RAILROAD GAZETTE

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EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting, and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

The Memphis bridge, which is to be opened next month, is the only structure across the Mississippi south of St. Louis, and it is 1,200 miles (by river) from St. Louis to the mouth of that great, crooked and muddy stream. Nor is there anything which can properly be called a railroad crossing in all that distance except at Memphis, Arkansas City, Vicksburg and New Orleans. This of itself is an indication of the enormous difference of the trans-Mississippi country north and south of Cairo in traffic production. Not only are bridges numerous north of Cairo, but they are kept busy. One would suppose that the vast territory west, northwest and south of Memphis would send an enormous traffic over the new bridge; but we must not imagine that the traffic will be at all in proportion to the territory. The railroad system, whose eastern terminus is at Memphis, is comparatively small. It is true that it is possible to send cars there from the whole of Texas and the whole of the Northwest; but the actual termini of the Texas lines are at Galveston, New Orleans and St. Louis. The Arkansas lines are also very largely St. Louis railroads, and actually it is not the east-and-west business, but the north-and south business—more exactly, the northwest and southeast business—which has been the chief occasion for building the bridge, which is the property, substantially, of the Kansas City, Fort Scott & Memphis Railroad Company. Once built, however, we should expect that the traffic of other railroads west of the Mississippi would add materially to its support. However imperfectly developed, so great a territory should afford a very large traffic for the one bridge south of Cairo. And the cost of such a structure on the lower Mississippi, the small number of places where there is any occasion for a bridge, and the situation of the railroads in that part of the country make it improbable that there will be hereafter, at least for a very long time, any other bridge for a long distance above or below Memphis.

The Illinois Central has awarded a contract to the Hall Signal Company for the equipment of its road between the terminus (Chicago) and Kensington, about 15 miles south, where the Michigan Central trains enter upon the Illinois Central tracks, with Hall automatic block signals. There are four main tracks throughout this distance, and some of the way there are six, seven or eight tracks. The number of tracks to be signaled is equal to an average of seven for the whole distance, or 105 miles of track. The signals are in most cases to be placed on steel bridges, spanning the entire roadway. In equipping eight tracks with block signals the Illinois Central officers show that they fully appreciate the magnitude of the traffic that is likely to be thrown upon their line between the terminus and Jackson Park next year. While two of the tracks at least will have to be used by freight trains, it will doubtless be found practicable to suspend freight traffic for an hour, or possibly longer, morning and evening, at least on days of specially heavy passenger traffic; so that the newspaper statements that the road will be able to start trains for the World's Fair every half minute are not far out of the way. A train every two minutes on each one of four tracks would do it, and the block sections will not need to be unreasonably short to run with that interval, provided the engines are powerful enough to "pick up" their trains quickly. It might be worth while to establish special starting platforms, if possible, at a point where the grade is descending, in order to enable them to do this. Where all the block sections are short, the maximum of express-train traffic is limited by the length of the first section, and it is, in some respects, undesirable to make this less than 1,000 ft.

The Hall Signal Co. has also been awarded a large contract by the New York Central, that company having decided to use the Hall automatic wire-circuit signals on the freight tracks between Albany and Buffalo, according to the general plan heretofore announced. Most of these signals will be located at points near the termini of freight divisions, where the distances between the telegraph offices (towers) which work the manual block system are too long for convenience. The sections under the manual system are, it will be remembered, about three miles long. On either side of a large yard, such as that at De Witt, for instance, the freight tracks on one of these sections will be divided into three or four short sections and the trains will be guided by the automatic signals. Something over 100 of these will be erected. The automatic signals put in by the Hall Company near Peekskill some time ago are to be taken out, so that there shall be a uniform system throughout the main line, and these Hall signals will be used to equip the line between East Albany and Troy, a distance of six miles, double track.

The two important installations here mentioned, with that on the Chicago & Northwestern heretofore announced, will give disc signals a standing which they have not before had, and their use on these roads will afford ample experience with that form and with glass-covered signals, thus giving an opportunity of settling, by the results of actual tests on a large scale, some of the questions regarding the relative merits of these and of ordinary semaphores, which have heretofore been decided without careful investigation, or have been regarded as too speculative to demand thorough study. The Hall disc signal, one of the marked characteristics of which is the uniform and well defined background provided for each signal, is now made in a form somewhat different from that formerly employed. The red cloth disc is about 4 in. smaller in diameter than the opening in the case through which it is seen, so that it is surrounded by a ring of white, thus making the contrast between the disc and the dark background much more effective. In this way an unmistakable signal is produced, even to a color-blind person, the signal becoming in fact a form signal. The distant signals to be used with this system on the Chicago & Northwestern (where all-clear is indicated by green) will have discs with the main portion of their face green, but with two white strips (at right angles to each other) across the face of the disc. At night this distant signal will be similar to that employed by the Northwestern in some of its interlocking signals; caution will be indicated by a red and a green light, side by side, above the disc, both being illuminated by the same flame, by means of a mirror placed in the back of the lantern. When the signal changes to all-clear the red light is covered, leaving the green alone exposed.

