RAILROAD GAZETTE

FRIDAY, JAN. 19, 1894.

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Contributions

Haarmann's Work on Track.

CHICAGO, Jan. 10, 1894.

TO THE EDITOR OF THE RAILROAD GAZETTE:

During the Columbian Exposition American railroad engineers visiting our exhibit frequently expressed the wish to become possessors of copies of Mr. A. Haarmann's work. "Das Eisenbahngeleise" (The Railroad Track). I failed, however, to take note of their names and addresses.

Since then I have received a few copies, and as it is safe to presume that those gentlemen are subscribers to your valuable publication, a short notice in the same to the effect that they can have a copy of the work in question at the *trade* price of $9.50 would be most likely to reach them and might be welcome news to them.

DR. A. VIETOR.

Pocket Book Chemistry.

Chicago, Milwaukee & St. Paul Railway,
MILWAUKEE, Jan. 9, 1894.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I note in your issue of Jan. 5 a review of the very excellent paper by Professor Stillman on "The Examination of Cement," but am surprised that in speaking of the analytical table you say: "It is in such form that any young engineer can go into a laboratory and make his analysis of cement without further instructions." Now Trautwine's Pocket Book is a valuable reference book, but one might with equal consistency place it in the hands of any young chemist, and set him to building bridges "without further instructions."

I criticise this statement, not for its own sake, but because there appears to be an impression among some mechanical men that almost any one can make chemical analyses. This is especially liable to be the case with those young engineers who imagine that the short course of instruction which they have received in elementary analysis represents chemistry. Any intelligent person may in a few weeks learn to perform the mechanical manipulation of an analysis, with the necessary neatness and accuracy, but that does not constitute him a chemist, or even qualify him for general analytical work. When an engineer is competent to be his own physician, his own lawyer, and his own spiritual adviser, he may also think of being his own chemist. Meanwhile, if he would insist on having all his analyses made by competent professional chemists, he might have less to say about inaccuracy and discrepancy in chemical work. H. E. SMITH, Chemist.

The Points That Go To Make a Good Freight-yard.

TO THE EDITOR OF THE RAILROAD GAZETTE:

It is a great pleasure to examine Mr. Scott's plan of a freightyard given in your issue of Jan. 5. Its two main features are extremely good and the yard in practice would undoubtedly work well. These two main features are, first, the arrangement under which cars can be dropped through each series of yards without reverse motion, and second, the arrangement by which the grade is utilized for the drilling of cars whose general movement is up grade. This latter end is accomplished by the simple expedient of placing the receiving yard at the top of the grade and hauling trains up grade beyond the classification yards to the receiving yard, from which cars are dropped back through the classification yard to the starting yard. This last feature of a starting yard for holding classified trains is, I believe, new in this country, and certainly must add greatly to the elasticity of the yard.

After giving much credit to this design, I hope I may be pardoned if I point out a few minor points in which an improvement might, perhaps, be made. I notice that the eastbound freights have to cross the westbound passenger tracks both in entering and leaving the yard. This could have been avoided by putting the westbound passenger tracks north of the yard, and retaining the eastbound passenger tracks south of the yard,—in other words by running the passenger tracks wholly outside the freight yard. This course is not practicable if there should be a passenger station on one side of the freight yard as might easily be the case.

Further, I notice that the receiving yard has eight tracks each long enough to hold two full trains. Would it not be better to make these tracks each only long enough for one train? If this is not done the second train cannot be put upon one of these tracks without first cutting off the engine on the main track. In the same way the classification tracks should be arranged each to hold a train. When this is done each train departing from the starting lines will make it practicable to wholly clear one of the classification tracks, rendering a change in the classification practicable if desired. A short track in both receiving and classification lines also renders it practicable to give preference to certain cars by dropping the cars on that track more quickly. Of course any space that is lost by shortening the tracks should be made up by providing more of them. If it is found that it is more convenient to make a long yard than a broad one, then the same number of tracks can be grouped in two yards, one immediately below the other, forming one classification yard. The same reasons for making the tracks of a train length apply to the starting yard.

I notice that Mr. Scott makes no provision for putting the cars on his trains in station order. This is usually done by the shifting engine at the head of the yard, to the great delay of everything else. Would it not be better if a series of short tracks were provided on which to do such work?

There are some minor points on which issue might also be taken with Mr. Scott. He states that a switch tower should be placed in the middle of the ladder. Is it not more general to place such a tower at the end of the latter so that the switchman can see all his switches at once?

Again, Mr. Scott says it is better to tack manifests to the sides of the cars than to hold them in the yardmaster's office when not in use by yard conductors, etc. To my mind the yardmaster should have in his office a series of pigeon-holes, one for each track, and in each pigeon-hole he should have the card manifests for the cars on that track. Otherwise I hardly see how the yardmaster can know what he is about; but I am aware that many more old railroad men besides Mr. Scott advocate the tacking of the manifests upon the cars.

To conclude, I have not seen such a good yard design in your columns since you printed the diagram of the Edgehill yards, and I hope that some one will build Mr. Scott's yard either with or without improvements.

H. D. W.

Relative Cost of Pneumatic and Lever Interlocking.

RAHWAY, N. J., Jan. 15, 1894.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The *Engineering News* of Jan. 11 publishes a letter from Mr. J. P. O'Donnell, of London, Consulting Engineer of the National Switch & Signal Co., taking exception to certain statements concerning the electro-pneumatic interlocking plant recently installed at Stewart avenue, Chicago, Ill., made in connection with the elaborate publication by the same journal in the issue dated Nov. 16, 1893.

