RAILROAD GAZETTE

FRIDAY, FEB. 9, 1894

CONTENTS.

ILLUSTRATIONS:	PAGE.
Burnside Shops of the Illinois Central	96
Wengern-Alp Rack Railroad, Switzerland	98
Metal Underframes for Freight Cars	102
Revolving Angle Iron Shear	103
Gold's Improved Steam Trap	103
Phœnix Iron Co.'s Testing Machine	104
A Sharp Curve in the Grand Central Yard	105
CONTRIBUTIONS:	
Thankfulness for the Absence of Signals	95
English and American Signaling Practice	95
The Mechanical Engineers' Monthly Meeting	95
EDITORIALS:	
Compound Locomotive Tests on the Long Island Railroad	106
The Altoona Air-Brake Tests	106
Erie Finances	107
Train Accidents in 1893	107
Shippers' Objections to the Official Freight Classification	108
Some World's Fair Traffic Experiences	109

EDITORIAL NOTES	PAGE. 106, 110
New Publications	110
Trade Catalogues	110
GENERAL NEWS:	
Locomotive Building	112
Car Building	112
Bridge Building	112
Meetings and Announcements	112
Personal	112
Elections and Appointments	113
Railroad Construction	113
General Railroad News	114
Traffic	114
MISCELLANEOUS:	
Technical	110
The Scrap Heap	111
Compound Locomotive Tests on the Long Island Railroad	95
Railroad Bridges in Massachusetts	95
The Use of Iron and Steel in Car Construction	96
Air-Brakes and Their Maintenance	100
Metal Underframes for Freight Cars	102
Chicago Traffic Matters	103
English Tests of Car Axles	104
Industrial Conditions in Mexico	104
Foreign Railroad Notes	105

Contributions.

Thankfulness for the Absence of Signals.

CLEVELAND, O., Feb. 3, 1894.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Referring to the communication from E. S. C. in your issue of Feb. 2, suppose that the Hackensack drawbridge had been provided with the latest improved signaling appliances, interlocked so that the home and distant signals could not possibly have shown clear unless the draw was closed. Was it not closed, and would not the distant signal, if indicating anything to the following train, have said "bang ahead, sir, the road is yours?" Should we not rather be thankful that, in the absence of a block system on the B., L. & W., the Hackensack drawbridge was *not* provided with distant signals? A. M. M.

[We ought to be thankful that there was no distant signal if its presence would lead a train into danger; but a fixed signal should be set at danger immediately after the passage of the front portion of every train that traverses the track which the signal governs; then it would not lead into danger. This is the practice even where there is no block system. If, as is sometimes the case where a drawbridge remains closed all winter, there is no signalman on duty and the signal is fastened at "all clear" and remains in that position for several days or months, it would be the duty of the engineman to bear in mind that the injunction to "bang ahead" was subject to important limitations; that the signal referred to the bridge (or switch) alone, and not to the occupancy or non-occupancy of the track by a train. Not only would this be the runner's duty; it is a duty which he ought to easily remember, for he would have frequent illustrations, in actual practice, showing that the fastened signal did not indicate a clear track.—EDITOR RAILROAD GAZETTE.]

English and American Signaling Practice.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I have no desire to volunteer as a defender of the Union Switch and Signal Company, and I am quite prepared to agree with Mr. Arthur H. Johnson that it would be a help (or at least a matter of interest) if we could have a consensus of opinion from competent signal experts on matters of signaling. It is the common criticism of expert testimony that it is given in the spirit of the advocate, and that, I think, may fairly be urged against Mr. Johnson's opinion which you published on Jan. 15.

I examined with a good deal of interest the new interlocking at Waterloo Station, London, while it was in process of erection, and when it was far enough advanced for the signalmen to be at practice in the tower, or as it is generally called the "A box." Disclaiming any qualifications as an expert, it seemed to me that Mr. O'Donnell only secured by his "Simplex" device located inside the tower the results we have here long obtained by selectors located outside the tower. I think it has been the experience of most of us that the use of selectors was carried altogether too far, and they are now much less frequently introduced. I thought in looking at the O'Donnell device that our cousins were about to purchase their knowledge at the same school where we bought ours.

But what I wish principally to call attention to is the apparent attitude of Mr. Johnson's mind, while testifying as an expert, in claiming the movement of the six-track road terminating at Waterloo to be more easily worked than the movement on the five lines crossing each other with the 14 tracks at Stewart avenue, Chicago. The fact is that there is about as much likeness in the two situations as "there is between an oyster and a feather bed," to use one of DeWolf Hopper's expressions.

