
Classic Trains
SPECIAL EDITION NO. 23
MOUNTAIN RAILROADS
HOLIDAY 2018
THE EPIC STRUGGLE AGAINST GRAVITY IN THE AGE OF STEAM AND EARLY DIESEL
120 RARE PHOTOS
Santa Fe and UP on Cajon Pass
Pennsy's Horseshoe Curve in 1940
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Big Boys on Sherman Hill
B&O's battle with the Alleghenies
Ride a Canadian Pacific 2-10-4 AND MORE!

A New York Central 0-8-0 assists a local train up West Albany Hill in May 1948. This 1.63-percent anomaly on NYC's Water Level Route took westbound trains out of the Hudson River valley and over to the Mohawk River valley at Schenectady.
William D. Middleton

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SPECIAL EDITION NO. 23

MOUNTAIN RAILROADS

CONTENTS

ON THE COVER: Santa Fe F7s climb Cajon Pass, the steep gateway to the Los Angeles Basin, with refrigerator cars loaded with Southern California perishables in the 1950s.
Krambles-Peterson Archive

Making the grade

Few experiences in railroading are as stirring as witnessing a train climb a steep grade. Locomotives send smoke skyward as they struggle to lift hundreds or thousands of tons uphill. Sand dust fills the air. The roar of the engines' exhaust and squeal of flanges against sharply curved rails can be deafening. Extra power in the form of head-end or rear-end helpers often adds to the drama.

In some ways even more compelling, in view of the stakes involved, is a train descending a heavy grade. One misstep by the engineer, or the failure of a key piece of hardware, can send a train hurtling out of control, a mortal threat to those aboard it or in its path.

Such drama often unfolds amid the sharp topography of a mountain region, adding the risk of severe weather, fire, and slides to the mix of challenges and hazards.

In this, the latest Special Edition from Classic Trains, we look at various aspects of this most thrilling side of railroading. Nine of the 10 feature articles here originally appeared in Trains magazine during the 1940s and '50s; the 10th is from 1984. Covering such landmarks as Pennsy's Horseshoe Curve [page 6], Santa Fe's Cajon Pass [18], UP's Sherman Hill [52], Southern's Saluda Grade [80], SP's Donner Pass [98], and B&O's West End [110], they have been completely redesigned with fresh layouts and additional photos. After each feature there's a two-page spread of head-turning photos illustrating certain mountain operations not covered in the big articles.

We hope you enjoy Mountain Railroads!

Robert S. McGonigal

MOUNTAIN RAILROADS
CLASSIC TRAINS SPECIAL EDITION NO. 23 • 2018

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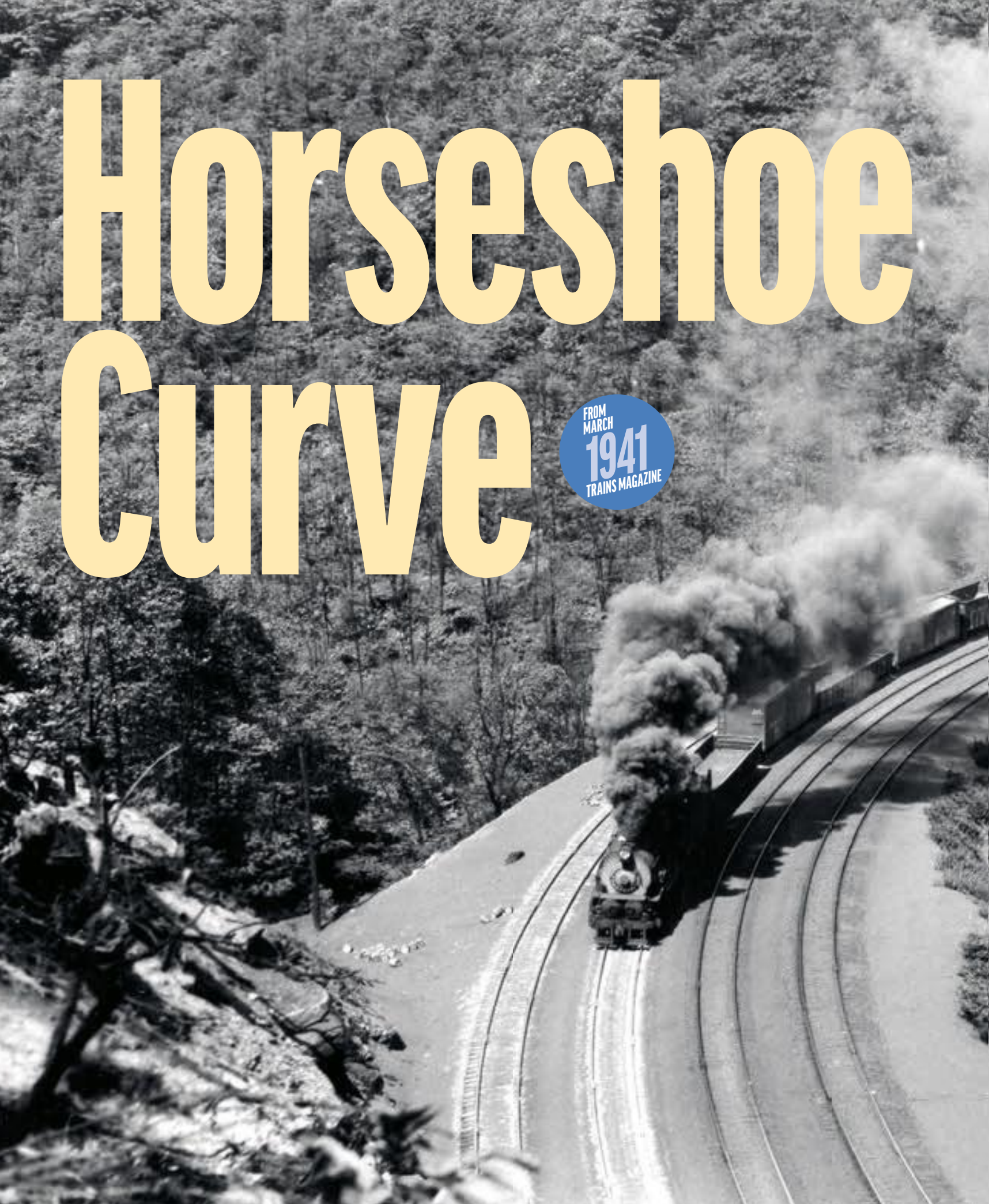
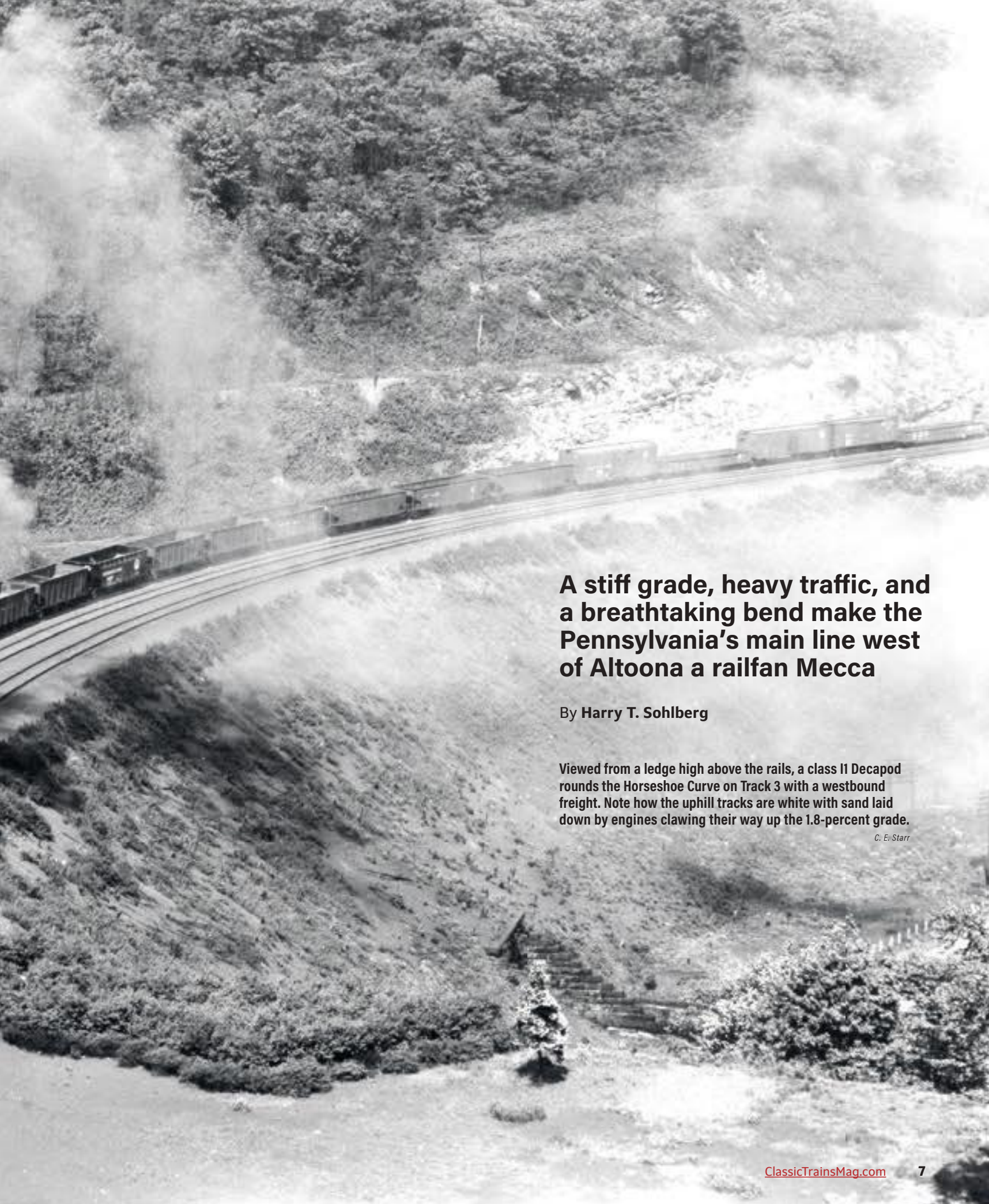
A Louisville & Nashville 2-8-2 rolls empty coal hoppers north out of a tunnel and across Clear Fork Creek on a rugged section of the road's Cincinnati–Atlanta route just south of the Kentucky-Tennessee state line, circa 1948.
David H. Noble

Horseshoe Curve

FROM MARCH 1941 TRAINS MAGAZINE





A stiff grade, heavy traffic, and a breathtaking bend make the Pennsylvania's main line west of Altoona a railfan Mecca

By **Harry T. Sohlberg**

Viewed from a ledge high above the rails, a class I1 Decapod rounds the Horseshoe Curve on Track 3 with a westbound freight. Note how the uphill tracks are white with sand laid down by engines clawing their way up the 1.8-percent grade.

C. E. Starr

Several of Pennsy's 598 heavy 2-10-0s, the road's preferred power for mountain freight work, dominate the smoky ready tracks at Altoona in the late 1920s.
Fred Eidenbenz

Boxcars follow a J1 2-10-4, one of 125 PRR built in 1942–44, through Slope interlocking on the way out of Altoona in 1949. Ahead 4.3 miles: Horseshoe Curve.
Linn H. Westcott

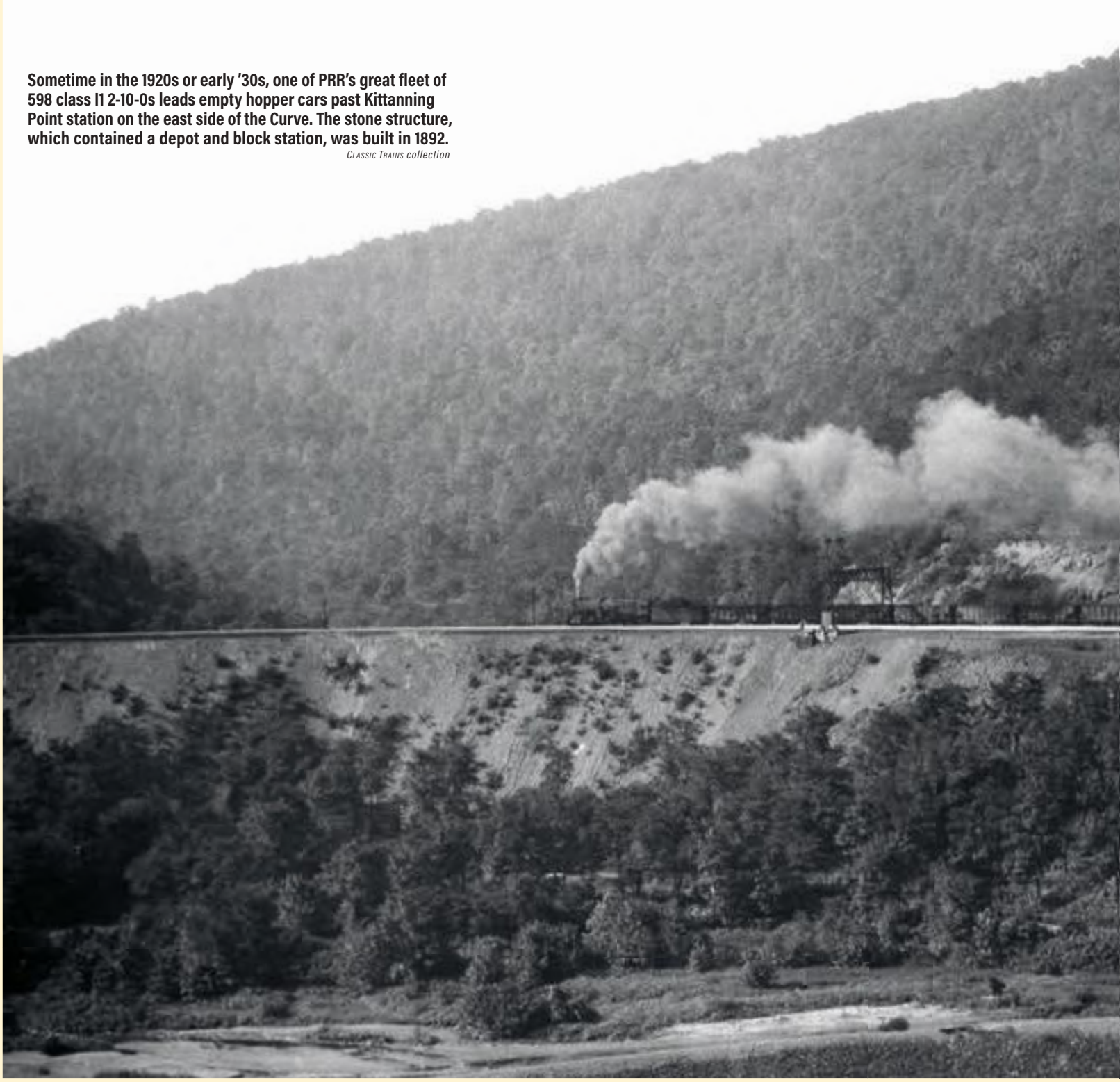
An eastbound freight has just traversed the Curve in this aerial photo from 1941. Fed by mountain streams, reservoirs supplying Altoona lie in the middle.
Mutual Magazine (PRR)

The brakeman calls out, "Horseshoe Curve on your right in a few minutes." The deadheads don't even look up, but nearly everyone else in the coach crowds to the righthand side to get a good look, for this scenic wonder of the Pennsylvania Railroad main line is well known to every traveler and would-be traveler. That the Curve is also a remarkable engineering attraction is usually lost sight of, but this wide sweeping arc allows the Pennsy's Pittsburgh Division main line, four tracks wide, to breast the east slope of the Alleghenies with a grade of only 92 feet per mile.

What better spot than here for the man who likes to watch or photograph trains! Westerners can well be proud of their famous Cajon Pass in the San Bernardino Mountains, the fabled Moffat Tunnel in the Colorado Rockies, or Sherman Hill in Wyoming, but Horseshoe Curve has everything to make the true railfan happy. It is on the Harrisburg–Pittsburgh portion of the Pennsy main line, funnel for the traffic from Chicago and St. Louis to New York and Washington, a line that is virtually never without the thrilling sound of locomotive exhaust.

Two engines on the front, two on the rear, the heavy freights roll up the line from Altoona, around the horseshoe, to the tunnels at Gallitzin, the crest of the Alleghenies. Light engines glide gracefully back down to Altoona, there again to take up their task of helping to lift thousands of tons over the 2,160-foot summit. Long freights roll down, brake shoes telling the story of retainer-set cars helping to hold the immense potential energy in leash.

Day and night the story of heavy-traffic railroading unfolds. The night owls can watch a show unequaled anywhere, as the great limited passenger trains from east and west —



Sometime in the 1920s or early '30s, one of PRR's great fleet of 598 class I1 2-10-0s leads empty hopper cars past Kittanning Point station on the east side of the Curve. The stone structure, which contained a depot and block station, was built in 1892.
Classic Trains collection

PRR's "Blue Ribbon Fleet" — pass by, sparks flying from stacks of westbound locomotives, sparks from brakes of eastbound trains. The timetable reveals a delightful concentration of traffic. During the five hours from 10:43 p.m. to 3:41 a.m., an astounding 27 named trains, including some of the most famous in the country, traverse the Curve. On fine summer nights, nothing could be more pleasant than watching this parade from a car parked on the public highway below.

This is truly the great parade! But my associates and I came to this Mecca of railfans with our cameras, looking for daytime action. And there's plenty of that too. Start with us at East Altoona, the front yard of the big mountain workshop of the Pennsylvania Railroad. The enginehouse here is one of the largest in the world. It is a complete circle, with 50 inspection pits, and a capacity for handling 385 locomotives in a 24-hour period. It is worthy of more description than we can give here, a whole story by itself sometime.

The same applies to Altoona itself. Bit by bit the entire plant unfolds. Juniata Shops. Altoona Machine Shops. Altoona Car Shops. South Altoona Foundries. The test department. The locomotive test plant. All of this lies directly at the foot of the main ridge of the Alleghenies, a true railroad town of some 80,000 persons — a beehive of activity and gateway to the far-famed Horseshoe Curve.

1,015 feet in 11 miles

Out of Altoona the average train adds another locomotive, and, in the case of freight drags, two or three are added to surmount the heavy grade. From Altoona to Gallitzin, summit of the grade, Pennsy trains climb

The Blue Ribbon Fleet passes by night

Scheduled passing times at Horseshoe Curve

TIME*	TRAIN NO.†	TRAIN NAME
10:43	49	The General
10:49	69	The Red Arrow
11:08	41	Cincinnati Limited
11:09	52	The New Yorker
11:23	59	Liberty Limited
11:33	77	The Trail Blazer
11:46	31	Spirit of St. Louis
11:51	29	Broadway Limited
12:32	22	Manhattan Limited
12:54	16	Iron City Express
1:12	66	The American
1:16	23	Manhattan Limited
1:18	76	The Trail Blazer
1:36	50	The Statesman
1:43	60	The Pittsburgher
1:52	38	The Clevelander-The Akronite
2:11	36	Philadelphia Night Express
2:18	70	The Advance General
2:25	40	Cincinnati Limited
2:31	39	The Clevelander-The Akronite
2:37	68	The Red Arrow
2:43	67	The American
2:45	58	Liberty Limited
3:00	30	Spirit of St. Louis
3:19	48	The General
3:34	32	The St. Louisan
3:41	28	Broadway Limited

* **Boldface** = p.m.; lightface = a.m.
† Odd numbers westbound; even eastbound

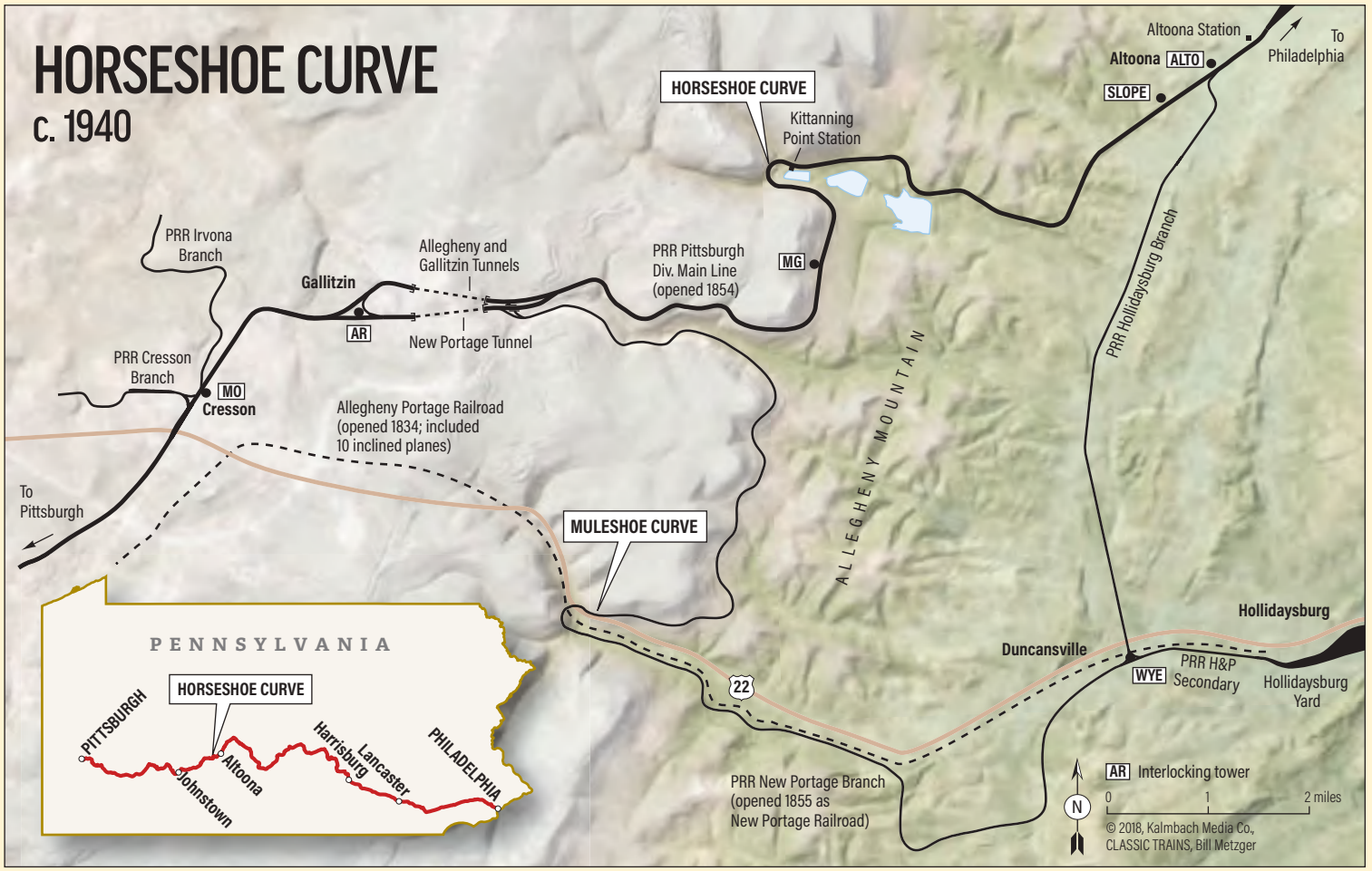
1,015 feet in 11 miles, a nearly 1.8 percent average gradient.

For about 5 miles, the initial grade out of Altoona is pounded to the utmost, and further advance seems blocked by the mountains until the train rounds the nose of a projecting spur and the picturesque station at Kittanning Point comes into view. We have reached the Horseshoe Curve — 242 miles west of Philadelphia and 111 miles east of Pittsburgh.

Construction of the Curve was finished early in 1854. It was the last portion of the Pennsylvania's main line between Harrisburg and Pittsburgh to be completed. The entire line was opened for traffic on February 15, 1854. Prior to that, for about 14 months, PRR trains used the Allegheny Portage Railroad to cross the mountain. This line between Hollidaysburg and Johnstown, built to link two sections of canal as part of the state's Harrisburg–Pittsburgh Main Line of Public Works system, included 10 rope-worked inclined planes. Its successor, the all-adhesion New Portage Railroad, is now used as an alternate PRR route; it includes a smaller version of our main attraction, Muleshoe Curve.

We have come out of Altoona by automobile and at the center of the Curve we turn into a spacious parking area. Well supplied with cameras and equipment, we begin the long, steep climb to the tracks, where we are met by our guide, previously arranged for by Pennsy officials.

Below us we see the Kittanning Valley and Burgoon's Run; above us tower the Alleghenies, dropping abruptly to lineside, forming a giant amphitheater for our scene of action. At Kittanning Point the valley parallel to the road becomes a deep, wide gorge, the south



Locomotives 3733 and 1339, from PRR's armada of 425 K4 Pacifics, drift downgrade with train 24, a maid-of-all-work local from Pittsburgh (11:10 a.m.) to Philadelphia's Broad Street Station (8:30 p.m.).
H. W. Pontin

side of which rises to a great height. To negotiate this gorge, after climbing steadily from Altoona, the construction engineers, led by the great J. Edgar Thomson, who also served as the Pennsylvania's third president, built a line around the head of the gorge and along the side of the mountain in the general shape of a horseshoe, hence its name.

The toe of this horseshoe is a gigantic fill across Burgoon's Run. This section of line is what is technically known as a 9-degree curve and extends over a distance embracing 220 degrees — more than half a circle. At a point 2,000 feet on either side of the center line it is 1,400 feet across Burgoon's Run. Visualize a real horseshoe and these figures are easily assimilated.

The southern calk of the shoe is 1,716 feet above sea level, and the northern calk, Kittanning Point, is at an elevation of 1,594 feet. If the tracks were to be carried directly across the gap from calk to calk, without the sweep of the horseshoe, it would require an immense fill on an 8½ percent grade — far too steep for a mainline railroad in the 1850s or today.

Kittanning Point station, its sign still painted neatly in the familiar Pennsy red and gold, though no longer used for train stops, offers sanctuary from the boiling sun. Beneath its roof we await action — and it is not long in coming!

Doubleheader coming!

The sound of barking exhausts heralds the approach of a doubleheader moving west, and we turn our cameras toward the nose of the point, expectantly, hopefully.

Hotshot freight!

Our catch sports a heavy I1 Decapod as a helper, with an M1a Mountain type assigned as the train engine. We notice that the 2-10-0 is numbered 4527 as its front end reaches the correct position in our finders, then we see the 4-8-2 carries road number 6768. We have time to count 110 cars before another pair of "jacks," the pushers, loom up around the

Above: An I1 rounds the Curve with westbound hoppers; empty trains like this can usually climb the hill unassisted. Right: Two more Decapods push against the cabin car of another train. The ground is thick with cinders ejected from the stacks of thousands of engines over the decades.

Two photos, H. W. Pontin

curve. Both are Decapods — PRR has 598!

It is no trouble for the engineer and fireman on the head-end helper, over on the south shelf, to look across the valley and see their colleagues rounding Kittanning Point.

A smoke plume on the southern end of the shoe attracts our attention as we watch the head end of the freight disappear. Slipping gracefully around the bend, a long passenger train takes things easy as it moves down the mountain. This is in accordance with operating department orders, so that all passengers are afforded a good view of the Curve, from beginning to end. Furthermore, if another train on an inner track is obstructing the view, enginemen are permitted to reduce speed until the other train clears, provided timekeeping does not unduly suffer. Such courtesies pay real dividends!

Like so many PRR long-haul trains, this one is headed by a pair of K4 Pacifics. It's the *Gotham Limited* from Chicago.

During the morning a steady stream of freight and passenger trains keeps us busy. In our two and a half hours' working time before noon we have cataloged 15 trains, 4 of which are passenger jobs. This does not include returning pushers, merrily clanking down the grade to Altoona to pick up another drag and give it a helping hand.

This is an ideal time to climb the steel ladder to the top of the signal bridge and capture a prize shot — both calks of the shoe in a single frame [following page]. This dramatic vantage point is off-limits to the casual visitor, but our guide, on behalf of the railroad, gives us his blessing and even accompanies us up the ladder.

Moving with the sun

After lunch we prepare to move with the sun. There's always good light somewhere on the Curve. We have no sooner reached our chosen position, placed our equipment, and noted the position of the sun, than things

Kittanning Point station is in the foreground of this eastward view that shows both sides of Horseshoe Curve at once. After rounding the Curve (behind the photographer), the downbound train on the hillside at the right will pass the station. Unused, the handsome depot was torn down soon after this 1940 photo.
W. J. Pontin

Photographer H. W. Pontin took the top two pictures on these pages from the signal bridge on the east side of the Curve. Above, Pontin (with camera) is up on the bridge with his party's PRR guide.
Harry T. Sohlberg

begin to happen all over again.

Fast freight PG-7, hauled by two Decapods, swings around the point. As the loaded cars click by, further assisted by another pair of I1's on the rear, we are jolted into immediate action by the sight of two Mountain types working west past Kittanning Point station.

With the freight train on the outside iron, the *Metropolitan*, a crack passenger flyer for Chicago, puts on a magnificent show as it rapidly overhauls the freight's pushers. Exactly at the center of the Curve, before our very eyes, the two M1's run abreast of the I1's — a true motive power parade!

The thunder of the two Decapods and the two Mountains, abreast, all four engines wide open, will linger with us in memory for a long time to come. Would that we could record the sound of this action! The towering bulk of the mountains overhead acts as a giant sounding board, repeating the deafening echoes again and again. Only Horseshoe Curve can furnish such drama!

Scarcely five minutes later passenger train No. 24, powered by two K4's, Nos. 3733 and 1339, slips down the west slope into our awaiting cameras.

By 3:30 p.m. we have bagged 14 more train movements, including two mine-bound drags of empty gondolas, requiring no helpers. Following the advice of our guide, we decide to head up the hill to survey the situation at Gallitzin and Cresson for the next day's activities. Regretfully we take leave of our amphitheater, doubting if the other side of the mountain can offer us as much.

The three tunnels at Gallitzin break the continuity of main line, and are the gateway to the lesser gradients of the west slope, only 1 percent instead of 1.8.

A check of our records during the car trip to Gallitzin informs us that the Pennsy has placed a great deal of confidence in its I1 Decapods, M1 and M1a Mountains, and its splendid K4 Pacifics. Hauling freight over such torturous grades seems mighty easy for the prevailing Decapods, and we note that most of the drags boast of manifests covering 85 to 115 cars, with an exceptional train hitting the 125-car mark.

Four main lines, all laid in the heaviest of steel, none of them idle for long, break the back of the Alleghenies, and stand as a tribute to those men who could foresee the future — the day when the Pennsylvania Railroad's Horseshoe Curve was to be an important link in the defense program of the nation.

HARRY T. SOHLBERG was executive vice-president of the Railroad Photographic Club.

M1 4-8-2 6853 passes Kittanning Point station on Track 3 with seven baggage cars and two coaches for Pittsburgh. Pennsy's 301-strong fleet of 68-inch-drivered 4-8-2s was mostly engaged in freight work east and west of the mountains, but some, with pilots and small tenders, were passenger engines.
H. W. Pontin

Almost to the top! Five miles west of the Curve, a J1 2-10-4 approaches the tunnels at Gallitzin, highest point on the PRR main line. The twin Gallitzin and Allegheny tunnels beyond the signal bridge are for westbound traffic; the shorter and older New Portage Tunnel (out of view to the left) is for eastbounds.
Edward P. Street Jr.

