Sierra Nevadas, Salt Lake to Oakland Pier, California, the power is Electro-Motive units combined to produce 4,500 horsepower.

These California Zephyrs provide coach and Pullman accommodations at no extra fare. All accommodations, of course, must be reserved in advance.

Generous-sized and conveniently located men's and women's dressing rooms are provided down the length of the train, and they have every facility for the passengers' comfort, even down to the electric receptacle for bottle warmers in the women's rooms.

Absolutely nothing has been omitted on these trains to make the transcontinental traveler feel like royalty away from home.

The undercar equipment is as new and modern as the general

furnishings, with Timken roller bearings, coil bolster springs, and vertical shock absorbers. The air brakes are the Westinghouse High-Speed-Control type, with antislide devices to prevent wheels locking. A lever-type hand brake operates through the Budd-type disc brakes with which the trucks are equipped.

Copper tubing is used for all brakes, steam and water pipes on the car bodies.

All buffet and dining-car kitchen facilities include Frigidaire electromechanical refrigeration, which also takes care of the ice-cube production.

The thirty-six-inch rolled-steel wheels of the cars are machine balanced, and we find rubber pads placed under the center plates, under the equalizers over the journal boxes, and at the ends of the bolsters. These are the things that help cushion your train and silence it when the miles are streaking behind.

Safety has been built into the California Zephyrs beneath their beauty and the passengers are surrounded by structural-tested walls and roof sections. Safety has been built into the roadbed, and the last word in signaling is used, including the centralized traffic control system of train dispatching over all of the districts of the silver miles which these silver cars of the California Zephyrs speed that are not double track.

CHAPTER XX

RIO GRANDE COAL HAUL

Geneva Steel

Geneva is a big name in the West, and it will be bigger. In the East it is Gary, Pittsburgh, Youngstown; in the West—Pueblo, Colorado; Geneva, Utah. The names are synonymous when it comes to steel. You think of them in connection with flame-spouting chimneys and iron-roofed buildings.

Geneva is the West's largest steel mill, and it is located thirty-eight miles south of Salt Lake City, Utah. It sprang up in the middle of fruit orchards and vegetable patches under the shadow of the mighty Wasatch Mountains in air clear as crystal. Steel is usually associated with vast, smoke-fogged industrial areas and waterways and ore boats.

Geneva is different. Geneva is new. Gary came into being around the turn of the century. Geneva, some forty years later, went into production to aid the West Coast war effort. Geneva, the whistle stop on the Rio Grande, became Geneva Steel. From blue prints in 1941 to a great steel plant in 1943-44, with three 1,100-ton blast furnaces, nine 225-ton open hearth furnaces, a 45-inch slabbing and blooming mill, a 132-inch continuous plate mill, a 26-inch structural mill, and various complementary facilities, including 252 by-product coke ovens.

The plant was operated for the government by the Geneva Steel Company, a new U.S. Steel subsidiary. It turned out plates and structural shapes for the building ship fleet in Pacific Coast yards.

Geneva Steel, even though a fair-haired boy in the government book, had a lot of trouble getting the things it needed

before it could start steel rolling down the rails. Such things as locomotives and cars, any old kind of locomotives, were as scarce as hen's teeth.

Geneva Steel ended up with a dozen twenty- and thirty-year-old steam locomotives of various makes, about every one tottering between the back shop and the junk yard, but they had to do. Rolling stock was also a desperate problem. Every road in the nation was staggering under its load of war traffic, and no road was letting go of anything with eight wheels and drawbars.

Geneva had a coal mine at Horse Canyon, Utah, served by the Carbon County Railroad. Many folks never heard of the Carbon County Railroad, but it was mighty important to the Denver & Rio Grande Western and Geneva Steel, all eleven miles of it. The Carbon County Railroad was the steel link between the Geneva Mine at Columbia, Utah, and Columbia Junction on the eighteen-mile Sunnyside Branch.