There is one great advantage of pneumatic over lever machines, with their above-ground wire and pipe-line connections, that Mr. Johnson discreetly passes over, and which I think is not usually sufficiently emphasized. I thought it was quite happily brought out by an English officer in speaking of the latter: "Oh! but we do smash 'em up so when we leave the metals." F.

The Mechanical Engineers' Monthly Meeting.

TO THE EDITOR OF THE RAILROAD GAZETTE:

It was quite natural that the members of the American Society of Mechanical Engineers should desire something more practical for the object of their monthly gatherings than the series of sociables which has been in vogue for the past two or three years. The movement recently set on foot has indicated, through the interest shown in the first monthly meeting, that there is an existing desire to meet as frequently as once a month for the purpose of exchanging experiences.

In the effort to divest such meetings of any official character, however, there is danger of wasting much valuable material and also of depriving distant members of one of the principal advantages they are supposed to derive from a society of this character. The legitimate channel through which members, wherever located, should be apprised of the technical proceedings is the published Transactions of the Society. However fully they may be reported if they are scattered through the columns of various periodicals their permanent value is greatly diminished because they are not readily accessible. The supposition that such meetings if given an official character would arouse opposition from members who are deprived of the opportunity of attending them is largely fallacious. If the membership of a society was restricted to those who attend meetings, or even who would attend if they had the privilege, its usefulness would be largely diminished by reason of its decreased income. If the proposed monthly meetings possess any merit whatever, it will be largely due to the character and experience of those who attend them, and it is necessary to add that mechanical engineers everywhere will be interested in the discussions. If the meetings are worth holding they are worthy of permanent record. It may be said that it is this very informal character which makes the proceedings of interest, and that participants are less restrained than if their remarks were to be printed. As it is, however, they are reported for the technical papers, but not as carefully and probably not as fully as they would be in the official Transactions.

Experience will no doubt show that the papers or subjects brought forward at monthly meetings of this character will be more fully discussed than at the official meetings of the Society, because there is more time for that purpose, while as was suggested at the first of the monthly meetings it is not conducive to their success that there should be a sudden change of subject. The notion that the actual physical presence of members at meetings is essential to maintain their personal interest in the Society should be discarded. Every organization of this kind has upon its rolls hundreds of members who continue year after year without attending a meeting. They are, however, interested in its doings, and if deprived of the privilege of reading verbatim reports of meetings, they will eventually object to the proposed practice of "unofficial meeting of members."

ENGINEER.

Compound Locomotive Tests on the Long Island Railroad.

We give below a report on a series of tests of Baldwin compound and simple ten-wheel locomotives on the Long Island Railroad, made by Mr. Charles M. Jacobs, Consulting Engineer, assisted by Mr. J. V. Davies. The object of the test was to determine the relative economy of the two types of engines. The principal dimensions of the locomotives are given below, the only difference being in the cylinders and valve gear.

Weight in drivers	78,700 lbs.
Weight on leading trucks	27,450 "
Total weight of engine	106,150 "
Weight of tender	67,000 "
Diameter of drivers	60⅝ in.
Cylinder diameter, simple	18 in.
" " compound	12 & 20 in.
Stroke of piston	24 in.
Type of boiler	Wagon top
Diameter of shell	54 in.
Number of tubes	200
Outside diameter of tubes	2¼ in.
Length of tubes	140 in.
Heating surface, tubes	1,216.75 sq. ft.
" " firebox	126 " "
" " total	1,342.75 " "
Grate area	22¼ " "
Diameter of exhaust tip	3½ in

The engines were Compound engine No. 145 and Simple engine No. 138, built by Burnham, Williams & Co., 1893. Both had been in the shops for general repairs at a late date, and were in equally good running condition.

All coal was weighed on and off from point of start to return to that point, and the water consumption was measured with Thompson patent water meters attached to the injector or suction pipes; the work on each day was the same. On the first day's run with each engine the flue tubes and grates and front end were all perfectly clean, and on all succeeding days all conditions were similar.

Each day's run for consumption was reckoned only from the time of starting with the train, and each day was concluded exactly at the point of origin, the fires being brought up to level as at starting, and the water in boiler being brought exactly up to the level of top cock. The same engineer and fireman were retained for the whole series.