TEHACHAPI PASS Southern Pacific Extra 6133 East rounds the last curve into the town of Tehachapi, Calif., top of the tortuous 30-mile climb that SP and (by trackage rights) Santa Fe trains surmount by means of 2.5-percent grades, a dozen tunnels, and a complete loop of track. The four F units in this 1949 scene are assisted by a 4-8-8-2 cab-forward, whose exhaust rises in the distance. *Linn H. Westcott*

CUESTA GRADE Sprawling from Oregon to Louisiana, the SP system had more mountains to cross than perhaps any other railroad. Cuesta Grade, on SP's Los Angeles–San Francisco Coast Line, obliged big 4-8-4s to accept the help of 2-10-2s to lift the *Coast Daylight* the 12 miles out of San Luis Obispo. The photographer was on the train when he made this 1949 shot on the horseshoe curve at Goldtree. *Linn H. Westcott*

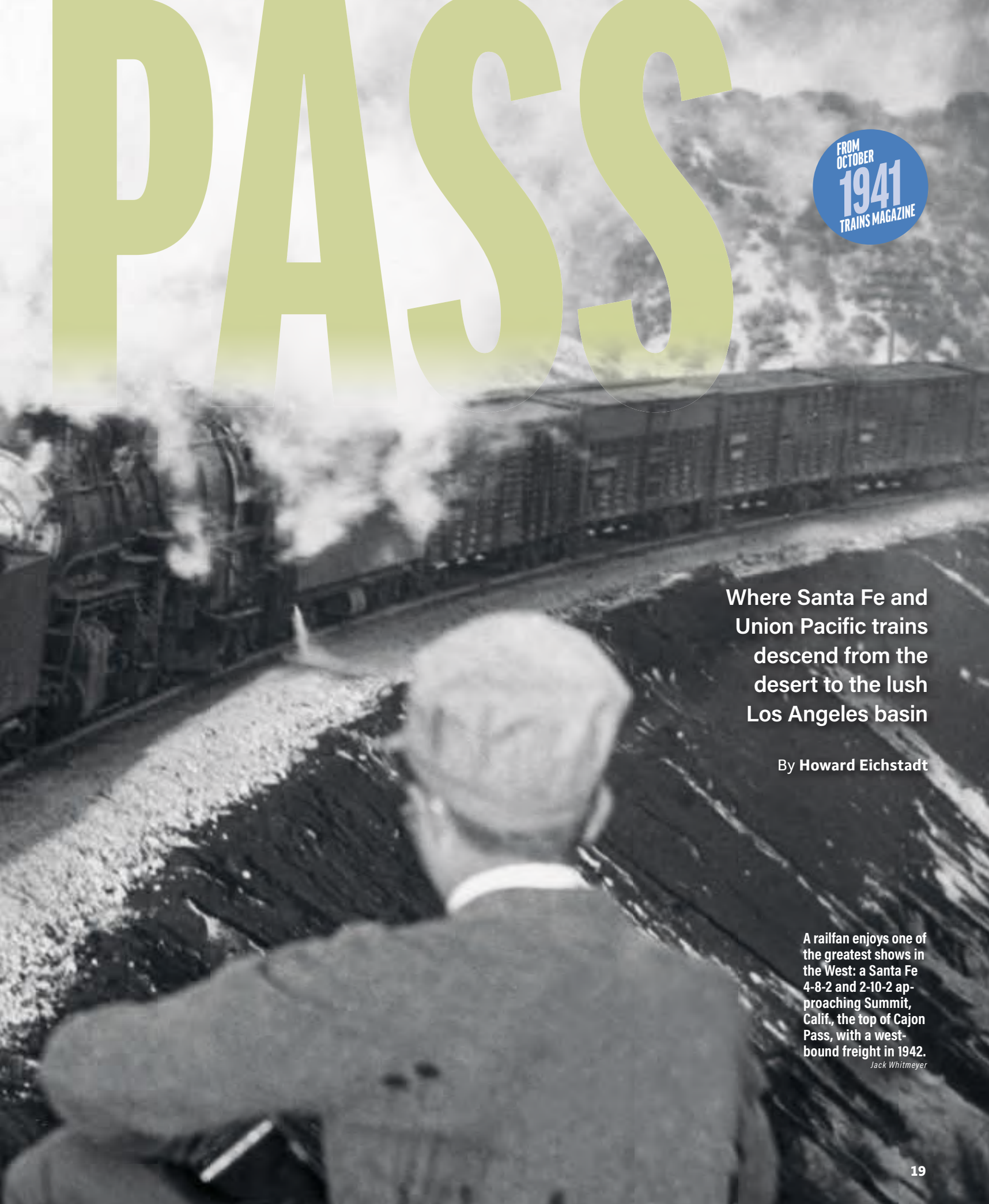
CAJON

PASS

FROM OCTOBER 1941 TRAINS MAGAZINE

Where Santa Fe and Union Pacific trains descend from the desert to the lush Los Angeles basin

By **Howard Eichstadt**



A railfan enjoys one of the greatest shows in the West: a Santa Fe 4-8-2 and 2-10-2 approaching Summit, Calif., the top of Cajon Pass, with a westbound freight in 1942. *Jack Whitmeyer*

Brakeshoe smoke wreaths a westbound freight descending Cajon's original 3.4-percent line behind 2-10-2 3879 in February 1951. The newer 2.2-percent line used by eastbound trains is in the foreground.
Robert Hale

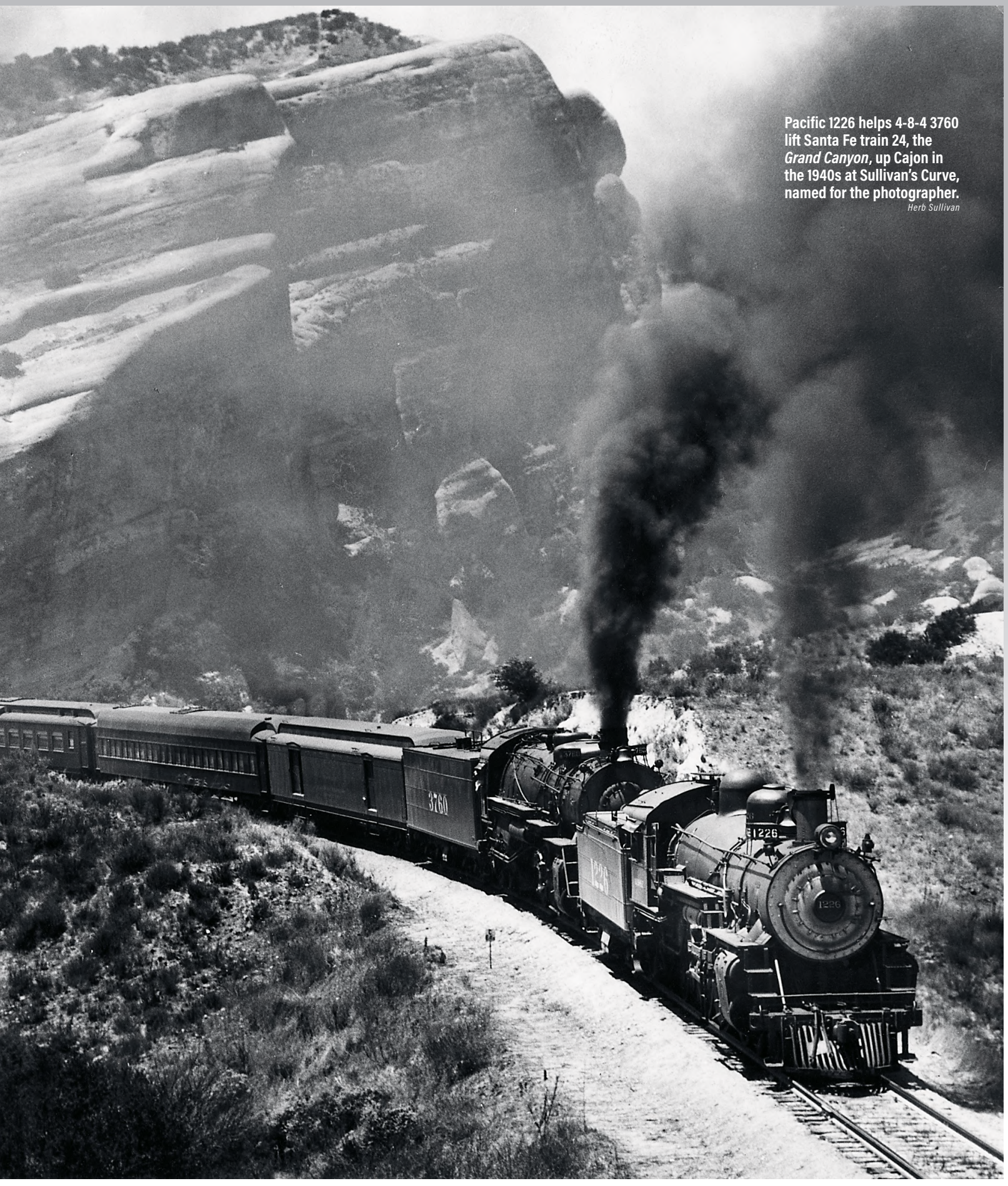
Santa Fe types 956 — one of the original 2-10-2s of 1903 that gave the type its name — and 3881 assist an eastbound ATSF freight up the pass in the early '40s. Military vehicles ride the flatcar ahead of the 956.
J. F. Banner

Rails cannot reach Southern California from random directions, as they do at Chicago or Kansas City; they must seek openings through the towering mountains circling protectively around the region. Each route has its pass, each pass has its story, and no one can say which story has the greatest romance. Santa Susanna, Soledad, Carriso, Tehachapi, San Timoteo, Cajon — they all spell lonely mountains and stiff grades, exhausts tearing holes in the sky to echo and re-echo through cut and canyon, wrecks and washouts, Ten-Wheelers and 4-6-6-4s, operators copying orders on desks that have known no darkness for 70 years. Millions of passengers and billions of tons of freight have been guided and hauled, cussed and delivered, by men still in service, by men pensioned off, by men long departed on their final run. There are stories in the passes, and more are being made every day.

One of these, Cajon Pass, is known as "The Big Hill of Southern California," and is the gateway for the Atchison, Topeka & Santa Fe Railway and, by trackage rights, the Union Pacific Railroad. From the Mojave Desert, Cajon Pass provides a pathway down through the mountains to San Bernardino, 50 miles south and 2,000 feet lower, in the heart of the Orange Empire. Sixty miles farther west is Los Angeles.

San Bernardino, situated at the east edge of the relatively level Southern California plain, is a natural junction and classification point. A passenger on an eastbound train is much more impressed with the ruggedness of Cajon Pass than if he approached it on a westbound train. All traffic converges on San Bernardino. Freights are classified, helpers are cut in, and tenders are filled. From the very moment the train leaves the yard throat, crossing over to the left-hand main under the 5th Street tower, perched precariously on a signal gantry, it is evident from the deep-throated exhausts that the engines are digging in for a climb.

To Devore, the tracks are straight on a consistent 2-percent grade, with chaparral-covered mountains gradually narrowing in on both sides. Then, crossing Cajon Creek, the



Pacific 1226 helps 4-8-4 3760 lift Santa Fe train 24, the *Grand Canyon*, up Cajon in the 1940s at Sullivan's Curve, named for the photographer.
Herb Sullivan

A westward view at Summit shows the little station brought in from another location in April 1940. The operators here sometimes log up to 150 movements in 24 hours.
Robert Hale

Another west-facing photo at Summit, dating from February 18, 1940, shows the old wooden coach that served as the temporary station after the original depot was destroyed by fire in the mid-1930s.
Classic Trains collection

rails enter a canyon, the pass proper, and run along the west wall seldom more than 25 feet above the stream bed. At Keenbrook it is evident from the number of tanks and standpipes that freights regularly take water here.

The canyon narrows at Blue Cut to a virtual gorge, forcing another crossing of the stream, but at Cajon station the railroad is once more west of the creek. Now we understand why the double track from San Bernardino is operated left-handed, contrary to usual Santa Fe practice. When the pass was double-tracked in 1913, an easier eastbound climb was secured by building a completely new line to the west of the original 3.4-percent grade between Cajon and Summit. The new line is 2 miles longer than the first, but it maintains 2.2 percent as the maximum upgrade anywhere on the pass, although the heavier gradient is still used as the downbound track. The new line includes the only two tunnels on the Los Angeles Division, both about 500 feet in length.

Between Cajon and Summit the two main tracks on the eastward run are so widely separated at some points that they are out of sight of each other, only coming together again just west of Summit, at an elevation of 3,823 feet above sea level. Here the grade has been leveled, providing a long siding where helper engines are cut out, brakes tested, and retainers turned up, preparatory to the long trip down the east side of the mountains.

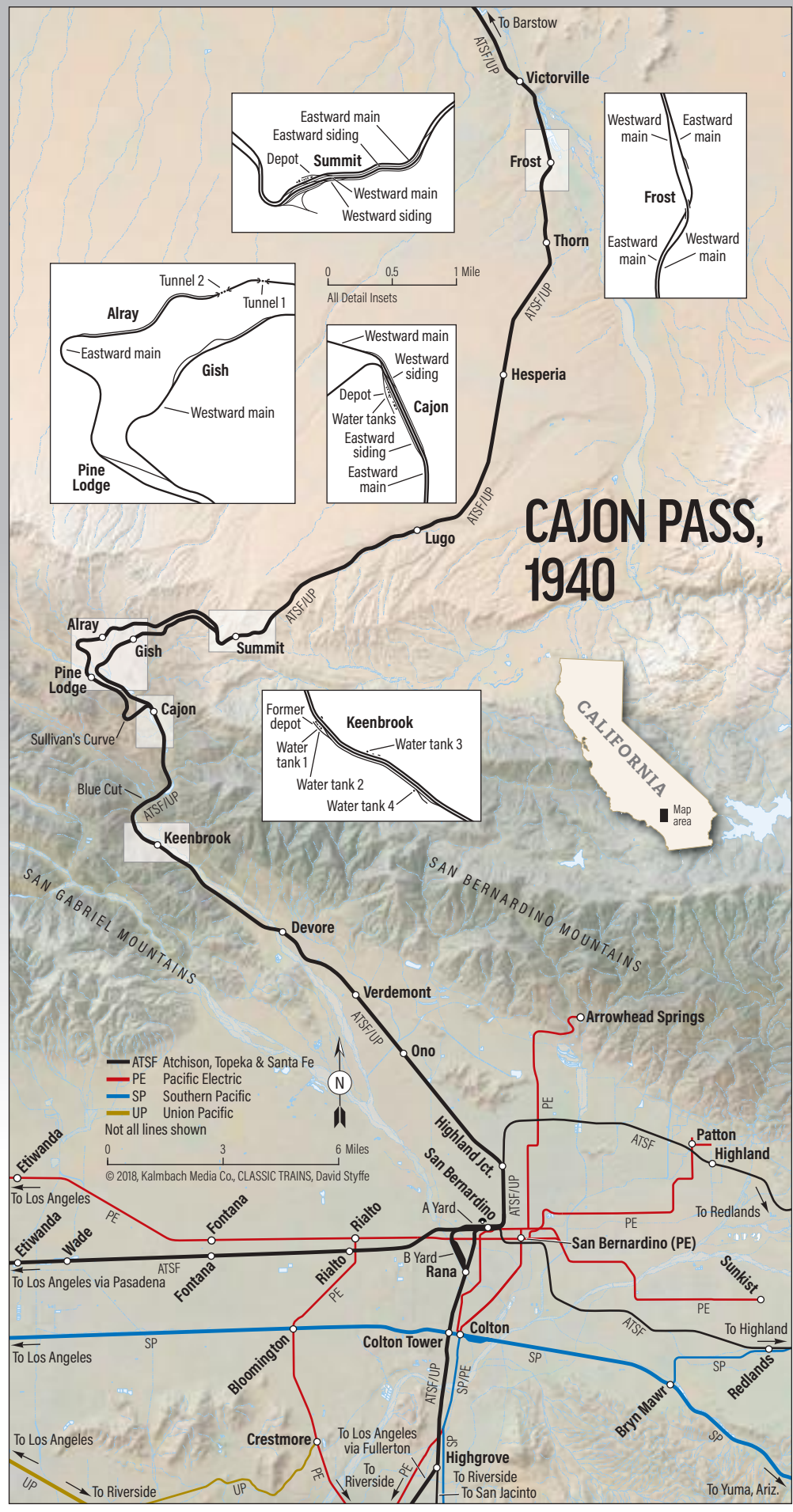
Between Summit and Victorville the line is much less rugged than on the west side, but is of the same general pattern, following a small canyon out of the hills and then down the even-sloping desert plain to the Upper Narrows of the Mojave River. The tracks are crossed back to right-hand operation by an overhead structure a few miles from the

small desert town of Victorville, site of a huge cement works. This plant operates the standard-gauge Mojave Northern Railroad to tap its quarries, 11 miles from the mill.

Historic gateway

Early travel over the uncharted wastelands concentrated on the routes of easiest entrance so that long before a railroad was ever imagined, Cajon Pass was an important gateway. In 1831 William Wolfskill, while on a trip from Santa Fe (in what would become New Mexico) to Los Angeles, discovered this notch in an otherwise almost impassable range. It later became part of the Smith Trail, over which a group of Mormons from Utah trekked to found the city of San Bernardino in 1851.

By 1876 the Southern Pacific had succeeded in pushing its line through the Tehachapi Mountains from Bakersfield to Mojave, Barstow, and Needles, Calif., on the Colorado River. There it connected with the Atlantic & Pacific Railroad, just arrived from the east. In 1884 the A&P was taken over by the Santa Fe Pacific, which leased SP's Barstow–Needles



Exercising Union Pacific's trackage rights on the Santa Fe, UP 2-10-2 No. 5523 and 4-6-6-4 No. 3822 hustle a hotshot west out of Victorville in October 1946.
Walter H. Thrall Jr.

line. Meantime, the Southern California Railroad, which had built from San Bernardino to San Diego, began work on Cajon and opened it in 1886 with a line from San Bernardino to Barstow. Through service from the east into Los Angeles was possible in 1887 with completion of a connection via Pasadena. The Southern California operated Cajon Pass until 1897, when Santa Fe Pacific bought the Southern California. In 1902, all of these owned and leased lines, plus the Mojave–Barstow section of the SP, were merged into the Atchison, Topeka & Santa Fe system. The Santa Fe Pacific still exists as a corporate entity, for it sold to the AT&SF only its equipment and trackage, retaining the unsold land grants originally given to the Atlantic & Pacific in what would become Arizona and New Mexico.

As of this writing, the line from Needles to Barstow, and the stretch from Barstow to Mojave, are part of Santa Fe's Arizona Division. All Santa Fe mileage west of Barstow comprises the Los Angeles Division, with headquarters at San Bernardino, where there are extensive shop and terminal facilities. The Division is split into four districts, the First taking in Cajon Pass on the 80-mile line from Barstow to San Bernardino, the Second being the route from San Bernardino to Los Angeles via Pasadena, the Third from "San Berdoo" to L.A. via Fullerton, and the Fourth the San Diego line south of Fullerton.

UP's Los Angeles link

Union Pacific, which operates its line here as the Los Angeles & Salt Lake Railroad, uses Santa Fe trackage on a rental basis from Daggett, 8 miles east of Barstow, to Riverside, 9 miles south of San Bernardino. This arrangement has been in effect since LA&SL was completed in 1905. Under the terms of the contract, UP pays a proportionate part of the cost of management, dispatching, and maintenance as determined by the relative car mileage of the two roads. At San Bernardino UP uses Santa Fe facilities for service and storage of its helper engines, and the San Bernardino and Barstow passenger stations are operated and used jointly.

All trains, including UP's between Daggett and Riverside, are under the control of the Santa Fe dispatcher in San Bernardino. UP first-class trains are shown in the Santa Fe timecard, numbered in the 200 series; for example, the *Challenger*, No. 818, becomes No. 218, and the *Los Angeles Limited*, No. 8 becomes No. 208. Ten first-class trains are carded as daily in each direction, with UP's streamliners and Santa Fe's twice-weekly *Super Chief* and *El Capitan* swelling the total on the days they run. All freights run as extras.

Passenger-train running time from San Bernardino to Summit ranges from 55 to 79 minutes for the 25 miles, about 10 minutes less being allowed for the westbound trip down the hill. Freights are purposely unscheduled, for tonnage and traffic conditions greatly alter their time. The best time up the eastbound grade, including a stop for water, is about 2 hours 20 minutes. The downgrade trip is nearly as slow, for retainers are used all the way, and 10-minute stops are made at both Cajon and Devore to permit the heat in the wheels to equalize. Passenger trains do not make such stops, but it is not unusual to see them arrive in San Bernardino in a cloud of pungent brakeshoe smoke.

The entire line is protected by searchlight-type block signals, with an interesting permissive double-yellow system up the grade from San Bernardino to Summit. This per-

UP 2-8-8-0 No. 3559 helps 4-8-2 No. 7856 on the Chicago–Los Angeles *Challenger* in a stirring scene west of the Victorville Narrows during the mid-1940s.
William Barham

mits trains to close in on each other without having to stop at what would ordinarily be red boards. However, such a system is not used on the east side of the pass, for here the grade does not exceed 1.6 percent, and operating speeds are higher, both uphill and down.

Freight trains of both roads are ordinarily held to 70 cars eastbound and to 50 loads westbound, counting 2 empties as one load, while passenger trains must not exceed 17 cars. Within these limits, total tonnage can vary considerably. Standard Santa Fe freight power is its 3800-class 2-10-2s. Eastbound, each drag has at least two of these, frequently three, and occasionally four. Westbound tonnage drags require one helper out of Victorville. In the power shortage caused by the recent increase in traffic it is not unusual to see smaller 2-10-2s, Mikados, and other types in helper service. UP ordinarily uses 2-10-2s in its 5000 or 5500 series, with a number of 2700-series Mikes as helpers.

Standard passenger power on the Santa Fe is the 3700-class 4-8-2s and the 3751-class 4-8-4s, while UP uses 7000- or 7800-series Mountain types. Helpers are assigned according to the need, and everything is used from Santa Fe 1400-class Atlantics to UP's 3500-series 2-8-8-0s. Three of UP's 4-6-6-4 Challenger types are equipped as oil-burners for the Los Angeles–Salt Lake run, usually hauling their namesake train. Very few passenger trains require helpers westbound.

Even the arrogant diesels on the streamliners bow to Cajon Pass, and shamefacedly break their smooth streamlining to unsheath a hidden coupler so a steam helper can pull them over the hill on schedule.

Because of the tunnels on the eastbound main below Summit, the practice is to doublehead only passenger trains. Helpers on freights are ordinarily cut in ahead of the caboose, or if there is more than one helper, the first is about two-thirds back in the train. Westbound helpers from Victorville are invariably ahead of the road engine.

Beware of flooding

Cajon Pass is not an easy piece of railroad, but it would be much more difficult if it had the snow conditions that hamper many mountain operations in winter. The greatest problem is to prevent the normally trickling little creeks from completely tearing out the railroad when they are swollen by sudden rains. During the rainy season, section crews are on nearly continuous duty. The pass was effectively blocked for several days by a flood in 1937, but line relocations and channel pro-

At Frost, where the westward track jumps over the eastward one, Santa Fe 2-8-2 3221 and 4-8-4 2924 head an L.A.-bound Shriners special on June 18, 1950.
Stan Kistler

tection since undertaken will probably prevent the recurrence of any such disaster. Most of the accidents on Cajon have been derailments caused by sudden landslides.

Station structures along the line are of unusual interest. The expectation was that the region would build up in the same manner as the area south of San Bernardino. Devore was equipped with an imposing stone edifice that today seems extremely elaborate for housing only a phone booth. Cajon station is also one of the original Southern California Railroad buildings, and evidently was a nondescript structure even when it was built back in 1886. Hesperia has an extremely large depot, for at one time this was a budding health resort town with some 3,500 inhabitants. Since then it has joined the ranks of ghost towns, with only a one-gas-pump, wooden-canopied general store remaining in active trade.

The original station at Summit burned to the ground about five years ago, starting a forest fire that swept far back into the mountains. Until April 1940, a weatherbeaten old coach spotted on the spur track served as the depot, rocking in the wind and leaking dust at every joint. At that time, a secondhand little station was brought up in two pieces via flatcar from elsewhere on the division. This quaint structure has a telegraph office many times the size of its tiny waiting room. Over the Summit operator's desk (the only 24-hour telegraph office between Victorville and San Bernardino) go many of the orders and clearance cards that keep the trains rolling over the hill. The movements recorded on the Summit trainsheet sometimes total up to 150 by the end of the day.

Summit residents are the section gang, three operators, and the postmistress. She comes in each day from her ranch in Little Horsethief Canyon to preside over the quaint little post office serving a rural route into the back country.

Power from Cajon Pass's two railroads is rarely found on the same train, so this scene of Santa Fe 4-8-2 3725 helping UP 4-6-6-4 3939 with UP's westbound *Challenger* at Ono on November 1, 1941, is unusual.
R. H. Kindig

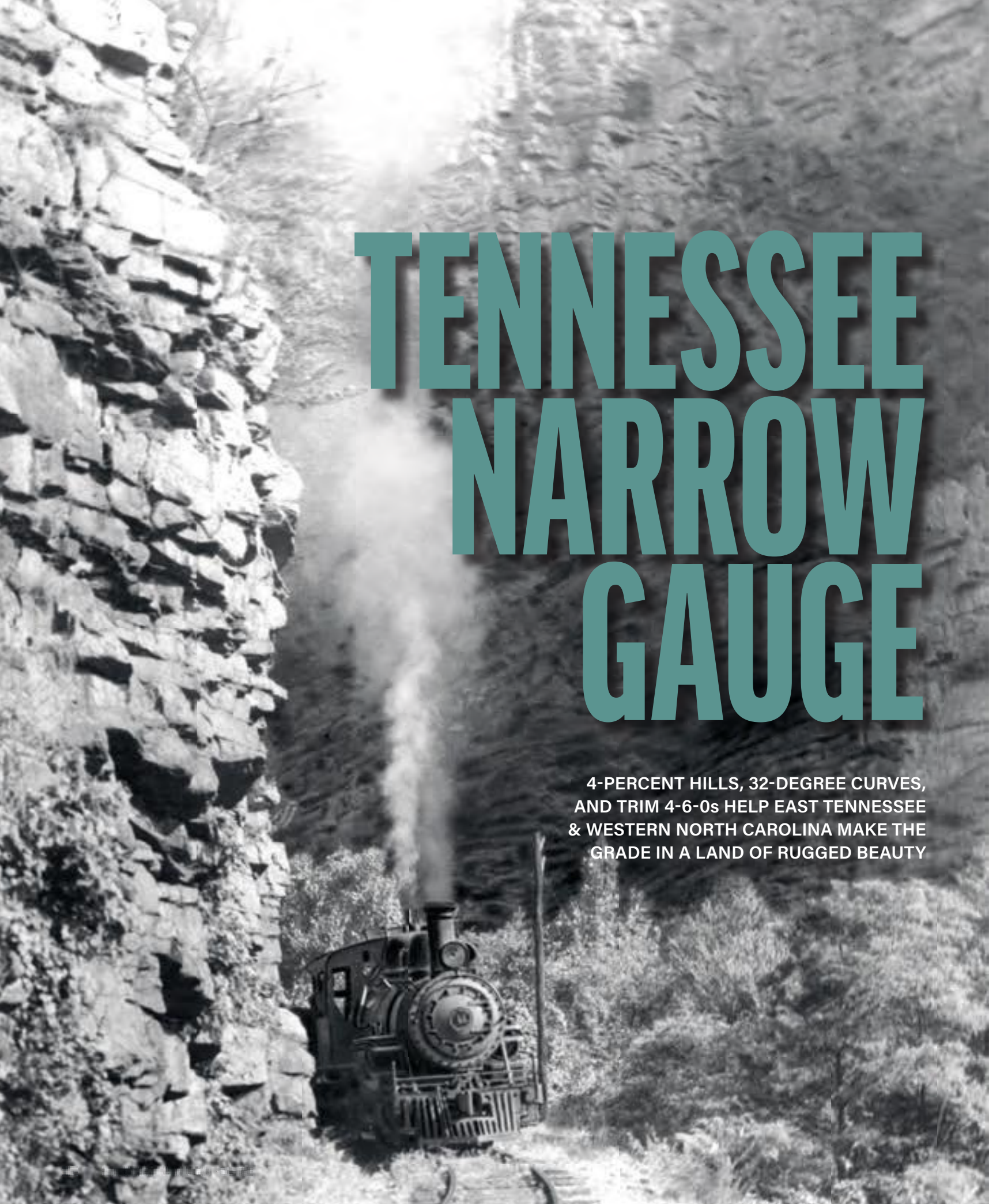
Travelers passing through Summit (virtually every one of them passes through, very few stop over) no doubt cast a startled eye on the spectacle of a streetcar, apparently in running order, perched on the hillside behind the station. It looks as out of place as a bus enthusiast on a railfan excursion. Those who know, however, recognize it as the *Descanso*, a former funeral car of the Los Angeles Railway, now the property (by donation) of the Railroad Boosters, the fan organization of Los Angeles. Direct operation of the *Descanso* is in the hands of the Railroad Boosters' Summit Sunny Sunday Outing Club.

Overnight guests at the *Descanso* can spend an evening in the little depot, listening to the clicking of the relay sounders and the never-ending stories of the boomer operator, while coffee boils away in a huge can atop a potbelly stove. Throughout the night the air is filled with the sounds of the railroad. A freight may be chuffing back and forth as the helpers drop out, the noise of the slack rolling up from the distance like thunder. Always, far down the pass, on one side or both, can be heard the steady drum-like throb of engines, keeping up the eternal struggle between railroad and mountain. Their whistles precede them, arriving in a welter of echoes that seem to call to the ghosts of hoggers long dead and engines almost forgotten. Inside the operator is on the phone. "Summit, O.S. number 206 in at 1:37 a.m., out at 1:39; No. 8 in at 2:05, out at 2:10. Copy 4, O.K. . . ."

Just above Cajon station, a westbound freight descends on the original line in the foreground while UP's *Pacific Limited* climbs toward Sullivan's Curve on the 1913 line.
Herb Sullivan

PACIFIC EXTENSION The Milwaukee Road's audacious extension from South Dakota to Puget Sound, opened in 1909, crossed five mountain ranges. In 1917–19 the road electrified segments in Montana/Idaho and Washington, totaling 656 miles. A four-unit box-cab electric, plus a GP9 diesel, rumble across the Columbia River with an eastbound freight at Beverly, Wash., in November 1964. *Tom Gildersleeve*

MULLAN PASS Northern Pacific Z-8 No. 5132 departs Garrison, Mont., with a freight for Helena and points east on May 31, 1953. In 30 miles the 4-6-6-4, assisted by a rear-end helper, will crest the Continental Divide by means of 3,897-foot Mullan Tunnel. The wye to the left leads to Butte and Homestake Pass, while MILW's Pacific Extension is beyond the water tower. *George Krambles, Krambles-Peterson Archive*



TENNESSEE NARROW GAUGE

4-PERCENT HILLS, 32-DEGREE CURVES, AND TRIM 4-6-0s HELP EAST TENNESSEE & WESTERN NORTH CAROLINA MAKE THE GRADE IN A LAND OF RUGGED BEAUTY

Winding through the deep gorges of the Doe River in the eastern part of Tennessee, where it extends between North Carolina and Virginia, is an unusual railroad with a rather long name, the East Tennessee & Western North Carolina. This is a remote section in the Blue Ridge Mountains, where ordinarily a railroad only 35 miles long would be thought of as little more than a lumber line on its last legs, but such is not the case here. This railroad last year (1941) earned more than $1,500 net income for each of its 35 miles, a figure hard to beat on a road of any size.

Deep in scenic, narrow Doe River Gorge, ET&WNC Ten-Wheeler No. 11 eases around Pardee Point in August 1941.
Robert B. Adams

Carrying second-shift workers to their jobs at the rayon plants in Elizabethton, daily train 3 has just entered the dual-gauge trackage east of town on November 21, 1943. The coaches came from Massachusetts pike Boston, Revere Beach & Lynn in 1923.
A. C. Hudson

The ET&WNC, a narrow-gauge road opened in 1882, doesn't even run regular passenger service, but in the summer, on every other Sunday, an excursion train known locally as "Tweetsie" is operated so the tourists may see some of the finest beauty spots in the South.

The excursions start at Johnson City, Tenn. Here, at an elevation of 1,700 feet above sea level and surrounded by beautiful scenery, are many small manufacturing industries, a state teachers' college, and ample accommodations for tourists. Among the industries at Johnson City are iron furnaces and rolling mills, machine shops, tanneries, brick-making plants, cigar factories, box factories, table and furniture factories, and several other wood-working establishments. Here, the coal-handling Clinchfield Railroad crosses the main line of the Southern Railway, and here the ET&WNC makes its terminus, transferring most of its shipments to the standard gauge.

Let us take a trip in the cab of one of the East Tennessee & Western

North Carolina locomotives with engineer Walter R. Allison as our guide. Allison has been with the railroad for more than 35 years and knows every inch of it. Our engine is No. 10, a low-wheeled 4-6-0 built by Baldwin. The locomotive has 16x22-inch cylinders and carries 180 pounds of steam pressure, while the drivers are just 44 inches in diameter. The middle driving wheel has no flange in order to negotiate the sharp curves, which are as much as 32 degrees, about 180 foot radius. It has a huge boiler for a 3-foot-gauge engine, but that's very much needed because of the small drivers and long cylinder strokes, which on the 4-percent grades require a lot of steam.

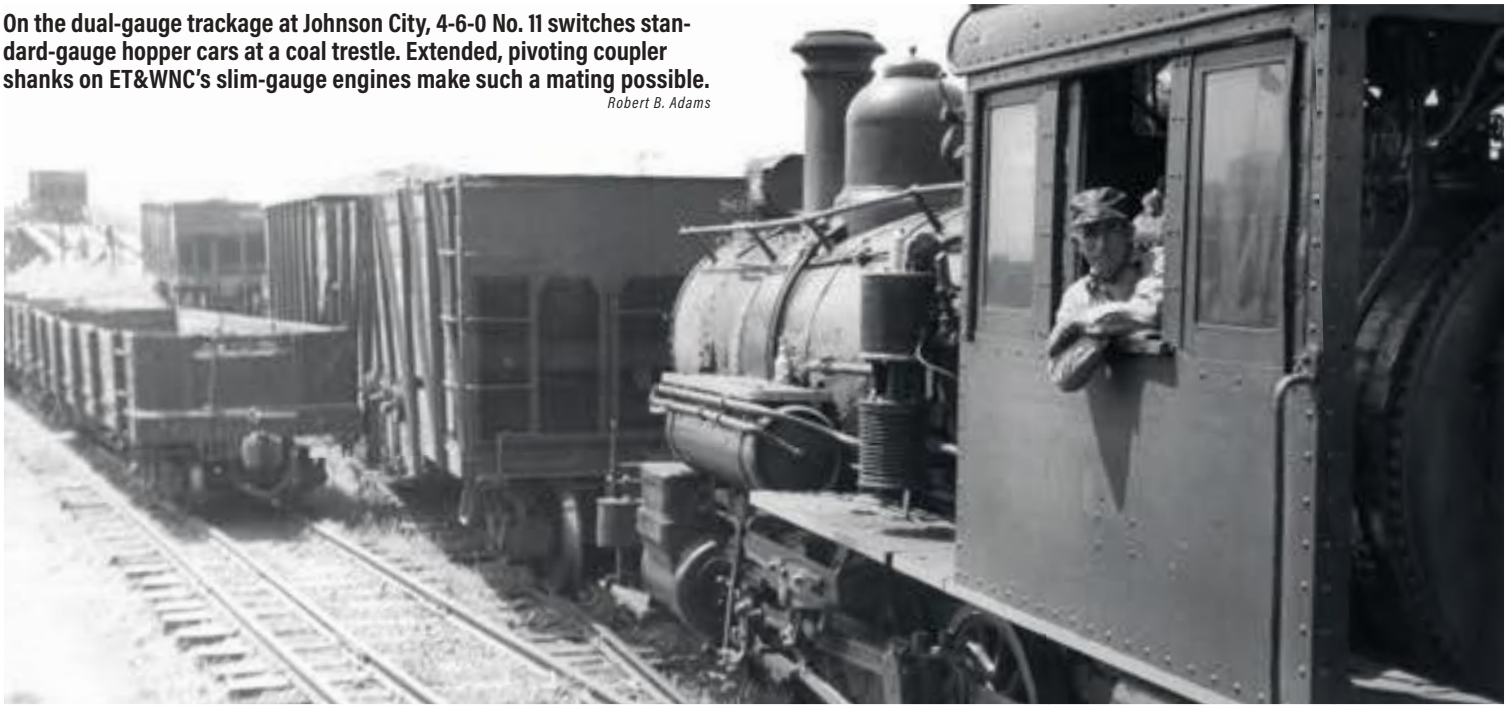
Like other ET&WNC engines, No. 10 is kept in excellent shape: all the machinery is polished, the paint is fresh, and there's a white stripe along the running board and underneath the cab. Behind us is a combination car — mail, baggage/LCL freight, and now-unused passenger accommodations. Regular passenger service was discontinued when the line beyond the present railhead at Cranberry, N.C., to Boone, N.C., was abandoned in March 1941. This part of the line beyond Cranberry was technically known as the Linville River Railroad.

