

## Proposed New Belt Railroad for Chicago.

A committee has recently submitted to the Board of Directors of the Chicago Union Transfer Railway Company a report on the location and construction of a belt railroad, which will be acted upon at a meeting of stockholders in October. The list of stockholders comprises the following railroad companies together with several Chicago capitalists: Baltimore & Ohio; Pennsylvania; Chicago & Northwestern; Chicago, Milwaukee & St. Paul; Chicago, Rock Island & Pacific; Illinois Central; Chicago & Eastern Illinois; Northern Pacific; Chicago & Great Western, (Chicago, St. Paul & Kansas City) Atchison, Topeka & Santa Fe, and the Chicago, Burlington & Quincy.

The following is an abstract of the report:

The general location is shown approximately on the accompanying map and explains itself. The right of way is to be generally 200 ft. wide, being less than 300 ft. only at such points where it is reasonable to suppose that industries will not be located. In no place will the right of way be less than is required for eight tracks. A double-track railroad from the Milwaukee division of the Chicago & Northwestern to the Wisconsin Central, a four-track road from the Wisconsin Central to the New York, Chicago & St. Louis, and a double track road from the New York, Chicago & St. Louis to the Baltimore & Ohio Railroad are proposed, it being the intention to furnish such facilities as are required at the present time to transact the business that all railroads may desire to do over the proposed line, leaving the additional facilities which shall be required in the future to be provided for when necessary.

The width of embankment for double track railroad is to be 28 ft., and for four track railroad 56 ft. The width of excavation for double track is to be 32 ft., and for four track 60 ft. Slopes in earth  $1\frac{1}{2}$  to 1, and in rock excavation  $\frac{1}{2}$  to 1. Culverts to be of stone, or stone and iron. Bridges to be constructed with masonry abutments, and steel superstructure. Crossings, where possible, are to be overhead or under. Crossings at grade are to be intersected. Overhead railroad and highway crossings are to be carried on steel columns, with masonry piers and steel superstructure. The track is to be laid with 80-lb. steel and best pattern of rail joint, oak ties, and gravel ballast.

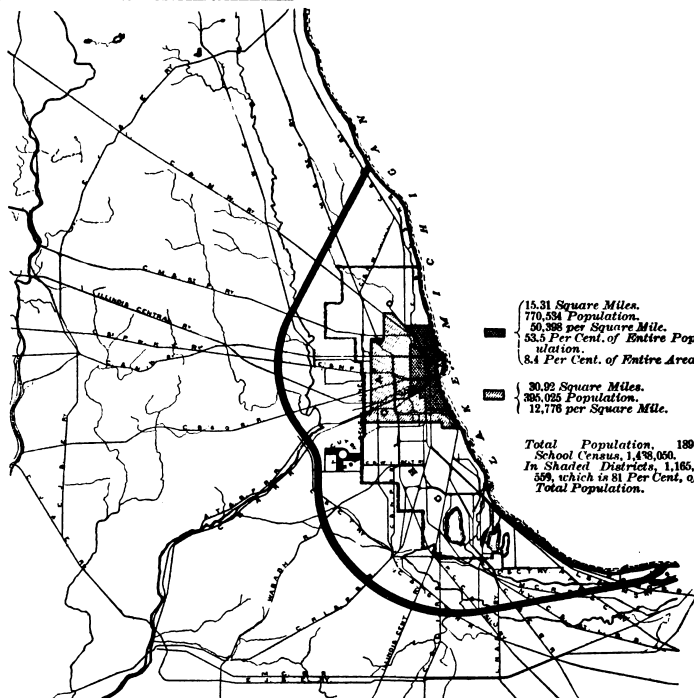
The principal features of the proposed line are as follows:

