

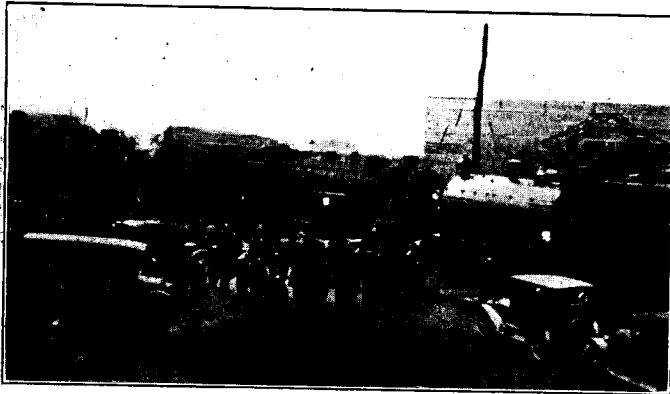
The Test was Witnessed by Many Prominent Men

# Test of New C. M. & St. P. Electric Locomotive

## Two Steam Motive Power Units Used to Try Capabilities of Giant Electric Competitor

**T**ESTS WERE MADE ON one of the five electric locomotives built by the General Electric Company for the Chicago, Milwaukee & St. Paul at Erie, Pa., on Friday, November 7. The large number of prominent engineers and railroad men present at the demonstration was evidence of the interest taken in the subject of electrification. The representation included 11 American railroads, two Canadian railroads, the Chilean Railway Commission, manufacturers from the United States, France and Japan, several consulting engineers, and representatives of the General Electric Company from various parts of the world.

During the morning a number of speed runs were made along the three-mile test track. Two passenger cars were



Two Steam Locomotives Were Used as Prime Movers for Regeneration Test

hailed on some of these runs and some were made with the locomotive running light. The runs were continued until every one had had an opportunity to ride on the locomotive. It was particularly interesting to note that practically all of the railroad men who rode in the cab of the locomotive under-estimated the speed. A speed of 60 miles an hour was estimated usually at about 45.

In the afternoon tests were made to show what could be done with regenerative braking. Two New York Central steam locomotives were brought onto the test track. One of these was a (4-6-2) Pacific type and the other a (4-8-2) Mohawk type. These were coupled in tandem to the electric

locomotive and used to push it while the electric locomotive was made to regenerate electric power to the trolley and thereby resist the power of the steam locomotives. The steam engineers were instructed to use all the power they could, but it was possible with both steam locomotives working to full capacity to hold the speed down to any desired value by regenerating with the electric. The noise of the exhausts was good evidence of the fact that reverse levers were left in the extreme forward position and that throttles were wide open. A measurement of just what the steam locomotives were doing was obtainable in the sub-station where the meters showed that the electric locomotive was returning 1,200 amperes at 3,000 volts or almost 5,000 hp. of electrical energy to the power system. This was done at a speed of about 25 miles an hour. When pushed by another electric locomotive, one of these engines has returned as much as 1,600 amperes to the line.

After a number of regeneration tests had been run all of the observers were taken in a train hauled by an oil-electric locomotive to a point near one end of the test track, where a tug-of-war test was made. This part of the track was used because of the possibility of damaging rails by slipping drivers. The three units were coupled as before and at a given signal the steam locomotive engineers started to push the electric locomotive, and the driver of the electric started to push against them. The steam engineers showed some expert handling in this test, and neither one slipped the drivers of his engine. At first the steam locomotives were allowed to push the electric a short distance. Then additional power was applied to the electric until the steam locomotives were pushed slowly backward. This was repeated several times. Comparative data for the two locomotives is given in the table. The total weights given for the steam locomotives do not include the tender.

	Pacific	Mohawk	Electric
Total weight, lb. ....	273,000	343,000	530,000
Weight on drivers, lb. ....	173,000	234,000	458,000
Weight on each driving axle, lb. ....	57,667	58,500	38,167
Diameter of driving wheels, in. ....	72	62	44
Size of cylinders, in. ....	22x28	28x28	.....
Number of driving axles. ....	3	4	12

From the data in the table it may be seen that the total weight on drivers of the electric locomotive is 51,000 lb. greater than that of both steam locomotives. For this reason the test did not illustrate the fact that greater adhesion is

possible with the electric locomotive because of uniform torque. On the other hand, it shows that a great amount of power can be delivered to the rails by an electric locomotive. The test showed the ease with which an electric locomotive can be controlled, and illustrated the possibilities of regenerative braking in a manner to convince the most skeptical. A description of one of the electric locomotives will appear in an early issue of the *Railway Age*.

### Train Accidents in August<sup>1</sup>

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of August, 1919:

COLLISIONS						
Date	Road	Place	Kind of Accident	Kind of Train	Kil'd	Inj'd
20.	Pere Marquette.....	Sabin	bc	P. & F.	6	34
24.	W. J. & Seashore.....	Elwood	rc	P. & P.	1	22
28.	Southern .....	Rankin	xc	P. & F.	..	..

