

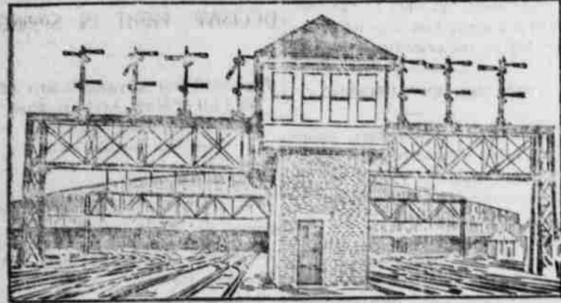
SIGNAL SYSTEM ESSENTIAL TO SAFETY IN RAILROADING

Brains of Railway Men Sometimes Fail to Work and Automatic Devices Must Be Provided.

New York, Nov. 10.—A series of deplorable accidents on railways running through sparsely settled portions of the United States has recently caused a good deal of discussion of American railway management and unfavorable comparisons between methods employed here and abroad, especially in England. Nevertheless, the achievements of American railway builders and managers rank among the most important in the industrial world and it is a fact that many American railroads are gradually being brought to a state of perfection in the matter of safety which equals and perhaps exceeds the English standard often called the highest in the world.

The cornerstone of safe railroading from an American standpoint is an ad-

enter the stretch between two groups of blocks, the first towerman must signal to the man controlling the next group for the "unlock." This he does by a code of bells, the towerman ahead pulls the lever controlling the third semaphore, and the limited rushes on toward the next group of blocks, to go through the same process there. It is impossible for a signal guarding a block to be altered while a train is on that block and even when the track is clear the operator's assistance is necessary to indicate the fact to the engineer. The normal condition of a semaphore is danger and were the numerous devices which constitute a signal system do become deranged each semaphore would remain immovable at danger. The passengers on the limited



AUTOMATIC GUARDIANS OF THE RAIL
A Signal Tower and Semaphores in a Terminal Yard.

quate and absolutely reliable system of signals. Recent accidents have shown that, in the language of one railway official, the brains of the most experienced railway men sometimes "fail to work" and for this reason there has been a constant effort to provide some mechanical substitute for brains. This has been successful so far as it is desirable to succeed, for machinery is not always immune to accidents.

The central feature of the modern signalling system is the division of a road into short sections technically known as blocks, each of which is equipped with signals operated in part automatically and in part by men stationed in towers along the track. Through various stages of development these signal systems have been so perfected that while a madman in a tower

would in all probability be a little irritated at the delay, but there would be no collision.

In the roadbed itself the American railroads have shown how continuous are their efforts to ensure absolute safety. Where a road was built hastily through a new country, night rails, light ties and any kind of ballast that was convenient were employed. Now speed, economy and safety all demand a permanent, solid roadbed. Between New York and Boston rock ballast alone is used and the rails are the heaviest in use for general purposes. Ten yards long, six inches high and weighing 100 pounds a yard, each rail is 1000 in weight—a bit of iron not easily forced from its position by any pressure and not given to wearing out very quickly. Side by side with the

drawbridge is the greater exactness and solidity with which, when down, the tracks upon it are joined with those on the fixed spans, thus removing one more possibility of disaster. The Sherzer roller lift, as the type of bridge in which one end is raised upon the rolling axis of the other, is called, is already installed at Boston and Bridgeport and the New Haven railroad is now building three more, one at Coscob, one at Westport and one over the Housatonic, east of Bridgeport. On these new bridges a train can run over a bed as firm as that which led it to them, though its speed is regulated by stringent state laws. Even did an engineer pass the warning signals when the bridge was raised, his train would not plunge into the water. Derailing switches would turn the train from the track and thus bring it to a stop.

The safeguarding of the public on the thoroughly equipped modern railway is not confined to that portion of the people who ride upon the trains. The deadly grade-crossing is gradually being eliminated. From New York to New Haven, for instance, a distance of 73 miles, there are no crossings at grade, and from New Haven to New London there are only five, none of which are considered dangerous.

Over modern roadbeds, guarded by modern signal systems, the traveller on the older American railroads has no cause to envy the European.

HEAVY BLOW ON LAKES.

The Small Steamers Had to Seek Refuge.

