

volved the abandonment of electric tracks. This, alone, raises an interesting point as against the insistent Massachusetts policy of allowing consolidation—by lease or otherwise—only if service at least as good as before the lease is maintained. But more important than this was the undisputed assertion that since the lease not only had steam service at Auburn been diminished but also the electric service cut down from half-hour to hourly cars and the electric plant allowed to deteriorate. This, if we are not mistaken, is one of the many instances where the New Haven company has bought control of trolley lines to "block" parallels. If that process is to be attended with abandoned tracks and vitiated service the policy may "go" in Connecticut and Rhode Island, with their flabby and nerveless railroad commissions, but in Massachusetts it will find a horse of another color.

The Block System in Iowa.

The space interval is the only rational, scientific and satisfactory method of running trains and protecting them from collision. The time-interval and flag-lantern-torpedo combination is cumbersome and troublesome at best, and is unworkable where trains are fast and frequent. But the fact that these truths are generally recognized does not insure millennial conditions, for it is easy to use the block system in a partial manner or to adopt its theory without enforcing correct practice, and without using well known electrical safeguards; and so we have situations like that in Iowa, illustrated in the discussion at the September meeting of the Iowa Railway Club. We print a brief abstract of it in another column.

Anyone familiar with practice under the block system on a road where it is regularly and consistently carried out, would say that the most of this Iowa discussion was useless, and possibly even vicious, many erroneous views being expressed and considerable time being used up in refuting fallacious arguments; but as those who took part in the discussion evidently were men engaged in the practical operation of trains, it cannot be said that anything which shall clear up points that are obscure to them is wasted; and a thorough airing of the subject ought to be of much permanent benefit. There can be no doubt that many trainmen accept the block system as a necessary evil and feel considerable opposition to it for months or years after they have begun to work under it, especially if the regulations for permissive blocking, or any of the rules, are administered in anything but the most accurate and businesslike manner. This being so there is ample room, if we are to continue the American theory of making employees more like men and as little as possible like machines, for instructive discussion.

The speakers brought out both bad and good points concerning practice in Iowa. Among the former were the following:

1. Permissive blocking is common. Permissive blocking is not necessarily vicious, but the utterances of some of the speakers indicated that as they had observed it, it was so, enginemen not running strictly under control. Unfortunately Iowa is not the only State in which this bad practice may be found.

2. With block stations at A, B, C, Station B is closed at night and trains which have to meet there are provided with telegraphic orders at A and C. While this is a suspension of the block system, it is to be observed that giving meeting orders for such movements is a great improvement over the prac-

tice of depending on time-table rules alone.

3. Operators, even the best of them, make mistakes, letting two opposing trains get together.

4. Trains doing work at stations are not suitably protected by fixed signals, and so the conductor must either send out flagmen or depend upon the station operator to notify approaching trains at the next station back; sometimes he thus depends when he has not assured himself that the operator understands the situation and so gets into trouble.

5. Operators are young and inexperienced and consequently commit errors which would be avoided by older men, such as conductors and enginemen.

All of these weaknesses exist because of the real or supposed need of keeping expenses within a predetermined limit. None of them are inherent in the system. As against the argument that the block system with these imperfections is worse than no block system at all, we have the testimony of many superintendents who have had 10 or 15 years' experience in just this kind of practice, that it is well worth its cost, taking it as it is. But in so far as these weaknesses are due to disobedience of rules, every railroad man in Iowa or in any other State, knows that the first duty is to correct the discipline, whatever the system. The block system is valuable in what may be called its reflex influence, for it makes so clear the value of good discipline, and makes it so much easier to begin, that many superintendents are shamed into putting their discipline on a better basis who would not have done so—at least not without further delay—if they had not been compelled, by the introduction of a new system, to study the rationale of discipline.