The ET&WNC handles heavy shipments out of Cranberry, and probably will for some time to come. Why? Cranberry is one of the best producing mines for magnetic, low-phosphorous-content iron ore, which is used in the production of tool steel. Out of Cranberry last year came more than $300,000 worth of operating revenue, and every bit of it went over the East Tennessee & Western North Carolina. After paying out $188,000 worth of operating expenses and $66,000 worth of taxes, the railroad still had a net income larger on a per-mile basis than most other railroads. It is owned by the mining operator, the Cranberry Corporation.

Our train is ready to pull out now. Behind the combine are various freight cars for points along the line, plus some empties for the mine.

A westbound freight led by No. 11 squeals through the tight confines of Doe River Gorge in 1941. It's downhill all the way from Elk Park to Hampton, 18 miles.
Robert B. Adams

On the dual-gauge trackage at Johnson City, 4-6-0 No. 11 switches standard-gauge hopper cars at a coal trestle. Extended, pivoting coupler shanks on ET&WNC's slim-gauge engines make such a mating possible.
Robert B. Adams



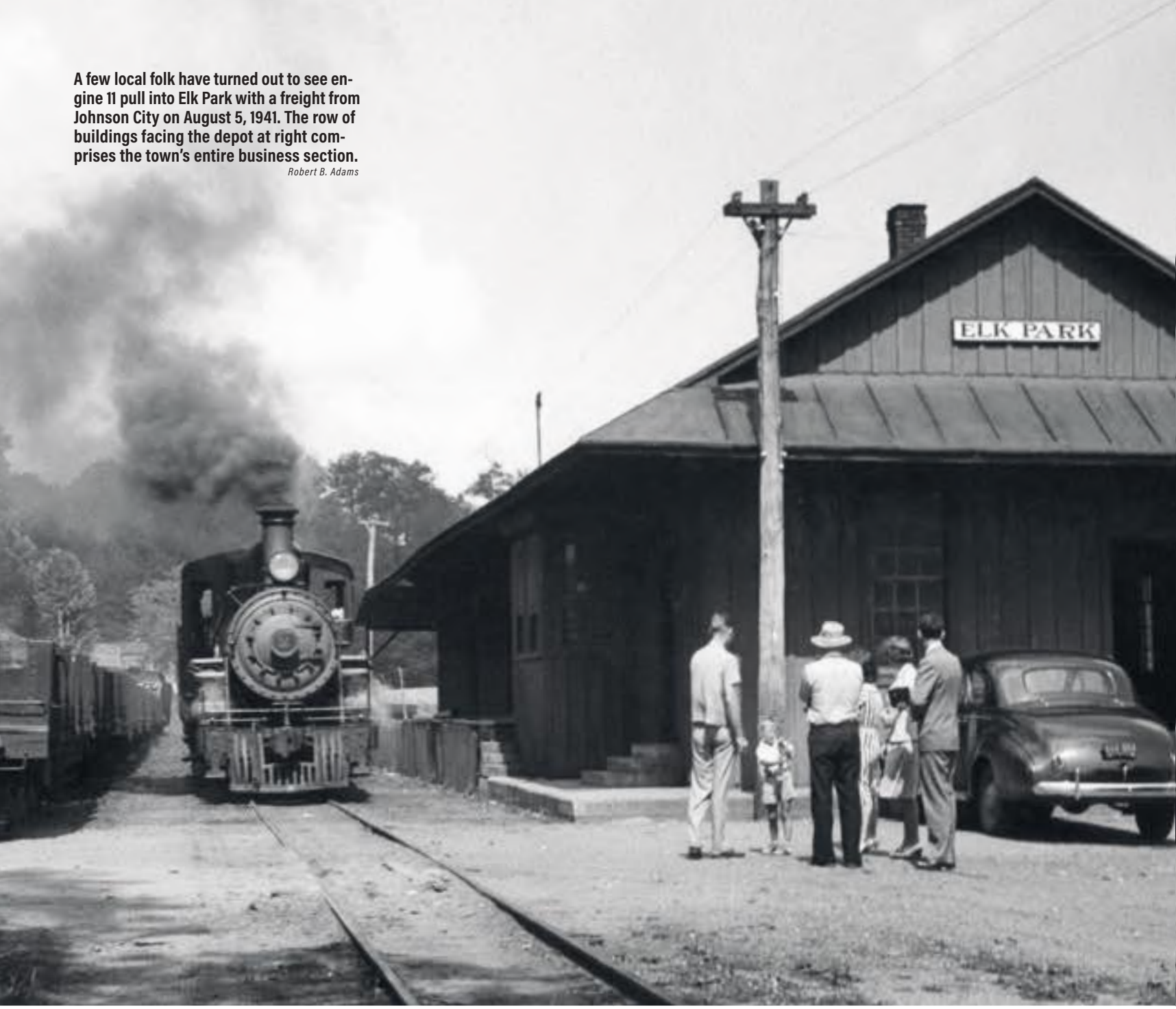
As we leave the Johnson City yards, engineer Allison points out a third rail located outside one of our running rails all the way to a point just east of Elizabethton. This allows the railroad to handle standard-gauge freight cars on this first section of the railroad, where there are no bad grades or curves.

The first 5 miles seem almost effortless as we approach the Watauga River, off to the left. Watauga means "beautiful" in the Cherokee Indian language, and certainly beautiful it is. Its banks are covered with cedar, hemlock, and laurel. Beyond is the broad, fertile Watauga valley. It was in this valley that our forefathers established the first free, independent government west of the Alleghenies. On the right stands a marker that shows the site of the old Watauga Fort.

As the train swings around a broad curve to the right, the town of Elizabethton comes into view. This is a rapidly growing city at the junction of the Doe and Watauga rivers. From Johnson City we have dropped about 200 feet, but from here on the railroad will climb steadily, until at Cranberry the line is 3,100 feet above sea level. Until last year, the Southern had a competing branch into Elizabethton, but now the East Tennessee is the only railroad serving this point. To show how the city has grown, in 1920 its population was 2,700, while today it is nearly five times as large. This growth is due to the richness of the nearby countryside where minerals, timber, fertile soil, and water power combine to make a promising future. These resources are now being harnessed by large plants for producing artificial silk, or rayon. Under a giant sycamore tree, still standing on the Doe River, Andrew Jackson held the first court in what is now Tennessee. Nearby is an iron furnace that was used in Revolutionary days, the iron being brought down from Iron Mountain beneath which our train will pass as soon as the local switching has been accomplished.

Across the river is Sycamore Sholes. It was there that our ancestors

A few local folk have turned out to see engine 11 pull into Elk Park with a freight from Johnson City on August 5, 1941. The row of buildings facing the depot at right comprises the town's entire business section.
Robert B. Adams



Surely the handsomest slim-gauge 0-8-0 in all the land, ET&WNC No. 7, a 1906 Alco, shines at Johnson City in the early 1940s.
James P. Shuman, William Moedinger collection

"Triple combine" (RPO-baggage-coach) No. 15 languishes at Elizabethton in late 1947. Retired the following year, the car is now at the North Carolina Transportation Museum.
Robert Holly

Homebuilt caboose 505 stands with passenger cars on weedy tracks at ET&WNC's Johnson City shops in August '41. At left is a 1910 speeder car.
Robert B. Adams

Just west of Hampton, ET&WNC crosses the Doe River on a deck-truss bridge whose structural members are covered, then goes right into one of the line's several tunnels.
Robert Holly

assembled before marching up the Doe River, crossing Roan Mountain to defeat a British force at Kings Mountain. This battle is regarded as the turning point of the Revolution in the South.

The train now swings almost due south, and for the next 5 miles the whole panorama changes. Lofty mountains rise in front of us almost like a wall. Directly in front of the train is a gap in the mountains which allows both the railroad and the Doe River to pass through. The mountain to the left is called Iron Mountain because of the iron ores found nearby years ago. As the walls of the mountain rise on each side, the scenery becomes increasingly beautiful and, almost without warning, we are rolling through a deep gorge. Here the railroad crosses the river on a deck-type covered bridge and immediately enters a tunnel. The river swings a quarter of a mile to the north and back to join us again at the other end of the tunnel.

Just as we are catching our breath, the mountains pass and we turn into a small valley with the village of Hampton across the river. The train stops for water and to drop off some LCL and express shipments, and while we are waiting engineer Allison proudly points out how well the roadbed is kept on this line. It's just as trim as the main line of the Pennsylvania.

After a little twisting, the train enters another gorge in the second range of mountains. The river is much narrower and twists considerably, crossing under the railroad many times while the latter dives into spurs of the mountain through tunnels. It is interesting to listen to the puffing of the locomotive, first echoed from the walls of the canyon, then muffled by a tunnel, then out-shouted by the rumble as we pass over a bridge.

Beauty in Doe River Gorge

The next 8 miles can be seen only by railroad, for there is no road entering the gorge until farther up the river. Their natural beauty is indescribable. We now pass Pardee Point, where summer excursion trains stop to let the passengers view the mighty cliffs of granite. The railroad has been climbing at a rate of 3 percent, but at this point it levels off. Thomas E. Matson, who was the civil engineer surveying the road, provided a level at this point so trains could get around the curve more easily and the firemen, before the days of automatic lubricators, could give the cylinders some oil.

Ahead of us is the hardest pull in the gorge, and the sparks start flying from No. 10's stack as she lunges into the grinding climb. Allison points out a large fish hawk poised high in the air with its talons spread. A minute or so later we see it dive down and snatch a fish from the river and fly up to a cliff to feed its young. We cross two steel bridges and pass through more tunnels and in another 10 minutes the station at Roan Mountain comes into view.

This point is named for the peak to the south, 6,313 feet above sea level. A scenic toll highway leads 12 miles to the top of the mountain, and people from every state in the Union visit this garden spot each year. On top is a great paradise of purple rhododendrons, 800 acres of them, and in the midst of this is a clear, cold bubbling spring whose waters are only a few degrees above freezing. This is the second highest mountain in the Appalachian range, only a few feet lower than Mount Mitchell. On a clear day it is possible to see seven different states from the top of the Roan.

The railroad continues on a 3-percent grade and as we approach the headwaters of Doe River, the Tennessee-North Carolina state line is crossed. After Elk Park, the railroad swings south to Cranberry, where the mines and railroad yards are located.

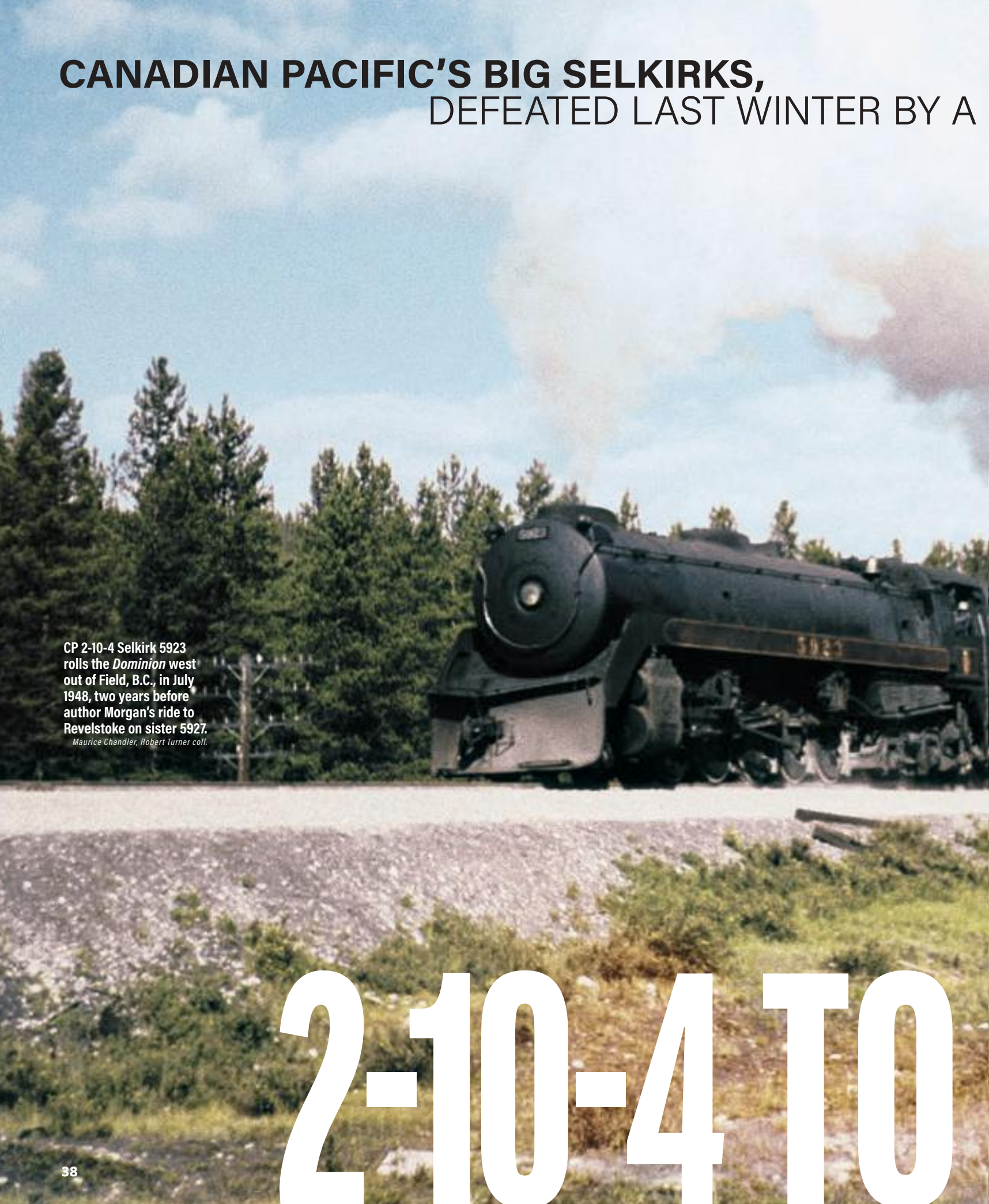
We spoke of the Linville River Railroad previously. Until floods made necessary its abandonment, this line continued south to Montezuma and Linville, then climbed over Linville Gap, 4,081 feet elevation, and down into a spur of the Watauga River, finally winding up at Boone, N.C., on the east side of the mountain. ■

THIS ARTICLE carried no byline when it was first published. ET&WNC abandoned its narrow-gauge segment in 1950, but the standard-gauge Johnson City–Elizabethton portion survives as the East Tennessee Railway.

MOUNTAIN RAILROADS IN PHOTOS

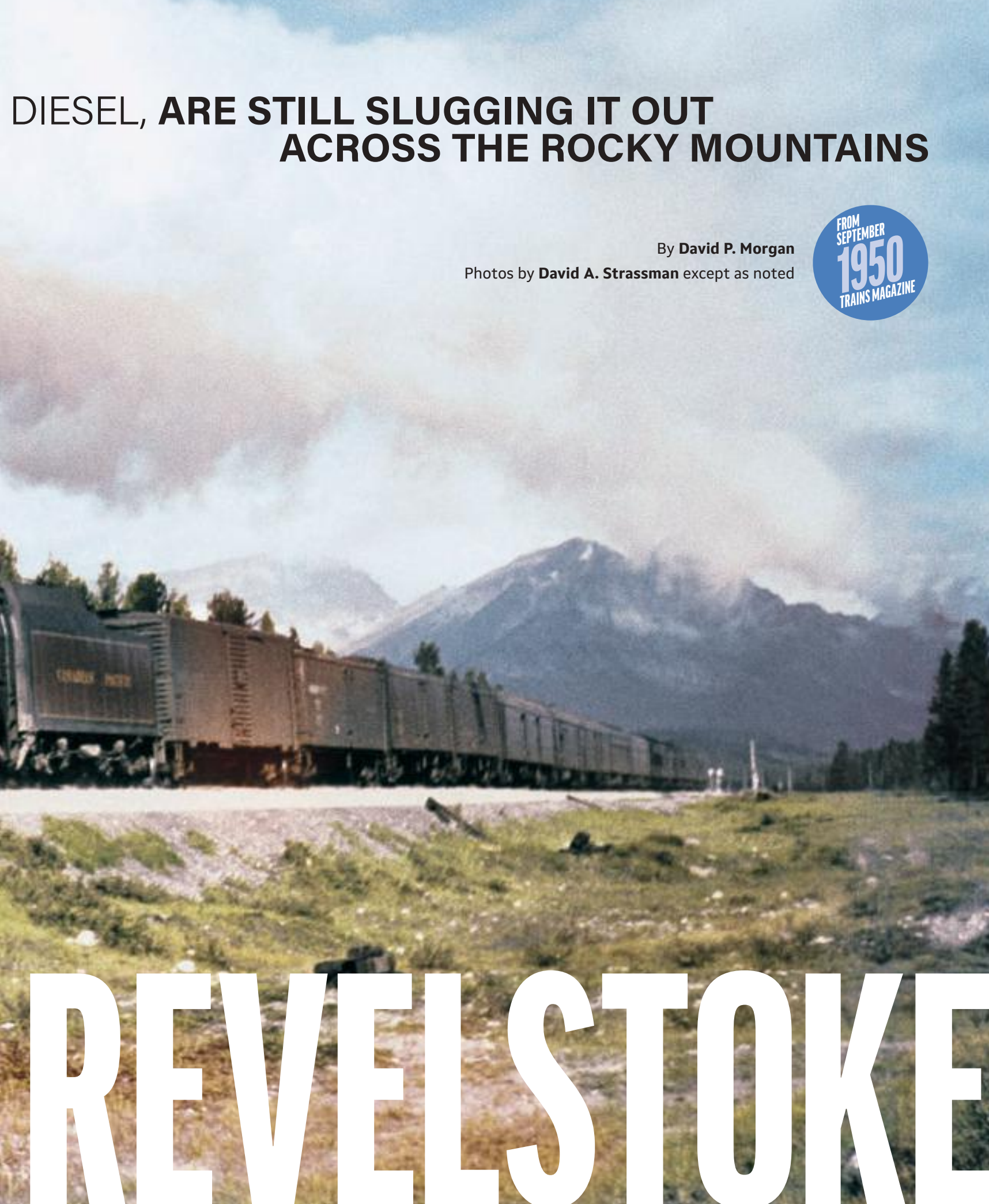
CRAWFORD NOTCH In snowy New Hampshire, circa 1950, Maine Central Ten-Wheeler 371 works up the 2.2-percent grade of the road's aptly named Mountain Subdivision with mixed train 378 for Beecher Falls. Today, Conway Scenic tourist trains out of North Conway, N.H., ply this scenic line up to the head of the Notch at Crawford; highlights include Willey Brook and Frankenstein trestles. *Philip R. Hastings*

CANADIAN PACIFIC'S BIG SELKIRKS, DEFEATED LAST WINTER BY A



CP 2-10-4 Selkirk 5923 rolls the *Dominion* west out of Field, B.C., in July 1948, two years before author Morgan's ride to Revelstoke on sister 5927.
Maurice Chandler, Robert Turner coll.

2-10-4 TO



REVELSTOKE

DIESEL, **ARE STILL SLUGGING IT OUT ACROSS THE ROCKY MOUNTAINS**

By **David P. Morgan**

Photos by **David A. Strassman** except as noted

FROM SEPTEMBER 1950 TRAINS MAGAZINE

Last winter a locomotive numbered 7001 rode the 262 miles of Canadian Pacific mountain main line between Calgary, Alberta, and Revelstoke, British Columbia, and the railroad has not been the same since. It never will be. No. 7001 was an Electro-Motive diesel demonstrator, technically an FP7 cab and two F7 boosters. Promptly dubbed "Blue Boy" because of its color, No. 7001 was the first diesel locomotive to echo its air horn through Kicking Horse Pass and Albert Canyon and to open up its triplet V-16 engines on the ascending eastbound 1.6- and 2-percent grades through the celebrated Spiral Tunnels.

Moreover, Blue Boy strutted his stuff on the transcontinental *Dominion* through the bitterest of snows and 50-degree-below-zero temperatures. He nonchalantly refused helper service at the foot of grades where the biggest and best of CP steam power has paused for assistance since the line was built. And where low-drivered mountain maulers are exchanged for Royal Hudsons, Blue Boy kept on rolling. He boosted the class A tonnage rating of a 2-10-4 on the westbound Calgary–Revelstoke run from 1,050 to 2,340 tons. Mileage and mountains were his meat and on both he thrived in the worst that a Canadian winter could throw at him. Then Blue Boy went back to the prairies from whence he had come, leaving behind him a trail of smashed traditions, new ideas, and ominous puzzlement.

This summer a splendid fleet of 36 T-1a and T-1b 2-10-4s is riding out the lull before the storm. Officially, CP is still tabulating and an-

Guests breakfasting in the trackside dining room of CP's Hotel Palliser in Calgary get a tenderful of 2-10-4 as T-1b No. 5927 backs toward the consist of the *Dominion*, which the Selkirk will take west.

Engineer Jimmy Griffiths looks ahead from engine 5927's cab at trackworkers standing aside to let the *Dominion* pass on its trek to Vancouver.

At Seebe, 50 miles west of Calgary, engineer Griffiths and fireman Mel Baldwin stand beside the 5927, which has taken siding for a scheduled meet with eastbound local train 2. The eight-car local is powered by year-old T-1b No. 5931, from a batch of six Selkirks that constituted CP's last steam order.

During the *Dominion*'s 10-minute stop at Banff, there's time for conductor Richards to confer with the engine crew, and for guests from the Banff Springs Hotel to inspect the big 2-10-4. It's the end of May, but there's still plenty of snow on the mountains surrounding the resort town.

alyzing Blue Boy's behavior, but the *Dominion*'s dining-car stewards and sleeping-car porters are preaching the wonders of dieselization to their passengers, confidently predicting air horn honking at the head end of their trains through the Rocky and Selkirk mountains by the 1951 tourist season. More than one helper crew is concerned about its seniority, and the blacksmiths at Calgary's Ogden Shops should be worried even if they're not.

The 5900–5935 series of Selkirks (as CP brands its Texas types) are not the only locomotives whose premature death warrant was written out indelibly on the speed recorder tape of Blue Boy, for the 2-10-4s are still supplemented by modern Mikes and old Decapods and 2-10-2s. But the 5900s were the forward battle line that EMD No. 7001 had to crush. And because you are riding west this morning on T-1b No. 5927, it's worth recalling the status of the Selkirk in the North American 2-10-4 family.

Specifically, CP's 2-10-4 is:

• The most powerful steam locomotive in the British Empire on a horsepower basis (although Canadian National's V-2a 2-10-2 packs more tractive effort).

• The sole 2-10-4 type constructed for dual service. Santa Fe's 74-inch-drivered 5000-series is no slouch in passenger work, but CP allows its 63-inch T-1b's a 65-mph maximum.

• The only streamstyled example of its wheel arrangement. T-1b's 5920–5935 are fashioned in the clean-lined manner of the road's 4-4-4s and Royal Hudsons.

West out of Calgary

It is 8:55 a.m., on Tuesday, May 30, 1950, and Royal Hudson No. 2846 is arriving at Calgary with CP train 7, the Montreal–Vancouver *Dominion*. There is no need for haste, since the limited is permitted a leisurely half-hour layover for change of motive power and train servicing. Station crews replenish the ice and water of No. 7; sleeping-car porters dump dirty laundry; the diner takes on fresh supplies. Up front, Alco-GE 1,000 h.p. switcher No. 7051 noses in to work over the consist.

You locate your red sleeper, *Teeswater*, store away all baggage, and explain to the porter that you'll join him at Revelstoke. Then you find a CP official who escorts you up to the business end of the *Dominion* — and there she is: T-1b No. 5927, serenely standing in the handsomeness of semi-streamlined wine-red and black and gold striping. Moments later the Alco has grumbled off and the 2-10-4 locks couplers with 12 cars: three head-end cars, one lightweight coach, tourist sleepers, a diner, standard sleepers, and an observation-lounge sleeper bringing up the markers. This is the last day the train will run west minus the famous open-air observation car service, a summer-season amenity.

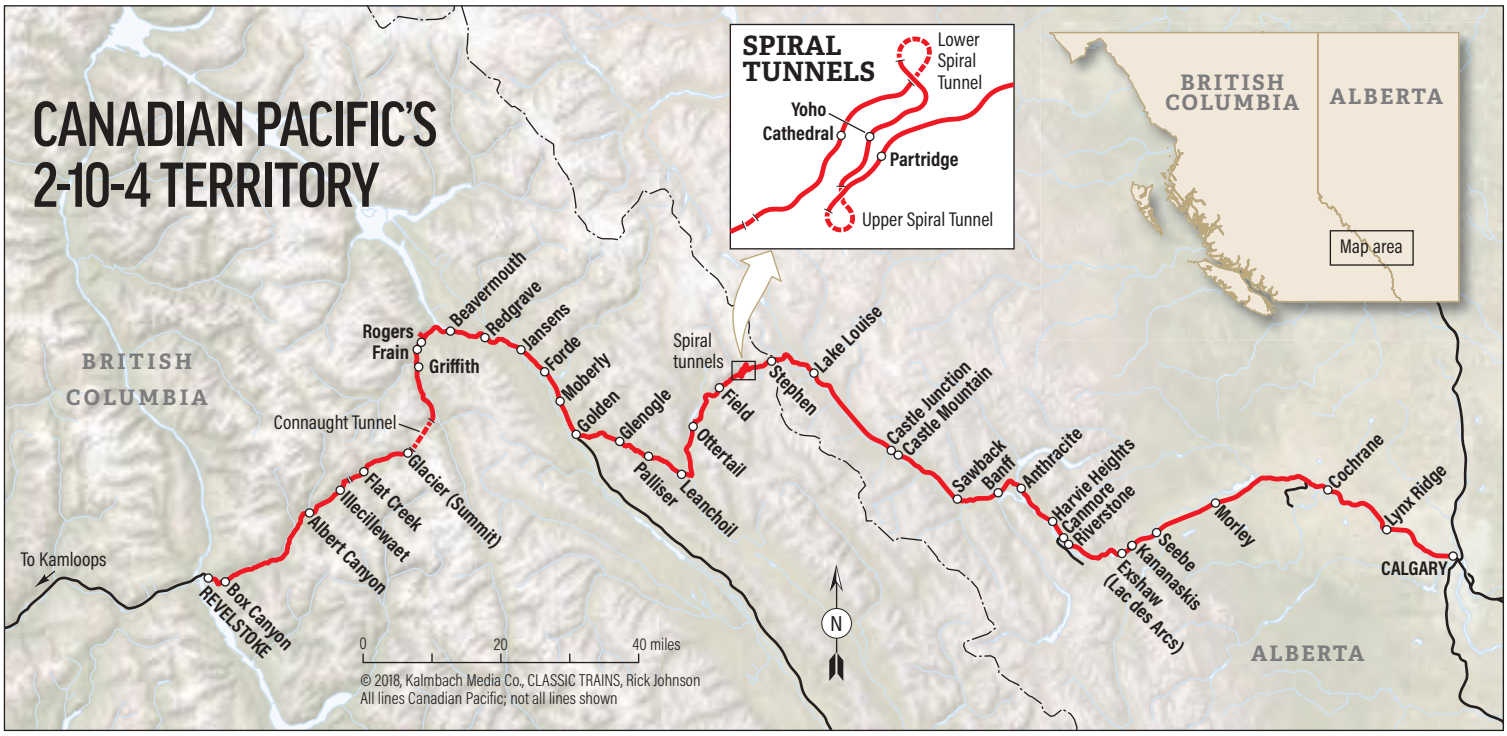
You climb up into the vestibuled cab of the Selkirk and meet engineer Jimmy Griffiths and fireman Melvin Baldwin, the Calgary Division crew. They will work No. 5927 over the 136.5 miles to Field. B.C. You take the seatbox behind the fireman (occupied by the head brakeman in freight service) and acquaint yourself with the simple, compact backhead of this 447,000-pound oil-burner turned out by Montreal Locomotive Works in November 1938. A vacuum-cleaner-like growl takes your attention to the right-hand side and you see Griffiths adjusting a compressed-air-powered wheel reverse. No endless winding to cut back the cutoff on No. 5927, just the press of a gloved hand and the reverse spins the Walschaerts up to the desired notch.

No. 7 catches the highball at 9:28 a.m., just 120 seconds off the advertised; and 12,000 pounds of booster tractive effort help the Selkirk get under way. Griffiths hauls the stubby brass throttle back along its brief quadrant and the 2-10-4 talks up through its streamlined stack casing. From the cab you see open-air observation cars 7911 and 7914, spotted for their summer season tour of duty, then watch a streamstyled Selkirk sister enter the yard from the west with Extra 5926 East; the freight's wooden caboose has moose antlers mounted on its cupola.

Right, left, right, left, comes the old familiar strain as cylinder cocks are kicked open toward the end of Calgary yard. Now 5927 points her polished black, smooth, recessed-headlight smokebox door toward the distant peaks and begins climbing from Calgary's elevation of 3,438 feet above sea level. The gravel-ballasted, 100-pound-rail main line, protected by searchlight-type absolute permissive block signals, swings up through green moors on gently climbing curves — always keeping near the Bow River.

Approximately 23 miles out, at Cochrane, No. 7 makes an unexpected stop at 10:08. Apparently station crews at Calgary neglected to close all of the ice hatches beneath the sleepers. While the trainmen remedy the trouble, fireman Baldwin takes water and you're under way at 10:13, accelerating past Mikado 5433, in the hole here with an eastbound freight.

At Seebe No. 7 enters siding for its scheduled meet with No. 2, a long-distance Vancouver–Montreal local, but the opposing train is late for its appointment. You climb down from the cab and watch the crew checking the eccentric crank on the third pair of coupled drivers. Here, snow-clad mountains are much nearer and the air considerably sharper than



The fireman is up on No. 5927's tender to take water during the stop at Lake Louise, location of yet another grand CP hotel, the Chateau Lake Louise.

at Calgary. At 11:22 No. 2 shows up behind No. 5931, one of six Selkirks assembled last year by Montreal and cited by CP as its last new steam locomotives.

Because another eastbound, a freight headed by Mikado 5380 is facing No. 7 on the same Seebe siding, you back out and get moving west again at 11:24½.

At milepost 62 a shoulder of the parallel Fairholme Mountains pushes the line near the Bow River and you can see those perpetual debutantes of the mountains, Three Sisters peaks. At Canmore 2-8-2 No. 5444 waits in the hole, then the visible peaks become far too numerous to recall: Peechee, Girouard, Inglismaldie, Cascade, Stoney Squaw — many towering more than 9,000 feet.

At 12:11 No. 5927 walks up the platform at Banff and pauses at the water plug while No. 7's passengers accept CP's invitation to stretch their legs and view the scenery. More than one tweed-suited guest from the railroad's internationally famous Banff Springs Hotel is down at the depot to view that perennial curiosity, the steam locomotive. Jimmy Griffiths oils around and Mel Baldwin takes water for the second time this morning. Conductor Richards comes forward to ask what you think of CP thus far, and advises you in the Jolson tradition that "you ain't seen nothing yet!"

No man ever spoke words more true about railroading, but you don't fully appreciate the wisdom until No. 5927 is nearly into Field. Thus far out of Calgary the terrain has been ample to captivate the naive flatlander, but barely sufficient to make a Rio Grande man stifle his yawn.

Into the real mountains

No. 7 is out of Banff at 12:20; a glance to the south here allows you a glimpse of the resort. Then Griffiths is calling you over to his cab window to see a moose, oblivious of the *Dominion*, drinking in the hunter-proof safety of Banff National Park. The glacier-shaped peaks are now rearing to altitudes of better than 11,000 feet; for U.S. tourists the most famous is Mount Eisenhower (formerly Castle Mountain), named in honor of the onetime Allied supreme commander.

The train arrives at Lake Louise at 1:16 (16 minutes late now). No. 5927 gulps water and leaves at 1:19. After noon, the crews in Alberta and British Columbia talk of "13:16" and "13:19," as they operate on a 24-hour clock. Now the grade shifts abruptly to a 1-percent-plus, and Jimmy Griffiths keeps 5927's cutoff rolled into the corner as she climbs 280 feet in six miles to reach the Canadian Continental Divide — 5,339 feet above sea level. The last few hundred feet of 1.5- and 1.8-percent grade absorb all the horsepower that 285 pounds of steam per square inch can create in a pair of 25x32-inch cylinders. At 1:33 she's standing at Stephen, B.C., upper gateway to Kicking Horse Pass.

The Rockies now bear out conductor Richards' prediction to the letter. The throttle of the Selkirk is closed and Griffiths is working air as the T-1b goes through Hector (named for the man whose survey party pack horse kicked him and gave the pass its famous name) and over the brink of the 2 percent down to the valley floor.

At 1:46 the Selkirk, now riding 130-pound rail, drifts into the mouth of Spiral Tunnel No. 1 and rides the 10-degree left-hand curve that completes almost a perfect circle within 3,255 feet of bore. The headlight and cab lights are on now, and the bell mounted high on the left flank of the firebox echoes its dismal clang. At this instant the 2-10-4 and its 12-car train are descending a 1.6-percent grade at an approximate elevation of 4,800 feet directly beneath the 10,464-foot hulk of Cathedral Mountain. At 1:48 No. 7 is back in the sunlight, and you can look back to the high-level line and down to the entrance-exit of Spiral No. 2; the grade sharpens to 2.2 percent between bores, crosses the Kicking Horse River, then — at 1:53 — enters the 2,922-foot Spiral No. 2 on another 10-degree curve, to the right this time, beneath Mount Ogden.

When the locomotive you're riding is shuttling around the compass like this, there's no sense in talking or even thinking about direction. The Selkirk is too close to the mountains to gain a decent perspective of this Swiss-style engineering that CP dynamited to completion in 1908 to eliminate the old 4.5-percent climb into Stephen.

As the 2-10-4 comes out of Tunnel No. 2 at 1:56 you ask the fireman if he was ever on a train that crossed itself — a feat once depicted in a notable CP publicity photo-montage and again, actually this time, on October 21, 1939. Mel says sure, any time a freight has four engines and at least 90 cars. He was firing a helper at the caboose end of an eastbound drag when the two head-end helpers and the 2-10-4 road engine came out of No. 2 and over Mel's engine before it went into the bore. "Man, but it was hot in those tunnels that day," he says.

Field, B.C, is a railroad town, rather reminiscent of Oakdale, Tenn., on the Southern's CNO&TP, what with its nearby river, smoky engine terminal, and threatening overcast of mountain. The Selkirk stops at 2:12 and is immediately serviced while the engine crew changes. At Field all clocks shift from Mountain to Pacific Time, so you set your watch back one hour. At 1:20, with engineer Henry George and fireman Andy Gullickson aboard, No. 5927 is out of town, 10 minutes late.