Chicago, Nov. 14.—High northerly winds, accompanied at different points by snow flurries or rain, put a serious embargo on navigation throughout the upper lakes. None but the larger steamers were able to successfully face the storm, the smaller craft generally seeking shelter at havens of refuge on Lakes Superior, Michigan and Huron. Last night the main force of the blow had shifted to the eastward. At Chicago a maximum velocity of 42 miles was reported.

New Cash Grocery has fine candies, up-to-date bonbons and fresh fruits.

MALARIA IN THE SYSTEM

Holly Springs, Miss., March 24, 1903. While building railroads in Tennessee some twelve years ago a number of hands contracted fever and various forms of blood and skin diseases. I carried S. S. S. in my commissary and gave it to my hands with most gratifying results. I can recommend S. S. S. as the finest preparation for Malaria, chills and fever, as well as all blood and skin diseases. W. I. MCGOWAN

I suffered greatly from Boils, which would break out on different parts of my body. I saw S. S. S. advertised and after using about three bottles I was cured, and for the last three years have had no trouble whatever. A. W. ZEBER, 217 Read St., Evansville, Ind.

I began using your S. S. S. probably ten years ago for Malaria and blood troubles, and it proved so good that I have continued ever since using it as a family remedy. It is a pleasure for me to recommend S. S. S. for the benefit of others who are needing a first rate blood purifier, tonic and cure for Malaria. Arkansas City, Ark. C. C. HRMINGWAY.

Boils, abscesses, sores, dark or yellow spots and debility are some of the symptoms of this miserable disease. S. S. S. counteracts and removes from the blood all impurities and builds up the entire system. It is guaranteed a purely vegetable remedy. Write for medical advice or any special information about case.

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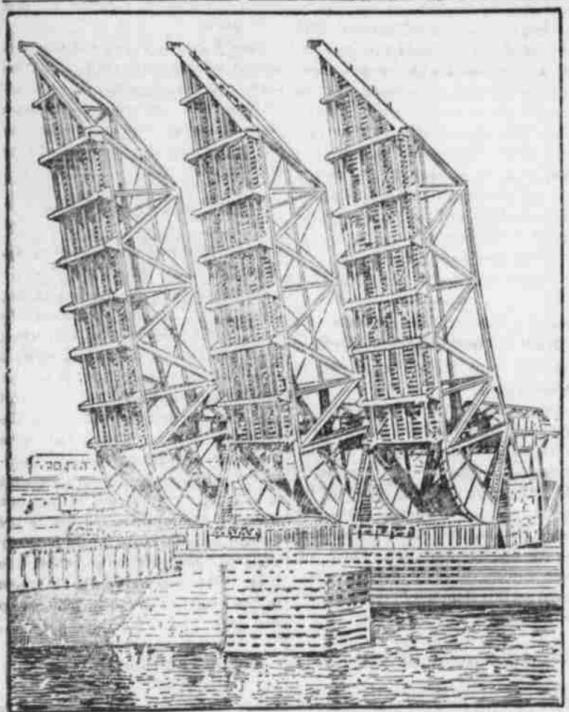
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A MEDIAEVAL IDEA MODERNIZED.
Massive Lift Bridges Have Taken the Place of the Revolving Type.

might succeed in tying up all traffic he would have difficulty in causing a smashup.

On the New York, New Haven and Hartford the blocks vary in length from half a mile to four miles. Ordinarily to every three blocks there is an operating tower in which one or more men are continually on duty. The merchant's limited, for example, rushing on its way to Boston at 60 miles an hour, enters a block, completes an electrical connection and automatically the semaphore rises to danger. While the train is on that block the towerman is powerless to change the signal. Only when the train has passed into the second block and the next semaphore is set at danger, can the operator pull the first signal down and allow the following train to proceed. Before the limited can pass the third signal and

work of making more solid the roadbeds has gone the task of removing as far as possible all dangerous curves and heavy grades.

Perhaps, however, American railroad engineers have been most successful in developing new types of bridges. The old drawbridge which revolved on a fixed pivot in the center has to a considerable extent been superseded by a modern application of the principle of the mediaeval drawbridge across which lay the road to the castle gate. But between the few planks crossing a narrow moat and hoisted by chains and windlasses turned by hand and a great steel structure carrying four tracks, whose tons of metal are raised by some of the most elaborate machinery we have, there is little resemblance. The chief advantage which this complex creation has over the older revolving

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