But the practice of Iowa furnishes encouragement also. One member declared that the block system was the true method even with only one train a day each way. There is genuine appreciation of the principle. The principle is sound, however clouded our practice and opinions may be. And this speaker was not indulging in hyperbole. Imagine a road 40 miles long, A to B, and no intermediate telegraph offices. The danger to our one train is from the single opposing train and from extras. Assume that No. 1 leaves A at 10 a.m. and arrives at B at 12 noon; and that No. 2 starts from B for A at 2 p.m. Is it not better for No. 2 to wait till No. 1 arrives at B, regardless of the clock, than to wait until given time? Or, if an extra is to follow from A, is it not better for it to wait until No. 1 reaches B, provided the delay can be borne, thus relieving No. 1 of a lot of unnecessary flagging, than to have this flagging done day after day, and year after year, when, most of the time, no extra is following? This illustration is an extreme case; if there are intermediate telegraph stations, and freight trains every day, and if meeting points have to be made frequently, the argument is by these circumstances only made stronger.

That the advantages of the block system are intelligently understood in Iowa is shown by the remark of one of the speakers that when patches of fog are likely to obscure the view, enginemen prefer to wait for a clear signal rather than run on a caution card. This gives evidence that the caution rule is enforced and that the advantage of a clear signal for a whole block is appreciated. Another bit of significant testimony was that concerning cases where a dispatcher sends out extras and forgets to give them all the meeting orders that they need. This is a kind of blunder which has usually escaped publicity; but since the Government began issuing its bulletins, cases appear every now and then. One member, speaking, no doubt,

from experience, declared that this protective feature alone was sufficient to justify the use of the block system.

Last, but not least, the running of 65 work trains on two fifty-mile sections, for three summers, without a collision, is a fact worth recording in favor of the block system, albeit much permissive blocking was, no doubt, done.

Of the discussions of block signaling which appear in print, a large part is somewhat academic in its nature, for the reason that the cost of collisions is not often allowed to be made public in a way specific enough to be intelligently compared with the cost of the block system; and also because the cost of the collisions which would have occurred on block signaled roads, if the signals had not been adopted, must remain an unknown quantity; but bits of experience like those here recounted serve partly to supply this deficiency, hence we print them. The final argument against the block system was that it made men more careless. No particulars were mentioned, but the reference was, we suppose, to the determined way in which men will omit to flag back when they know that they are protected by a block signal. Mr. Campbell gave a simple answer to this, namely, that by proper discipline—which we judge, from the tone of his remarks, was not found difficult when the superintendent set about it with determination—the men were made to obey the rules. Another answer would be to make the block signaling so perfect that flagging can be dispensed with. That is the way they do it in England. The plea that improvements make men careless may easily be made too much of. The establishment of double track instead of single tends to make conductors and enginemen less alert and thoughtful than they were when they had to spend half their time in making astronomical calculations (or something akin to that kind of work); but no one is going to postpone building a second track on that account.

Chicago, Milwaukee & St. Paul.

This company had a net income in the fiscal year ending June 30, 1904, of \$10,718,400, about 2½ per cent. greater than the corresponding figure for 1903. The company has added 224 miles of line to its system. This consists of short branches and cut-offs pretty well scattered. It has completed its line into the coal fields in Illinois. It has added 47 miles of second track, completing this year the double tracking on the La-Crosse Division from Brookfield Junction to Watertown Junction. It is building third and fourth tracks from Chicago to Milwaukee. Grade reduction in many places and track elevation in cities have been the feature of the year. For the former \$1,129,000 was spent and for the latter \$2,544,000.

The changes in the equipment roster have been small; 2,000 new freight cars were bought, 23 passenger train cars and 47 locomotives. This is a very small purchase of new equipment for so large a road. As it now stands about 5 per cent. of the freight car equipment and 5 per cent. of the locomotives are less than one year old. The company has been hard hit by the high price of coal. In order to avoid a repetition of the severe experience in this particular of the past few years, the company has entered vigorously into the policy of buying coal mines. In pursuit of this policy it has acquired title to coal lands, or coal patents, in Illinois aggregating 30,109 acres.

The expenditures for new work for the year amounted to \$9,307,000. Of this amount \$5,520,000 was charged to capital account. The remainder, namely, \$3,787,278, was