DERAILMENTS						
Date	Road	Place	Cause of Derailment	Kind of Train	Kil'd	Inj'd
2.	Kan. City So.....	Bunch	unx	F.	2	17
8.	Fort Worth & D. C.....	Vernon	....	F.	0	4
13.	Colorado So.....	Walsenburg	....	F.	1	2
14.	Chicago, B. & Q.....	Deweese	unx	P.	0	1
20.	Central Ga.....	Leeds	....	P.	1	3
21.	Norfolk & W.....	Boyce	b. truck	P.	0	13
27.	Chi., R. I. & P.....	Tucumcari	....	P.	2	4
31.	N. Y. C.....	Painesville	....	P. & F.	1	0

The trains in collision on the Pere Marquette at Sabin, Mich., four miles south of Traverse City, on the evening of the 20th of August, were a southbound passenger and a northbound freight. Both locomotives were wrecked. Six trainmen were killed and 34 passengers were injured. The collision was due to neglect on the part of the men in charge of the freight (an extra) who overlooked the schedule of the passenger train.

The trains in collision on the West Jersey & Seashore near Elwood, N. J., on the 24th of August, were the 9th and 10th sections of an excursion train from Washington destined for Atlantic City. The ninth section had been stopped because of a train ahead, and it was run into at the rear by the tenth section, badly damaging three cars. One passenger was killed and 22 were injured. The tenth section had run past cautionary and stop automatic block signals set against it. This collision was made the subject of a special report by C. S. Lake, assistant director of the division of operation. In this report, summarized in the *Railway Age* of September 12, page 514, the fault of the engineman is held inexcusable, and responsibility is placed also on the flagman of the ninth section and also on one other brakeman and the conductor of that section.

The trains in collision at Rankin, Tenn., on the 28th were passenger train No. 102, eastbound, and a westbound freight train. The freight was on a side track and had nearly cleared the main line when the passenger train approached at uncontrollable speed, striking the caboose. Responsibility for the collision is charged against the passenger train for approaching at a higher speed than was proper, according to the rules, and against the freight for not being protected by flag. It appears that the flagman of the freight was sent forward, but he had not gone far beyond the forward end of his train when he was struck and killed by the passenger train. The conductor in charge of a locomotive, standing on the side track, also was killed. Officers of the road have not been able to determine the

<sup>1</sup> Abbreviations and marks used in Accident List: bc, Rear collision—bc, Butting collision—xc, Other collisions—b, Broken—d, Defective—unf, Unforeseen obstruction—unx, Unexplained—derail, Open derailing switch—ms, Misplaced switch—acc, obst., Accidental obstruction—malice, Malicious obstruction of track, etc.—boiler, Explosion of locomotive on road—fire, Cars burned while running—P, or Pass., Passenger train—F, or Ft., Freight train (including empty engines, work trains, etc.)—Asterisk, Wreck wholly or partly destroyed by fire—Dagger, One or more passengers killed.

cause of the death of either of these men, but neither death was caused by the collision.

The train derailed at Bunch, Okla., on the 2nd of August, was southbound passenger No. 3. The train was running about 35 miles an hour when the locomotive was thrown off the track and the whole train, except the two rear cars, was ditched. The mail car was wrecked. The engineman and fireman were fatally scalded and 15 passengers and two trainmen were injured. The cause of the derailment was not determined.

The train derailed on the Fort Worth & Denver City near Vernon, Tex., on the 8th, was southbound passenger No. 4. Three Pullman cars were overturned; four passengers injured.

The train derailed on the Colorado & Southern, near Walsenburg, Colo., on the 13th, was southbound passenger No. 2. Two cars were overturned. The engineman was killed and the fireman and express messenger were injured.

The train derailed near Dewees, Neb., on the 14th was an eastbound passenger. The fireman was injured. The cause of the derailment was not determined.

The train derailed on the Central of Georgia near Leeds, Ala., on the 20th was the westbound Seminole Limited, No. 9. The engine and tender fell through a trestle bridge spanning the track of the Southern Railway and a stream of water, and lodged in the stream. A foreman carpenter working beneath the bridge was killed and three other men were injured; but the engineman and fireman escaped with slight injuries.

The train derailed near Boyce, Va., on the 21st about 1 a. m. was northbound passenger No. 2. One coach and two sleeping cars were overturned. Twelve passengers and one trainman were injured. The train, running at about 45 miles an hour, was thrown off the track by a broken tender truck.

The train derailed on the Chicago, Rock Island & Pacific near Tucumcari, N. M., on the 27th was the eastbound Golden State Limited. The engine and first two cars were overturned. The engineman and fireman were killed, and four other trainmen were injured.

The trains involved in the accident on the New York Central near Painesville, Ohio, on the 31st of August were an eastbound freight and the eastbound Twentieth Century Limited express, running on parallel tracks. Four cars in the freight train were thrown off the track and fouled the track on which the passenger train was running and were struck by the engine of the passenger. The runner of this engine was killed. A few passengers were injured by broken glass.

*Electric Car Accidents.*—Near Parkersburg, Ohio, on the 14th an electric car ran into a locomotive of the Baltimore & Ohio and 11 or more occupants of the car, mostly children, were killed. About 30 were injured.

*Canada.*—Near Stonecliff, Ont., on the 4th the eastbound Imperial Limited, of the Canadian Pacific (train No. 2) was derailed, and one passenger was killed. Four cars were overturned and a number of persons were injured. The derailment was reported as due to a broken rail.

**Plans for Census.**—Special effort is being put forth to make the manufacturers' section of the approaching fourteenth decennial census the most complete and comprehensive ever made. The schedules for use in tabulating the information will be mailed to every manufacturing establishment in the United States in December. The questions relate to the calendar year 1919. In 1914, the year the last manufactures census was taken, about 275,000 manufacturing establishments were listed. This time more than 300,000 schedules will be sent out; and, in addition, it is expected that about 50,000 mines and quarries will also be reported.