Somewhere in the East, agents for the Carbon County Railroad found 600 aged coal hopper cars that were about ready for the scrap pile, but they had to do. And they were started in service, with the Rio Grande operating them in special trains at reduced speeds. En route, they received careful inspections. These old cars and the old locomotives did their bit in putting Geneva on the map. They have been replaced now—the locomotives with modern Diesels, and the cars with high-side hoppers than can keep pace with modern main-line traffic.

In 1948, Geneva produced 800,000 net tons of finished steel and semifinished steel. And for every ton of steel produced there had to be two tons of iron ore, one ton of coke, and a half ton of limestone. Raw materials had to move in, and steel had to move out to distant fabricating plants. The hauling problem had to be solved by the two railroads that served Geneva—the Denver & Rio Grande Western and the Union Pacific.

Little has been written of the fine service rendered by these railroads in connection with Geneva, but they did a heroic job, and at no time failed to maintain the tradition of American railroads. Since this is a Rio Grande chapter, we will concern ourselves here mainly with the Rio Grande story.

We will go back a little to the early production of pig iron in the West, which, surprising enough, dates back to 1852. Like Geneva, it was produced in Utah. Columbia Steel started to make pig iron commercially for West Coast steel plants at Provo, Utah, in 1924.

Neither the Rio Grande nor the Union Pacific had any particular knowledge regarding serving big steel, but they learned at Geneva. Both roads knew about copper mines and smelters and the resulting heavy traffic, but waiting on Geneva was something else again. It meant engineering layouts and operations designed to cope with a different kind of heavy traffic, a traffic of the magnitude and precise regulation incident to meeting full-fledged steel production.

In the East, the famous ore boats bring to Gary and other lake terminals the red dust of the Mesabi, but at Geneva the red ore travels by rail across sagebrush deserts, 225 miles, from Iron Mountain to Geneva over the Union Pacific. Also large quantities of this ore are hauled from Provo, Utah, by the Rio Grande across Utah and Colorado to the Colorado Fuel & Iron Company in the Pueblo district.

Geneva uses fifteen to twenty carloads of limestone and dolomite per day, and this originates at Geneva Steel's Keighly quarry, near Payson, Utah, thirty-three miles from the steel plant. This quarry is on the Tintic Branch of the Rio Grande, which joins the main line at Springville, six miles south of Provo. Denver & Rio Grande Western freight trains working out of Provo haul the rock, either by special pickup moves or by what are called "tramp" assignments, meaning by other than solid through trains. It is handled in hopper cars.

For the reason that Utah coal is "just on the border line between coking and noncoking," Geneva blends it with a small proportion of a "coky" variety of coal from Oklahoma, which strengthens the coke structure. This is hauled from the Rio Grande's eastern gateways at Pueblo and Denver in mixed trains.

Geneva uses about eighty-five cars of coal a day. This originates for the most part at the Horse Canyon mine, and is hauled out to Mounds, on the Rio Grande main line, in seventy-ton

hopper cars over the Carbon County Railroad, which we have mentioned. The Rio Grande then moves it to Geneva. Though the haul is shorter by half than the U.P. red ore movement from Iron Mountain, the Rio Grande encounters far more severe grades and curvature.

To meet the operating problem, the D.&R.G.W. worked out a solution that proved satisfactory. Never was there a stretch of track so much written about or so much photographed as that between Helper, Utah, and famous Soldier Summit, the Rio Grande right of way over which this coal from Horse Canyon moved on to Geneva.

This black-diamond haul over Soldier Summit involves whipping the heaviest westbound grade on the Rio Grande main line—2.4 per cent, Helper to Kyune, a distance of seven miles, 2 per cent for eighteen miles more. At the start of the run, the coal move generally is downhill to Mounds. On the head end there is a four-unit, 6,000-horsepower Diesel, capable of handling up to 105 loads, or a tonnage of 8,500 to 10,000 tons.