The westbound *Dominion* descends Kicking Horse Pass. Just around the bend ahead of the train is the upper portal of Spiral Tunnel No. 2; after traversing the bore the train will cross the bridge at far left.
Canadian Pacific

At Ottertail, B.C., engine 5927 is stopped in the hole to meet train 8, the *Dominion* to Montreal, approaching behind sister Selkirk No. 5933.

In the dozen or so miles east of Golden, the line finds a path by crossing and recrossing the Kicking Horse River and passing through several short tunnels.

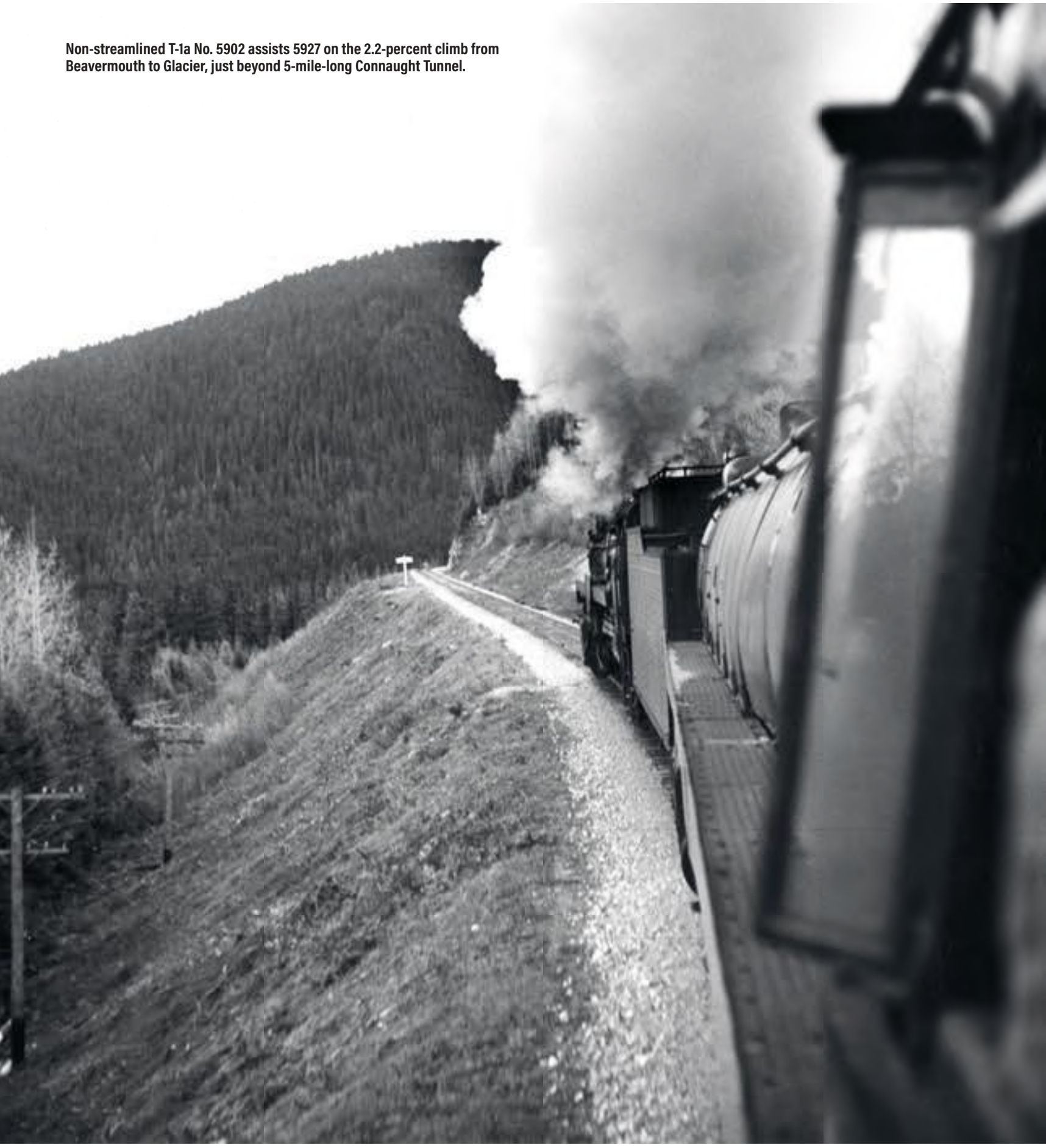
At Ottertail you meet train 8, the eastbound Montreal *Dominion*. Today it has Selkirk No. 5933 (another of the new 2-10-4s) and 14 cars. You're away at 1:45 after a 2½-minute meet. Nine miles west, at Leanchoil, you enter the hole again — this time for the 11 cars of the Toronto-bound *Dominion*, No. 4. No. 5934 is doing the honors; on a wye nearby is No. 5760, the Decapod that helped No. 4 up from Golden, B.C.

Along here the Kicking Horse River, which once behaved itself with reasonable control, is infuriated by its prison grip between the Van Horne, Ottertail, and Beaverfoot mountain ranges — and it becomes a boiling, foaming, snarling howl of water gone berserk. In an attempt to escape its wrath, the railroad passes through five brief tunnels and nimbly crosses the Kicking Horse at six places to seek a safer berth on the other bank. In 1948 the river flooded over the CP main line; the fireman points out specific spots where the maintenance-of-way gangs have reinforced the track since then.

Double Selkirks to Glacier

By 2:50 No. 7 is standing in Golden and you're looking at a highway signpost that speaks much for railroad engineering. The sign reads Revelstoke 192 miles; the rail distance is precisely 90.7 miles. The grade eases off to almost nothing for the next 28 miles while the railroad rambles down the broad valley of the Columbia River. At 3:48 your 2-10-4 is standing at the west end of Beavermouth Yard, taking a tank of water while unstreamlined sister No. 5902 — a 1929 graduate of Montreal — couples on ahead for the 22.5-mile helper district to Glacier.

The two Selkirks are thundering heavy stack music as they climb up the Beaver River Valley on grades ranging from 0.1 to 2.2 percent. A truss bridge spans the cascading chaos of Surprise Creek. Now there is a sheer drop to the valley floor far down below on your left. Stony Creek Bridge climaxes this helper-assisted ride; here the end abutments of the great curving arch of steel (486 feet



Non-streamlined T-1a No. 5902 assists 5927 on the 2.2-percent climb from Beavermouth to Glacier, just beyond 5-mile-long Connaught Tunnel.

Engine 5927 faces the late-afternoon sun at Revelstoke, where author Morgan left the cab for the comfort of his sleeping car and a good meal in the diner. The Selkirk's work is not quite done, though — it will assist the new road engine, a Royal Hudson, for 8 miles up to Clanwilliam, then return to Revelstoke.

long) grimly grip the steep sides of the gulch, 270 feet above the roaring spray of its namesake stream.

Straight ahead is Mount MacDonald, the 9,492-foot peak that caused the original CP engineers to hurdle the rock mass with the infamous Rogers Pass line. You glimpse the old right of way moments before the fireman yells "Connaught," and your tandem of 2-10-4s goes exhausting into the 21½x29-foot door of the longest double-track bore in North America. Your world goes black at 4:43, just after the two Selkirks take the left-hand iron (to permit the engineers a better view) and plunge indoors. The 26,517-foot tunnel is laid on a 0.95-percent ascending westbound grade, so both engines are still working steam. Oil smoke swirls into the cab of 5927 and the temperature goes up. At 5:52½ you gulp daylight, and a minute later, at Glacier, No. 7 rolls to a stop. Helper 5902 comes off here.

The throttle of Selkirk 5927 is eased back just enough at 4:58 to get the *Dominion* rolling again, and then the 2-10-4's work is over until she reaches Revelstoke. Now her fat boiler merely has to produce enough steam for auxiliaries like air pumps as the limited descends down the Illecillewaet River Valley. Station names like Ross Peak, Flat Creek, and Twin Butte tell of the magnificent scenery on this 40-mile last leg that lowers the railroad more than 2,200 feet down into Revelstoke. Finest of all is Albert Canyon, just beyond snowshed protection from winter storms.

The Selkirk swivels back and forth across the rip-roaring Illecillewaet 13 times from Glacier down to Revelstoke, but the 2-10-4 rides well.

At 5:30, just five minutes off the timecard, you're standing in Revelstoke. You push your green-glassed goggles up on an oil-smudged forehead and the brightness causes you to wince; at once the tension inherent to a locomotive cab dissolves and you feel worn and tired — and hungry.

But the day's work is not completed yet for the Selkirk. A new crew climbs aboard and eases her away from the *Dominion* until Royal Hudson 2861 couples on. Then No. 5927 moves back, this time in the role of helper over the 8-mile westward climb to Clanwilliam, where the grade is a bit too much for the streamstyled 4-6-4's 75-inch drivers.

You walk slowly back along the platform at Revelstoke, through the crowd of postcard-buying American tourists, to *Teeswater* and a smiling pair of sleeping-car porters. "I was expectin' you'd look like that," your man admonishes. "You'll find plenty of towels and soap in your room."

Up front, the Selkirk-Hudson team is under way out of Revelstoke by the time you've cleaned up and changed into a suit. Dinner tastes wonderful but you're hardly competent to judge because any food would be fine after seven straight hours aboard 5927.

Suddenly you see those memorable numerals, illumined through the increasing dusk from the number board atop her handsome front end. No. 7 is standing at Clanwilliam, and the Selkirk, her job done, is coasting back to Revelstoke. You lay down your fork, and for a moment appetite fades as you hear a waiter enthusiastically mention Blue Boy and his diesel escapades last winter. ■

DAVID P. MORGAN joined the TRAINS staff in 1948, became the magazine's editor in '53, and retired from that position (as well as publisher) in 1987. He died in 1990 at age 62.

JUICE JACKS FOR CLARKS GAP Following the lead of fellow Pocahontas coal-hauler Norfolk & Western, the Virginian Railway electrified part of its main line, 135 miles from Mullens, W.Va., over Clarks Gap Grade to Roanoke, Va. The original 1925 box-cabs were joined in 1948 by four two-unit, 6,800 h.p., class EL-2B monsters, one of which is at Mullens in September 1960, nine months after N&W absorbed VGN. *Tom Gildersleeve*

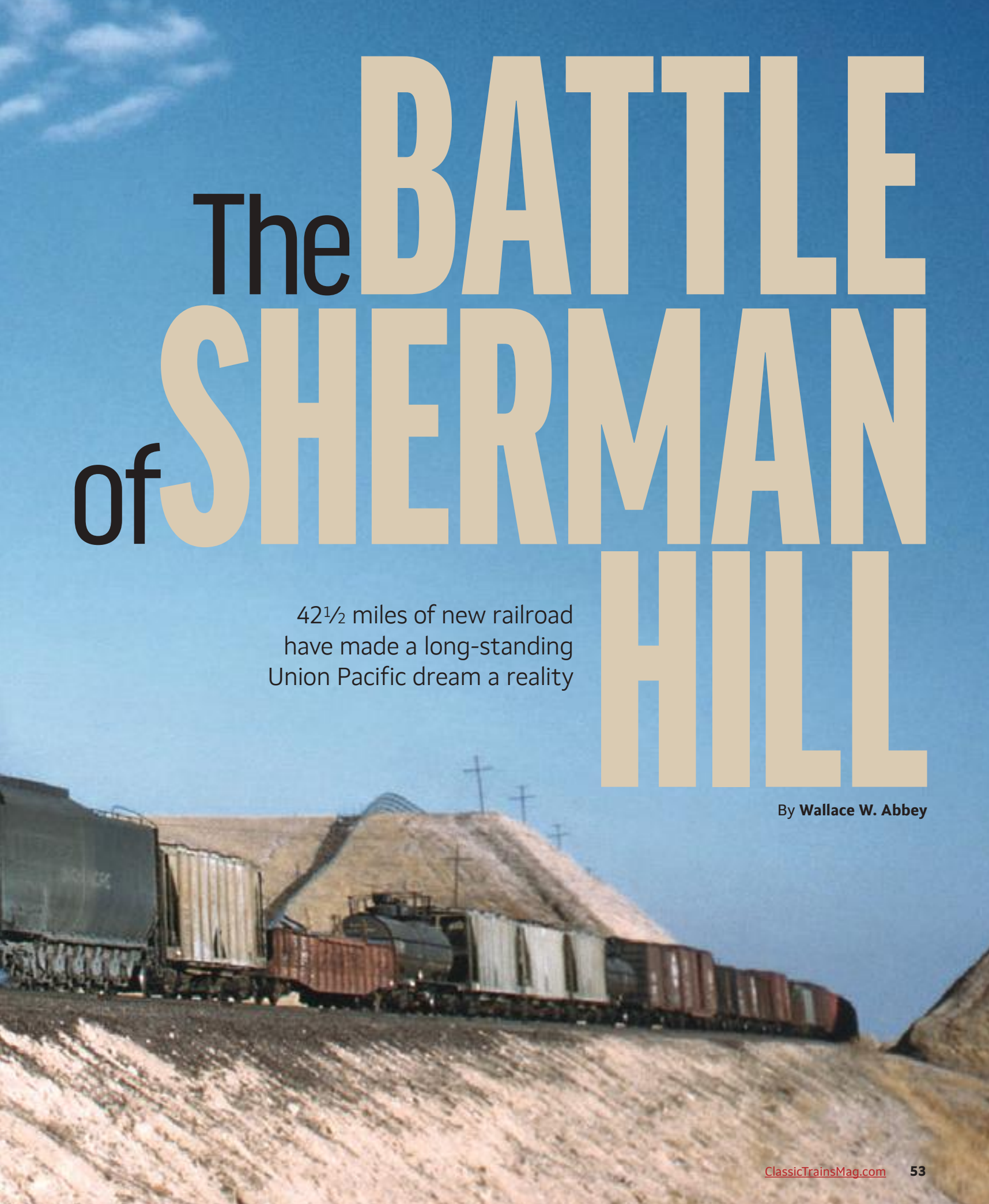
MOUNTAIN TYPE In 1911 Alco built the first locomotives of the 4-8-2 wheel arrangement to haul Chesapeake & Ohio passenger trains over the Allegheny Mountains. In September 1947 C&O 543, a USRA-design heavy 4-8-2 built in 1918, brings Clifton Forge–Huntington local train 13 into Alleghany, Va., on the same grade that prompted the development of the Mountain type three-and-a-half decades earlier. *E. T. Harley*

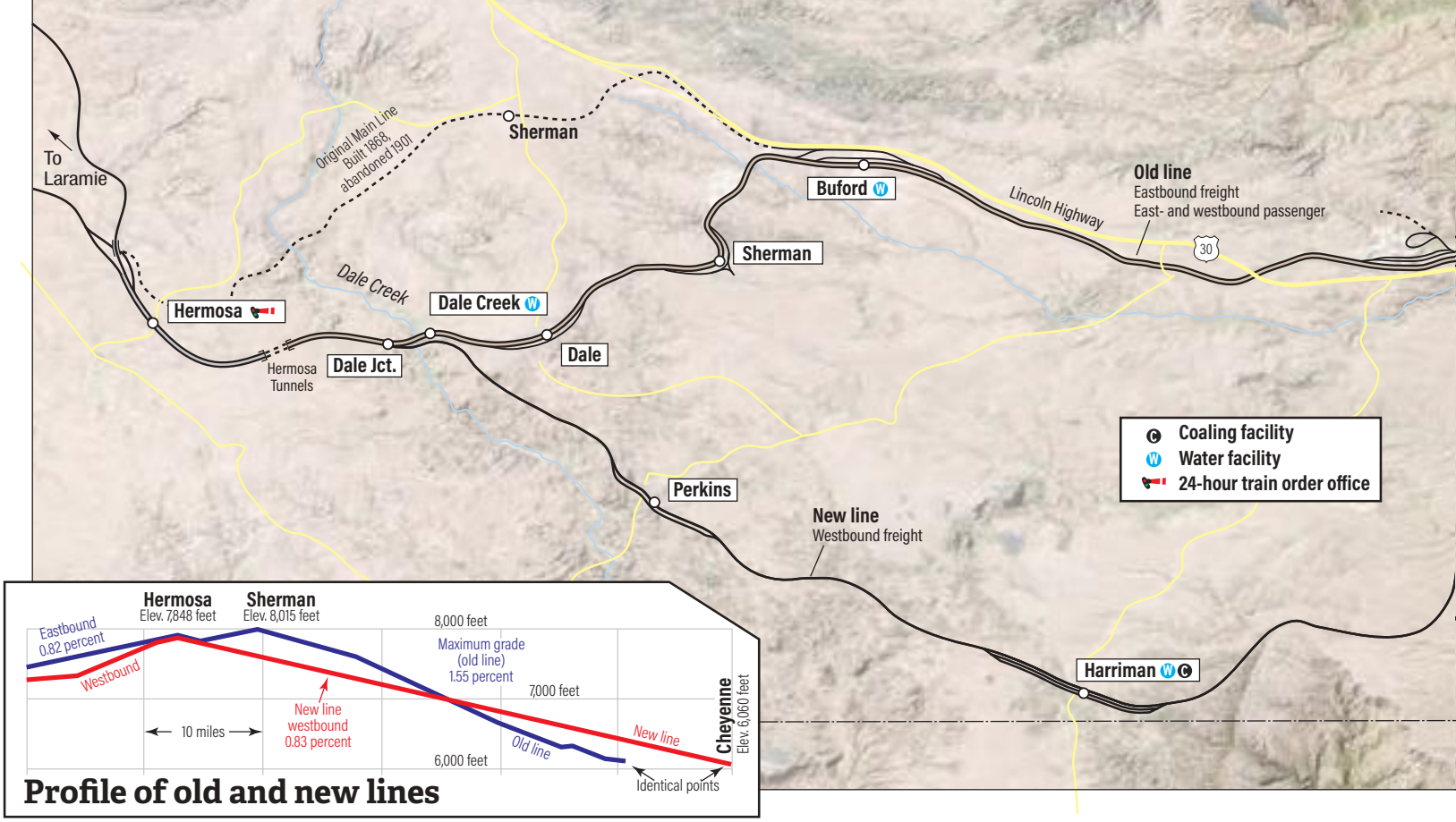
Big Boy 4022 climbs windswept Sherman Hill on the new line, officially completed on May 12, 1953, with a freight extra out of Cheyenne in 1958.
Stan Kistler

The BATTLE of SHERMAN HILL

42½ miles of new railroad have made a long-standing Union Pacific dream a reality

By **Wallace W. Abbey**





NEW LINE BY THE NUMBERS

TOTAL LENGTH
42½ MILES

MAXIMUM GRADE
0.82 PERCENT

HIGHEST FILL
157 FEET

DEEPEST CUT
110 FEET

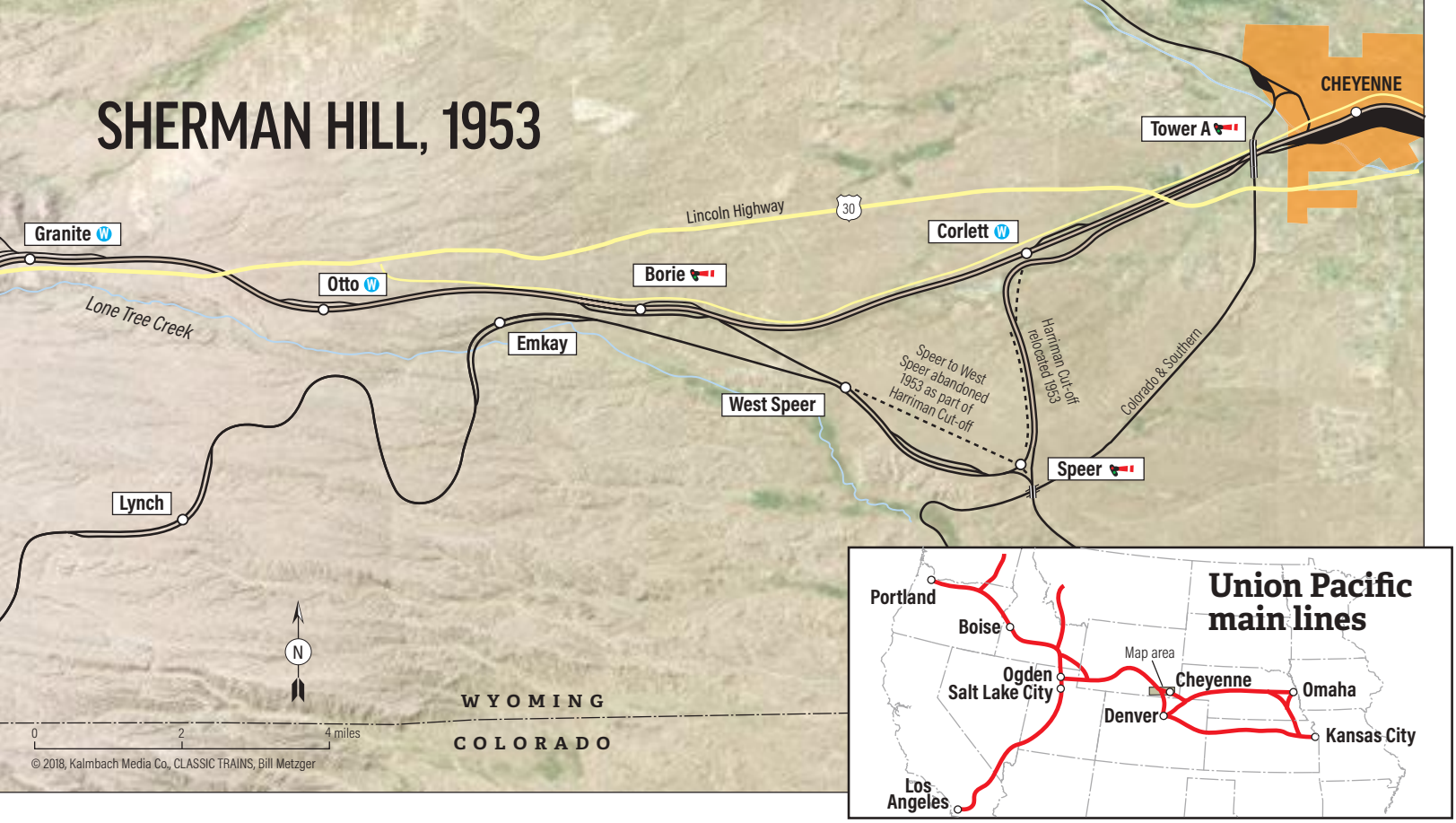
RUNNING TIME SAVED
15 MINUTES

Since the first surveyors ventured into the uplands west of Cheyenne in 1865, the Union Pacific has been waging intermittent war against the geography of southeastern Wyoming. Several times it has skirmished among the hills and along the creeks, trying to win a grade through the Laramie Mountains that best combined the virtues of economical construction and efficient operation. Each sortie with the construction tools of the day has brought improvements, but until this year of 1953 Sherman Hill has stood formidably in the way.

The 8,014-foot summit at Sherman has been the highest point on the main line and the toughest to reach with a heavy train. But now today's construction forces — using earth-moving machinery that would astound and probably frighten the shovel-and-wheelbarrow laborers who built the Union Pacific through this country — have put a new battle line around and below Sherman. They have whittled significant percentages off the ruling grade with the largest line-change project in UP history.

The new line, which is 42½ miles long, begins about a mile west of Tower A at Cheyenne, where the long freights come out of the yard with the exhausts of their mammoth articulateds — 2-8-8-0s, 4-6-6-4 Challengers, and the mighty 4-8-8-4 Big Boys — exploding in a frightful cannonade. It meanders in sweeping

SHERMAN HILL, 1953



Extensive cutting and filling help keep the grade on UP's new line to 0.82 percent. Big Boy 4017 works west through one of the cuts in 1954. *Stan Kistler*

loops through the bald hills of Laramie County, drops to within a quarter mile of the Colorado state line, and then cuts through solid rock and decomposed granite to Dale — formerly Dale Creek — where it rejoins the former alignment.

The meandering is for a definite reason. Added length — 9 miles of it — compared to the old line means a reduced ruling grade. On the new line it's 0.82 percent; on the old, 1.55. The difference is money in the bank for the UP in the form of reduced operating costs.

Beginning in spring 1951, surveying parties explored the Laramie Mountains to find a new route that would chop the top off the only westbound grade of more than 0.82 percent between Omaha and Ogden. The bulldozers, rock shovels, and scrapers of Morrison-Knudsen Construction Co. began revising the landscape on February 18, 1952. The men and their machines dug, scraped, and blasted. They threw a fill 112 feet high across Sand Creek, one 157 feet high across Texas Creek, and dug a cut 110 feet deep through solid rock. They handled more than 7 million cubic yards of earth and rock.

Almost exactly a year from the day grading started — and six months ahead of schedule — the last rail went into place.

The $16 million line change is as modern as current practices can make it. New 133-pound rail is spiked to treated ties. Passing tracks 7,200 feet long named for Morrison-Knudsen (Emkay), UP Operating Vice-President Perry J. Lynch, UP Chairman E. Roland Harriman, and UP Chief Engineer William C. Perkins have No. 14 turnouts. Cuts are 40 feet wide at the bottom. Steam locomotives can get coal and water at Harriman. Trains move under centralized traffic control.

The new line around Sherman Hill doesn't mean the old route will be abandoned. Eastbound freights and east- and westbound passenger trains will continue to go that way. Westbound freights will take the new line, which is engineered to reduce running time 15 minutes even though it is 9 miles longer.

The idea of having no grade on its westbound track greater than 0.82 percent has long been a fond one to the Union Pacific — since before there were the tools to do the job. But since May 12, 1953, when the latest assault on the Laramie Mountains was officially completed and the newest Sherman Hill line was opened for business, that dream has been a reality.

WALLACE W. ABBEY, a prolific rail journalist, author, and photographer, was a member of the TRAINS staff during 1950–54, then moved on to positions in railroad public relations. He died in 2014.

In a late-1950s view from the west end of Cheyenne, a GE gas-turbine-electric sets out for the new line over Sherman Hill while a Big Boy and turbine bring a train in off the hill and EMD diesel-electrics approach with another eastbound.
Bill Caflisch, Helen Caflisch collection


A
BEGIN
CTC
LACKAWANNA
UNION PACIFIC

"WILD MARY" The Western Maryland's colorful nickname owed at least as much to the road's rugged territory as to its initials. WM's Elkins Division southwest of Cumberland, Md., encompassed the 3-percent grades and 16-degree curves of Blackwater Canyon. That's what's ahead for this coal train at Montrose, W.Va.; the two RS3s ahead of the caboose are being tested on the line, ruled for now by 2-8-0s. *George C. Corey*

FEATHER RIVER ROUTE At the opposite end of George Gould's would-be transcontinental empire, the Western Pacific faced obstacles, too — lonely mountains in Utah, and the Sierras in California. In the case of the latter, WP found a relatively easy course by following the Feather River, but the going was still tough. In 1950, a 2-8-8-2 on an eastbound holds a siding in the canyon to meet FTs with Bay Area freight. *Allan Fraser*

WHEN A FIRE CLOSED THE DENVER & SALT LAKE LINE UP THE FRONT RANGE OF THE ROCKIES,

REOPENING

FROM FEBRUARY 1944 TRAINS MAGAZINE

An eastbound D&RGW train eases through Tunnel 10 not long after it was reopened to traffic, culminating more than two months of expedited effort after the fire.

TUNNEL 10

By **Harry Hawes**

Photos by **R. B. "Bud" Hooper for D&RGW**

The skipper on the Denver–Craig local sensed something wasn't right, so he called in from a lineside phone. "Hello, dispatcher . . . this is Conductor Pierson – First No. 1, Engine 302. . . . We're at Quartz. Say, when we went through Tunnel 10 a few minutes ago, we smelled smoke, and it wasn't engine smoke . . .

It seemed like a different kind of smoke — maybe like some wood burning. . . . Yeah, I know Schneitman . . . you say he's got his B&B gang at Crescent? . . . That's at milepost 31.08 . . . 2 miles west of here. . . . OK . . . Yeah, I'll tell him to get down there pronto . . . just as soon as I hit Crescent. . . . He's got a pretty fast motor car — ought to make the 3½ miles to the tunnel in nothin' flat. . . . OK, you're welcome. . . . Thought I'd better play my hunch, be on the safe side, you know . . . OK, goodbye."

Back in the cab, J. A. Pierson told his

Plain, the first siding east of Tunnel 10 (a distance of 3 miles) became the headquarters for the men and equipment that repaired the burned-out bore. Perched on the edge of the Front Range, the location enjoys a sweeping view of the flatlands to the east.

On- and off-track equipment stands outside Tunnel 10's west portal during the early stages of the repair work. Most resources were brought in from the Denver end of the tunnel. Behind the photographer about 300 feet is Tunnel 11.

engineer, "All right, Vaughn, gun 'er — dispatcher wants us to meet Schneitman's B&B outfit at Crescent and get him down to Tunnel 10 as soon as possible."

It was 11:40 a.m. Monday, September 20, 1943. Engineer A. E. Vaughn started highballing his three-car passenger train up the 2-percent grade — and he was really gunning his 36-year-old Ten-Wheeler.

Back in Denver, there was commotion in the office of J. B. Culbertson, chief dispatcher of the Denver & Salt Lake Railway. A trick dispatcher, F. D. Stephenson, who covers the east end of the D&SL, where Tunnel 10 is located, dashed across the hall to the office of A. L. Johnson, veteran of 26 years with the D&SL, including the past 17 as general superintendent. Johnson was about to leave for lunch when the dispatcher advised him of the reported smoke in Tunnel 10.

"Guess I'd better stick around a while 'til we hear from that B&B gang," he said. "Flash me as soon as you hear, will you?"

At 12:20 p.m., Johnson's phone rang:

"Mr. Johnson, this is Burt Schneitman at Quartz. . . . Tunnel 10 is blazing like fury! . . . Yes, sir. . . . And there's two engines with fire hoses at Crescent. . . . Yes, sir . . . right away!"

Johnson let loose with a barrage of orders to the dispatchers: "Stop all trains in the vicinity of Tunnel 10 and turn them back! . . . Get every man available to the fire! . . . Get all the water cars you can from east and west!"

Thus began what was to be the greatest traffic emergency in the history of the D&SL, as well as of the Denver & Rio Grande Western, which uses the 128-mile stretch of D&SL line between Denver and Orestod for operation of through trains between Denver and Salt Lake City.

The joint line, from Denver to Bond (a mile west of Orestod), carries a volume of traffic that is among the heaviest of any comparable area in the West. With heavy war freight, the job of avoiding delays in the emergency was monumental.

Feeble first efforts

Fanned from portal to portal of the 1,570-foot tunnel by terrific drafts, the flames, of unknown origin, leaped from section to section of the 1,129 feet of 12x12 timbers. They soon created an inferno that made the first effort of fire fighters feeble, indeed.

Johnson learned from the dispatcher that two engines were at Crescent; one had brought a work extra there, the other had arrived light. Knowing that all D&SL engines are equipped with a fire hose as precaution against forest fires, he ordered both engines to hasten to the tunnel and lend what assistance they could until further help arrived.

A Rio Grande GE 44-ton diesel shuttled equipment into and out of the tunnel. This view is east of the bore, where special tracks were built to accommodate outfit cars for workers.

Men are busy shoveling gravel as cars filled with material arrive at Tunnel 10's west portal. Workers from a nearby water tunnel construction project assisted railroad crews.

Workers erected a steel arch framework at the western entrance to the fire-damaged 1,570-foot tunnel.

Bulldozers "mucked out" tons of loose rock in the burned portion of the tunnel. Note the rock that was charred by the tremendous heat in the crown of the bore.

The fire came at the height of D&SL's sheep-movement season, so the railroad arranged for 31 trucks to carry the animals from special pens at Rollinsville to stockyards in Denver.

Meanwhile, Johnson contacted storekeeper William Chappel at Utah Junction, near Denver, and within two hours Chappel had assembled and delivered a trainload of needed lumber and a relief train.

Immediately upon word of the severity of the fire, Johnson and the dispatchers had a stream of men en route to the tunnel together with water cars, fire hoses, and other equipment, much of which was assembled by the Rio Grande.

The emergency threw a wrench into the day's traffic machinery. West of the tunnel were D&SL train 2, the daily passenger local from Craig, which had to be turned back at Pinecliff ("Cliff" on the railroad); two long Rio Grande freights, which were turned back for detour over D&RGW's Royal Gorge Route to Denver; and two light engines. Rio Grande train 6, the *Exposition Flyer* from California was ordered detoured via the Gorge before it reached Bond.

A long D&SL stock train was turned back from Pinecliff to Orestod and transferred to the Rio Grande for detour via the Royal Gorge to Denver.

On the east side of the tunnel were two D&SL military specials, which were quickly sent back to Denver for rerouting over the Rio Grande; two freight extras; and eight other trains to be detoured.

Because of the sudden rush of traffic on the gateway, one group of enginemen received orders to hasten from Bond to Pueblo, and boarded a night passenger train for the trip. With no available seats in the Pullman or coaches, they crowded into the baggage car and sat on everything from bird cages to egg crates.