Total length of line from the C. & N. W. Ry. to B. & O. R. R.	60.3 miles.
Straight line.....	58.07
Curved line.....	2.23
Total number of degrees of curvature.....	353 deg.
Maximum degree of curvature.....	16 ft.
Maximum grade per mile.....	1.6 miles.
Length of longest maximum grade.....	13.7
Miles of track on which grade is 16 ft. or less.....	17.6
Miles of track on which grade is less than 10 and more than 5 ft. ....	17.6
Miles of track on which grade is less than 5 ft. per mile.....	29.0
Maximum elevation above Lake Michigan.....	71 ft.
Minimum elevation above Lake Michigan.....	11 "
Elevation at midpoint above Lake Michigan.....	60 ft.
Total ascent on whole line.....	200 "
Subgrade crossings.....	11
Overhead crossings.....	2
Grade railroad crossings (at points where there are existing railroad crossings).....	5
New grade railroad crossings.....	5
Overhead highway crossings.....	8
Subgrade highway crossings.....	3
Grade highway crossings.....	85
River and creek crossings.....	7
Feet of iron bridging on proposed line.....	1,200
Feet of iron bridging on existing line.....	1,100
Feet of iron bridging on highways.....	1,320
Feet of iron bridging on other small openings.....	250
Total iron bridging.....	3,970 ft.
Arch culverts.....	60
Iron pipe and box culverts.....	60
Total estimated cost of line from lake to lake.....	\$5,500,000

The total length of the line from lake to lake will be 63.78 miles. The distance from Chicago & Northwestern Railway to Chicago Union Transfer Railway Yards is 25.0 miles, and from Baltimore & Ohio Railroad crossing to Chicago Union Transfer Railway Yards, 32.9 miles. The line will connect with twenty-three main lines of railroad entering the city of Chicago.

The distance a car will have to be hauled in making transfers is in one case twelve miles farther via the proposed line than via any other proposed route, and in one case ten miles. Out of 572 possible transfers, the distance over the proposed line exceeds the distance via other lines in 166 cases, but the total of the distances via the proposed line is 308 miles less than the total of the averages via the other lines, which shows a saving of an average of 23.10 miles per car transferred. The low grades, light curvature, few important highway crossings, numerous overhead and sub-grade railroad crossings, will admit of the handling of heavy trains at high speed and with reduced operating expenses.

The distance from any junction point of any railroad with the proposed line to the Union Stock Yards by way of the U. S. V. & T. Co. averages 18.35 miles; via the C. & C. T. Co. and C. & N. P. Co., 21.25 miles; via the C. & W. I. Belt, 23.75 miles, and via the proposed line, 27.75 miles, the greatest difference of distance in any one instance being 19 miles, while in 13 cases it is shorter via the proposed line than via the other routes; but the advantage of this line is not so much the distance to be traveled as the freedom from annoying delays. The chances for delay in making transfers from Kinzie street, by way of the Union Stock Yards to the Illinois Central, a distance of about nine miles, can be readily appreciated from the fact that the route crosses 67 highways, three cable lines, and three cable lines and eight lines of railroad on which are operated the trains of 16 railroads running 450 passenger trains daily. On three of these highways 5,442 vehicles and 12,193 pedestrians cross the tracks in thirteen hours; on one of these cable lines 740 cars in 15 hours; and on one of these eight lines of railroad 173 trains and engines in 11 hours and 40 minutes, while a safe estimate of the number of engines and trains crossing over this route would be 2,000 per day, or about three trains every two minutes; horse and cable cars, 366 per hour; vehicles, 3,000 per hour; pedestrians, 5,000 per hour, making a total aggregate per hour of 8,440, or an average of 140 per minute.



Proposed Belt Line of the Chicago Union Transfer Railway Company.

Owing to the fact that so many of the railroad terminal yards are now located within or near the city limits, and in many cases are so crowded that it seems to be impossible therein to provide for the ever-increasing business, new yards must be provided, on less expensive land, where the public and the movement of the cars will be less embarrassed than at the old yards gradually abandoned, for the following reasons:

(a) The constant menace of the street crossing problem, which is rapidly cutting all yards into smaller and smaller sections, rendering them less and less useful on account of the increased expense and delay necessary to operate them.

(b) The increasing danger to life and property, compelling the construction of expensive additional viaducts.

(c) The increased switching mileage rendered necessary on account of the present location of the yards.

(d) The crowded condition of the main tracks of all the railroads, caused by their through and suburban passenger traffic, together with the necessary freight house and team track switching, rendering any additional switching slow and expensive, and in many cases causing serious and annoying delays. As bearing thereon attention is called to the distribution of the population of Chicago as shown by the shaded portions of the map. Within the limits of the heavy shading is contained more than 50 per cent. of the entire population of the city, and in this district all the railroads have their passenger and freight terminals, while in the lighter shaded district, nearly all the transfer work is accomplished.