At Mounds, tonnage is reduced to 7,200 tons, or eighty cars. The same road engine handles the train to Helper, with a maximum grade of 1 per cent for the twenty-three miles. At Helper, where the Soldier Summit pull begins, a Diesel helper of 6,000-horsepower is cut into the coal drag. A second helper works at the rear of the train. This is the heaviest steam power on the Rio Grande, a 2-8-8-2 type simple articulated steam locomotive of the L-131 class, with a tractive force of 131,800 pounds.

The road Diesel whistles off and the train of Geneva coal starts its crawl over the hump. The grade drops at Soldier Summit, twenty-nine miles to Thistle. Going down, coal trains fill out to ninety cars, and they hold at this number so that full utilization of the dynamic braking on the four-unit Diesel may be realized. The retainers are turned up to "light" position, and no inspection stops are necessary.

Retainers are returned to normal at Thistle and the coal drag goes through to Geneva. Here it heads into the plant receiving track. Now we see the advantage of Diesel power and the way it is applied to modern precision railroading.

Immediately that the road Diesel brakes its coal train in at Geneva, it is cut off and run around the train to pick up the caboose, which is coupled on behind a train of 100 to 120 empties. The Diesel then backs on and the train line is hooked up and the brakes tested. In about an hour from the time it pulled in through the switch it pulls onto the main line for the eighty-two-mile run to Helper.

Eastbound, Thistle to Soldier Summit, the grade lifts for twenty-nine miles at 2 per cent. The Diesel takes the long train up the hill without a helper. Upon arriving at Helper, the bad order cars are switched out and replaced, and the train proceeds to Columbia Junction behind the same road Diesel, climbing the ruling 1.76 grade on the branch without the service of helper power.

The coal trains are handled between Columbia Junction and Helper by two crew turns out of the latter point daily. These are known as DPC-1 and DPC-2, having been so designated for the Defense Plant Corporation, original owners of the mine. The runs are about twelve hours apart. Generally, if DPC-1 brings down full tonnage to the main line at Mounds, where the tonnage is reduced, DPC-2 will come down with a lighter train, filling out at Mounds with the loads left by the DPC-1.

Two crews handle two turns between Helper and Geneva every twenty-four hours. Sometimes they set out commercial coal at Provo, Utah, for other destinations.

The time sequence of the coal runs includes departure from Columbia Junction at 2:00 P.M., the arrival at Helper at 4:00 P.M. The train leaves Helper at 8:00 P.M., pulling into Geneva at 4:00 A.M. in the morning. The Geneva departure, as has been pointed out, is about an hour later, or at 5:00 A.M. The train is due into Helper at 10:00 A.M. Upon call, a turn works out of Helper to Columbia Junction, starting a new sequence.

Around 800 hopper cars are employed in the Geneva coal movement, about 300 of these are the new-type seventy-ton cars, which were purchased by the Carbon County Railway. These are equipped with a type of brake-shoe key that will not shake out when the car is turned over by the Geneva unloading ap-

paratus. The new cars are also equipped with the Lewis type empty-and-load brakes. Geneva Steel in its early days had a lot of trouble with brake shoes and keys being buried in its furnace charges, while the railroad was plagued with bad-order cars.

The Rio Grande spent about $284,000 in preparing its Sunnyside branch for the increased load it had to carry. A change of line near Mounds reduced the grade against loaded movements from 0.70 per cent to 0.50 per cent, and against empty movements from 1.76 to 1.33 per cent. Relocation work at Columbia Junction reduced the empty movement from 2.54 to 1.78 per cent. Also, a Y and two interchange tracks were constructed at this point.

The old branch rail dated away back to 1912, and this was replaced with ninety-pound relay rail, with six inches of gravel ballast between Mounds and Dragerton, a mile north of Columbia Junction.

