Railways of the United States spend millions of dollars each year keeping their lines operating in even the fiercest winter weather, while their competitors on the highways wait for the government to clear the roads. In this article, TRAINS tells the story of railroad snow-fighting on one midwestern railroad during the particularly bitter winter of 1935-36, and of how the railroad kept trains running when all other means of transportation were tied up.

The Winter of '36

Division superintendent relates how the Milwaukee Road fought heavy snows in subzero cold

BY JOSEPH C. O'HEARN

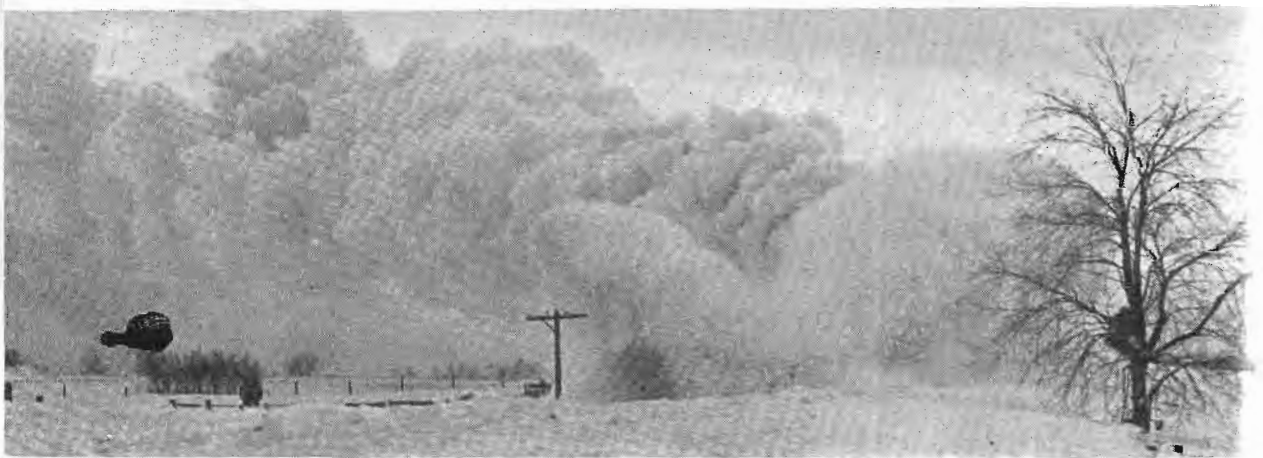
BATTLING blizzards, subzero temperatures and high winds, hundreds of men fought to keep open the hard-hit eastern end of the Chicago, Milwaukee, St. Paul & Pacific Railroad (Milwaukee Road) in an epic war against nature nine years ago. From January 18 to February 20, 1936, the railroad spent more than a million dollars for snow removal. Only four times during the 34-day period did the thermometer rise above zero, and, when this occurred, blizzards or storms of near-blizzard intensity accompanied the "milder" weather. Details of how freight and passenger business were handled during the period have not been published before, but one day recently J. H. Valentine, superintendent of the Milwaukee Division, got to reminiscing.

Valentine was not only in the middle of it, he was above, below, in front of and behind the battle against Old Man Winter at its worst. He spent hours out on the line and more hours in his office in the Milwaukee depot, constantly using the phone to keep in touch with distant points where trouble hit hard. Ordinarily, his division employed about 140 maintenance men. During the period from mid-January to near the end of February, that number was increased until, at the peak, more than 900 men were at work clearing the lines. Operating costs jumped 112 per cent while business rose two per cent, yet, during the entire period, the longest time any passenger was delayed out on the line was about three hours.

During early January, considerable snow fell over the area composing the Milwaukee Division, although the fall was not above the average of other years. Wedge plows were used and schedules were maintained with comparative smoothness, but on January 17 real trouble entered the picture. A blizzard, sweeping in from Lake Michigan and riding on a northeast wind that had the anemometer cups spinning up to a 35-miles-per-hour velocity reading, piled up 13.6 inches of snow in nine hours. That was just 1.2 inches more snow than normally falls in the area during the entire month of January. Drifts blocked the lines as fast as they were opened. Wedge plows of wood and

West of Ripon, on the Milwaukee Road Oshkosh line, a wedge plow blasts into a four-foot snowdrift. Snow is thrown 25 feet into the air when the plow crashes the drift at 20 miles per hour.