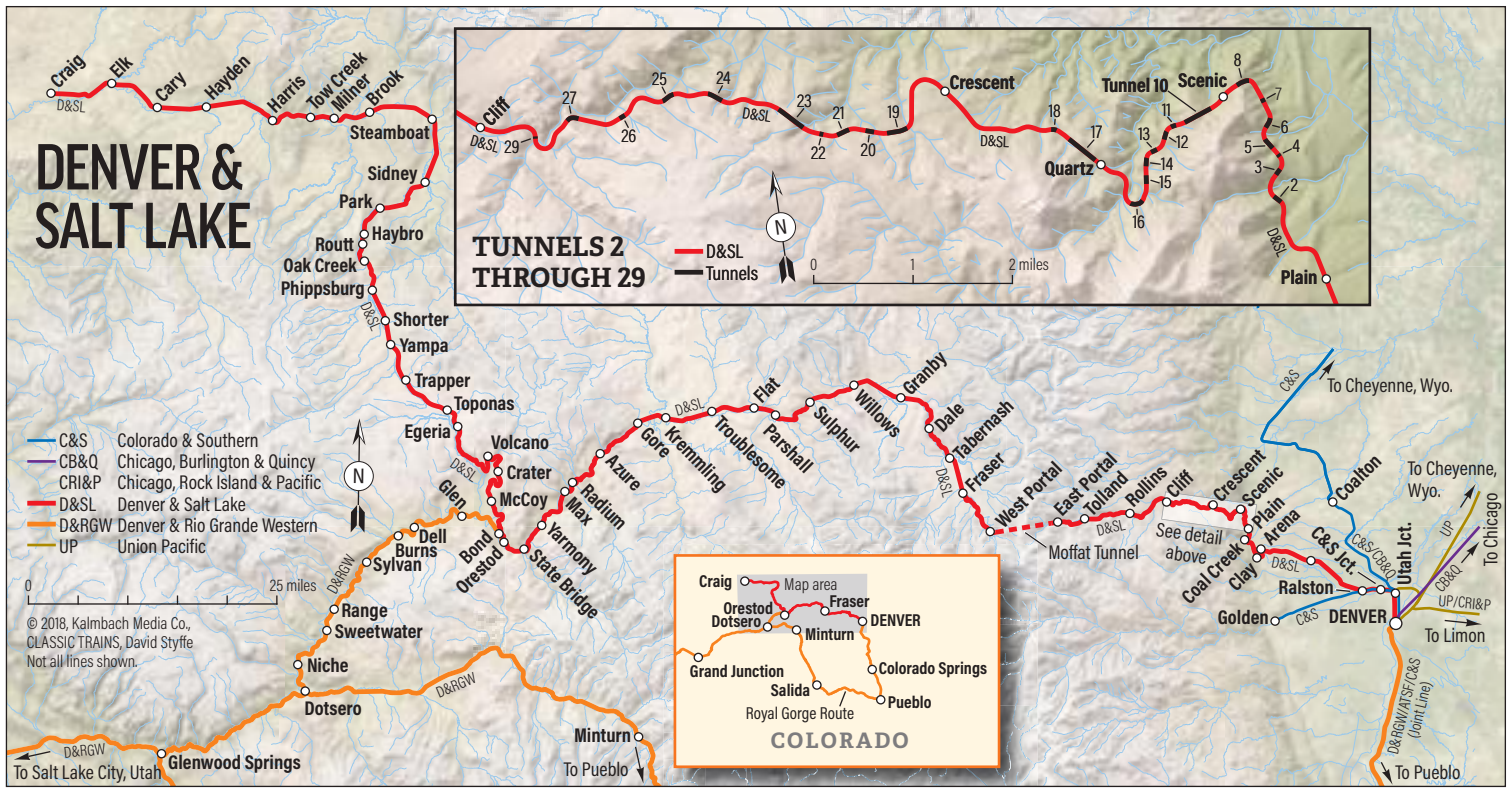
Speculation as to when the fire could be extinguished and the tunnel reopened ranged from a few hours to several weeks as the train and engine crews swarmed about the eating houses at Bond that night. No one realized the magnitude of the task ahead — or that it would require nearly 2½ months to restore normal operations.

175-mile detour

From the afternoon of September 20 until the afternoon of December 1, the D&SL operated its trains only between Pinecliff and Craig, and Rio Grande trains used the Royal Gorge as a detour. It meant that every train that normally uses the famous Moffat Tunnel and Dotsero Cutoff to Salt Lake City had to detour over the route via Pueblo and Salida — 175 miles longer.

To the D&RGW, it meant the greatest rush ever experienced in the Pueblo yards, as well as at many other points on the Royal Gorge Route. The fire came as traffic over both the D&SL and Rio Grande was approaching its seasonal peak. Furthermore, both roads were hard-pressed for the type of workers necessary to restore Tunnel 10.

Reflecting the sudden traffic jump



With the concrete lining in place, but some wood framing and rock yet to be removed, track crews spike down new steel inside the tunnel. Thousands of miles from the front lines, these men are doing their part for the war effort.

Concrete mixers mounted on improvised platforms (above) provided material for the tunnel's new lining. Portable generators (below) supplied electricity for the mixers and other equipment.

through the Pueblo gateway, a total of 18,184 cars were successfully handled there through the joint Rio Grande-Missouri Pacific yards within six days after the detouring of traffic, compared with 12,741 during the six days just prior to the detour. This was an increase of 32 percent, all handled by the same number of employees, switch engines, and other facilities as were in service there before the fire.

Notably at Pueblo, Canon City, Salida, Tennessee Pass, and Minturn, Rio Grande employees worked long hours, often around the clock, to keep traffic moving until relief workers could be dispatched to their aid. Numerous D&SL employees were sent to the rescue in handling the Rio Grande problems at many points.

The fire raged out of control for several days despite locomotives and a Denver Fire Department pumper pouring water into both portals. Firemen were further handicapped by heat within the tunnel, heat so intense that rock was reduced to molten lava and slag. Workmen were compelled to fight the blaze in 10-minute shifts day and night, because of the blistering temperature of the tunnel's rock walls.

The blaze turns deadly

Another problem was that of carbon monoxide gas caused by the burning timbers. Workers were issued gas masks during the early stages of the fire. Despite precautions, three city firemen died from asphyxiation when they ventured too far into the tunnel.

By the afternoon of the second day, the fire was confined to a timbered section about 275 feet inside the east portal, and the area was found to be one-third full of debris, including rocks that fell when the timbers burned away.

Quick action by D&SL President Wilson McCarthy, Vice-President E. A. West, and Chief Engineer A. E. Perlman in obtaining outside manpower and equipment enabled the repair job to get into full swing the day after the fire.

"We knew we would have to procure more trained tunnel workers and that such workers were employed on the Big Thompson Water Diversion tunnel not far from the scene of the fire," said McCarthy.

"We stated our case to L. A. West, regional head of the War Manpower Commission; to S. O. Harper, chief engineer of the U. S. Reclamation Bureau, and his assistant, Walker Young; and to John Austin, general superintendent of the Lewis J. Stiers Construction Co., which is under contract to build the western end of the Big Thompson project. All were anxious to cooperate, and next morning the veteran tunnel builder, John Austin, was on the job with 100 men. The importance of this graciousness and the patriotic spirit that


1148

Business as usual: An eastbound Denver & Salt Lake freight enters Moffat Tunnel with 2-6-6-0s fore and aft. The Denver & Rio Grande Western absorbed the "Moffat Road" in 1947.
Forest Crossen

Rio Grande 2-8-0 No. 1146 helps 2-8-8-2 No. 3406 lift 27 cars upgrade between Tunnels 16 and 17 in July 1938. Just over five years later, a fire in Tunnel 10 would shut down this vital line.
Henry R. Griffiths Jr., Jim Griffiths coll.

prompted it cannot be minimized. With this large force of additional workers, the time required to restore the tunnel was greatly shortened."

Special types of generators, mucking machines, and heavy equipment were obtained from various construction firms, mines, and municipalities in Colorado, Utah, Idaho, and New Mexico. A number of independent heavy contractors furnished special equipment, and some of it came from southern states.

A giant diesel generator arrived in a few days to furnish adequate light and power for the extensive job. A carload of air pipe to provide better ventilation for workers and other needs arrived a few days later.

In addition to all B&B-outfit cars available on the D&SL system, a total of 24 were delivered to the vicinity of the tunnel by the Rio Grande to accommodate the three shifts of workers.

Sheep season

The biggest traffic problem created by the emergency was the arrival of the peak of the autumn sheep-marketing season in D&SL territory. The railroad built temporary loading pens along the right of way at Rollinsville in order to effect the transfer of sheep from stock cars to double-deck trucks for the remainder of the trip to Denver. The pens were sufficient to handle as many as 8,500 sheep every 24 hours, and a fleet of 31 trucks, rounded up from all sections of Colorado by Rio Grande Motorway, a subsidiary of the D&RGW, averaged two round trips each daily over the 54-mile Boulder Canyon Highway from Rollinsville to the Denver Union Stockyards.

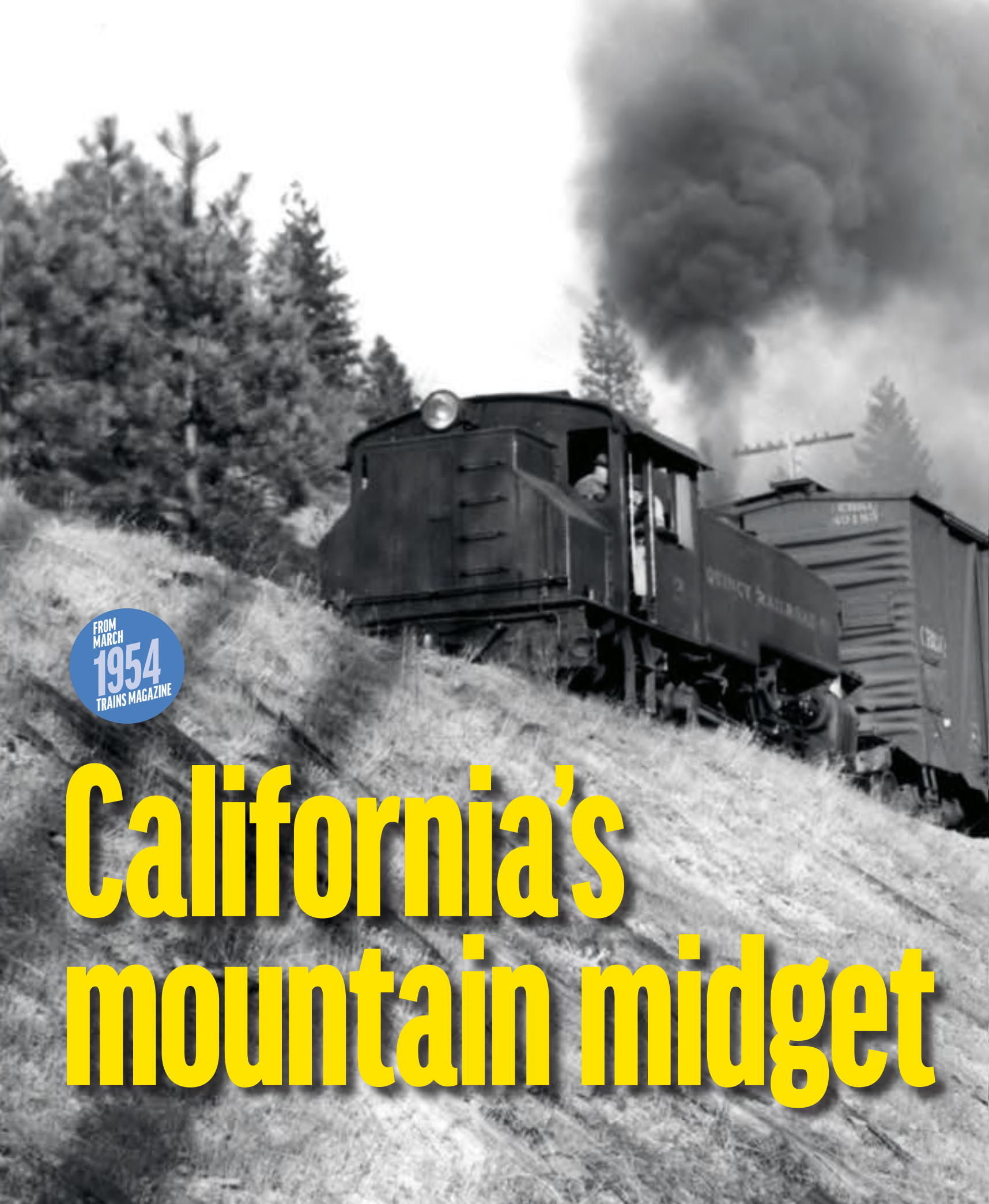
Despite this handicap, a total of 110,130 sheep and lambs billed via D&SL were delivered to market between September 28 and October 17.

It was not until November 3 that a "pioneer bore" was pushed through the slide area of the tunnel to permit circulation of air and the movement of men and materials back and forth from portal to portal. The following day, workmen started erecting the first steel framework needed for support. Two days later a material track-spur was in operation, and on November 12 carpenters began building forms for the concrete lining. All of the tunnel, except approximately 600 feet of solid rock bore, was to be concrete-lined, similar to the lining of the 6-mile-long Moffat Tunnel.

At 4:53 p.m. December 1, Denver & Salt Lake passenger train No. 1 passed through the rebuilt tunnel, and traffic of both roads quickly returned to normal. The important route was back in business.

CASCADE TUNNEL CATENARY What better way to ride a mountain railroad than on an open observation car? This September 1950 view from the rear of Great Northern's Wenatchee–Seattle *Cascadian* shows the train's eastbound counterpart in the siding at Monitor, Wash., 7 miles west of Wentachee in GN's 70-mile electrified district that included the 7.79-mile Cascade Tunnel. *George Krambles, Krambles-Peterson Archive*

ROYAL GORGE ROUTE On a fine September 5, 1953, Denver & Rio Grande Western's westbound *Royal Gorge* snakes through its namesake canyon carved by the Arkansas River. Pullman and Missouri-Kansas-Texas sleepers trail the train's regular D&RGW cars. Ahead are the 3-percent grades of Tennessee Pass, at 10,212 feet the highest mainline railroad in the nation. *George Krambles, Krambles-Peterson Archive*



FROM MARCH 1954 TRAINS MAGAZINE

California's mountain midget

Quincy Railroad 2-6-2T No. 2 pulls hard on the 4-percent grade up to the Western Pacific interchange at Quincy Junction in 1942. The little road lacks turning facilities, so its locomotives operate in reverse half of the time.
Arthur L. Lloyd

SIX MILES IN A BUCKBOARD WAS TOO DURNED FAR, SO THE CITIZENS OF QUINCY, CALIF., SPIKED DOWN THEIR OWN RAILROAD IN 1910 — AND THEY'RE STILL BEING REPAID FOR THEIR EFFORTS

By **W. H. Hutchinson**

The Quincy Railroad is still called the Quick & Windy by old-timers in California's High Sierra — the old-timers who helped to build it and who remember riding on its first passenger train 44 years ago. The old name comes easily because the road is virtually unchanged since it was built — 5.368 mainline miles of undulating 50- and 52-pound rail — "s'posed t'be 55" — plus 2.379 miles of spurs and side tracks clustered close to the home terminal.

One end of the line hangs on the side of Mount Hough at Quincy Junction, a point on the Western Pacific main line originally called Hartwell. The rails drop away from here in a mile of 4 percent, a straight *schuss* of track, and snake across the verdant meadows of American Valley to nestle just off the main street of Quincy. Here a frame building provides freight shed, depot, and general offices — with an engine shed-and-shop nearby. A 2-6-2T sleeps quietly in the shed with a GE 44-ton diesel switcher. Two Fairmont motors, a homemade weed burner, and a 40-foot tie flat comprise the section gang's equipment and complete the roster of the Quincy Railroad's physical assets. The undepreciated asset that shows on no balance sheet of this Class III pike is its birth out of necessity and its record of filling that need ever since.

Quincy, population 3,251, is the county seat of Plumas County, one of the most scenic regions of the Sierra Nevada. Trout and deer abound here; the high mountain meadows provide summer grazing for large-scale livestock operations; the pine and fir and cedar forests sustain the county's economy. And the lure of unfound gold, chrome, and manganese still beckons the adventurous a century after the Forty-Niners abandoned paying claims elsewhere to search this area for a lake whose beach sands were said to be tiny nuggets of pure gold. The fabulous lake was a chimera, but the men who broke down the brush looking for it found other, more enduring values.

One of these was American Valley, a bowl-shaped depression, girt by forested slopes on all sides. The valley's elevation was less than 4,000 feet, comparatively sheltered from winter's fury, and the meadows stayed green all summer; a man could cut enough hay off his land to feed his livestock through the winter. The gold-seekers

The Two-spot switches cars at Quincy Lumber in 1942. Note the rerailing frogs on the pilot deck of the 1924 Alco.
Arthur L. Lloyd

settled down as a township of Butte County, whose county seat, Oroville, was 60 miles to the west where the Feather River breaks from the mountains into the rolling Sacramento Valley. The year after the first settlement, a wagon road inched its way to Oroville.

Following the climbing grade of Spanish Creek through Meadow Valley, the road pitched over its summit under the 7,000-foot mass of Spanish Peak, and snaked down the spinal ridge to Bidwell Bar and Oroville. This was Quincy's link — the county's link — with the outside world for 85 years and this link was no stronger than the weather.

In summer the road was hub-deep in powdery dust, granite on the higher reaches, red pumice lower down. In winter the snow was belly-deep to a tall teamster standing on a pine stump while he fastened snowshoes on himself and his horses or mules. In rain or thaw the road would bog down a saddle blanket. The mountain people accepted this situation as a condition of survival. They knew how to cope with it and they did, until the Western Pacific selected Feather River's North Fork canyon as the route of its line from Salt Lake City to San Francisco Bay.

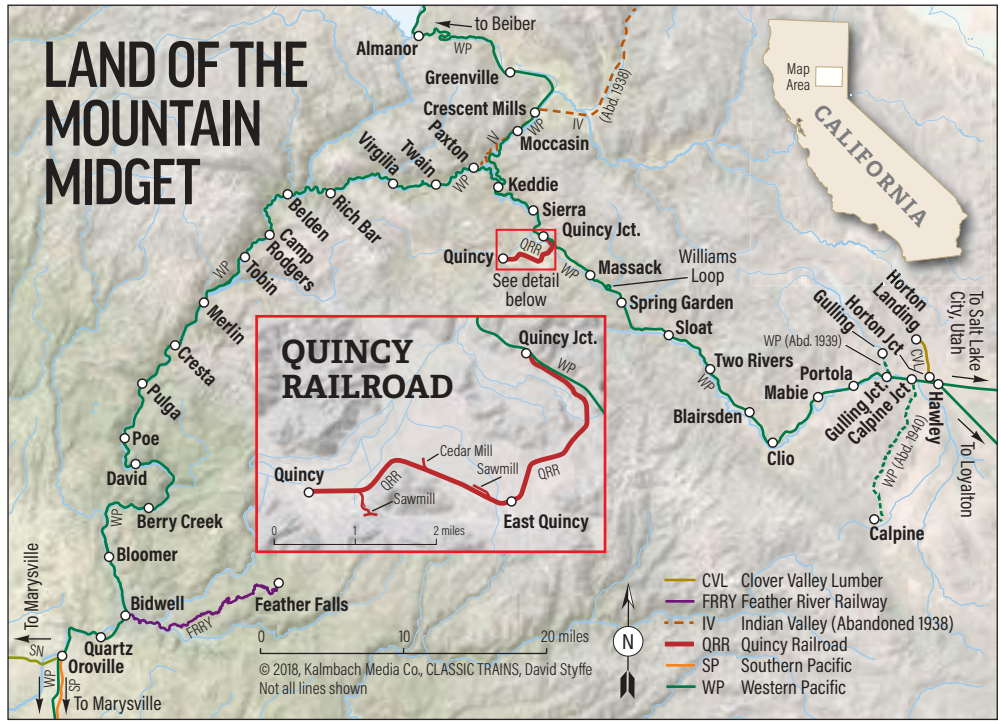
Linking to the WP

The survey and construction crews brought a surge of prosperity to Quincy. They brought, too, the sure knowledge that when the WP was completed the folks in Quincy would be a mere 6 miles from the winding rails that reached outside, no matter what the weather. Quincy's inhabitants decided that 6 miles was too doggoned far in sleigh or wagon or buckboard. They decided to build their own railroad to the Western Pacific.

The talk simmered along through 1908, while a couple of big-city promoters from San Francisco tried to milk the proceedings and got a dry pail for their pains. On July 8, 1909, the people of Quincy totted up $55,000 in subscription notes to their own railroad and passed a resolution authorizing their board of directors to begin construction of a railroad, the Quincy & Eastern Railway, to connect their town with a point on the WP called Hartwell. They also resolved to complete construction on or before January 1, 1910. Then with a fine sense of community interest they went to work — not hiring the "foreign" laborers imported by WP who worked for $1.80 a 12-hour day, but employing their own fellow citizens who asked for, and got, $2.50 for the same day.

Q&E's rail came off the ties of the Boca & Loyalton, which surrendered part of its right of way to the WP when the big road came through, although one contemporary account maintains that some of it came from Southern Pacific's Woodland–Red Bluff branch when that section went to 70-pound steel. No matter whence it came, the names in the rails that roll the Mountain Midget today bring a prickling up the spine, for this is the rail that built the West: JOLIET 1886 . . . CAMBRIA 1875 . . . A&RI&S CO 1876 STEEL.

GE 44-tonner No. 3 works the interchange at Quincy Junction, milepost 288 on the Western Pacific main line from Oakland. The third locomotive in the Quincy's history, and the first diesel, it arrived in 1945.
Mac Lefebre



For rolling stock, Quincy & Eastern's organizers purchased two flatcars and a combine from the SP. Somewhere along the way they acquired a caboose. For motive power, they went to Alco for a new, oil-burning 0-4-4T, road No. 1, outshopped in March 1910. By the time she was delivered, all was in readiness, including a new corporate name, the Quincy & Western Railway.

Q&W made its first revenue run with freight and passengers on June 15, 1910, but since the WP had not yet begun through passenger service, the real celebration was reserved for August 21, when WP's first through westbound varnish reached Hartwell. It was met by a Q&W special, comprising all the road's rolling stock save the caboose. The flatcars were decorated with patriotic bunting, the Quincy Band played martial airs, and Arthur W. Keddie, the "father of the Western Pacific" and a Q&W director, delivered the welcoming oration. Newsmen and WP officials off the big train rode to Quincy on the special, participated in a parade down Main Street, and returned to Hartwell in style. Thereafter, the Quick & Windy settled down to its job.

The little line broke the bonds of isolation. It delivered dry goods and wet, groceries, seed, feed and fertilizer, mining machinery, farm equipment, everything that Quincy and the mountain country needed. And it did the job cheaper than wagon freight. It provided daily passenger connections with the WP. It fed the growing output of Plumas sawmills into the economic blood stream of the nation, with No. 1 huffing mightily to push two loaded cars up that last mile of 4 percent.

But in 1917, the Quick & Windy did what the One-spot had never done. It lay down and died — of pernicious anemia of the exchequer. The citizen stockholders of Quincy knew what the road meant to them and their children, to their friends and neighbors, but they could no longer feed the deficit fires with ready cash. Fortunately, their road had become too important to perish.

The F. S. Murphy Lumber Co. depended on the railroad to move its product to market. Murphy acquired the Q&W, reorganized it, changed its name to the Quincy Railroad, and sold shares in the new company to such local citizens as still wanted a stake in their pike. Of the 300 shares outstanding, approximately 10 percent were sold outside the lumber company. When the Murphy holdings were sold in 1926 to the Quincy Lumber Co., the railroad was not purchased by the corporation but its stock was purchased by the same individuals. Despite the Murphy company's control, the road was operated as a public service with Murphy regarded as just another good customer. The same practice applies today.

A 2-6-2T arrives

New motive power came to the Quincy in the shape of No. 2, an Alco side-tank 2-6-2, outshopped in December 1924 and delivered just in time to tackle the Quincy's biggest job. This job was Pacific Gas & Electric's construction of a power-storage reservoir system at Bucks Lake, down the old road to Oroville, over the summit from Spanish Creek headwaters. The work took from 1925 to '27, and all the cement, aggregate, construction equipment, and supplies came in over the Quincy to be transshipped to freight teams and steam-traction engines. The biggest single load in the Quincy's history came during this work; it was a 221,000-pound Marion shovel, which was no mean feat for 52-pound rail and the Two-spot's maximum tractive effort of 21,400 pounds. To handle the passenger traffic occasioned by the construction work, the Quincy evolved a weird and wondrous contraption with a colorful nickname.

The Galloping Goose was a gasoline engine installed on a homemade frame that gave motive power to the ex-SP combine. This gave the Quincy the possibility of two trains on the line at once but posed no dispatching problems, for a private telephone line from the depot to the junction let everyone know where he stood. Also, there is nothing that can be called a blind curve on the whole main line. Despite these factors, the 2-6-2T and the Goose met in the one and only cornfield meet in the Quincy's history. The collision left the Two-spot essentially undamaged, while the Goose required extensive repair. But later when its main drive shaft broke, it was retired, and bus and truck transportation took over the passenger, mail, and express hauls. A modern station wagon today provides thrice-weekly connections for passengers and express with WP local trains 1 and 2, while all mail comes into Quincy by contract truck carrier.

After the Bucks Lake reservoir job was over, the Quincy resumed its routine of bringing merchandise in and moving lumber out. When the Feather River highway, State

Left: VIPs, newsmen, a band, and others fill the Quincy & Western's inaugural train, pictured alongside the Western Pacific at Hartwell (later, Quincy Junction) on August 21, 1910. Above: Q&W's first engine, 0-4-4T No. 1, powered the special.

Left, Western Pacific; above, C. W. Witbeck collection

Route 24, got into the earth-moving stage, the Quincy helped haul the raw materials that would erode its own prosperity. When the highway was completed in 1937, at a cost approximating $100,000 of taxpayers' money per mile, rail shipments into Quincy settled down into their present status: "From a little to a little less," as Superintendent L. H. Thayer describes it.

Men of Quincy

Mr. Thayer completed 30 years of service on the Quincy — and almost a half century of mountain railroading — last year. He started with the Colorado Midland in 1904, and worked that road, the Rio Grande, and the WP, always traveling west. He was WP's car distributor in Sacramento when asthma and valley heat combined to prescribe a year's leave of absence. He joined the Quincy in 1923, just in time to learn his road before the deluge of Bucks Lake traffic. "It's better for my sinus here," he says with a twinkle in his eyes. Other attractions include mining claims, the lure of high country, and the undeniable fact that running a whole railroad on your own is a job that is hard to beat.

The men who work with him feel the same way. His four-man train crew — engineer Solon F. Luzadder, conductor Jean Hilton, brakeman Harry Dailey, and combination hoghead, extra shack, and master mechanic Frank McCollum — think no more of stopping to rescue mired livestock along the line than they do of working around the clock to keep the line open when snow falls or when the streams that make American Valley a summer meadow overflow the line. The office force — agent Orville Meyers and Andy Anderson, an ex-SP freight conductor — take care of the paperwork, help load and unload merchandise freight, and go out on the line when emergencies call. A four-man section gang and Frank Sullivan in the shops complete the Mountain Midget's crew: 12 men who know what they are doing and like it.

The last complete annual figures for the Quincy look like this: Interline traffic originated totaled 1,646 cars of lumber and forest products, 2 cars of manufactures and miscellaneous, and 390,000 pounds of less-than-carload freight. Inbound, the Quincy received 372 cars of petroleum products, mostly tank cars, 50 cars of road mix and aggregates, 77 cars of manufactures and miscellaneous, 229 LCL merchandise cars, and enough empties — in addition to the merchandise cars — to handle the outbound traffic. To do this, they operated 6,768 freight locomotive-miles, 15,024 loaded freight-car miles, and 11,028 empty freight-car miles. Normal operating routine calls for two freight trips a day, six days a week, to Quincy Junction and return, but this does not explain all that the Quincy does.

The road's major customers today are three large lumber mills, two bulk-oil distribution plants, the U.S. Forest Service, and the state highway department. Any time one of these customers wants switching service, cars spotted, the loading docks cleared, in addition to the regular twice-daily service, he gets it. This friendly, small-town service may explain why a planing mill, a molding mill, and a pencil stock factory have all located at Quincy in preference to other sites in the area. It helps to explain, too, why so many of the petroleum products consumed in the Plumas area come into Quincy by rail. The rate is cheaper, admittedly, but not enough cheaper. What counts seems to be the fact that the men who own or manage the bulk plants are their own salesmen and their own delivery men to the customers they sell. A tank car that can and will be spotted, held, or shifted as desired avoids waiting, avoids losing sales and delivery time while a tank truck and trailer beats its way up the canyon and has to be unloaded without delay whenever it arrives.

Hometown hero

Another mark of the Quincy's hometown status is its unfenced right of way. Some ranchers have fenced their fields, true, but the railroad has done none itself. "If we hit a cow we pay for it," and no one in American Valley has yet tried to upbreed a range animal into blooded stock after the fact. Considering that Western Pacific can never expect competition for the Quincy's interline originations, the relations between the two are a tribute to both parties — well represented in a news item in Quincy's paper, the *Feather River Bulletin*, during the big snow of January 1952.

The newspaper had a new reporter, one new to Quincy as well. The wire service clips, the radio waves, the metropolitan dailies, all were filled with SP's climactic battle on Donner Summit to free the streamliner *City of San Francisco* [see page 98]. The reporter called the Quincy to find out how they were making out.

"We're open," said Mr. Thayer. "Made four round trips to the Junction last night with No. 2 doubleheading behind the Three-spot."

"How about Western Pacific?" asked the reporter.

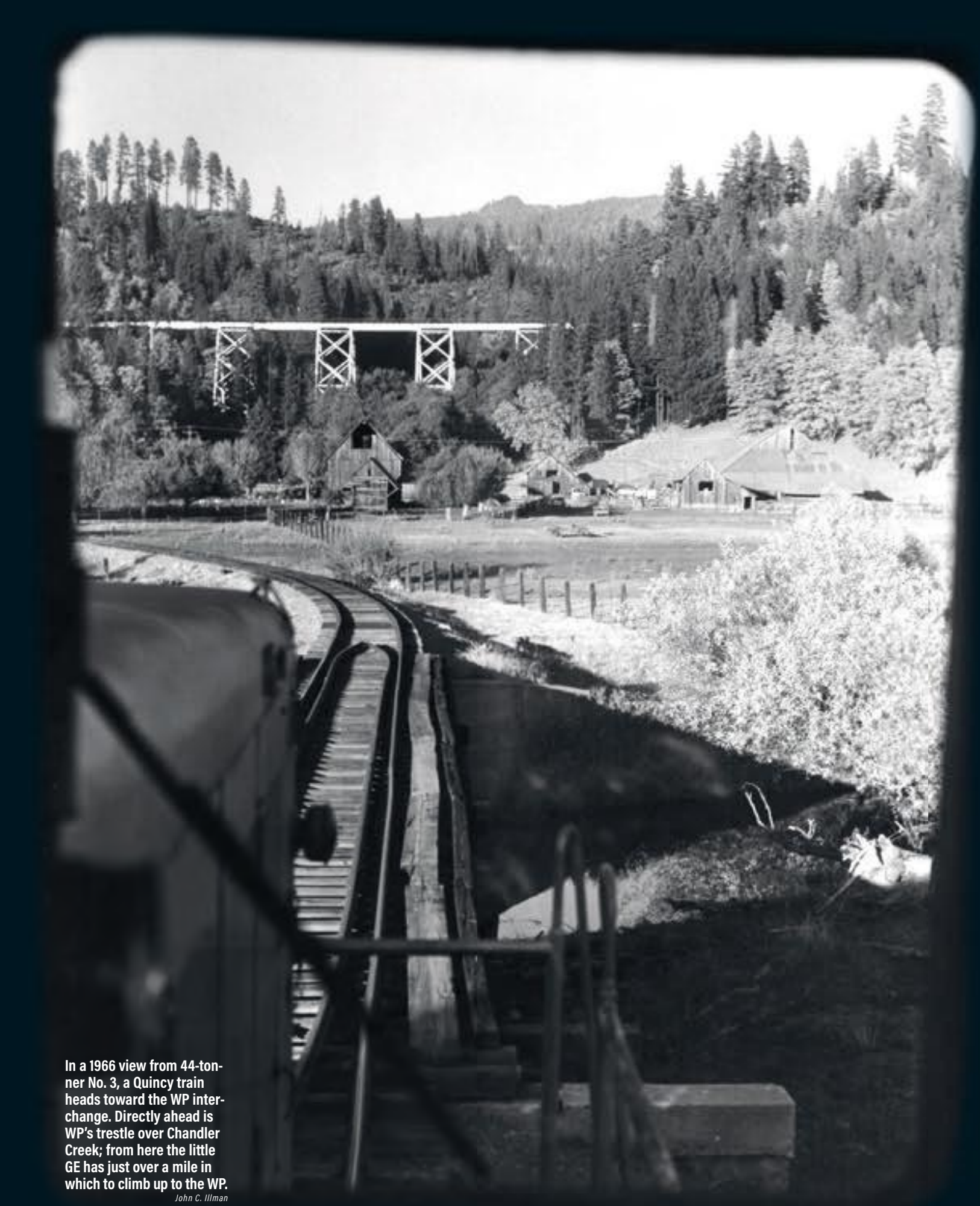
"They're plugged," said Mr. Thayer, neglecting to mention that the blockage was a rock slide down the canyon and not snow.

"Are you going to lend them any equipment, or help out?" asked the reporter.

"We sure will if they ask us," said the Quincy's superintendent, figuring that even a cub reporter would know the minimal news value of his remark. But it was printed just that way.

So the Quincy goes its short and friendly way, serving its community, hospitable to all comers from railfans to the children of summer vacationists. So long as the timber stand holds out, it seems likely to endure. And with Forest Service regulations making for "sustained cut" operations, with the major market for the annual lumber output being in the East, the sound of Solon Luzadder's special whistle as he brings the afternoon trip in from the junction is apt to echo across American Valley for some years to come. That whistle simply tells the train crews' families that it's time to get dinner on the table.

THE QUINCY RAILROAD still runs, though reduced to 3.3 miles out of Quincy Junction. Two engines on its roster in 1954 survive along the ex-WP in California, 2-6-2T No. 2 at the Niles Canyon Railway and 44-tonner No. 3 at the Western Pacific Railroad Museum, Portola.



In a 1966 view from 44-tonner No. 3, a Quincy train heads toward the WP interchange. Directly ahead is WP's trestle over Chandler Creek; from here the little GE has just over a mile in which to climb up to the WP.
John C. Illman

MOUNTAIN RAILROADS IN PHOTOS

OAKLAND HILLS Sacramento Northern had lots of mileage in the table-flat Delta region, but to reach Oakland the interurban had to cross San Pablo Ridge, which it pierced by means of 3,400-foot Shepherd Pass Tunnel. Freight trains routinely got rear-end helpers in both directions, as in this early-1950s scene of a westbound between Moraga and Valle Vista. Passenger service ended here in 1941, freight in '57. *Linn H. Westcott*

FROM NOVEMBER 1984 TRAINS MAGAZINE

SA

At Melrose, N.C., F7s approach the bottom of Saluda Grade with a freight in the early 1950s. Safety Track No. 2 heads toward the photographer while the main track diverges to the right.
Linn H. Westcott

LUDA

America's steepest mainline grade challenged generations of Southern Railway men

By **Frank Clodfelter**

The nation's steepest standard-gauge mainline railroad, over Saluda Mountain, is a part of the Southern Railway's Carolina Division, with headquarters in my hometown of Asheville, N.C. This division, extending from Charleston, S.C., to Asheville, ranges in terrain from sea level to the highest mountains in the East. Asheville sits in a bowl surrounded by the Appalachian chain of mountains; a few miles west lies Great Smoky Mountains National Park. This western North Carolina region has 223 peaks higher than 5,000 feet in elevation and 49 above 6,000 feet. Nearby Mount Mitchell, 6,684 feet, is the tallest mountain in the eastern U.S.