To meet the needs created by the Geneva Steel plant, the Denver & Rio Grande Western enlarged its Provo, Utah, yard, revamping the leads and laying additional track. This provided facilities for handling limestone loads and empties, for plant loading at Geneva and took care of such coal setouts as might be made. To handle the traffic in and out of Geneva, beside the solid through coal movements, tramp assignments again operate between Provo and Salt Lake City's Roper Yard, forty-four miles away. These assignments deliver empties into Geneva for loading, haul out the finished steel for movements to the North and West, and handle coal and limestone loads and empties.

The Denver & Rio Grande Western's biggest single source of income is Geneva Steel, and the road is most happy to serve it. If ever a railroad deserved the support that industry can offer economically, it is the Rio Grande, which operates trains over some of the roughest terrain in the United States. It has, further, battled through some very rough financial hills on a road that seemed destined for the poorhouse. It suffered bankruptcy but it never lost the will to fight, and in the year 1950 it was physically in a position to look the world in the eye and accept every challenge.

The road that drove through the Rockies, instead of dodging around them, is writing a new story of conquest in the West, and this time it has to do with the birth and growth of a new industrial giant, slowly uncoiling in a region that once was a part of Utah's sagebrush deserts.

CHAPTER XXVI

NEW D.&R.G.W. FLAT YARD

Streamlined Facilities

The demands of modern railroading are constant and imperative. The railroad that lags is lost. The voice of the shipper is raised against delay; the trucker is a thundering competitor in the modern scheme; rival rail lines are shouting up their wares –new power, better cars, faster schedules. Speed and improved communication facilities are featured in the stories of the day. Everything is machine and push button.

In Denver, Colorado, the yardmaster has under his hand banks of little switches for directing incoming trains to the yard track desired; he has a microphone, paging speakers, and talk-back speakers at his command. There is a streamlined yard office building and a streamlined tower for the streamlining of freight classification and train movement over the lines of the Denver & Rio Grande Western.

Requirements at Denver do not demand a hump yard, and an eighteen-track yard of the flat-switching type amply takes care of the work at this important point. Everything about this Denver yard is smart and symmetrical. It has provided important operating advantages for the Denver & Rio Grande Western, including the speedier handling of industrial business in the area—in particular, the time required to deliver stock cars to the stockyards—and the advancing of the departure time of trains of connecting roads. On one road the time has been advanced an hour; on another by four hours and thirty minutes, a very considerable saving in the rush of 1950 railroading.

The new yard makes possible maximum tonnage for all de-

parting trains, with a decrease in train-miles and a very considerable decrease in helper-miles. The yard has brought about a reduction of per diem payments, and also eliminated a number of switch-engine shifts.

The present yard replaced two small freight yards, and in addition to its eighteen tracks in the classification yard it has tracks and servicing facilities that include an engine run-around track, rip tracks, a Y track, a scale track, hold and team tracks, a modern icing station, and service track with car-repair and Diesel-locomotive servicing facilities, two electrical substations, communication facilities, and a new modernistic yard office.

The yard slopes down from the south to the center on a 0.19 per cent grade, and from the north the slope toward the center from the north end is 0.4 per cent. This saucer shape was adopted partly to give sufficient grade to the yard tracks to prevent cars from rolling out of the yard after being switched. The yard is well drained, with runoff water carried under the yard through two forty-eight-inch corrugated metal culverts.

After the grading for the new yard was completed the entire trackage area surface was covered with seven inches of pit-run gravel having a maximum size of three-quarter inch. The portion of the yard upon which trackage was not constructed was covered with pit-run gravel to a depth of four inches.

The eighteen tracks comprising the body of the yard range from 4,600 to 1,700 feet in length, with a total car capacity of 1,200. The tracks were built on fourteen-foot centers, with the exception of two eighty-car icing tracks, built on each side of the 3,600-foot icing dock. The length of the yard, throat to throat, is one mile. The yard was arranged to permit future expansion to more than double the present capacity. Two 3,000-foot yard-entrance tracks were built at the south end and one 5,000-foot lead at the north end.