J. Valentine collection.



J. Valentine collection.

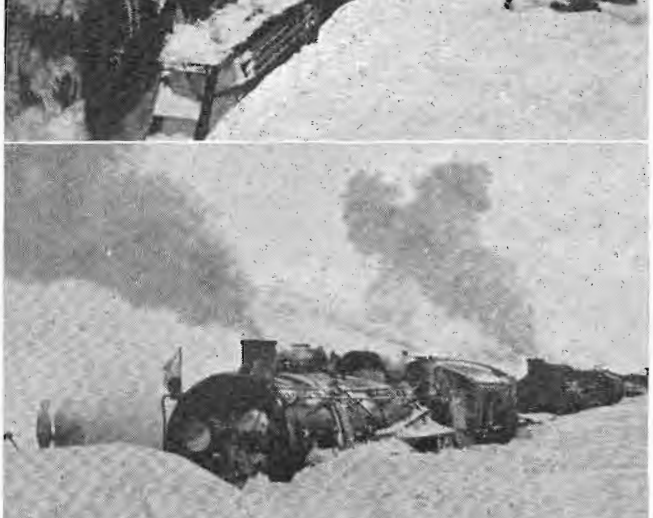
Sunday, February 16, 1936, and the thermometer reads 16 below. The engine is waiting for the track to be cleared so it can pull out a cut of freight cars from a stalled freight ahead.

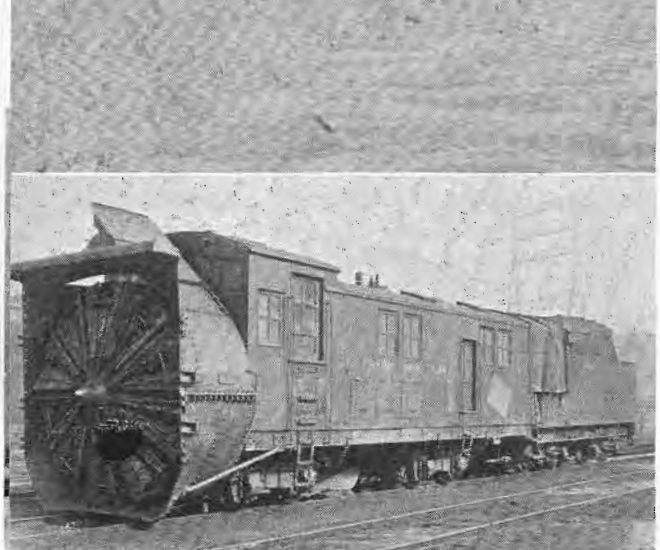
metal construction, attached to a car weighted down with stones, were in constant use. It soon became apparent that more men were needed. By midnight, 100 men had reported and had been assigned to critical areas. Toward midmorning on January 18 the storm abated, and by noon all lines were open.

Three normal days followed. Then, on the morning of January 21, winter returned to the attack. At 8 a. m. the thermometer stood at 1 degree below zero. Instead of rising, as is customary during the morning hours, it dropped, or rather plunged, only stopping at 11:30 a. m. when the mercury hit 26 below zero! High winds lifted surface snow and piled it in drifts across tracks. Valentine, knowing that the equipment on hand was not sufficient to cope with the situation, sent out calls for two rotary plows which were then in Mitchell and Aberdeen, S. D.

The first rotary arrived in Portage, Wis., on January 26. But between January 21 and 26, many things had happened. Drifting snow, coupled with temperatures that ranged between 18 and 26 degrees below zero, had played havoc with the lines, men and equipment. The equipment, equal to conditions encountered in an entire normal winter, had been placed under terrific hammering through constant use. Heavy toll was taken as, day after day, the wedge plows were driven into increasingly deep drifts. A support stay would snap and half the wedge would drop on the track, useless until repairs could be made. Or a side flange would buckle, piling up snow on the incline of the wedge and, before the locomotive pushing the plow and the weighted cars could be stopped, the plow would topple sideways, jamming up the line until it could be righted. Men and still more men were called, until over 450 were at work, digging down through wind-hardened and frozen drifts.