Railroading for locomotive engineers in such a setting presents many problems, such as inordinate slack action, the balancing of a train over Saluda Hill, and proper use of dynamic brakes in conjunction with the air brakes to prevent a train from stalling or running away.

Asheville is served by only one railroad, the Southern, with four routes converging on the city:

1. Asheville–Spartanburg, S.C.: The timetable lists the distance as 67.4 miles to the freight yard at Hayne, S.C, adjacent to Spartanburg on SR's Washington–Atlanta main line. The route's most notable feature is Saluda, 32.3 miles south (east by timetable direction) of Asheville. Publications for years have described Saluda Mountain as having a maximum grade of 4.7 percent, although the slope actually reaches 5.1 percent for 100 feet.

2. Asheville–Salisbury, N.C.: This run is 141 miles east to the old Salisbury station and 8.8 additional miles north to the new Spencer Yard on the Washington–Atlanta line. The maximum grade is 2.2 percent over the Blue Ridge Mountains between Old Fort and Ridgecrest. This 12-mile stretch is generally regarded as the most scenic portion of Asheville's four rail outlets. The track curls back on itself to gain elevation, passes through seven tunnels, crosses Mill Creek 11 times, and rounds a vast horseshoe curve overlooking a spectacular geyser.

3. Asheville–Murphy, N.C.: Balsam Mountain, with a 4.3-percent grade, and Red Marble Mountain, with its 4.2-percent grade up the Nantahala Gorge, are close rivals of Saluda Mountain. The Murphy Branch is non-signaled territory that we railroaders term the "wagon-wheel line" of the Carolina Division. In a race with the Louisville & Nashville to reach Murphy, the railroad was hastily constructed along ancient Indian trails or cow paths. During steam days, only small engines such as Consolidations were used because of restricted bridges, curvature, and light rails.

4. Asheville–Knoxville, Tenn.: This is the water-level route along the French Broad River and the gateway to points west such as Cincinnati and Chicago.

One choice: straight up

Many people wonder why a railroad as steep as 5.1 percent was built up Saluda Mountain at all. You will discover the answer if you drive through the rolling hill country around Landrum, S.C., and look at the wall of mountains that rise abruptly to the west. You will notice that the vertical range of the Blue Ridge Mountains is devoid of the usual foothills or cross crenelations. From Melrose to Saluda there is no way to gain elevation by winding around foothills or having the rails wind back and forth as SR predecessor Western North Carolina Railroad managed between Old Fort and Ridgecrest.

This was the problem confronting Capt. Charles W. Pearson, late of the Confederate Army, when he assumed the task of building a railroad from Tryon to Asheville in 1877 for the Spartanburg & Asheville Railroad.

The original survey of the first railroad to crest the Blue Ridge Mountains from the south ran via Columbus, N.C., and along Tryon Mountain, cresting at Howard's Gap (opposite Saluda Gap). Col. Thad S. Coleman was chief engineer in charge of relocating the route of the railroad from Spartanburg to Asheville, with Pearson as assistant engineer.

Coleman and Pearson abandoned the original survey because of the estimated costs of building tunnels and about 13 extra miles of track. However, the chief factor in seeking another route was the unstable condition of the mountain, which was continually slipping. Pearson was appointed resident engineer for the Spartanburg & Asheville when actual construction was started in 1877. He had no choice except to build the railroad straight up Saluda Mountain.

The mountain began to take its toll soon after the first train negotiated the grade on July 4, 1878. In 1880, 14 men were killed on Saluda; in 1886, a runaway work train killed 6 convicts, 2 guards, and a foreman; in 1890, 3 men lost their lives; and in 1893, 3 more were killed and another lost a leg. This last wreck, which occurred at the first steep curve east of Melrose, was a mass of coal, steel, timber, and a carload of cattle, and the curve has since been known as "Slaughter Pen Cut." Loss of life and property on Saluda was the most serious problem that faced the Southern Railway

Forty-two years separate these views west from the U.S. Highway 176 bridge at Saluda. In 1938 (left), 2-8-8-2 4055 storms toward the crest of the hill with a train out of Asheville. In 1980, the mid-train "slave" units of an empty coal train approach the depot while the head-end units round a curve in the distance.

Two photos, Frank Clodfelter

when it was organized on July 1, 1894.

The Southern made a survey to determine if another route avoiding Saluda Mountain was feasible. The survey proved that Pearson was correct: he had no way to build a railroad except straight up.

The runaways of 1903

Discouraged by the loss of life and equipment on Saluda, the Southern was searching for a solution to the problem when three more runaways occurred in 1903.

W. P. "Pitt" Ballew was involved in the first. A veteran of the hill, he became a locomotive engineer in 1899. Ballew may have been small in stature, but what he lacked in size he made up in steel determination to conquer his favorite run out of Asheville. He became a legend in his own time, and to his contemporaries he was downright colorful. He wore a black Dunlap hat with the fine polished look of an aristocrat.

Ballew, who died in 1940, explained his runaway trip: "I'm not superstitious, but it sure pays to keep a wary eye on [the] number 13. We left Asheville with engine No. 440 on July 13, 1903, and we had 13 cars of Interstate coal next to the engine, two merchandise cars, and a car of eggs next to the hack.

"When we started down the mountain," Ballew continued, "I made an application with the automatic brake, and to my surprise I heard only a faint hiss of the brakes instead of a sharp exhaust to indicate that the brakes were being applied to all the cars.

"I [whistled for] brakes to warn the trainmen who were riding the tops of the cars to tie up hand brakes. Fireman Bob Daugherty and brakeman Jim Halliburton swung off the train when I shouted that we had no air and the train was running away."

Loss of life and property on Saluda was the most serious problem that faced the Southern Railway.

Conductor R. C. Ervin caught the caboose east of the station, and when he felt the momentum of the train and noticed the air gauge on the peg, he realized the train was gone. Standing on the front of the hack, he noticed flagman Roscoe Garrison running over the bouncing cars toward the rear of the train. The moment Roscoe's feet touched the caboose floor, Ervin raised the pin and cut the car loose from the train.

The last man off was engineer Ballew. Preoccupied with trying to save his train by reversing the engine, applying sand, and attempting every trick of the trade, Ballew realized too late that all hope was gone. The train was going too fast for a man to swing off running and hold his balance. To stay aboard meant certain death. So Ballew hurriedly climbed down to the last step of the engine and hurled himself down a cinder-covered embankment. Moments later the train turned over below where the first safety track on the mountain was later installed. Engine 440 landed on its side surrounded by a pyramid of coal — a temporary monument to Pitt Ballew's wild ride. The 13 coal cars and the two merchandise cars were a total loss. Only the last car remained on the rails, its load of

Switch tender R. A. Moody (above) cleans the points of Safety Track No. 1 in 1942. In another 1940s view but facing the opposite direction, the switch tender has lined the switch for the main line and stands aside as a train eases down the hill; the safety track's rails are heaped with sand to retard train speed.

Left, Frank Clodfelter; above, Allan D. Krieg

eggs in somewhat scrambled condition. The train crew who had jumped to safety found Ballew near death at the foot of the mountain — a scarred and broken little man who had fought to the last moment to save a train entrusted to his care.

Railroad officials discovered that an angle cock between the cars had been turned. It was thought that someone might have turned the angle cock after the brakes had been worked at Saluda, or that a bouncing drawhead might have partly turned it — enough to maintain the pressure on the engine gauge, but not enough to retard the train when the automatic brake was applied.

"I'm not superstitious, but it sure pays to keep a wary eye on [the] number 13."

While Pitt Ballew was in the hospital recovering, two more runaways occurred on Saluda. Exactly a month after Pitt's runaway, Third No. 62 left Asheville on August 13, 1903, with 23-year-old Jack Averill Jr. at the throttle, fireman Charlie Hair on the scoop, and W. B. Sherrill as brakeman. This train had 13 Interstate and Seaboard coal cars. Engineer Averill lost control before he reached Sand Cut, about halfway down the mountain. The engine crew stayed aboard in an attempt to bring the train under control. Approaching Melrose at the foot of the hill, the runaway reached an estimated speed of 60 mph — a freewheeling ride into eternity!

Death claims two heroes in 'Slaughter Pen Cut' was the headline the following day in the *Asheville Citizen*. The subhead read: "Saluda Mountain Witnesses Another Disastrous Wreck on the Southern Railway." The paper reported that the engine and 11 cars were demolished. The engineer and fireman were killed, their bodies buried under the wreckage. Brakeman Sherrill had lost both legs and was expected to die. Engineer Averill's father, mother, wife, and two little children were spending the summer at Saluda and so were just 3 miles from where he met his untimely death. The article further stated that as the runaway passed Melrose the operator, J. W. Heatherly, saw the fireman throw up his hand and smile — and then Heatherly fainted.

The third runaway on Saluda in 1903 occurred just one week later. Engineer J. F. Dougherty, heading up the hill with a "shirttail of cars" (not enough tonnage for a helper), slipped and stalled east of Sand Cut. The train began to run away backwards before the crew had time to tie up the hand brakes. None of the men jumped from the train, as they were confident that the speed was not high enough to derail at Slaughter Pen Cut; also, they were hoping their train could be brought under control.

As the train passed Melrose the operator there notified the Asheville dispatcher that the train was running away backward. The alarmed dispatcher was aware that another westbound extra was due at Tryon, 5.7 miles east of Melrose, and that if that train had passed Tryon, there was no way of warning its crew. The dispatcher hammered out a message to the Tryon operator: "Throw a red train order board on the westbound extra and get him into the siding as quickly as possible. There's a runaway coming down the mountain, and he's already by Melrose!"

The westbound extra was already blowing for the crossing immediately east of the Tryon station when the operator dropped a red board in his face. Running toward the locomotive, the op shouted his emergency message to the crew. Quickly reversing his locomotive, the engineer held his breath when he heard a constant whistling on the 1.5-percent grade west of the station. Seconds after the westbound extra cleared the main line, the runaway shot past. Engineer Dougherty's train sailed across the 400-foot Vaughan's Creek trestle and, after hitting the 1.5-percent grade up Bird Mountain, seesawed back and forth before finally settling to a stop. None of the crew was hurt.

The quick action of the Asheville dispatcher, the Tryon operator, and the crew of the westbound extra had saved lives and another costly wreck. Railroading at its best!

The *Rutherfordton* [N.C.] *Tribune* for August 20, 1903, published the following item: "Freight on the Asheville and Spartanburg road may be wholly abandoned and all freight brought over the Knoxville and Augusta division, now being built. Twenty-seven men have been killed crossing Saluda Mountain, and every death has been caused by the

Two heavy Mikados, author Clodfelter's favorite Southern freight power, labor past Safety Track No. 1 with a train of reefers filled with peaches in the mid-1940s; smoke from a 2-10-2 pusher rises above the trees at left. This spur, considered superfluous in the diesel age, would be removed in the early 1950s.
Frank Clodfelter

wrecking of a freight train, there not having been a single passenger disaster on record."

Life-saving safety tracks

The runaways of 1903 led to two changes in operation over this unique mountain — in their degree of importance: safety tracks and brakes on coal cars.

Pitt Ballew, crippled and maimed in the first of the 1903 runaways, had ample time to reflect on the grade while recuperating. He inadvertently caused a sensation and alarm while he was a patient. "I shouted from my bed, *'I've got it! I've got it!'* The nurses rushed in to see if I was out of my head or expiring of my injuries. The nurses calmed down when I assured them I was all right mentally and physically. Then I requested they send for Southern's Superintendent G. R. Loyall as quickly as possible.

"I explained to Mr. Loyall that the Southern build two safety tracks on Saluda: the first about a mile from the top of the sharp curve above Sand Cut, where the mountain rises abruptly to the right of the descending tracks. The second at Melrose at the foot of Saluda Mountain."

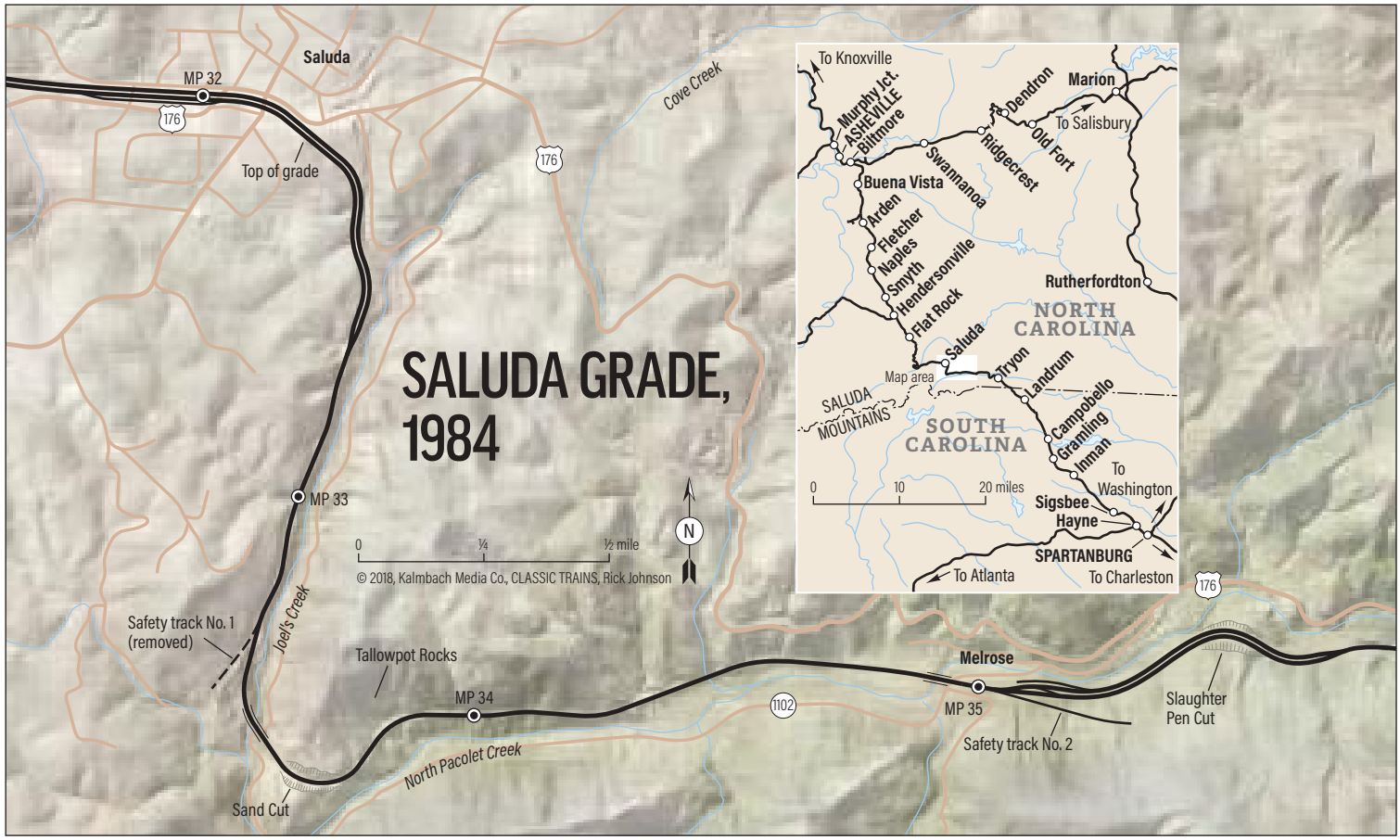
The railroad, impressed with Ballew's suggestion, immediately surveyed and built the two safety tracks, which were put into service within months.

According to the late E. B. Hall, former mayor of the town of Saluda and veteran operator there, Safety Track No. 1 was 1,080 feet long and was located 8,001 feet east of the depot. The grade ranged from 4.3 to 9.9 percent. At the end-of-track were anchored timbers chained to the rails and a mound of dirt 60 feet long, 14 feet wide, and 6 feet high. The track was heavily sanded.

Safety Track No. 2 was cut out of the side of the mountain for 1,464 feet at the foot of the grade, opposite the operator's shanty at Melrose. This track was located several thousand feet west of Slaughter Pen Cut and had grades that varied from 5.5 to 10.3 percent. This track was also heavily sanded.

After the tracks were completed in November 1903, switchtenders were stationed at Safety Track No. 1, and the switch was kept lined for the spur. Engineers on descending trains were required to blow one long, one short, and one long at the whistle board 800 feet from the safety track if their train was under control. After the switchtender threw the switch to the main line, the engineer would give two short blasts to confirm that his train was still under control. Safety Track No. 2 was controlled by the Melrose operator with the same whistle procedure.

Installation of the emergency tracks saved many lives and countless thousands of dollars' worth of equipment over the years. There is



no record of the number of "mild" runaways that have occurred since the tracks were installed; certainly these could otherwise have been major derailments.

A passenger train descending Saluda in October 1904, less than a year after the safety tracks were installed, somehow ran away after passing the first safety track under control. The speed of the train was so great that it ran right to the end of Safety Track No. 2. Fortunately, there were no injuries, but the engine was damaged when it hit the rock cliff at the end of the track. If the safety spur had not been built, Slaughter Pen Cut would likely have claimed more victims.

The hogger and brakeman saved their lives by jumping as the train started up the spur.

Safety Track No. 1 saved another passenger train during the devastating flood of July 1916 when the Asheville Division was almost washed away. Engineer Tom Tarpley, on First No. 10 bound for Jacksonville, whistled for switchtender R. W. Ward to give him the main. Ward refused to throw the switch. Tarpley was in an explosive mood until Ward explained: "The track walker has discovered that the fill between here and Sand Cut has been washed away and the bridge over the Pacolet River at Melrose has been destroyed. Park your train in the safety track!"

The railroad made arrangements for transportation, food, and lodging for the 300 passengers who had landed in Saluda. The train remained in the safety track for 13 days.

While I was chief photographer for the *Asheville Citizen-Times*, I photographed the wreck of 2-8-8-2 No. 4052 on September 25, 1940, when it ran away up Safety Track No. 1. The huge engine swept aside the chained timbers like match sticks and plunged over the end of the dirt mound with the first two cars of the train. Engineer "Turk" Pope and the head brakeman saved their lives by jumping as the train started up the spur. Although Pope shouted to his fireman to jump, the unfortunate man remained aboard and was crushed when he was pinned against the boiler by coal that poured into the cab from the upturned tender. Pope dug with his bare hands in a futile effort to save his fireman. His bleeding hands uncovered enough coal to find that the man was dead.

The second change on Saluda after the 1903 runaways concerned brakes. The railroad discovered that in Saluda wrecks, Interstate Railroad coal cars outnumbered other types of cars in runaways. The Interstate Company, located at Bulls Gap, Tenn., owned its own cars and shipped a tremendous amount of coal via Saluda for export through Charleston. In the interests of economy, its cars were equipped with steel wheels, which heated more quickly than wrought iron and considerably lessened braking efficiency. Furthermore, to reduce the danger of flattening wheels, the company requested that brake piston travel on its cars be cut to 6 inches and brake levers shortened to 2½ inches. All of these factors reduced braking power by 50 to 60 percent. The cars met Interstate Commerce Commission specifications for average grades, but Saluda is no average grade. The Asheville Division superintendent issued instructions that Interstate coal cars comprise no more than 50 percent of any train descending Saluda.

Workhorse 2-10-2s

In service between 1917 and 1953, Southern Railway's 2-10-2 locomotives were one of the longest lived and most successful classes of steam power on the continent. Although not as beautifully proportioned or as fast as my favorite SR freight engine, the Ms-4 Mikado, the 2-10-2s were held in deep respect by management, shop forces, and engine crews.

Southern received 55 2-10-2s from Baldwin during 1917–18, Nos. 5000–5054, class Ss — bulky, low-speed power with 57-inch drivers, 28x32-inch cylinders, Southern valve gear, Duplex stokers, 190 PSI steam pressure, up to 378,000 pounds engine weight, and 71,000 pounds tractive effort (raised to 74,000 pounds when steam pressure was increased to 200 PSI). An additional 25 class Ss engines ar-

In a sequence of photos from the early 1950s (counterclockwise from top), Southern FP7 6141 and an unidentified F3A crest the grade and bring the westbound *Carolina Special* through the town of Saluda. Bringing up the rear is a deadheading dinette-coach, likley coming from the shops at Spartanburg, S.C.

Three photos, Linn H. Westcott

rived from Alco's Richmond Works in 1918, numbered 6350–6374 for SR's Cincinnati, New Orleans & Texas Pacific line but were soon reassigned (and renumbered 5055–5079) because they could not satisfactorily run in the close clearances of the CNO&TP. (USRA-design Ss-1 2-10-2s Nos. 5200–5249 were barred from the Asheville Division because of their longer rigid wheelbase.)

Shop forces at Asheville made several modifications to the Ss-class engines assigned to Saluda. They made water glasses longer than normal so crews could better observe the water level in the boiler while descending or ascending the mountain; a second air pump was installed because of the excessive use of air brakes on Saluda; some engines used as helpers or on the head end of passenger trains were equipped with cab signals and steam-heat connections; and water pipes were installed over the driving wheels so a constant flow of water would cool the tires while descending the mountain.

Santa Fe types and 2-8-8-2s were not permitted on through freights between Asheville and Hayne until the 1930s when bridges and trestles were strengthened. The articulateds were transferred in 1943 to the Birmingham Division to haul coal. The 2-10-2s made their greatest showing from then until the diesels arrived in 1949, and some served as Saluda helpers until 1952.

Steam bath on a helper

An unforgettable memory from my decades on the hill is an episode that occurred

Sand Cut scenes: Troops wave from their Pullman (top) as a 2-8-2 hauls the *Skyland Special* up the hill during World War II; Safety Track No. 1 cuts across the mountain above the engine. Three decades later, fantrip Mikado 4501 heads up with a four-car Spartanburg–Asheville excursion on July 8, 1972.

Two photos, Frank Clodfelter

while I was firing a Santa Fe type on the second-trick Saluda helper. My hoghead was "Coldwater" Roberts, and one of our evening assignments was helping train 27, the *Carolina Special*, from Melrose to Saluda.

One winter afternoon after the helper conductor coupled the air hoses of our 2-10-2 to the rear Pullman on No. 27, Coldwater blew two short blasts of the whistle to notify the engineer on the head end that he had cut out the automatic brake on the helper, shoved up the slack, completed the brake test, and was ready to leave.

Simultaneously the hoggers opened their throttles, and black 2-10-2 5011 and green-and-gold 4-8-2 6492 blasted alternate exhausts off the ridges in rhythmic explosions. The air was filled with the smell of coal smoke and valve oil, the sound of grinding flanges biting curved rails, and the earthy odor of fallen leaves on the forest floor.

The two engines gently handled the train as it crossed the bridge over the Pacolet River, where the grade changes from 1.3 to 4.4 percent; however, within a few hundred feet, as the grade jumped to 5.1 percent on the steepest part of the hill, the engines were beating their hearts out. The occupants of the seven-car train were witness to one of the most arresting examples of cooperation in human endeavor — the crews of two steam locomotives working in unison to move a train over Saluda Mountain.

There was no conversation. There was concentration aboard the two locomotives. Each man was absorbed in the details and responsibility of his job in moving the train safely and on schedule over the hill.

The relaxed passengers along the green aisles of the Pullman, day-coach riders chatting leisurely among themselves, and patrons of the dining car enjoying polished silverware on white tablecloths with cut flowers — all were unaware of the intense concentration of the engine crews. The engineers were alert to the danger of driving-wheel slippage that could result in a stall on the mountain — ready on an instant's notice to shut off the throttle, opening again quickly to regain footing. A stall would mean time lost on the schedule, difficulty in restarting on the grade without burning the rails, and the chance of damaging valve gear or flattening driving wheels if they went into a spin. Foremost in the minds of the enginemen was the safety of passengers and fellow crew members as they kept their eyes trained on the roadbed to observe track conditions, signals, road crossings, diamond boards, or flagmen. As required by the rules, the engineers looked back or ahead on curves to inspect their train for hotboxes, dragging equipment, or sticking brakes. They were constantly checking boiler water level in the sight glasses — too little water in an engine cresting Saluda could result in a boiler explosion.

Running a steam locomotive is an art, but

On the 10-degree curve just above Sand Cut, 2-10-2 No. 5029 shoves on the rear of the *Carolina Special* in April 1947. The angled sign to the right of the engine indicates that the switch for Safety Track No. 1 is 800 feet ahead. Specially modified for the hill, class Ss engines were Saluda fixtures until the end of steam.

William P. Price

so is proper firing. Passengers looking out from the *Carolina Special* that day, as well as the crew on the helper engine, would note that the fireman on the 4-8-2 was demonstrating his professionalism with the skill that comes from years of experience. A trail of gray smoke from his engine indicated proper combustion, and the white vapor from the pops, just under the release mark, was proof of a full head of steam. He was firing by the stack and the steam gauge — glancing out occasionally at the stack to be sure the smoke was not too heavy and then back at the steam gauge so the safety valves would not pop at 200 PSI. Shutting back on the stoker or pulling on the injector to put cold water in the boiler would prevent the release of the pops and consequently the loss of steam. This fireman, by knowing the road, figured ahead to quit firing a few moments before the engineer shut off the throttle to drift down a hill, opening the blower to keep smoke out of the cab, working the injector to keep a safe supply of water but not enough to "drown" the boiler so the engineer would be working dry rather than saturated steam.

After adjusting the stoker on the 2-10-2

"A REAL HERO"

I have many, many impressions of Saluda Mountain, both during the time I was a train dispatcher in Asheville and also when I returned later as division superintendent. . . . It is undoubtedly the most dangerous and critical stretch of mainline railroad anywhere in the country, and the unusual events that have occurred on the mountain would fill a rather large book. Fortunately, modern equipment such as pressure-maintaining features of locomotives as well as more sophisticated brake equipment have reduced the danger to some extent, but as you know it is still a piece of railroad that must be watched every minute. I am sure there are many records of runaways on the mountain in years gone by — quite a few in my time, in fact.

Probably you recall one when an ammunition train almost reached the top of Saluda Mountain and ran away backwards. As I recall there was only one individual who remained with the train and that was the engineer of the helper. . . . He stayed with the train and did what little he could to retard the speed of the train and in any event undoubtedly kept it from going over the end of the runway track. In my book that's a real hero. — *H. H. Hall, president and chief operating officer, Norfolk Southern Railway, in a December 1982 letter to author Frank Clodfelter*

Derricks from Asheville and Hayne — plus a large contingent of men — work the wreckage of a coal train that piled up at Melrose on September 20, 1964. This first Saluda runaway since the steam era shocked the Carolina Division.
Frank Clodfelter

helper I was firing, knocking off the injector before I had too much water in the sight glass, it was time to steal a moment for observation. The scene out of the open window was straight out of Currier and Ives. The massive 2-10-2, workhorse of the Asheville Division, was talking to the mountain in a labored voice. The rear marker lights on the Pullman directly in front of us were beginning to glow in the fading light. At the head end, the driving wheels of the 4-8-2 road engine were highlighted by the rays of the setting sun.

And speaking of observation, how can I ever erase the sight of that passenger engine with an authentic engineer at the throttle? J. B. Barnhardt was the epitome of a Southern Railway runner. Proudly clad in freshly laundered overalls, red bandana pinned to his shirt, safety goggles bridging his nose, gray cap squarely set on his head, a 23-jewel Hamilton watch secured to a gold Simmons chain, and light gloves for a delicate touch of the throttle — he was a picture of confidence, pride, and responsibility.

Suddenly there was the stinging pain of hot boiler water enveloping my body. The cab was so clouded with steam that visibility was impossible — a pipe had broken somewhere! Engineer Roberts, suffering the same fate that had befallen me, loosed a blast of profanity. He blew one short blast of the whistle and shut off the throttle; within seconds the train stalled. Engineer Barnhardt on the lead engine had quickly reduced throttle, keeping the slack stretched while he applied the automatic brake to avoid the possibility of a runaway backwards.

I climbed out the cab window to escape the spray of hot water and was preparing to jump to the ground and run around the rear of the engine and drag Coldwater out of the right-hand side of the cab when another stream of profanity assured me that my engineer was not being scalded to death. The helper conductor came scrambling down the coal pile from his doghouse on the tender to ascertain the trouble; alarmed passengers filled the rear vestibule of the Pullman to witness the spectacle of the stalled engine with hot steam erupting from the cab. After a few moments the steam subsided, and I was able to locate the cause of the trouble. I discovered that the copper pipe leading to the water sight glass on my side had broken and was spraying hot water and steam into the cab.

I suggested to Coldwater that I shut off the boilerhead valve leading to the sight glass on my side and that he could use the glass on his side until we reached Saluda.

"Hell, no!" he barked. "You're not cutting off a damn thing from this engine! I reported that leaking line the last time this engine went to the roundhouse and they didn't do anything about it. Now let the master mechanic chalk up another engine failure to his record!"

Coldwater shouted to the conductor: "Cut this engine off — we're backing down into the

An eastward view at Melrose shows the extensive facilities at the base of Saluda Grade in April 1948. Around the left-hand bend beyond the water tower is Slaughter Pen Cut, where a carload of livestock perished in an 1893 runaway. The switch target for Safety Track No. 2 is mounted high for better visibilty.
William P. Price

spur track at Melrose and the fireman will kill the fire!"

When the operator at Melrose learned of the engine failure and stalled train, he notified the chief dispatcher in Asheville and advised that an eastbound freight for Hayne had not departed from the siding in Melrose. The orders came quickly: "Instruct the crew on the eastbound to cut off their engine and back up to No. 27 and help the train to Saluda." The eastbound's crew did as instructed, but their

"Hell, no!" barked Coldwater. "You're not cutting off a damn thing from this engine!

2-10-2 was not equipped with reverse sanders, and after a fire-flying slipping of the driving wheels on unsanded rails, the train moved forward a few feet and stalled.

The Melrose operator reported this second failure to the dispatcher, who told the operator at Saluda: "Instruct the westbound freight in the siding at Saluda to cut off their engine, back down below Sand Cut, and doublehead No. 27 to Saluda."

The *Carolina Special* suffered a 2-hour delay in one of the most dramatic and amusing incidents in the long history of railroading on Saluda Mountain.

Diesels come to Saluda

The age of diesel-electric locomotives on Saluda began May 25, 1949, when Southern began operating EMD F7s in freight service. Four units totaling 6,000 h.p. took 1,500 tons up Saluda without help; with a 2-10-2 helper they were rated at 2,000 tons. Average speed Melrose to Saluda was 10½ mph compared with 6 or 7 mph with two 2-10-2s, which together were good for only 1,000 tons. Two Mikados occasionally doubleheaded with 700 tons or, with a Santa Fe helper, 1,200 tons. With a Mallet helper the tonnage for two Mikes was 1,250.

The Southern's February 1950 *Ties* magazine explained: "Here was no mere extension of diesel usage — this was tackling one of the hardest tests in railroading. With the roar of diesel engines working at full capacity as trains wound their way around curves going up grade, and with the whine of traction motors with their electrical fields reversed to convert them into generators operating as dynamic brakes on the downgrade, these locomotives proved that the toughest job on the Southern — one of the toughest on any railroad — was well within their capacity. And, railroading on Saluda Mountain was safer."

Safer, yes — but not without risk . . .

"This train is gone!" Road Foreman of Engines K. D. Lewter made this dramatic and spine-tingling announcement over the radio in the darkness of the early morning of September 20, 1964, after the brakes of unit coal train 154 had been placed in emergency and its six F7s gained uncontrollable speeds. Railroaders from the Asheville dispatcher to the operator at Hayne Tower were electrified by the announcement that a diesel-powered train was running away down Saluda Mountain. Crews as far away as Spartanburg cut their conversations, and carpecks in their Asheville shanty froze in shock.

Brakeman Tom Jenkins was the first to leave the train. He had climbed up on the rear unit after turning up retainers and was pour-

Marching out of Melrose: With its customary rear-end helper (top), the *Carolina Special* ascends the hill in the early 1940s. Santa Fe type No. 5027, assisted by 5047, gets into the grade with a freight in 1948.

Top, E. H. Bennett Jr.; above, David W. Salter

ing a cup of coffee. When he heard on the radio that the train was running away, he swung off and watched it hurtle by.

Leonard Biddix, who was the fireman on this first diesel runaway down Saluda, explained what happened: "We balanced the train over Saluda Mountain and applied the automatic brake for an inspection of brakes by the trainmen. After the inspection, we released the air so the retainers could be turned up on the cars. After the head-end brakeman returned to the rear unit and we heard from the conductor on the caboose, we started down the mountain. We used the dynamic brakes when the train started rolling and charged the train line with three applications of the automatic brake. However, normal applications with the automatic brake failed to check the speed of the train. We drew the air down to 75, 71, and then to 55 pounds, but this did not check the speed of the train. We realized that we were running away and placed the brakes in emergency position.

"When we left the top, flagman Sherlin was calling off the air pressure shown on the caboose — he never let up calling air until the brakes were shot and he heard Mr. Lewter's announcement that the train was gone.

"When the train reached a speed of 22 mph as we approached Sand Cut, Road Foreman Lewter dropped off on the left side. Engineer Charlie Green jumped off the right side. After we got through Sand Cut, I swung off and jumped past some rails laying along the track. I was able to stand up but ran off into a briar patch and got scratched up. When the train got by I found Charlie Green with a fractured ankle — his foot had landed in a pothole. I asked Charlie where Mr. Jenkins and Mr. Lewter were. About that time we saw Mr. Lewter running down from Sand Cut. . . . We still had not found Tommy Jenkins. I walked back up the mountain and found Tommy walking down the other side of Sand Cut. We waited to hear what would happen when the train hit the safety track at Melrose. There was a tremendous sound such as you might hear during a violent thunderstorm or about like a bomb going off.