The two long icing tracks were built with 110-pound rail, the next four tracks with 100-pound rail and the remainder of the yard tracks with 90-pound rail. The rail and all of the other track material, except the spikes, were second-hand material.

A scale track, 1,150 feet long, was built just west of the run-

around track with the scale track at the center of it. This track gives a weighing capacity of eleven cars. For holding peach diversion cars, two hold tracks, 2,000 feet long, were constructed between the yard and the main track, and these latter tracks can also be used as team tracks for the small amount of unloading that may be necessary.

One of the outstanding features of the new yard is its modern icing facilities. This plant was built near the mid-point of the yard length between the main track and the longest yard track. The plant includes an icehouse with a storage capacity of 16,000 tons, an icehouse office building, a long ice dock, two Link-Belt Rico Master car-icing machines, two salt-storage houses, and an ice-machine track.

The icehouse is a three-room building, 96 feet by 290 feet, and it is constructed entirely of fire-retardant and rot-resistant treated wood, with the exception of the concrete floor and the asbestos-cement siding. Because it would be impossible to get ice out of the three rooms in sufficient quantities to ice two peach trains simultaneously, a daily storage room, 12 feet wide and 9 feet high and running the entire length of the ice structure was built on the ice-track side. With the added space thus made available, ice can be taken out of the house continuously.

During periods between trains, a readily available reserve supply can be built up, thus allowing the crews in the main icehouse to work steadily. Two spiral chutes descend from the storage room to tunnel conveyors which move the ice laterally and on up inclined conveyors to the ice dock.

This ice dock, built between the two icing tracks, is 6 feet wide, 6 feet high, and 3,600 feet long. The two Rico Master car-icing machines run on a track laid between the dock and the second ice track. The machines take ice from a conveyor on the ice dock, crush it, and elevate it to the top of the machine and chute it down to cars standing on either track. Salt is automatically mixed with the ice to the proportion required. This salt is stored at both ends of the dock.

The ice used at this Denver yard icing plant is taken from ponds in the mountains, being harvested in cakes cut twenty-

three inches square, the ice thickness being between sixteen and twenty inches thick. Generally the ice is delivered in January in whatever types of cars are available. The ice cakes are unloaded opposite each of the three big storage rooms, and an inclined conveyor in the center of each room delivers them at the proper elevation.

South of the ice plant, a small one-story office building houses the ice inspectors, and also provides a tool and storage room.

Modern Yard Office

Your modern yard office, in contrast to the yard office of yesterday, stands out as an architectural triumph. It is, perhaps, the least publicized of all the present-day railroad plant facilities. Like the old-time railroad depot, the freight house had nothing to recommend it except its convenient location as concerned the property. It was dingy, gloomy, and poorly ventilated and lighted.

Today the yard office building is clean lined and trim, and the one at the Denver yard is particularly attractive and business-like in line and make-up. It was constructed adjacent to a main road at the south end of the new yard. It is two stories, with a basement and tower, built of brick and terra cotta. The building is seventy-five by thirty-five feet. The four-story communication tower is twenty feet square, located on the southeast corner, looking over the yard. The basement of the yard office building contains signal and communication facilities, a compressor for the pneumatic-tube system, and a heating plant.

Office space is provided on the first floor for the yardmaster, the engine dispatcher, and their associated personnel. Heating is by hot-water radiation and convection, and the locker room by unit heaters.

The tower observation and control room is thirty-six feet above the ground. It provides a clear view of the entire yard, and houses the controls for the paging and talk-back speakers, as well as a radio and yard-track indicator. The latter is connected with

equipment in the north throat of the yard, which, by means of a control machine in the yardmaster's office, flashes any number from one to eighteen, indicating the proper track for an incoming eastbound train to head-in on, thus averting the necessity of calling the dispatcher before entering the yard.