Receiving word that the rotary had arrived at Portage, Valentine gathered a crew, boarded a caboose behind a K-1 Prairie, and set out to get it. The men who had brought the rotary from Mitchell turned it over to Valentine and his crew with plenty of instructions, especially concerning clearances, and the K-1 was coupled on behind the rotary for the return trip to Milwaukee. Things were going very nicely at four miles per hour, the absolute maximum speed at which the plow could be operated, until Fox Lake, Wis., was reached. The rotary





Above, left and right: Solidly packed drifts cause plow to snap stay and twist to one side. Left: Snow-cuts through drifts 9 to 17 feet high were a continuous challenge between Chicago and Milwaukee. At bottom is shown one of the rotary plows sent to Milwaukee from South Dakota, pictured on March 3, 1936, at the Milwaukee Road shops, where nine feet of snow was piled only ten days earlier.

blades had been merrily whipping the snow drifts into high arcing flumes, but suddenly the fluming stopped, although the blades kept whirring. The plow was backed up, then sent slowly into the drift, which was somewhat larger than those previously encountered. Valentine was standing atop the drift, watching the proceedings. As the blades met the deep snow, he noticed that the lower part of the frame encasing the blades nosed upward instead of biting at the base of the drift. Another K-1 was called out from Horicon, and when it arrived it was coupled behind the first K-1. Both engines grunted forward in unison. The rotary blades bit into the drift and the plow held down to the drift base. The extra power of the second K-1 was all that was needed, and Milwaukee was reached without further trouble.

While recounting the experience, Valentine gave a bit of interesting information concerning rotary snowplows. The first one to arrive was an old type in which the operator sat up in front in a cab where he could get a good view of conditions ahead. The cab was part of a wood structure built completely over an old locomotive from which all drive wheels and cylinders had been removed. A fireman, back in what was originally the cab of the locomotive, kept up steam in the boiler to supply power to the mechanism driving the rotary blades. He also operated controls in accordance with signals received from the operator via the transmission cord and the standard communications cab whistle. The entire rotary machine was, of course, pushed by a locomotive the engineer of which also received signal for stopping, starting and reversing.

Bottom, courtesy Milwaukee Road; others, J. Valentine collection.

The second plow, arriving from Aberdeen a week after the first made its appearance, was a new type. Its operator had a complete set of controls in the cab for governing the rotary blades. He also had control of the air on the locomotive pushing the plow, but he still sent signals to the engineer as to direction and speed requirements.

FORTUNATELY, conditions were not as bad when the new plow arrived in Portage, and the crew which met it had sufficient opportunity between there and Milwaukee to learn the basic features of its operation. From Milwaukee, the plow was sent to various points to clear out stubborn drifts. On January 28 the temperature began a slow rise, continuing upward until January 30, when 6 below was registered as a minimum. The warmer weather ushered in a new series of snow storms, some light, some fairly heavy, but all adding to the task of maintaining schedules and services. No sooner would one area be opened than another would need attention. Valentine rushed men to the troublesome districts—50 men here, 75 there.

Trains were stalled after plowing into deep drifts, and when this occurred to long freight trains, a special procedure was used to break them out. A freight locomotive and a work train loaded with shovelers were sent out behind a plow, the plow taking the opposing main at the crossover nearest the rear of the stalled train. The locomotive then continued down the line and upon arrival at the scene would pull out a string of about 20 cars. These would be taken back to the crossover and set out on the opposing main, and the helper again would proceed to the remainder of the stalled freight, attempting to pull it free. If this was impossible, another cut would be taken over on the opposing main. Meanwhile, a gang of men, sometimes numbering more than 100, would be hard at work shoveling snow from the wheels of that part of the train remaining in the drift. In most cases only two cuts were necessary, although an exception occurred one night when four cuts and two helper engines were needed.

Upon freeing the stalled locomotive so that it could gain traction, the helper would pull the remaining cut from the opposing main back to the original main, and the train would be made up again. The plow then would come onto the original main ahead of the train, and clear out the drift. With this done, the delayed freight would proceed on its way. Naturally, all opposing traffic was delayed, but fortunately such tie-ups occurred mostly at night, when few passenger trains were in operation.

On Saturday, February 8, the sky was darkened at about 4 p. m. by low, scudding black clouds driven in from over Lake Michigan by a strong east wind. A half hour later, day turned to night, and from the clouds fell a blinding, driving snow. The storm, increasing in tempo, added five inches of snow in three hours to the two-foot blanket that had already fallen. The second rotary plow had arrived from Mitchell only that morning, and Valentine had both plows out on the division, working with a gang of 600 men to keep the lines open. It was an all-night process, and on Sunday morning conditions seemed fairly well under control, although a heavy snow was still falling.

On that morning, No. 14 started out from Milwaukee for Chicago with a wedge plow and a locomotive running ahead. No. 14 was followed by No. 58 in about five minutes. At Sturtevant, 23 miles out of Milwaukee, the

Optional routes

TRAINS each month prints a brief listing and survey of available routes between larger cities.