"Tom, Jenkins, and I got Charlie Green supported between us and he hopped down the mountain on one foot. At Melrose, we found flagman Sherlin and conductor Benfield looking over the wreckage, which was a sight to behold. They had ridden the caboose down the hill and said the cab made a real easy stop and they were not injured in any way. I could hear the wrecked engines running, but I could not get to them because cars were piled on both sides of the safety track. A bystander said he knew of a path around the wreck. I shut down the motors of each unit. All were running except the lead unit, which had hit a rock cliff. Some engines were on their sides, but so far as being hurt they were not that bad off. The lead engine that hit the rock cliff was the only one that had any appreciable damage."

Of the 6,300-ton train's 69 cars, the first 23 were turned over or derailed. Damage to the locomotives totaled $69,500.

The second diesel runaway down Saluda occurred on November 14, 1971, with three SD locomotives. The crew jumped and there were no deaths or injuries. The locomotives derailed just as they started up the Melrose safety track.

A member of the crew later stated: "It was a sight to behold. Within a space of 7 car-lengths, 44 cars were piled upon themselves with the 6 rear cars and the caboose remaining on the rail."

Saluda in the 1980s

To give a picture of current operations, a typical train on the Asheville–Hayne run, was selected at random from the trainsheets in the office of Carolina Division Superintendent L. E. Wetsel Jr. The date of the run was April 5,

On September 15, 1984, three SD units pull out of the siding at Melrose and proceed up the hill with one-third of their train; after reassembling the three portions at Saluda, they'll continue on to Asheville. Norfolk Southern ended operations on the grade in 2001; the track remains in place, but it's been severed.

Two photos, Jim Wrinn

1984. Eastbound freight 178 out of Asheville had engineer Ray Wallace at the throttle and conductor Paul Ross on the caboose. The power was three EMD SD40 and SD40-2 locomotives (Nos. 3283, 3176, and 3212) totaling 9,000 h.p. pulling 5,337 tons in a 94-car train of 35 loads and 59 empties.

Wallace and Ross on Hayne–Asheville train 187 had the same units on 44 loads and 22 empties weighing 5,187 tons. Per standard practice, 187 would climb Saluda Mountain in three cuts. Leaving Hayne, conductor Ross figured the tonnage of each cut from the waybills, knowing that each SD40/SD40-2 is rated at 540 tons up the hill. Ross advised the head-end brakeman which car to cut behind when the train arrived at Melrose. Engineer Wallace stopped the train at the base of the mountain with the slack stretched before the first cut was made. When the brakeman reached the designated car, he uttered one word on his walkie-talkie: "Slack." Wallace provided just enough slack for the brakeman to lift the pin. Then the brakeman rode the rear of the cut to Saluda, where it was parked and the power returned to Melrose to pick up each remaining cut in turn.

During the 29-day period in April 1984 that included the above example, 65 freights ran Asheville to Hayne, 72 from Hayne to Asheville. Eastbound tonnage was 354,322; westbound, 273,200. Average trains daily (both ways): five. Trains ran at irregular hours.

The last *Carolina Special*

Saluda's final scheduled passenger train, the *Carolina Special*, made its final runs on the mountain on December 5, 1968. The train, which once ran out of Chicago (on NYC's Big Four to Cincinnati, thence over Southern) to Asheville, where it divided into sections for Charleston, S.C., and Goldsboro, N.C., was a typical American passenger train of the steam and early diesel era. During its prime years it consisted of mail and baggage cars, coaches, a diner, and Pullmans — even an observation car proudly marked Carolina Special. It was not a fast train, but when one considers the rugged and diverse country through which it ran, it must be ranked as one of the most utilitarian and colorful that ever served the South.

The EMD F3s that I had on the final runs of the *Carolina Specials*, train 28 Asheville to Hayne and 27 back, were 4144 and 4138, respectively. By then the train had dropped to sub-zero respectability — the usual baggage car and coach powered by a single diesel unit, plus an additional coach, which was not needed. To add to the gloom, the F units were draped in the funereal black-and-white scheme that had replaced green-and-white on passenger diesels.

This epitaph was written by W. D. Workman, who rode the engine with me from Hayne to Asheville, and published on December 12, 1968, in *The State*, the Columbia, S.C., newspaper that he edited: "Many adjectives were applied to Southern Railway's *Carolina*

Special over the years. 'Crack' was not one of them. More often it was dubbed, either out of frustration or affection, 'The Carolina Creeper.' But for over half a century, the *Carolina Special* was a vital passenger link between South Carolina and the Midwest. For years now, it has been dying in pieces as revenues tumbled. Last week the *Carolina Special* left Columbia for the last time. Aboard was Editor W. D. Workman Jr. of *The State*, in the company of a handful of railroad buffs and one legitimate passenger."

The *Carolina Special* operated for more than half a century. Beginning in the year of my birth, 1911, it operated until December 5, 1968, when I ran its final trip up Saluda.

FRANK CLODFELTER hired out with the Southern Railway at his native Asheville, N.C., in 1931. After a stint as chief photographer of a local newspaper, in the early 1940s he returned to railroading, first as a fireman, then engineer. He began contributing photos to TRAINS *in the early 1940s and completed this article just before his death in 1984.*

Frank Clodfelter runs F3 4138 up Saluda Grade on the final run of the *Carolina Special*, December 5, 1968.
W. D. Workman

ERIE'S RIVER LINE Time freights powered by Alco FA diesels meet at CB Junction, west end of the Erie's River Line at Cuba, N.Y., during the winter of 1950–51. Erie built the 32-mile line along the Genesee River from a point on its Buffalo line around 1910 as an alternative to the heavily graded main line west of Hornell via Wellsville. Passenger trains stuck to the old route; freights took the River Line. *Wallace W. Abbey*

POCONOS EAST OF SCRANTON Lackawanna 4-8-4s pass on the grade east of Scranton, Pa., in the mid-1940s. Coming at us with throttle closed and trailing a cloud of brakeshoe smoke is the *Lackawanna Limited* to Buffalo; the severity of the grade is also seen in the pillar of exhaust from the freight's Pocono type. At right is a spur to the Erie's Dunmore car shop, and the Laurel Line third-rail interurban. *D. Pinnell*

STRANDE

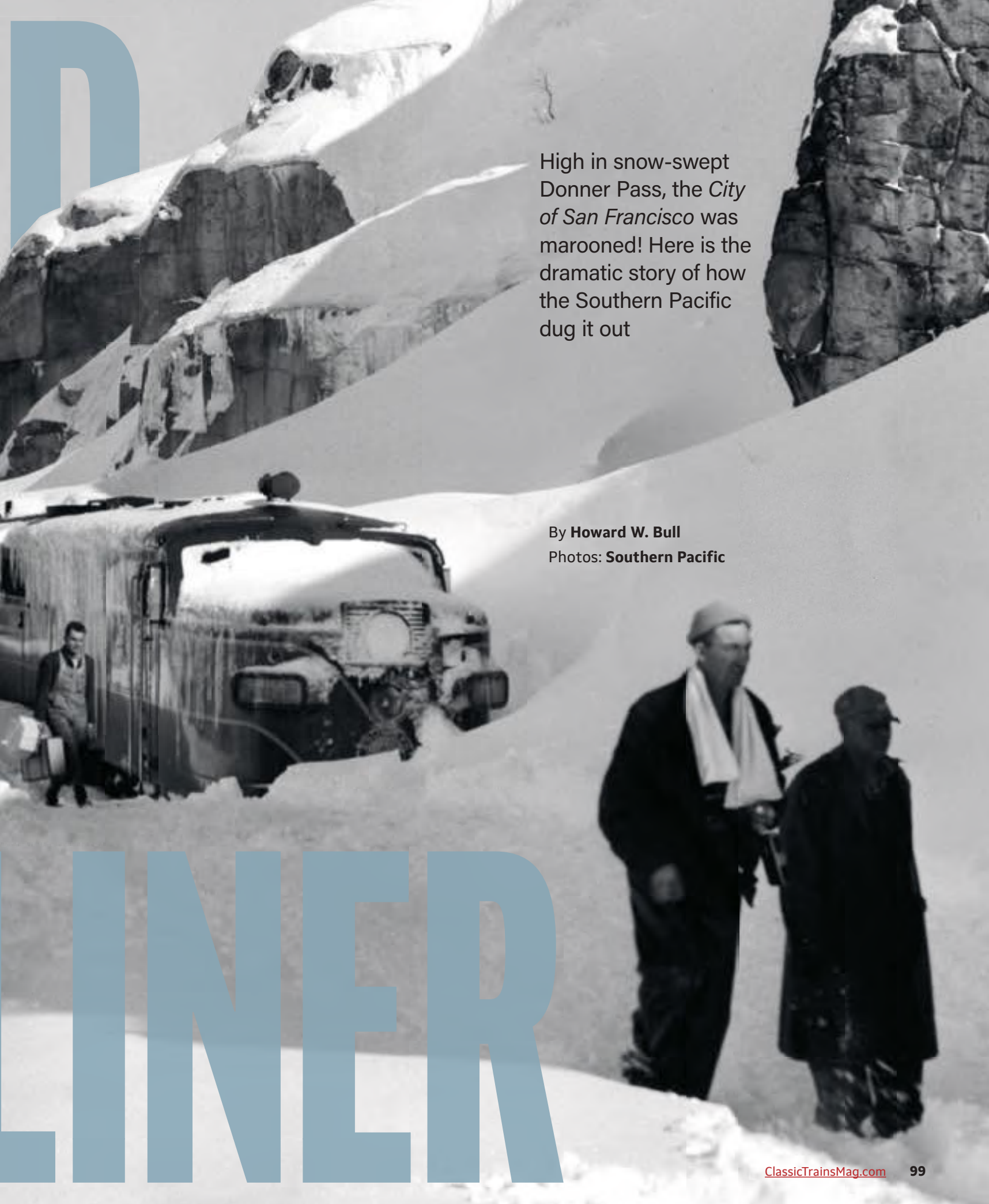
FROM JANUARY 1953 TRAINS MAGAZINE

STREAMI

D LINER

High in snow-swept Donner Pass, the *City of San Francisco* was marooned! Here is the dramatic story of how the Southern Pacific dug it out

By **Howard W. Bull**
Photos: **Southern Pacific**



Southern Pacific diesel units 6019, 5914, and 6013 cooled their flanged heels at Norden, Calif., the summit of the Sierra Nevada grade, on the morning of January 13, 1952. The Alco PA-PB-PA trio squatted at the head end of train 101, the swank streamliner *City of San Francisco*, marking time on the snowshed-covered westbound siding. The day before there had been trouble on the Hill, as SP men call the Mountain Division between Sparks, Nev., next door to Reno, and Roseville, Calif., neighbor of historic Sacramento. Yesterday's *City* had made milepost 182, 10 miles down the mountain west of the snow-swirled summit, only to stall its doubleheader of steam and diesel power in a huge snowslide. The train had to be dragged back to Norden and eventually was sent on its way down the eastbound track — the same route that this day's 101 would pursue.

Veteran engineer Tom Sapunor and fireman Gordon Painter made use of the forced stop at Norden to fill the diesels' steam generators with water — just in case. At 11:23 a.m. they rolled out of the high-timbered siding, along the shed-protected main line, past the covered turntable, and down the westbound rails toward the interlocking office. Sacramento Division Superintendent M. L. Jennings stood beside the main, giving a stop signal. Beside him was J. T. Fulbright, roadmaster. Sapunor brought 101 to a stop. The big boss of the Hill swung up the lead diesel's ladder to cab level.

"Tom," he addressed the engineman, "you're going down the eastbound against the current of traffic." Jennings explained that Bill Brennan, road foreman of engines, was down at Crystal Lake, about 15 miles west, where he would cross the streamliner over again onto the westbound rails for normal operation.

Jennings dropped back to the frozen ground while Roadmaster Fulbright climbed into the cab on the fireman's side and took the middle seat. Train 101 moved forward slowly through the lower crossover just inside the cathedral-like sheds, then out into the blizzard. The diesels gained speed as Sapunor opened the throttle after the rear car had cleared the crossover. The howling wind made plenty of throttle necessary even on the downgrade. Norden, the top of the SP at 7,000 feet above sea level, faded in a swirl of snow.

Block signal protection is afforded in each

This view toward the rear of the snowbound *City of San Francisco* is from the first car behind the locomotives, a UP baggage car. Tunnel 36, used by eastbound trains, is in the distance.

direction on both tracks of the Hill, and automatic train stop further safeguards movement. When trackside sources of power fail, batteries are cut in. So Sapunor and Painter knew they were well protected, though the storm raged and their right of way was an alley the width of a rotary plow cut through ice and snow.

"Clear!" shouted Painter.

"Clear!" echoed Sapunor. The language of the rails and the sentinel guardians of the steel highway were in action.

Roadmaster Fulbright had brought with him news of the previous day's *City of San Francisco*. The plush yellow train had struck a gigantic snowslide down the westbound iron. Deadhead crews and linemen were riding the steam helper's cab. Engineer Bell of the AC cab-forward 4-8-8-2 had sustained injuries, and most of the men in that cab had been cut by flying glass. Fulbright and Assistant Superintendent Bob Miller had come along on an eastbound rotary plow.

Sapunor and Painter learned from Fulbright that two other cab-forwards sent to rescue the diesels on yesterday's *City* had left the rails at Troy. Yet another was on the ground at Gold Run. The Mountain Division was having trouble — plenty of it.

"That's it! We can't make it!"

Much of the way, the *City* snaked down through a deep cut of ice and snow. The blast of the blizzard alone was enough to keep fresh drifts piling up before PA No. 6019's plow pilot, but in addition, dangerous ice cones arched out over the top of the cut, threatening to tumble more tons of the heavy white stuff into the path of the train.

Tom Sapunor continually inched out the throttle as the relentless wind cut down into the canyon at a terrific rate. The train skimmed out into the open for a brief run between newer, heavier drifts that blocked the way. Still, the PA's plow sent the drifts into bits of swirling snow. Atop Donner Summit the weather station registered a wind velocity of 100 mph. The needle was against the peg, and the barometer hung around 22.88 and 22.90.

"Red fusee!" shouted Painter.

"That must be Bill Brennan," Sapunor said. "He's going to cross us over to the westbound." He eased off on his throttle as the snowsheds of Crystal Lake loomed out of the snow ahead. The light from the red fusee moved slowly up and down, easing him down for the crossover.

Sapunor let his trainload of 226 passengers plus crewmen roll slowly onto the crossover. Bill Brennan swung onto the lower step of the cab ladder, cautioning Sapunor to watch out for slides beyond Crystal Lake. He dropped off again, and train 101 ventured once more into the full force of the Sierra storm.

Sapunor widened on the throttle as the rear car cleared the switch points within the snowshed. Engines roared and traction motors sent flanged wheels biting hard at the frosty railheads. The train was making 28 or 30 mph. Once again on the westbound main, the *City* skirted an open ledge, exposed to the full fury of the blizzard. Sapunor opened the throttle wider — but speed decreased.

Around eastbound tunnel No. 35 on the westbound track swung the straining train, plowing through snow that rose to 12 feet on its left, the slope side, and clung tenaciously to the outer right-side cliff 5 to 6 feet deep. The streamliner, now barely crawling, made its way part way around the rocky point that shields the more protected eastbound line. The diesel engines roared and the motors whined in crescendo — but even 6,000 h.p. was no match for the conditions, and the train stopped.

"That's it!" shouted Sapunor. "We can't make it!"

Reversing his motors after the forced stop, the engineman attempted to back his train out of the towering drift, but diesel-electric traction was not enough. Perhaps steam power could have backed that train, perhaps not. The *City of San Francisco* was stalled.

"I'm going to the phone at Yuba Pass," announced Roadmaster Fulbright. He was out of the cab, churning through the snow, and out of sight on a half-mile trek to the phone.

Superintendent Jennings and Assistant General Manager E. D. Moody were at Norden, and so was T. E. Billingsley, terminal superintendent. Floods elsewhere required attention, too, but the Hill received the major consideration. General Manager R. E. Hallawell and General Superintendent of Transportation C. H. Grant bore the brunt of it. While men and machines fought the storm on the mountain, these men kept tabs on the progress being made. They reported often to SP President Donald J. Russell. The dispatcher was out of the picture; Jennings and Moody were dispatching trains, snowplows, and engines up and down the mountain. Telephones were important, too, and the plucky linemen were keeping the wires hot.

Fulbright made it to the phone at Yuba Pass and reported the situation. Assistant Superintendent Bob Miller promised a rotary and a 4-8-8-2 right away. "We'll get them out."

Fulbright found the *City* frozen fast when he returned to it. Brake rigging, under-floor tanks, everything — frozen solid. The storm raged on. A modern Donner Party was marooned on the bare face of the wild Sierra with a 100-mph blizzard for company!

Road of rotaries

The Overland Route became a road of rotaries, for the whirling blades of the big steam-driven plows were the only hope.

The day before, Elmo "Ed" Hardison and his engineer, Lee Moore, had been called from the roundhouse in Roseville. The message: "Deadhead east on a cab hop. 11:30 p.m. on duty." Now these men were on rotary No. 7222, pushed by AC-8 No. 4188, at Emigrant Gap, 5 miles down the mountain from the immobile streamliner.

Bob Miller's plea for help sang out over the wires. Hardison and Moore were the first to

The first non-railroaders to reach the stranded streamliner were Pacific Gas & Electric linemen (from left) Jay Gold, Roy Claytor, and Charley Swing. Gold died on January 21, 1952, two days after this photo.
Pacific Gas & Electric

An amazing sight in 1952: Three modern diesel locomotives and a 15-car streamliner, trapped for days by snow on California's Donner Pass.
San Francisco Examiner

reach the *City*. They plowed up the eastbound main, past the frozen streamliner, crossed over at Crystal Lake, then moved west toward 101. Within a car and a half of the stalled train they halted. Then they broke out the shovels. There were only three men in the outfit, but they relieved each other, and finally they dug right up to the *City*'s marker lamps. But the train, now truly icebound, would not budge. Then an air pump failed on rotary No. 7222 in back of 4188 behind the ill-fated train.

Engineer Frank Neugebauer and fireman Jack Paight, with conductor Lawson and brakemen Lee and Nunn, also had been called out of Roseville early in the storm, and were manning rotary 7205 with AC 4245 pushing. Engineer Rolland Raymond and fireman Bob Dahl mauled the 4245 up the grade out of Emigrant Gap. By noon of January 13 they reached Norden, and soon after that they heard about the *City of San Francisco*.

They turned and plowed back to the Gap, turned again, picked up Bob Miller, and plowed up the westbound track to the *City*. Then they started shoveling. Tom Sapunor personally dug out the 6019's pilot. He tried to pull the *City* free again with his PAs, but the cold had a firm grip on it. Engine 4245 could not help, of course, because rotary 7205 was between it and the streamliner, and the blade end of the plow had no coupler.

Frozen fingers in stiff gloves

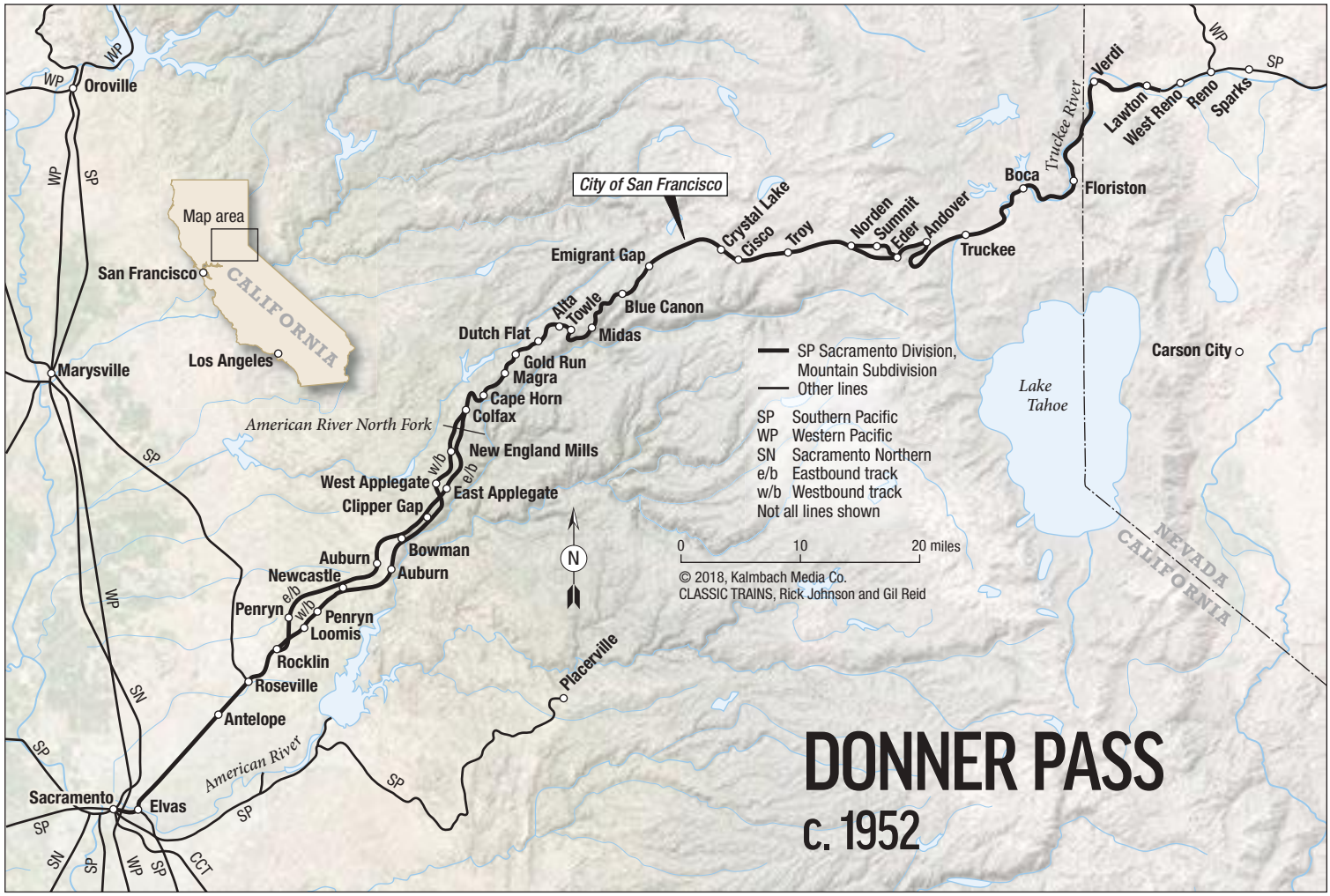
The first night closed down on the *City of San Francisco*. Extra 2768 East, a 2-8-0 with a caboose, brought in 35 section men. They dug all night to try to free 101, but the wind only lashed more wickedly and the men's fingers froze to their stiff gloves. It was good that engineer Sapunor had filled his PAs' steam generator water tanks to capacity. They were sorely needed to keep passengers and crewmen warm and alive. When the diesels' water supply finally gave out, AC 4188, coupled to the rear, took over the train-heating duties.

There was yet no alarm aboard the snowbound *City*. It was a lark to most of the passengers, who felt sure they'd be free before long. Conductor Clyde Baldwin kept them advised of rescue efforts.

The morning of January 14 was bitterly cold. Ed Hardison herded the shivering, exhausted section men into the small confines of his rotary plow and squeezed them alongside the hot boiler to thaw them out.

Later in the morning, SP officials stranded on the train with the passengers called these men and all the crewmen into the streamliner's dining car. Food was plentiful, and coal lugged from Crystal Lake on the backs of some of the section men kept the stoves going. So the real heroes of the event ate.

The passenger' spirits were high. Eddie Tschumi, dining-car steward, announced that lunch was being served on the house. Bob Miller assured everyone that assistance was on the way. It *was* on the way — but many



long, hard, weary hours off.

Rotaries were storming the mountain, not once or twice, but again and again. But the blizzard wasn't letting up. The temperature was down to 22 degrees, and the gales were fierce.

Bob Miller was everywhere, mostly riding the rotaries. Occasionally he'd walk back to reassure the *City*'s passengers and crew.

"Relief trains? Sure. We've got two of them coming — one from Sparks, one from the west. One's close now — at the Gap." Then he'd be gone again into the wind and snow.

"That man needs rest," opined Dr. Walter H. Roehll, a passenger.

But the assistant super couldn't rest; rescue was near. A scant 5 miles away at Emigrant Gap a rescue train with doctors, nurses, food, and sleeping accommodations chafed at the bit, waiting for the track to be cleared to the stalled streamliner.

Women and children in 101's forward coaches had been transferred to the Pullmans, but Miller knew that rescue before long was imperative. So out again, wading waist deep through the snow he went, west toward rotary 7205. There was a railroad to get moving. No sleep, no rest — a man can take just so much. By the time Miller staggered into the plow's cab, he had reached his limit, and he collapsed in a heap on the deck.

"Hey Frank! It's Miller!" conductor Lawson shouted to the 7205's engineer.

"Got to get him up to the streamliner," rasped Frank Neugebauer. "Up to that doctor." The engineman urged the whirling teeth of the rotary faster. Behind them the 4245 shouldered the rotary on.

Dr. Roehll came from the streamliner as soon as the rotary reached it. "Rest — lots of it. That's what he needs."

Lawson's crew backed the 7205-4245 down toward Emigrant Gap again. Maybe an engine could still get in from the west to free the *City*, or maybe the relief train could churn up to it that same perilous way. Perhaps, too, a pair of rotaries with a 4-8-8-2 sandwiched between them could get down from Norden above the streamliner. They were on the way: plows 7207 and 7208 with AC 4284 between them.

But Lawson's outfit, backing down the westbound track, got stuck in the drifts behind it. Lawson got to a phone and called Norden. Superintendent Jennings told him, "I've got two rotaries coming down the eastbound. Wait for 'em. Don't try to move."

They waited until finally they saw a figure on foot emerging through the blizzard like a ghost. It was a crewman from the 7207-4284-

Ski patrol members Bob Cooper (left) and Jack Holland were among those who trekked in with food and medical supplies for 101's passengers.

7208 set that had come down from Norden on the eastbound track.

"We're stalled, too!" the man reported. "Not far ahead of 101. Can you get back up the westbound and come alongside?"

Once again, 4245 shoved 7205 back up toward the *City*. They found the two rotaries and 4-8-8-2 from Norden under a mammoth snowslide about 600 feet west of the streamliner's diesels. The section men that had come up on Extra 2768 East were there, digging with shovels. It was no use — and there was danger of another, bigger slide. Bob Miller, working with the men again, ordered everyone out of the area, back to the relative safety of the *City*.

A short time later, however, several crewmen returned on their own to the frozen snowfighting equipment. In trying to free rotary 7208, Rolland Raymond, AC 4245's engineer, was killed when the plow overturned on top of him.

Weasels and Sno-Cats

Aboard the streamliner, where news of the tragedy had not yet been received, cheerfulness still prevailed.

"Those section men tramped all last night beating down a path just in case rescue does reach us. They'll do it again tonight," said a passenger. "How about raising a purse?" In a short time $80 had been gathered.

"I heard SP's got a snowplow . . . coming from the Union Pacific," offered someone else. "This outfit's trying, anyway!"

Southern Pacific was trying everything humanly possible to effect a rescue. So were others. The Sixth Army, under Maj. G. C. Cotton, loaded small tracked-vehicles called Weasels on flatcars and took them to the farthest point of penetration. But they couldn't make it. A Pacific Gas & Electric Co. Sno-Cat got through, but one vehicle could not take 226 people out. So it brought supplies in — and word of rescue efforts by rail, highway, and air. PG&E's Jay Gold, who died a few days later of sheer exhaustion, Charley Swing, and Roy Claytor manned the Cat. Claytor was the first man from outside to contact the isolated train, and his mere presence gave the passengers a needed lift.

The men of the California Division of Highways were hard at it, too. They thought they could get through to the train from Emigrant Gap and Herschel Jones' Nyack Lodge, about 4 miles west of the train.

Would one of the rescue trains make it first? Nobody knew, but everybody prayed and hoped.

The telephone company was on the job all this time, keeping the lines of communication open and answering as best they could the frantic appeals for word of loved ones aboard the stranded *City*. It operated a mobile two-way radio-phone automobile, which helped

On the afternoon of January 16, passengers make their way along the path beside the train to Highway 40. Autos and other vehicles then took them to Nyack, where they boarded a special train to Oakland.

to locate and save a truck of precious foodstuff for Nyack Lodge.

Assistant Road Foreman of Engines Charlie Carroll meanwhile recognized an essential but irksome task. He organized a latrine patrol, and with cans from the train's baggage car he and various crewmen performed the necessary operation.

Then another, potentially deadly problem arose. When the batteries under the Pullmans died, crews set up portable propane-fueled generators to recharge them. Carbon monoxide from the generators found its way into the cars, causing people to fall ill. That night and the next day, before the source of the problem was identified, Dr. Roehll and an SP doctor now aboard the train tended to the stricken and reported no serious cases. But it was a close call. Rotary 7222's fireman Ed Hardison was overcome in one of the Pullman rooms and could not make his way to safety. Sid Paradee, a passenger from Ohio, found Hardison and dragged him and another man to fresh air at the car's vestibule end.

"My legs just crumpled under me," said Hardison. "It was a Godsend that Mr. Paradee found us."

Crazed cook

January 16 broke calm and clear. The wind had died. A Coast Guard helicopter soared overhead. Visions of food, supplies, and perhaps a doctor descending by parachute with accurate news of a real rescue went through the mind of every person. Rescuers dropped supplies, medical aids, and food, but the doctor could not be safely parachuted.

"Look out, Colonel!" someone shouted, as an Army man made ready to catch some food stocks floating earthward fast.

"I'll catch 'em," he answered. And he did. Eggs! Some new stripes were added to his already spangled uniform.

Yet no rescue was in sight. Was it the calm before the next storm? A minor one broke at that moment.

"My third cook!" cried the chef in 101's dining car. "He's crazy — look at him go!"

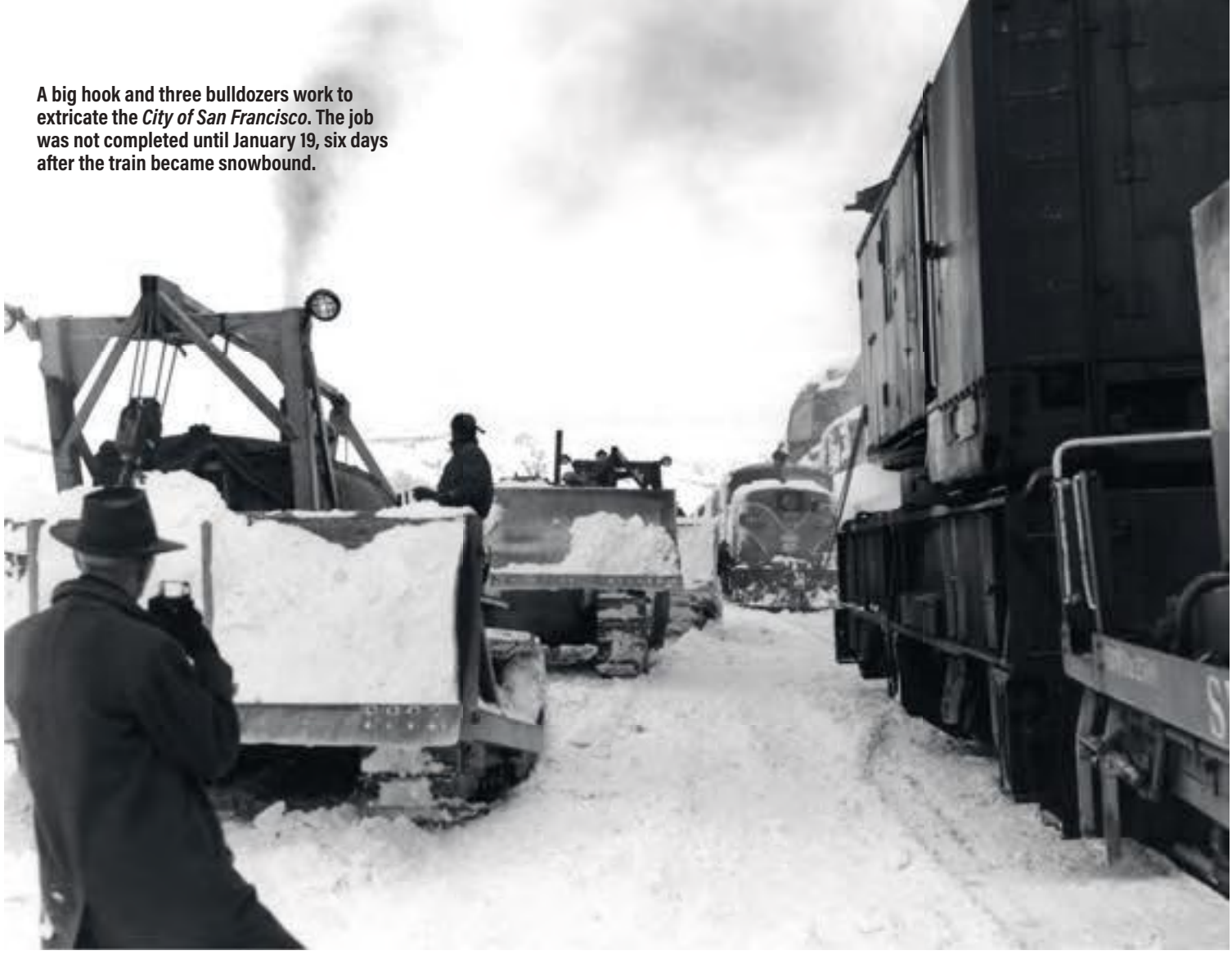
Ed Hardison heard and saw the gaunt, scrambling figure of the terrified cook dive through an open diner window into the snow beside the train. Deep, fresh drifts all but engulfed the man.

Hardison produced a ball of twine, strung it out so he wouldn't get lost himself, and started in pursuit of the terror-stricken man. Careful cajoling persuaded him to follow the snow drift up to the head end. He returned to the train — and, unbelievably, to his duties in the kitchen.

Tension, partly a product of the dead calm following all the howling wind and furious snow, was high. Still, no rescue came.

Workers load luggage onto a Pacific Telephone & Telegraph Co. Sno-Cat and trailer, which will take the bags down to the highway.

As train 101's passengers and their luggage are moved to safety, several miles to the west a rotary snowplow, pushed by an AC 4-8-8-2 running in reverse, churns its way toward the stranded equipment.



A big hook and three bulldozers work to extricate the *City of San Francisco*. The job was not completed until January 19, six days after the train became snowbound.

Restless for rescue

The passengers were feeling the strain too, and a number of them formed a committee bent on hastening their rescue. Bob Miller told them, "Your idea is fine, but first let me go to Crystal Lake again. I'll find out what Mr. Jennings has worked out for us. I know they'll get us out of here."