I believe it is generally known, to those railroad men who are interested in this matter of signaling, that my colleagues have from the first introduction of pneumatic interlocking endeavored to correct the dexterous sophistry employed by our friends at Pittsburgh in attempting to force their patent on the long-suffering railroad companies.

Mr. O'Donnell's experience in signaling entitles his opinion to some respect, and I am sure it would help a great many of our operating officers and engineers to come to a conclusion, with reference to the most desirable practice, if we could have a consensus of opinion from competent signal experts.

In the letter referred to, Mr. O'Donnell clearly shows that the estimate as to 36 men per day, besides repairmen, being required to operate a *usual* interlocking at Stewart avenue, is very incorrect. The terminus interlocking at Waterloo, installed by Stevens & Sons, and which controls a system of tracks almost equal in complexity to Stewart avenue, requires only 12 signalmen per day, and a portion of the time of one repairman and two assistants. Sixteen attendants are required at the Stewart avenue pneumatic plant, and its operation and maintenance cost about $1,200 per month. Then, again, when we consider that a greater volume of traffic is dealt with at Waterloo terminus than at Stewart avenue, and that rigid block working is in force at the former plant, the comparison is still less in favor of the pneumatic system.

A comparison which I made between two parrallel sets of interlocking at Jersey City, one of which is lever work and the other pneumatic, shows that the cost of operating and maintaining the lever interlocking is less than the pneumatic, although the lever machines deal with a larger number of trains, with track accommodation much inferior to the other.

I wish to point out some weak practice peculiar to the pneumatic system. There are not enough signal arms supplied to safely designate routes. This practice certainly saves a great deal of expense and complication in pneumatically operated signals, but it hardly seems right to humor pet ideas in mechanism to that extent.

The advocates of the pneumatic system claim that it has advantage over the lever system, inasmuch as the switches can be operated at any distance from the signal tower. Practical experience in this respect has taught us that the lever machines will satisfactorily operate at safe distances when properly installed, and that the safety limit is governed by the questions of sight and location, and not by the form of interlocking machine in vogue. There are pneumatic machines in service which overstep this safety limit.

Then there is the unreliability of the detector bar when operated by power. With a detector bar operated by the usual method, the full lever power is seldom exerted in attempting to unlock a switch while it is occupied by a train, because the signalman feels the obstruction at once and desists from the attempt. But in the pneumatic system the full indiscriminate force of the cylinder is exerted on the detector bar, resulting too often in rupture of the bar and splitting the train.

Not only does a pneumatic plant require a high class of operating and maintenance skill, but it has also been found very advisable to have an engineer of considerable skill to superintend the erection. Of course there are a good many inferior grades of lever interlocking in use, and the plain remedy is to employ none but experienced and competent contractors. ARTHUR H. JOHNSON,

Consulting Engineer The Johnson R. R. Signal Co. and The Hall Signal Co.

The Louisville & Jeffersonville Bridge.

CHICAGO, Ill., Jan. 8, 1894.

TO THE EDITOR OF THE RAILROAD GAZETTE:

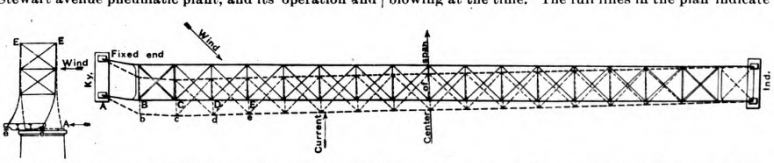
The disaster to the Louisville & Jeffersonville bridge on Dec. 15 possesses great engineering interest. The probable causes of the fall of the second span are not apparent from the discussion thus far made public. After reading the full accounts which have appeared in the engineering periodicals I venture to give you my conclusions, thinking they may be of interest, particularly to such of your readers as have not made a specialty of bridge construction.

Mr. John Sterling Deans' first letter contains the following statement: "The trusses, including the upper lateral bracing and the transverse bracing, are first put in place. The span is then swung off without any floor or lower laterals in position, and, as far as the falsework is removed, this floor and lower laterals are put in place."

If this means that the bridge is left without falseworks at any time before the floor and lower laterals are in place complete, I know of this method of erection only as an extraordinary procedure, resorted to in case there is imminent danger of the falseworks going out and doing damage to the span. It is not the usual method. As long as the floor beams and lower laterals are not in place the falseworks are needed to secure the span in case of a wind storm. It is true the blocking is taken out as soon as the trusses are connected, but it is the work of only a few minutes to put it back, if, at any time, the safety of the structure is threatened by wind. The falseworks should, therefore, remain in place until the lower lateral system is complete, and this has been my own practice and the practice of all others in the cases of which I have knowledge.

The most remarkable feature about this span, however, was that it had been standing without falseworks for weeks and still the lower laterals in the two end panels next to the fixed end of the span were not in place. The strain in the lower end lateral, as given on the strain sheet of the Phœnix Bridge Co., is 231,000 lbs., requiring two 5 in. × $1\frac{9}{16}$ in. bars to take care of it. Even assuming an ordinary wind blowing it is therefore evident that here was an enormous force practically left unprovided for.

I have endeavored to illustrate by the sketch accompanying this letter the action of the span under these conditions, when subjected to a wind of the direction blowing at the time. The full lines in the plan indicate



the upper chords, and the dotted lines the lower chords. The dislocation of the parts is, of course, exaggerated.

As the upper lateral and portal bracing were in place