Buffalo and New York City:

New York Central—Fastest and most frequent service. Local and through sleepers on several trains. Several day trains, led by *Empire State Express*, which has all seats reserved and an observation-solarium available to coach passengers. Standard fare.

Lehigh Valley—Sleepers and coaches on night trains; day *Black Diamond* has semi-streamlined coaches and conventional parlor-solarium. Good meals, fine scenery. Differential fare generally lower than standard.

Delaware, Lackawanna & Western—Several sleepers; eastbound, this road has widest choice of departure hours for local sleepers. Most coaches air-conditioned. Day train has coach - lounge and parlor - solarium. Good meals, scenery. Fastest of differential routes.

Erie—No sleeper into Buffalo, but car available Hornell - New York and return. Day and night train, also another weekday train. Day train has a through coach. Least crowded of coach routes. Fare differential.

Pennsylvania—Indirect, via Philadelphia. Sleepers and parlor west of there. Fare about as standard.

Hudson River Day Line—In summer, NYC tickets may be exchanged for steamer tickets, Albany to New York and return.

plow unit stopped for water, which gave No. 58 a red board at a signal a mile north of Sturtevant. The plow and No. 14 went on their way, but No. 58, after starting up, became stalled in a rapidly filling drift which the plow had cleared only a few minutes before. The dispatcher at Milwaukee, getting no clearance for No. 58 from Sturtevant, realized what had happened and issued orders to Tower 68, 17 miles out of Milwaukee, to hold No. 56, which had already left for Chicago. The information was also given to Valentine, who immediately ordered a rotary and a crew to prepare for action, joining the rescue party himself.

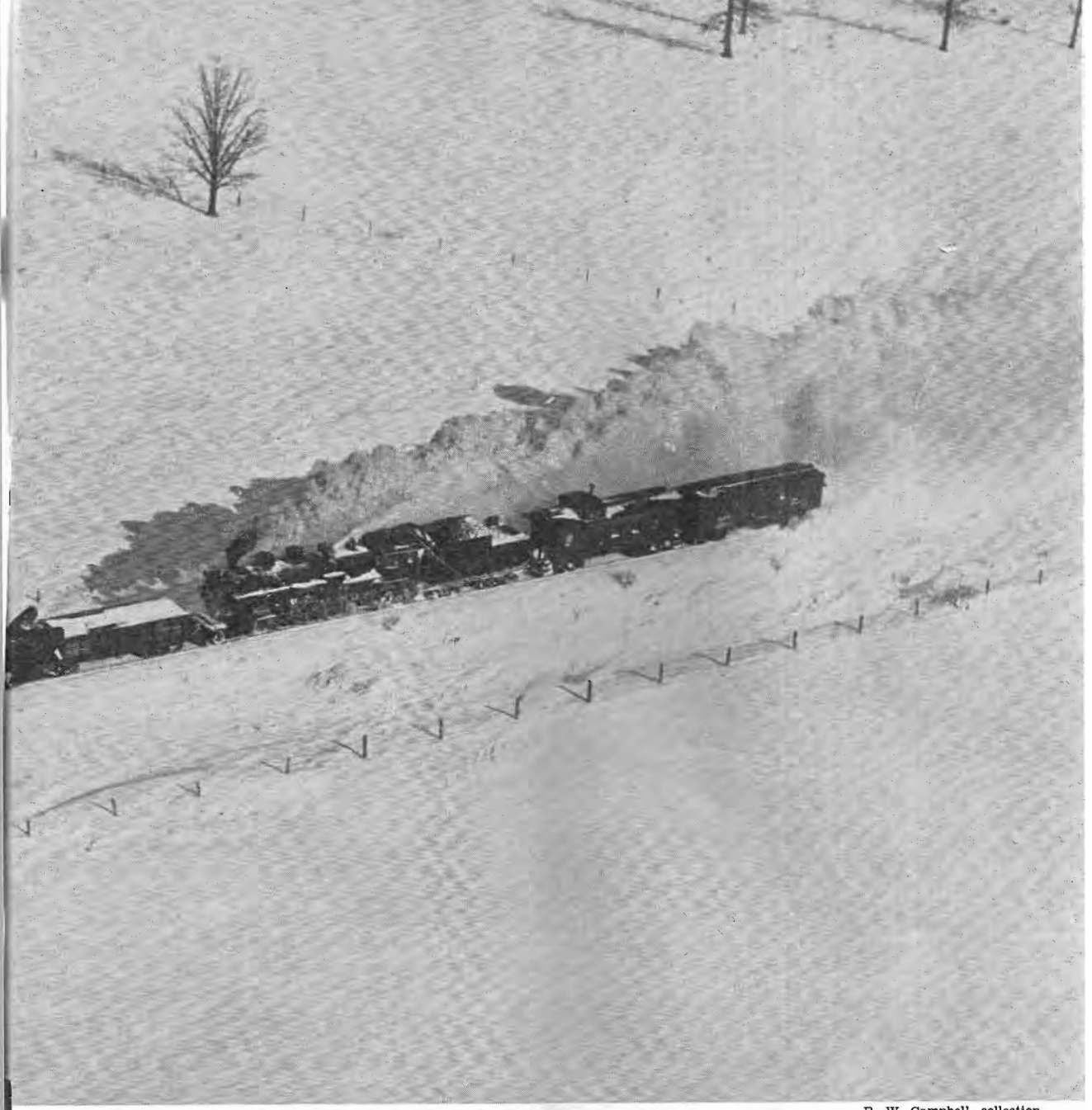
The *Pioneer Limited,* No. 4, was about to leave Milwaukee, so Valentine directed her to follow the rotary. At Lake, 6½ miles out of Milwaukee, both the rotary and the *Pioneer Limited* crossed over to the opposing main. Arriving at Tower 68, the rotary pulled ahead to the point where No. 58 was stalled, and the *Pioneer* stopped just opposite No. 56. The tops of both trains were just level with the tops of the snow banks on each side of the tracks. Between the trains was a wall of snow about six feet high, and through this passageways were cut. Passengers were then transferred from No. 56 to the *Pioneer.*