A pneumatic-tube system serves the telegraph office and all other principal locations, in keeping with the practice in nearly all modern yards across the country.

The mechanical forces have facilities adjacent to the three rip tracks which include a small office building and shop equipped with gas, electricity, and hot and cold water. In the rip-track area are convenient electric outlets for the use of electric tools and welding machines. Compressed air is distributed at a pressure of ninety pounds per square foot over the rip-track and yard areas for testing on these tracks and for charging train lines before departure.

Lighting facilities include four 117-foot towers, equipped with five to nine floodlights to the tower. Towers are located at each end of the yard and others on each side midway down its length. These floodlights are arranged to illuminate the main body of the yard, but with the highest degree of intensity concentrated on the leads, the ice dock, and the areas surrounding the yard office and rip tracks.

Through two transformer substations power is furnished the icehouse and associated facilities, and the yard office and adjacent area requiring power and lights.

Servicing of Diesels is performed in the vicinity of the rip tracks. Here we find a 70,000-gallon fuel-oil storage tank, with fuel outlets, water hydrants, two sand towers, sand-storage space, and oil pump house. A small building is provided for lubricating oil storage, while another building takes care of caboose supplies.

Because the new yard lies within the limits of a C.T.C. system, changes were necessary in the control machine to conform with the revised main-track and new yard layouts. These changes involved the installation of eleven power switches at the north end of the yard and five power switches at the south end of the south leads.

I have the greatest admiration for a road like the Rio Grande that has so adequately modernized facilities which make for speeding the movement of freight. Many times we do not realize how important such a modernization program can be until an emergency arises. Then, instead of jamming up the railroad, traffic is taken in stride. Minutes, hours, days are saved; a nation can be saved through our modern transportation system and such completely adequate facilities as we have examined in this flat yard of the Denver & Rio Grande Western.

Such a railroad invites the attention of shippers, just as a streamlined train invites passengers. There is no room for indifference and outmoded practices in the modern railroad picture.