On this venture through the snow Bob Miller collapsed again and was cared for in a trackside shanty by other crewmen.

Meanwhile, engine 4188 had run out of water and could no longer supply steam — the *City* was now without heat.

The snow trail to the highway near the stalled train had been packed hard by the weary, persistent tramping back and forth of the section men. It was ready for the eager feet of passengers. January 16 was silent, calm, and clear as a bell.

"They're through! They got through! We can get out down the highway!" broke the silence. The hopeless inertia of more than 200 imprisoned humans transformed itself into movement.

"The Highway Department got 40 open," reported a crewman returning from the highway turnaround. Highway 40 is the transcontinental road over the Sierras. Dogged determination on the part of the state highway crews had blazed a way clear. It was just a short distance through a perpendicular cut through solid ice and snow to freedom.

Highway Department cars and private automobiles from Nyack Lodge crawled up the canyon, swung into the turnaround, and waited to make the final rescue.

Women and children made the jubilant exodus from the train, protected from the stinging cold by pillowcases with eyeholes cut in them. Blankets wrapped them against the weather. There were a few stretcher cases — none serious.

The autos took the passengers, crew members, and officials out down the sheer-walled canyon to the Lodge and to the waiting rescue train at Emigrant Gap. Most of the people went directly to the train. Steaks and the trimmings were on the house and beds were ready. Doctors and nurses took charge where they were needed.

Leaving the streamliner, Dr. Roehll turned to the Army colonel. "Colonel, we can fight an army, but we can't fight the elements."

Powerful caterpillars and bulldozers from A. Teichert & Sons and Luntz Construction Co. in Sacramento dragged the diesel units and the cars free up there on the mountain. But the human cargo was safe.

At Southern Pacific headquarters in San Francisco, the news of the freed train eased tired minds. Wrote newly elected President Donald J. Russell:

"The people of Southern Pacific again have lived up to their proud tradition of proving equal to every emergency. During the time the *City of San Francisco* was caught in the Sierra snow by one of the worst storms in history, all concerned worked together in the unceasing round-the-clock effort to liberate the passengers and the train. It was an inspiring demonstration of teamwork that wrote another epic chapter in the history of Southern Pacific. . . . Every man and woman who participated in this successful endeavor has my sincere thanks and deep appreciation." ■

FOR MORE about the City of San Francisco*'s stranding on Donner Pass, see Robert J. Church's definitive book* Snowbound Streamliner *(Signature Press, 2000).*

BLUE RIDGE GRADE The last major hurdle for Norfolk & Western coal trains bound for tidewater at Norfolk, Va., was the 9-mile, 1.2-percent grade east of Roanoke up to Blue Ridge. In these two August 13, 1958, photos, class Y6 2-8-8-2 Mallet 2129 and class A 2-6-6-4 1216 approach the summit with perhaps 150 cars. In the left distance, smoke from an engine pushing on the rear rises above the trees. . . .

. . . The pusher is 2179, a Y6b 2-8-8-2 added at the base of the hill a few miles out of Roanoke; it will cut off on the fly at the summit and back down for another shove. The A and Y6 up front will continue, likely picking up 50 more cars hauled over the hill earlier by a turn out of Roanoke. At Phoebe, top of a grade out of Lynchburg, the Y6 will come off, leaving the A in sole charge of 200 or so cars. *Two photos, Bob Krone*

B&O battles the Alleghenies

GRADES, CURVES, TONNAGE, AND MONSTER LOCOMOTIVES: THE WEST END OF B&O'S CUMBERLAND DIVISION HAS THEM ALL

By **E. L. Thompson**

There are three tracks on Salt Lick Curve. Repeated sanding of the rails and an avalanche of cinders has left them looking very dirty. The sweeping 10-degree curve has a water station at one end, and at the opposite end are the distant signals for Terra Alta, W.Va., the summit of Cranberry Grade on Baltimore & Ohio's Cumberland Division. Far below, Salt Lick Creek meanders toward its confluence with the Cheat River. In the distance, one hears the constant chugging of locomotives that never seem to get closer.

FROM NOVEMBER 1945 TRAINS MAGAZINE

CRANBERRY GRADE Just west of Terra Alta, W.Va., two Mallets move a coal train around sweeping Salt Lick Curve, a landmark on B&O's West End, sometime in the 1930s.

Baltimore & Ohio

KEYSER, W.VA. **The West End's largest intermediate point, Keyser hosts yards, a car shop, and a roundhouse. This 1952 scene looks west from the station.**
William P. Price

Finally, one of B&O's new Baldwin 7600-series 2-8-8-4 articulated locomotives, class EM-1, sticks its nose around the bluff and beats a slow, steady exhaust toward the sky as it weaves its way around the curve. Behind it come 4,650 tons, represented in 54 loads of coal, and then two of the LL-1 class 0-8-8-0 Mallets, each sounding as if the next chug would be its last. Even with this tremendous display of motive power, train speed is a mere 7 or 8 mph. However, this does not mean a stall is imminent, for that is the average gait of coal drags in their regular battles with the Allegheny Mountains here.

Several hours later, after crossing "The Glades," a 19-mile stretch of comparatively level trackage, this same train will drop slowly down Seventeen Mile Grade on the eastern slope of the mountains. Runaway safety spurs will serve to keep a check on the engineer's speed during a descent that is in places steeper than the climb up Cranberry.

This is the West End of the Cumberland Division, extending 101 miles from Cumberland, Md., to Grafton, W.Va. Featuring four separate grades of 2 percent or steeper, 30 brand-new articulateds, safety spurs, multiple track, and requiring 350,000 pounds of tractive effort to lift eastbound tonnage trains over the grades, this historic line ranks high in railfan appeal.

The most famous of the four major grades is Seventeen Mile, long known as one of the most severe mainline climbs in the country. More than 11 miles of this grade are at an average of 115 feet to the mile, which offers real opposition even to the big EM-1 articulateds. Cranberry Grade on the other side is nearly as steep, and holds an even more interesting position because tonnage coal trains, which move eastbound, must tackle it. Farther west are the shorter — but nearly as steep — Cheat River and Newburg grades.

The B&O's West End has many other interesting features besides the grades: leased Western Maryland and Reading 2-8-0s working as pushers on Seventeen Mile; Tray Run viaduct and Buckhorn retaining wall on Cheat River; runaway safety spurs; the ever-fascinating helper station at M&K Junction, where most of the 0-8-8-0s are stabled; articulated locomotives exclusively for road freight power; shortline railroads interchanging at Piedmont, M&K Junction, and Tunnelton; color-position signaling with high-speed dwarf signals on traffic tracks; middle tracks signaled in both directions; a large classification yard at Keyser; trains dropping down the mountains with retainers up and wheels smoking; important long-haul passenger trains blasting their way upgrade with a diesel road engine and a 2-8-2 helper, plus a 2-8-0 pushing; the twin Kingwood tunnels — and many other notable features, including a current average of 24 freight trains daily in each direction.

SEVENTEEN MILE GRADE **Mikado 4453 assists Pacific 5035 on a westbound troop train at Swanton, Md., 4 miles east of Altamont, on June 9, 1949.**
Bruce D. Fales, Jay Williams collection

SEVENTEEN MILE GRADE **Local train 30 stops at Bond, Md., in 1949. The track behind the tower is a safety spur for runaways, one of two on this grade.**
William P. Price

ALTAMONT, W.VA. One of the big EM-1 2-8-8-4s of 1944–45 tops the grade at the east end of The Glades with a coal train before starting down Seventeen Mile Grade; 54 cars back, a 2-8-2 is pushing.
Baltimore & Ohio

Up and down the West End

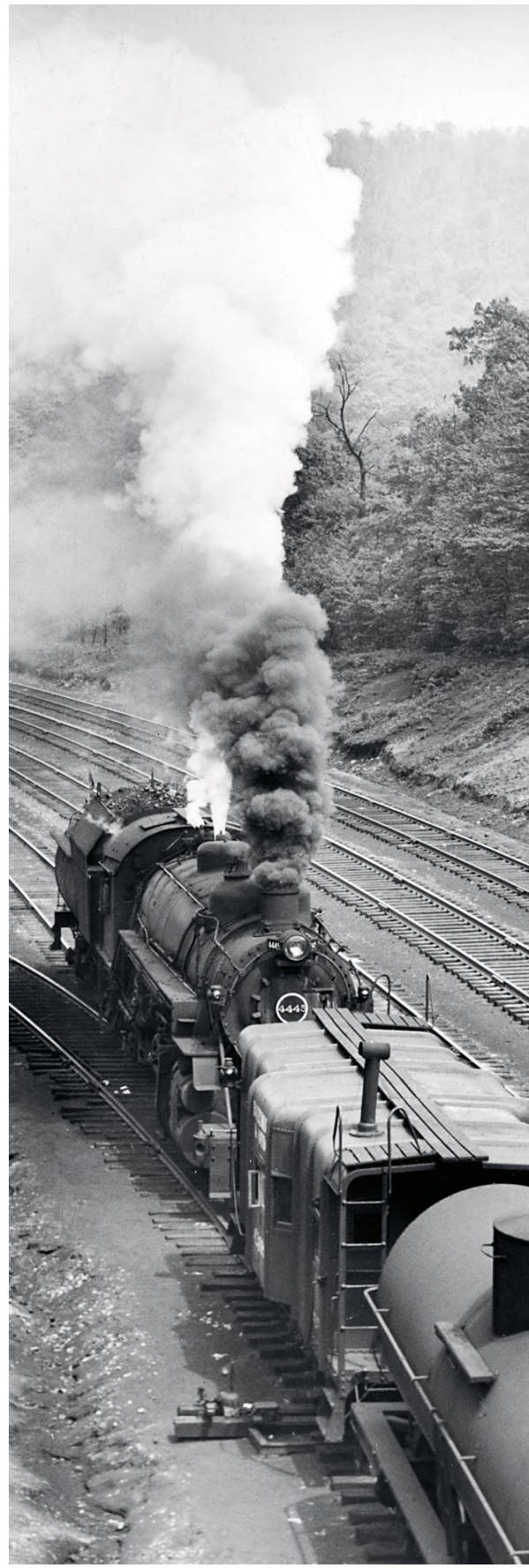
Scarcely any of the West End's 101 miles are level. From Cumberland to Keyser, there is a gradual climb of 175 feet in 23 miles, about 7 feet to the mile. In the next 5 miles to Piedmont, foot of the first mountain grade, another 104 feet must be climbed, with a maximum rise of 0.47 percent. The succeeding 1.8 miles witness an additional 89 feet of climb, with the gradient steepening to 1.57 percent.

Just east of Bloomington, Md., the line crosses the Potomac River, and then leaves it for good as Seventeen Mile grade gets under way in earnest. By Altamont, the line has climbed 1,620 feet in 15 miles, or an average of 108 feet to the mile. There are places where the climb is as stiff as 2.29 percent, and by deleting a few stretches near the summit where the grade is somewhat easier, we find that in the 11.2 miles from the Potomac River bridge to Swanton, the climb is 1,284 feet, or an average of 115 feet to the mile (2.18 percent), with *no* allowance for compensation of grade on curves.

From Altamont, highest point on the line at an elevation of 2,628 feet, there is a short 0.92 percent descent to Deer Park Hotel, and then the fall is very gradual through Mountain Lake Park and past Oakland to the Youghiogheny River. A varying grade rises to Terra Alta. This is the top of Cranberry Grade, from where the line drops 12 miles to M&K Junction. The main part of the grade, extending to a point just beyond Amblersburg, drops 1,000 feet in 8.9 miles, or an average of 112 feet to the mile (2.12 percent).

After reaching a low point of 1,402 feet at Rowlesburg, another 2.0-percent climb begins, this one lifting the line through the picturesque Cheat River Canyon to Blaser, a 454-foot ascent in less than 5 miles.

A mile and a half of 0.43 percent descent brings the line to Tunnelton, and then come the twin Kingwood tunnels. The westward track rises to the mouth, then drops at 1.0 percent to West End tower, whereas the eastward tracks climb at a steady 0.4 percent between these points. From an elevation of 1,774 feet, the line drops down Newburg Grade at an average of 1.97 percent to 1,236 feet just before Newburg. The fall is a shade under 1.0 percent between Newburg and Hardman, and then there is easy running to Grafton, with an additional loss of only 118 feet in the last 10 miles. Grafton is 999 feet



ALTAMONT Mikado 4445 is cut off on the fly from the caboose of a westbound freight it has just helped up Seventeen Mile Grade. Despite its exertions, the 2-8-2 has plenty of steam to spare.
H. W. Pontin

CRANBERRY GRADE Here's Parkersburg–Cumberland train 30 again, making time at McGuire Tunnel Cut, less than a mile west of Salt Lick Curve, in the hands of Mikado 4459 and Pacific 5035 on June 10, 1949. B&O daylighted a long-troublesome tunnel here when it installed a third track on Cranberry in 1911.

Bruce D. Fales, Jay Williams collection

CRANBERRY GRADE **Three trains on Salt Lick Curve! On the near track, two 2-8-8-0s lean on the caboose of a coal train. Overtaking the Mallets on the center track are a 2-8-2 and 4-6-2 with passenger train 30. And on the outside, empty hopper cars roll west for another load of coal. It's 11:49 a.m., March 25, 1945.**

Bruce D. Fales, Jay Williams collection

above sea level, representing a net gain in elevation of only 359 feet in 101 miles.

Of special interest are the safety spurs on Seventeen Mile grade, at Bond and Strecker, built in the 1910s to catch runaway trains. These spurs depend upon time-release switches. Approaching the tower at each location from the west, downgrade, a train must consume at least 59 seconds on a 1,700-foot circuit to ensure the mainline route. The switches are normally lined for the safety spur, and if less time is consumed, the towerman cannot throw the switch over to the main line until after an additional 2 minutes have elapsed. Frequently an engineer feels he might have run the 1,700 feet too quickly, so he will bring his train down almost to walk to allow the 2 minutes to elapse. If the towerman then sees the train is under control, he may line up the main track. The safety spur at Strecker extends 66 car lengths, and that at Bond 62, both reaching a maximum grade of 12 percent going up the side of the mountain. Once getting onto one of these tracks, it is almost impossible for a train to back out of it without assistance. Even should the train use the required time to allow the release to run down, an engineer may ask for the safety spur by sounding one long blast of the whistle. Unless he has a good reason for doing so, an engineer going onto a spur faces almost certain demotion from road to yard service.

> Scarcely any of the West End's 101 miles are level. Regardless of direction, all trains must climb — and descend — two grades of 2 percent or more.

West from Cumberland

Cumberland, the "Queen City of the Alleghenies," first saw B&O smoke on November 5, 1842. Construction to that point had been relatively easy compared with what was to come. While the road had been chartered to connect Baltimore with the Ohio River, there was doubt as to the route west of Cumberland. Various plans were considered, many of which resulted in legal entanglements with state legislatures and the new Pennsylvania Railroad.

It was finally decided to build to Wheeling without entering the state of Pennsylvania, and by 1850 construction of what became known as the West End was under way. By June 1851, the line reached Piedmont, where an enginehouse was built. Today locomotives are serviced at Keyser, but for many years Piedmont remained an operating point. The route chosen was generally the line of today. Considerable difficulty was experienced in building over the mountains, and on June 22, 1852, when the first train reached Fairmont, 22 miles beyond Grafton, Kingwood Tunnel had not been finished. Trains crossed the mountain on a temporary line.

B&O's Cumberland Division begins at Weverton, Md., 99 miles east of Cumberland. That 99 miles is the East End, one of the system's most important lines. The West End commences at Cumberland's ancient Queen City Hotel (the station and division offices are in the same building) and proceeds through the city to Viaduct Junction, where it bears left, while trains for Pittsburgh continue straight ahead and enter the Cumberland Narrows as they head for Sand Patch Grade.

After leaving Cumberland, the West End passes large plants of Kelly-Springfield Tire

CRANBERRY GRADE **Two photos made from the same location — a perch above the passenger shelter at Amblersburg, W.Va. — show an EM-1 leading . . .**
C. A. Brown

CRANBERRY GRADE **Mikado 4464 and Pacific 5018 work hard with a 16-car mail-and-express train in 1947. Sand, cinders, and brake residue on the right of way mean constant work for section men.**
Ralph E. Hallock

Co. and Celanese Corp. of America. Next comes McKenzie Tower, where the Patterson Creek cutoff joins the West End. This branch extends to Patterson Creek tower, 6.3 miles east on the division's East End. The *National Limited* and *Diplomat*, some through freights, and many eastbound coal drags use the cutoff to avoid Cumberland and save 10 miles.

The West End follows the left bank of the Potomac River, as does Western Maryland's line to Elkins, as far as 21st Bridge, where the B&O crosses the river into West Virginia just before reaching Keyser. This is a key operating point, as helpers are serviced here, and some trains make crew changes. With a population of 6,200, Keyser is easily the largest intermediate town on the West End. Just west of the passenger station are yards with a capacity of 1,900 cars. Eastbound coal drags are consolidated here into 100-car trains, and the articulated locomotives that brought them over the mountains give way to 64-inch-drivered Santa Fe types.

West Keyser marks the end of the yards, then, after some easy running, the line reaches Piedmont. The small Cumberland & Pennsylvania Railroad connects with the B&O here, and as the West End swings past the plant of the West Virginia Pulp & Paper mill, the hills rise high on both sides. Then comes Bloomington (where the line reenters Maryland) and the real guts of Seventeen Mile Grade. The line follows the Savage River, although climbing far above it, and the scenery is splendid.

At Bond, all eastbound freights (except those with diesel power) stop for inspection.

Between Bond and Strecker the curves are unusually severe, and this section is about the toughest on the entire grade. The high rock cliffs echo the exhaust across the narrow valley as the locomotives blast their way toward the top. The Savage River gives way to Crabtree Creek, another thread of water that has carved a rocky gorge down in the heart of the mountains. Just before Strecker is the short 399-foot Hitchcock Tunnel, and a similar distance beyond Strecker tower is a water station where many freights (and some passenger trains) pause to replenish their tenders.

After Swanton the grade moderates and the curves are much easier. This seems to give the straining locomotives an extra lease of life, and soon on the left, at Altamont, is a white stone sign reading SUMMIT OF ALLEGHANIES, ALTITUDE 2628 FEET. (Most recognized authorities spell the word "Alleghenies.") This is indeed the top! Helpers are cut off most trains here, and the line then crosses a 19-mile wooded plateau known as The Glades.

Deer Park, 3 miles west of Altamont, is the site of the once-famous hotel of that name, and both Mountain Lake Park and Oakland are thriving summer communities. A short distance north is the new artificial Deep Creek Lake, which is fast becoming an all-year playground. Soon the West End exits the state of Maryland for the final time, and after passing the West Virginia State Tuberculosis

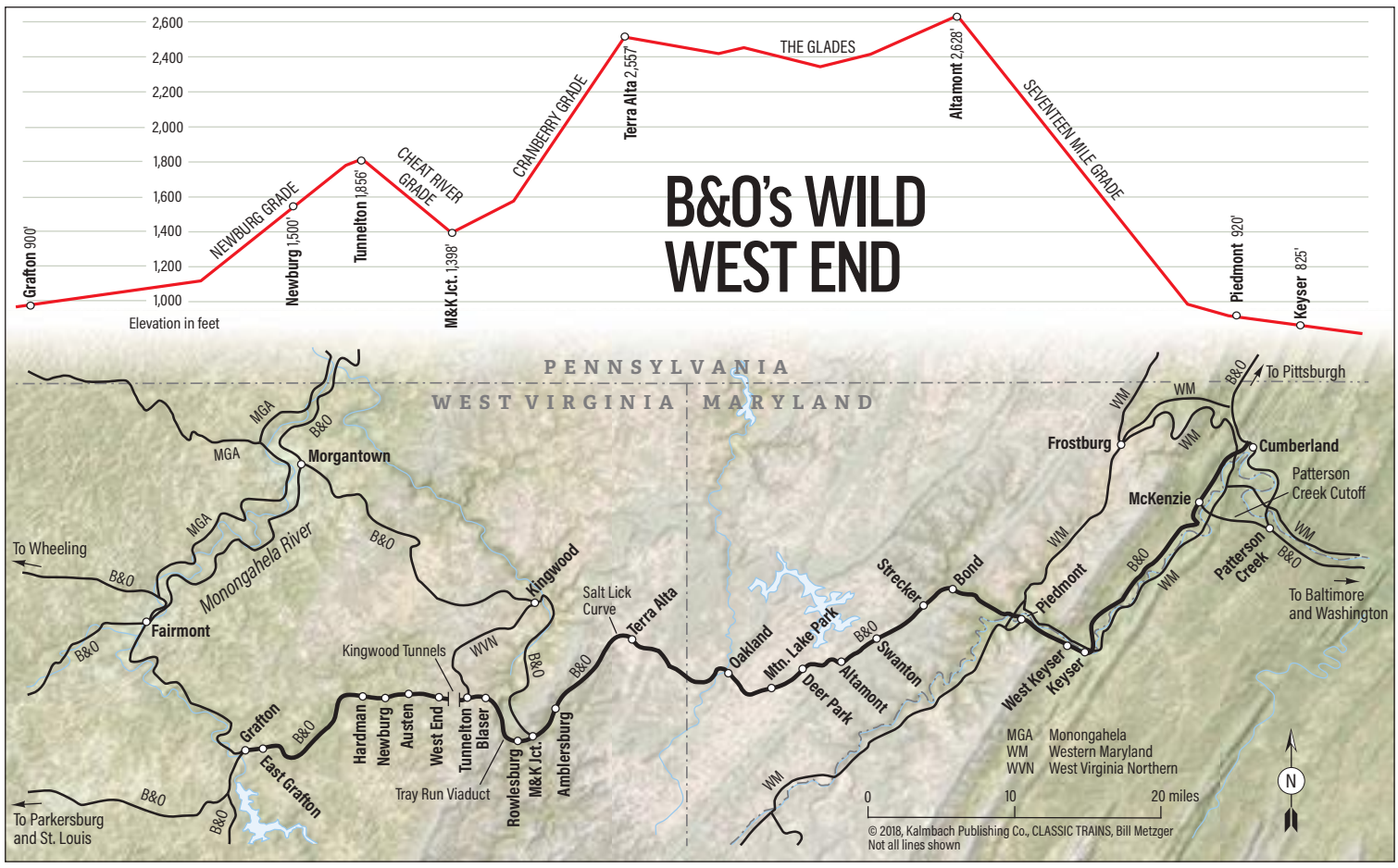
. . . a coal train up Cranberry on March 20, 1948, assisted on the rear by two 2-8-8-0s. Such a power combination is good for 4,650 tons, or 54 coal loads.

Two photos, C. A. Brown

M&K JUNCTION Situated at the base of two grades — Cranberry and Cheat River — M&K Junction at Rowlesburg dispatches helper engines in both directions.

E. L. Thompson

CHEAT RIVER GRADE EM-1 7610 crosses famous Tray Run Viaduct with 73 empty coal cars returning west to the mines; a 2-8-2 provides a boost on the rear.
E. L. Thompson



Sanitorium at Hopemont, the line reaches Terra Alta. Westbound freights stop to turn up retainers, and all eastbounds drop helpers. Terra Alta means "high earth," and it is the summit of Cranberry Grade, named for the extensive cranberry bushes once found in the vicinity. Just beyond, as the train drops downgrade, is Salt Lick Curve, and from there to Amblersburg, never-ending panoramas meet the eye as the line sweeps around one sharp curve after another. Amblersburg is wedged in by mountains on all sides, and the line makes a right-angle curve past here.

Then comes M&K Junction, a spot of almost continuous activity. The coaling station services nearly 150 locomotives daily, and on occasion has refueled more than 60 in an eight-hour shift. The numerous Mallets and Mikados employed in helper service operate in both directions from M&K, and in addition, two other lines connect here. One is B&O's M&K Branch, extending to Kingwood and Morgantown, while the other is the Rowlesburg & Southern, a small lumber road that interchanges several cars per week.

At Rowlesburg the main line crosses the Cheat River and begins climbing the grade of the same name, threading its way along the side of Laurel Hill. For part of the way the great Buckhorn Wall, a stupendous piece of masonry, bolsters the roadbed on the mountainside. One of the most difficult spots encountered by the line's early builders was at Tray Run, and now the railroad crosses this deep gorge on a high stone-arch viaduct. Clement's Fountain, a little farther on, is unofficially known as the most picturesque point on the West End, and the railroad maintains a small but attractive park from which to view this gorgeous canyon. From the roadbed clinging tenaciously to the side of the mountain, it is nearly 400 feet down to the Cheat River, which parts company with the railroad here.

At Tunnelton, short line West Virginia Northern brings coal to the B&O, and just beyond are the twin Kingwood tunnels, the old one a single-track bore of 4,154 feet, and the new one double-tracked, slightly lower, and 4,201 feet long. The descent of Newburg Grade is not as thrilling as some of the others, but for a short distance the curves are very sharp, and then after passing B&O's Raccoon Valley coal branch, the line follows Three Forks Creek on an easy descent. The Cumberland Division ends, and the Monongah Division begins, at East Grafton, 2.2 miles short of the terminal, and the yard extends between these points. Grafton itself is a railroad town of something over 7,000 population, and has the questionable distinction of being one of the smokiest towns in the country.

Not so fast

Maximum speeds on the West End are not high compared with other lines. Passenger trains are allowed 50 mph from Cumberland to Piedmont and from Altamont to Oakland; elsewhere the limit is 45. On the four major descending grades, this is lowered to 35 mph with minimum time prescribed in minutes. Fast freights are allowed 45 mph as far as Keyser, but from there west, the maximum is 35; there are no prescribed speeds for descending grades, but the minimum time works out at about 20 mph. Slow freight and work trains are limited to 5 mph less on Seventeen Mile Grade, while elsewhere they are 10 mph less.

The West End has two tracks or more throughout, with middle traffic tracks between Big Curve and Bond, Terra Alta and M&K Junction, and Blaser and Hardman. Additional third tracks, classed as slow-speed, extend between West Keyser and Piedmont, Piedmont and Kelley's Curve, Strecker and Altamont, Altamont and Wilson, Mountain Lake Park and Deer Park Hotel, and Terra Alta and Hopemont. On the short segments from Cumberland to Viaduct Junction and from East Grafton to Grafton, the main line has four tracks.

> A thrilling sight occurs each night when the *National Limited* drops through M&K Junction as both the road diesel and Mikado helper roar past with throttles wide open, getting a run for Cheat River Grade, fire still flying from the brake shoes after the long descent of Cranberry Grade.

The entire line, including all the slow-speed tracks, is signaled by color-position automatic block, and nearly all crossovers permit speeds of 30 mph. The West End has 14 interlocking towers and three additional telegraph offices. Remote-control switches are located at various strategic points. Eastbound there is only one passing siding, but westbound there are six. The difference is occasioned by more eastbound slow-speed tracks. In the 101.4 miles, there are 59.7 miles of double track, 38 of triple track, and 3.7 of quadruple track; passing sidings total 6.6 miles in length.

Tonnage rating for the older articulated locomotives westbound from Cumberland to Grafton is 1,300; for the new EM-1 class it's 1,500. In fast freight service these ratings are lowered by 200 tons. Eastbound the tonnage figures are 1,500 and 1,650, respectively, while fast freight ratings are 1,000 and 1,100. Each helper adds a corresponding figure, so it may be seen that three Mallets on coal drags up Newburg and Cranberry grades can handle 4,500 or 4,650 tons, depending on the lead locomotive; this

KINGWOOD TUNNELS **EM-1 7620 (left) has nearly finished its climb up Newburg Grade with eastbound coal in April 1948. Having bested Cheat River Grade on June 11, 1949, another EM-1 (right) leads a westbound into the double-track tunnel, opened in 1912 to supplement the original single-track bore at Tunnelton.**

Left, William P. Price; right, Walter H. Thrall

NEWBURG GRADE At noon on July 27, 1949, 2-8-8-0 7170, helped by two sisters on the rear, makes 5 mph with 54 cars of eastbound coal near Austen, W.Va.
R. H. Kindig

NEWBURG GRADE B&O's 86 2-8-8-0s were built as Mallets during 1916–20. The road converted 60 of them to simple articulateds between 1927 and 1940, including this pair helping a coal train up Newburg in 1948. The 2-8-8-0s were the West End's top power until 2-8-8-4s and FT diesels came in the early '40s.
William P. Price

GRAFTON, W.VA. The *Metropolitan Special*, having spent the better part of the afternoon traversing the West End, departs Grafton for Cincinnati and St. Louis.

Bruce D. Fales, Jay Williams collection

is from 52 to 54 loads. Most westbound helpers are B&O 2-8-2s or 2-8-0s from the Reading or Western Maryland, and they add 650 tons to the rating. Class S-1 Santa Fe types are rated at 1,050 westbound and 1,175 eastbound, although they are used only for occasional helper service on Seventeen Mile Grade.

The 5,400 h.p. EMD FT freight diesel quartets are rated at 2,150 tons westbound without assistance and 2,050 eastbound. Helpers make the same additions as they do with steam locomotives. Diesels are used regularly only on the St. Louis section of time freights 97 westbound and 94 eastbound.

Of interest is that assistance in the form of an additional Mikado must be provided for eastbound coal trains from Mountain Lake Park to Altamont; other helper districts are Piedmont–Altamont; M&K Junction–Terra Alta; M&K Junction–Blaser; and Hardman–West End. The usual adjustments are made during unfavorable weather, of which there is a plenty on this piece of railroad.

The best scheduled freight time on the line from Viaduct Junction to East Grafton is 5 hours 10 minutes, or an overall speed of 19.9 mph. However there are only three westbound and five eastbound freights shown in the timetable, with the balance of the movements, which total an average of 24 in each direction, operated as extras. While the number of tonnage coal trains will vary, a good average is about 17 per day. The heaviest movement occurred from East Grafton on October 24, 1943, when 1,702 loads were dispatched, and the record average monthly movement has been 1,374 in August 1943.

Helper assignments on passenger trains vary. Light Pacifics can handle five cars without assistance, and the heavy P-1d's are allowed six. Diesels are given extra helpers to keep the speed over 25 mph and thus prevent damage to their motors. The heavier trains use a 2-8-2 to doublehead the diesel on the front end and a 2-8-0 pusher on the rear.

An EM-1 for FDR

An interesting problem arose on a campaign trip of President Franklin D. Roosevelt when he returned from Chicago through Clarksburg. The train had 14 heavy cars, and because of the nature of the party, helpers could not be put on the rear. With only one 2-8-2 assisting, the diesel would have fallen below 25 mph on Cranberry Grade and overheated its motors. The solution was to doublehead an EM-1 in front of the diesel from Grafton to Terra Alta, and what a sight *that* made!

A thrilling sight occurs each night about 11:35 when the *National Limited* drops through M&K Junction and Rowlesburg as both the diesel and Mikado roar past with throttles wide open, getting a run for Cheat River Grade. With mountains towering on all sides to kick back the echo, and fire still dropping from the brake shoes after the long descent of Cranberry Grade, this is a sight long to be remembered. For anyone who'd like to try a sample, overnight accommodations may be secured at a small but nice hotel directly across the tracks from the Rowlesburg station, and after Nos. 1 and 121 (the overflow section of No. 1) roll through, should one still not be sleepy, the show is repeated at 1:20 a.m. when the *Diplomat* flashes by on its nightly journey across the Alleghenies.

The West End of B&O's Cumberland Division really puts on quite a show. To the railfan whose heart beats faster to the tune of mountain railroading, with frequent trains and many locomotives, no better tonic could be prescribed than this piece of railroad.

E. L. "TOMMY" THOMPSON worked for the Washington Terminal Co. and the B&O. His first TRAINS article was in 1940, his last in 1973. He had a keen interest in train-timing.

MOUNTAIN RAILROADS IN PHOTOS

LOW-GRADE TRANSCONTINENTAL Canadian National's Vancouver–Toronto/Montreal *Panorama* has a mix of heavy- and lightweight cars, including an ex-Milwaukee Road Super Dome, in its consist as it curves through the Rockies in western Alberta on a sub-zero day in February 1967. The CN main line manages to cross the Continental Divide at only 3,717 feet, on grades not exceeding 0.7 percent. *George G. Weiss*

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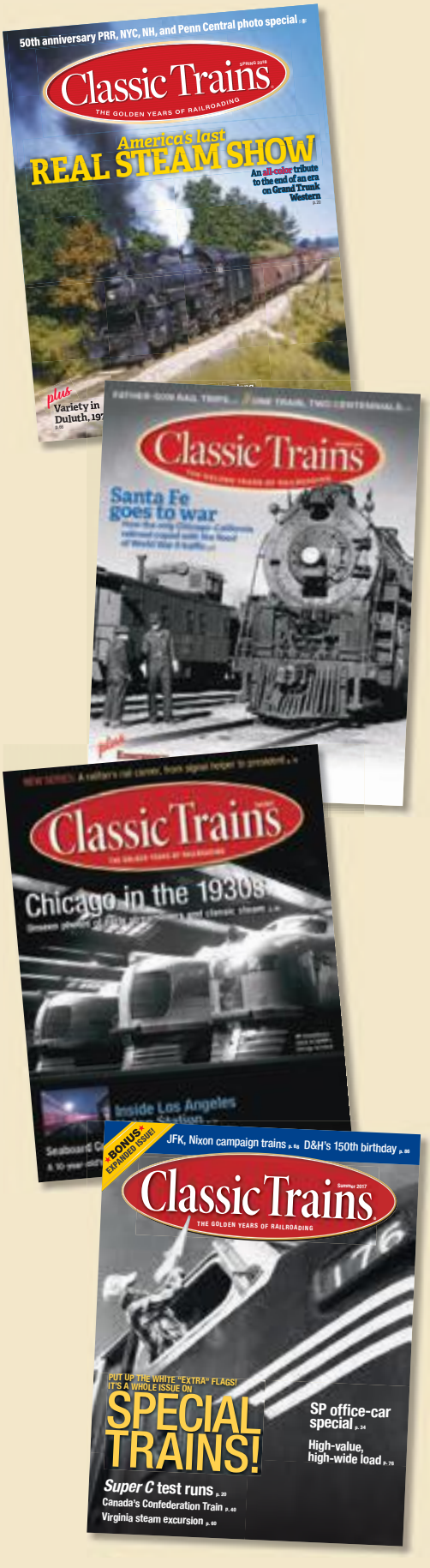

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