The baggage cars on both trains stood directly in line with each other. Orders had been given, before leaving Milwaukee, that a coffin containing a body be transferred from No. 56 to the *Pioneer.* Since the baggage cars were directly opposite each other, the transfer was accomplished by merely lifting the coffin to the top of the wall of snow between the trains, sliding it across and gently lowering it through the baggage-car door on the *Pioneer.* How, with snow flying thick and identification of baggage cars impossible to make, the two baggage cars came to be lined up so perfectly still puzzles Valentine.

The *Pioneer,* with all passengers from No. 56 aboard, proceeded down the opposing main behind the rotary. Upon arrival at the signal where No. 58 was stalled, passengers from the latter train also were transferred to the *Pioneer.* The *Pioneer* then proceeded to a crossover near Sturtevant and went on to Chicago on the right-hand main, carrying a total of 350 passengers. Late that same afternoon, both No. 56 and No. 58 were freed, all traffic in the meantime having been run around them. The delay for those on Nos. 56 and 58 was about 3¼ hours, the longest wait out on the line for any passengers on the Milwaukee Division during the entire period of the 1936 battle with Old Man Winter.

The following is a report received in the division superintendent's office on February 10:

> J. H. V.: I have checked on the number of snowdrifts on my division. Between Atwater and Berlin, 23; between Ripon and Oshkosh, 18; between Horicon and Portage, 10; between Brandon and Markesan, 7; between Rush Lake and Winneconne, 10; total, 68 drifts 9 to 17 feet high and from 100 to 3000 feet long. Most of these continue to fill with snow driven by winds. We have used plows and flangers, and have flanged