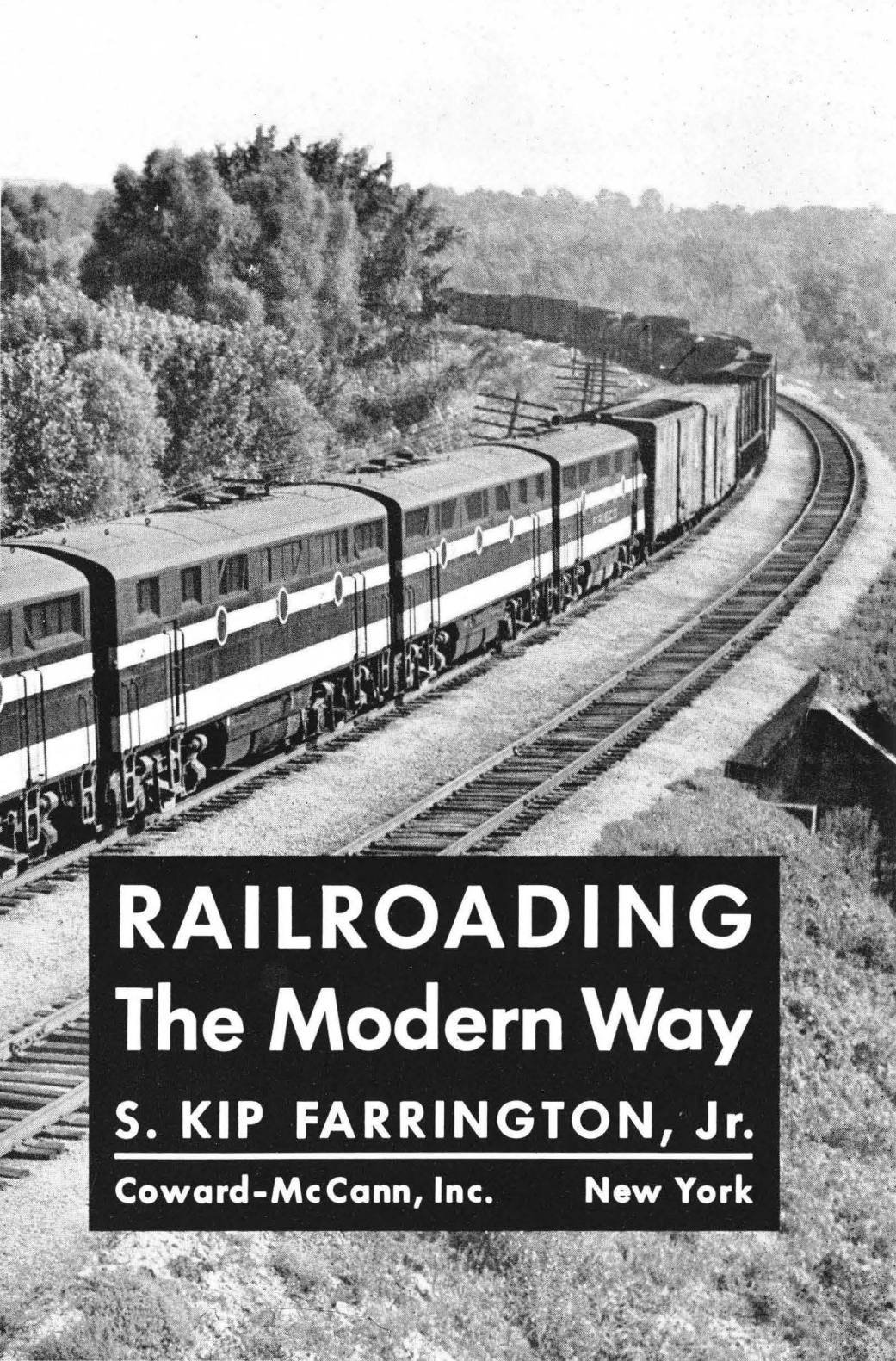
On the average, about four westbound through trains, for a total of some 295 cars, make up and depart from this Rio Grande yard daily. The eastbound traffic volume is approximately the same as the westbound. Most of these freight trains have written a place for themselves through their speed and dependability—trains like the Ute, which make connections that aid in the rapid movement of merchandise to and from the big eastern, mid-continent terminals and the Pacific Coast.

Through yards like the one just described, the time used in interchange and in all yard operations has been reduced to an absolute minimum. Nothing is left to chance any more. Shouting and lantern waving no longer serve the railroad to any great degree. Shoe leather and tempers are saved in this new era. The engineers have provided for every emergency. We have an example in the amplifier equipment. Somewhere something has happened and everything is dead. There is no excitement, no scurrying hither and yon, desperately hunting the trouble. The yardmaster simply flips a switch and cuts in a corresponding spare unit.

Where underground cables are employed, terminal junction boxes are located every 600 feet to facilitate testing and trouble hunting. A spare cable is run to each speaker stand in the yard. If a short circuit develops or there is other trouble, the spare can be connected up in a very short time.

The communication equipment is operated on 110-volt A.C. which normally is obtained from a commercial line. However, if the current goes off the yardmaster simply turns a key and so starts up a 1,500-watt, 120-volt A.C. Onan gas-engine set as a means of supplying power for communications and electric lights in the office.

This yard is typical of the Rio Grande—pep and thorough railroading ability. President Wilson McCarthy, Executive Vice-President E. A. West, and General Manager A. E. Perlman know their modern railroads and how to run one in that manner.



RAILROADING
The Modern Way

S. KIP FARRINGTON, Jr.

Coward-McCann, Inc. New York

Published simultaneously in the Dominion of Canada by Longmans, Green & Company, Toronto

MANUFACTURED IN THE UNITED STATES