All weather conditions were adverse to the compound engine; as one day (Nov. 4) was exceedingly wet, and on the succeeding day the coal was still soaking. The resultant economy, it will be seen, is figured up at $37\frac{2}{10}$ per cent. in coal, and $17\frac{6}{10}$ per cent. in water, on the simple basis of *per car per mile*; but making allowance for the increased length of terminal stoppages with the simple engine, the economy per car per mile *per hour* was $32\frac{1}{10}$ per cent. in coal and $10\frac{7}{10}$ per cent. in water, each in favor of the compound engine.

CONDITIONS OF TESTS.

Coal used on all days—Moshannon Clearfield coal.
Condition of engine and fires—Ordinary working conditions.
Train hauled, No. of cars—20.
Train hauled, gross weight, tons—819.
Train hauled, tare weight, tons—255.
Train hauled, net weight tons—564.
Mileage, course—Hempstead Crossing & Ronkonkoma and return twice daily.
Mileage, total daily—113.78.

The average weight of coal used per train mile is, with compound 54.4 lbs., and with the simple locomotive 86.8 lbs. The sparks drawn from the front end of the compound locomotive amounted to but about one-third of those drawn from the simple locomotive.

Railroad Bridges in Massachusetts.

The annual report of the Massachusetts Railroad Commission was summarized in the *Railroad Gazette* of Feb. 2. That part of it made by Mr. George F. Swain, Bridge Engineer, omitted last week, contains the following:

Only 5 out of 17 railroads or divisions have complied with the law and made reports of inspection of their bridges by competent engineers. The reorganization and the consolidations which have occurred are doubtless the reasons why some of the inspections have not yet been made and reports submitted. On the Boston & Maine and on the New York, New Haven & Hartford the oversight of all bridges has during the past year been transferred from the chief engineer or bridge engineer to the division superintendents, and the chief engineer, being relieved of the direct supervision of bridges, unless specially ordered to do so, made no inspection; while, on the other hand, the division superintendents were not aware of the requirement of the law.

A table is presented of bridges which have been renewed or repaired to any considerable extent during the past year, and also during the past six years. The condition of the bridges is being improved steadily, and the amount of new work done each year in repairing and renewing is smaller. Considerable has been done in building new bridges necessitated by the work of abolishing grade crossings. On the Boston & Albany more bridgework has been done during 1893 than during any other year since 1887. The number of railroad bridges in

	Vauclain compound No. 145.				Simple No. 138.			
	Nov. 3.	No. 4.	Nov. 5.	Average.	Nov. 6.	Nov. 7.	Nov. 8.	Average.
Coal consumed, lbs.	5,687	6,303	6,607	6,199	9,502	9,835	10,289	9,875
Water evaporated, lbs.	43,104	45,591	47,457	45,384	52,820	.....	57,101	54,961
Evaporation, lbs. of water per lb. of coal	7.57	7.23	7.18	7.32	5.55	.....	5.55	5.55
Running time	4 h. 18½ m.	4 h. 7 m.	4 h. 6 m.	4 h. 11 m.	4 h. 19½ m.	4 h. 32 m.	4 h. 32 m.	4 h. 28 m.
Stops, time	1 h. 14½ m.	1 h. 10 m.	1 h. 2 m.	1 h. 9 m.	1 h. 8½ m.	1 h. 26 m.	1 h. 19 m.	1 h. 18 m.
No. of stops other than nominal	1	2	0	.....	1	2	0	.....
Total time with train	5 h. 33 m.	5 h. 17 m.	5 h. 8 m.	5 h. 19 m.	5 h. 28 m.	5 h. 58 m.	5 h. 51 m.	5 h. 45 m.
Total time, engine using steam	3 h. 47 m.	3 h. 46 m.	3 h. 46 m.	3 h. 46 m.	3 h. 55 m.	3 h. 52 m.	3 h. 39 m.	3 h. 48 m.
Total time, safety valve blowing off	17 m. 25 s.	20 m. 30 s.	5 m. 5 s.	14 m. 20 s.	24 m. 45 s.	4 m. 45 s.	1 m. 10 s.	10 m. 13 s.
Injector feeding regularly—No. of applications	7	10	15	10⅔	10	13	15	12⅝
Average steam pressure	169.5	170.25	160.4	166.7	130.1	123.9	124	126
Safety valve set to blow off at	180	180	180	180	145	145	145	145