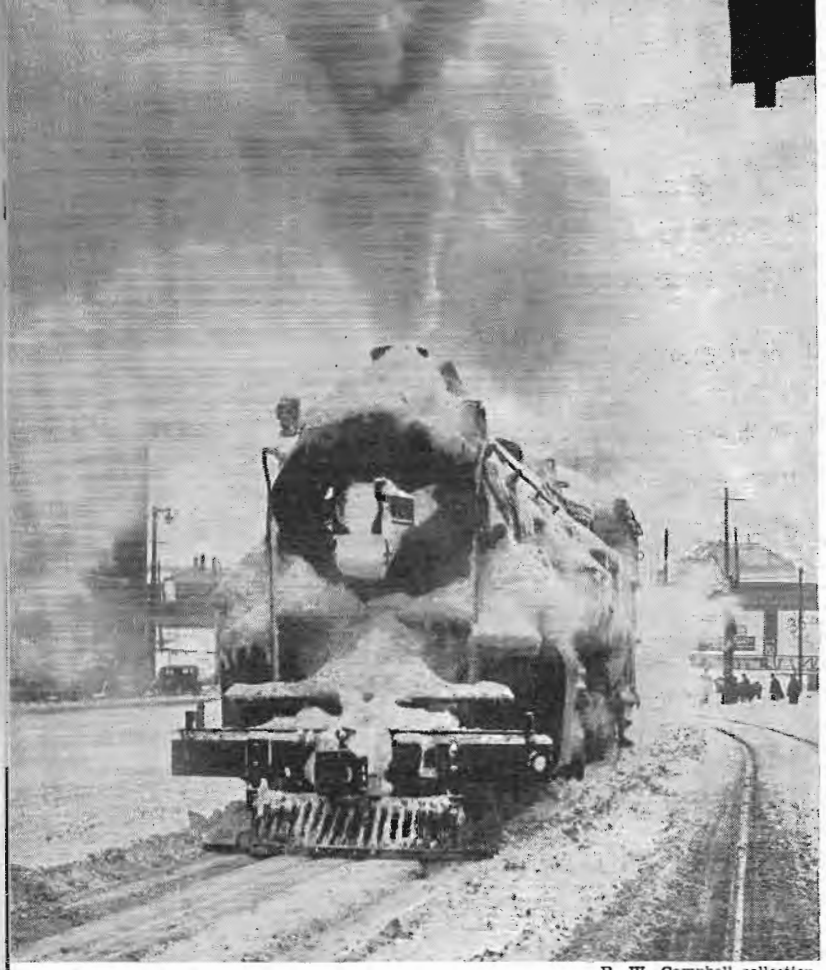
R. W. Campbell, collection.

Nearing Rugby Junction on February 5, 1936 (temperature, 25 below), is Milwaukee Road engine No. 8254 and snow work-train. The front car is loaded with stone. Before hitting a drift the caboose and supply car are cut off.

many of them by hand. We may have one month of snow conditions that will continue to tie up the road. Pickett, Berlin and Oshkosh wire reports of five-foot drifts in cuts today and it is still snowing. J. H. Johns, Road Master.

The Milwaukee Division has five subdivisions, totaling 637 miles of line, with a road master in charge of each subdivision. J. H. Johns' division comprised 130 miles of line, and his report was, of course, only for the area he outlined.

On February 12, when the thermometer hiked to 14 degrees above zero, Valentine considered sending the rotary plows back home, but a hunch told him to wait. It was a good hunch, too, for that very night a storm, bearing in from the northeast, hit the division. This one started out in earnest and really topped all its predecessors in intensity. The temperature fell from 6 above to 6 below overnight, and winds



R. W. Campbell collection.

Engine No. 6332, a 4-6-2, leads a doubleheaded passenger train into the Milwaukee station after running through a blizzard. Men at far right are clearing the passenger-car turntable. Below: At the eastward siding near Sturtevant, Wis., this switch stand was buried in snow twice its own height.

J. Valentine collection.

howled to new velocity records. The rotary plows were shagged out and run practically doubleheaded, since one followed behind the other with only a few minutes elapsing between their departure times. More men were hired, until over 900 were at work.

On February 14 there was 38 inches of snow on the level and more was in the making. The storm continued through February 16 with a steadily dropping thermometer until, on February 17, 26 below was recorded, with a wind velocity of 53 miles per hour. Dry, stinging, powdery snow blasted at workers out on the line. By early morning of February 18, the official snowfall recorded for the entire month was 23.8 inches, more than twice the normal fall, and 15 inches of it had fallen between February 12 and 18.

About midnight of that February 18, Valentine left his office, exhausted and hoping for a few hours' rest. At 3:30 a.m., however, he was roused by a telephone call which told him that 17 freight trains were stalled at various places in his area. One stalled freight is plenty of cause for worry, but 17—well, just picture the procedure of getting one freight train out of a drift! He hurried to his office, where he was given a report covering the locations of the stalled trains. Three were between Roundout and Janesville, three between Chicago and Milwaukee, six between Kittredge and Sturtevant and five were deep in the snow on the roads from Oshkosh and Portage to Milwaukee.

For 14 hours straight, Valentine dogged, cajoled, and bullied every man on the division. He was out working with them. At every opportunity, he broke in upon the dispatcher's line and gave orders that would relieve tight situations. He rode the rotary plows down the line between walls of snow that were often above the tops of the engines. By 5 p.m. on February 20, all trains were free and all lines once more were open. The wind died, and the temperature began a slow, steady, upward climb.