Among the buyers and sellers that we see in railroad circles there are four kinds of extremists; the affable and willing salesman who is ready to guarantee to meet an impossible specification, the sarcastic salesman who scorns those buyers who attempt in any way to regulate the material they are buying, the buyer who relies on his specifications as infallible, and the buyer who shuts his eyes, and relies solely on the brand of the goods—that is, on the reputation of maker. These men are extremists because their several policies are irrational, and will fail to produce the only right result, viz., the best value for money expended. The mean of these extremes is probably the most economical policy to follow. The real value of a specification should be estimated according to the extent of the practical experience on which it is based, and the signification of a brand should be measured by the character of the material as shown by repeated tests and practical trials. It is not desirable to rely solely on specification, and still less desirable is it to rely solely on a brand or a maker's reputation. Buyers are coming to understand these points better than heretofore, and many manufacturers who formerly were comparatively free from competition now have to work hard to sell on reputation alone. There is nothing which causes so many disputes and so much ill feeling between superintendents of motive power and purchasing agents as this one question of specification or brand. Doubtless most of our readers well understand the reasons that lead to the foregoing conclusions, and we need not enter upon a more extended explanation of them; but every one interested will, nevertheless, like to see what well known men think on the subject, and we therefore call the reader's attention to some letters on "Specification versus Brand," which are printed in another column of this issue. Recent discussions have brought this subject prominently before the officers of three large roads, and their experience, with that of other prominent men who purchase hundreds of thousands of dollars worth of material yearly, is epitomized in these letters, which will be entertaining reading to all, whether they favor specifications or not. They will be specially instructive to those who need a stronger conviction and a little more "backbone" to enable them to follow the best practice, which is to decide as to the nature of what is wanted and buy on merit. The reader of these letters will doubtless recall instances where material formerly bought on brand has now been replaced by other material without any special reputation, but which has been sold on pure merit. Anyone reviewing a list of makers of such railroad material as wheels, axles, boiler steel, tubes, staybolts, lubricating oils, cylinder oils, car couplers, springs, etc., will doubtless find, as we have, that firms formerly considered to be makers of the highest grade have been replaced, on roads that buy on specification, by new manufacteries; and it is probable that the reduction in prices during the past few years has been more or less directly brought about by this increased dependence or specification, which permits a meritorious product to find its proper place in the market.

Riveting Locomotive Boilers.

It seems to be clearly evident from the results of service that power riveters and the development of the machinery used for locomotive boiler construction have not kept pace, in the last two or three years, with the increase of pressures and dimensions. Two or three failures which have occurred lately will illustrate what we mean. Some locomotives built for a Western road and warranted to stand 180 pounds boiler pressure were found to be weak in the crown sheets, and the pressure had to be reduced. In another case some new locomotives leaked so badly that they had to be run for a long time without jackets, until the sediment stopped up the leaks. In another, the rivets were found not to fill the holes; the sheets were so thick and the rivets so large that the power riveter used could not expand the rivets so as to fill the rivet holes.

The machinery used for building locomotive boilers in this country is being rapidly changed for more powerful apparatus; but in the interval we have had a lesson in the cases of from 150 to 200 engines that deserves attention. Three years ago a $\frac{7}{8}$-in. rivet was large. Now it is not uncommon to use 1$\frac{1}{4}$-in. rivets. The sheets were formerly from $\frac{3}{8}$ in. to $\frac{1}{2}$ in. in thickness. They are now from $\frac{9}{16}$ in to $\frac{5}{8}$ in. The riveters formerly used could drive $\frac{7}{8}$-in. rivets and drive them well, and could make a fairly good job with $\frac{3}{4}$ in., but they fail entirely with 1-in. rivets and thick sheets. The pressures commonly prescribed for compound engines are now about 180 lbs., with a decided tendency to even higher pressures, say 200 lbs. The diameters of boilers have been increased from 56 in., heretofore called a large size, to 74 in. for the largest size now used. A riveter to properly drive rivets for such boilers as this weighs from 75 to 100 tons, and is a large machine, but it must be used if one would do really good work.

The recent trouble with certain large boilers carrying high pressures has not wholly arisen, however, from the inadequacy of the riveters, but to some extent from a lack of appreciation of the problem on the part of the boiler makers who lay out the sheets. The thin sheets formerly used could be stretched or expanded in setting up the boiler, so as to make a tight joint even if the shells were not quite the same size, but with the thick sheets this is impossible. The shells must accurately fit each other if a perfectly tight joint is to be made. In one boiler that we have examined it was clearly evident that one of the shells was smaller on the outside than the inside diameter of the shell which fitted over it. The riveter had driven the rivets, but had failed to stretch the sheets to make a tight joint. The boiler, of course, leaked and the calking process simply resulted in changing the point of leakage from one place to another. No sooner would one part of the circumferential seam be made tight by calking than another part began to leak.

All smaller sizes, and, in fact, our average locomo-