In view of the above and other considerations, the line has been so located that each railroad can secure yard room and facilities ample for its probable future requirements at a minimum expense. The railroads terminating here have, within the limits of the city, 246.5 miles of main track, 230.5 miles of second main, and about 900 miles of yards and sidings, a total of 1,377 miles of track covering about 7,000 acres.

Many railroads, already recognizing the necessity of increasing yard facilities, are now seeking new locations at points beyond the busy districts; and if there is no concerted action new yards will be located only with reference to some specific requirement, dictated by the business of the line so locating; overlooking the necessity of a comprehensive system which should simplify all transfer and terminal work. A few years ago a majority of the railroads entering Chicago made all freight-car transfers via the main lines of other railroads, sending their own switching engines and crews over miles of the main tracks of foreign roads. The business has now outgrown this method and roads begin to recognize the necessity of having facilities at common points at which transfers may be made. This improvement on the older plan is apparent to all. Transfers made by the old way cost and still cost, where permitted, much more than a profitable switching charge even on the existing belt lines, and subject the cars so transferred to an ever-increasing delay.

This company having already acquired the necessary yard facilities for sorting and delivering to the various railroads the mixture of cars it may receive from the various yards, we think this or some similar line an absolute necessity, and the earlier it is secured the cheaper and better for the interests of the city and country, here, their patrons, and Chicago.

Among the advantages of locating and securing right of way for this belt railway before the country through which it passes is populated will be: The present value of the land, the concessions that would probably be made on account of the increased value it will give to the adjoining property by creating desirable locations for manufacturing and industrial purposes, and that it makes known to the world its location and object, so that all future plotting of the territory affected thereby will be made in conformity with its known and intended use, and all streets, buildings and improvements will naturally adjust themselves to this known condition.

The necessity for taking immediate steps in some definite direction, looking to the construction of an adequate transfer system, may be more readily realized by a consideration of the growth of the railroad systems which terminate in Chicago. The increase in mileage of ten leading roads terminating in Chicago, between the years 1870 and 1890, was 370 per cent.; the increase in tonnage was 490 per cent. The tonnage of all roads entering Chicago increased from 1880 to 1890, 131 per cent., and from 1885 to 1890, 72½ per cent., reaching a total of 119,284,935 tons, which was 17½ per cent. of the entire tonnage of all the railroads in the United States. We find that the receipts and shipments of a few commodities at Chicago during the year 1890 aggregated 1,664,000 carloads. There being about an equal number of empties handled makes an aggregate of 3,328,000 cars. It seems from the data we have been able to collect that about 40 per cent. of the entire tonnage of the roads terminating here is handled in Chicago, or nearly 50,000,000 tons for the year 1890; this would make about 6,000,000 carloads.

During the year 1891 the C. & W. I. Belt transferred 550,871 cars, the Chicago Railway Transfer Association 582,487 cars, the St. Charles Air Line 180,837 cars. Of the direct transfers the C. & N. W. made 404,551, the C. & B. & Q. 150,986, which aggregates 1,889,532 transfers. From other data and estimates, the direct transfers made by other roads would, in our opinion, reach about 2,500,000 cars, making the total for 1891 nearly 4,400,000 cars handled.

Another reason for taking some steps looking to the relief of the railroad business here, is the constant, and at present unavoidable, delay in handling cars, coupled with the unnecessary delays on team and industrial tracks. The delays from this last cause will aggregate 1,500,000 car-days per annum, while delays arising from existing yard locations, inadequate and expensive transfer facilities, will reach, at a low estimate, 5,000,000 car-days per annum. The average earnings per car-day in the United States, as deduced from the reports of 1890, is \$1.50; the average time consumed in loading, shipping and unloading a car is 4½ days for each load, which would make the earning capacity of a car on a long haul, or during the busy season, over \$5 per day. It is not claimed, however, that all this could be saved, but we leave it to the operating departments of the various railroads to make their own estimates from the above data.

We believe that the construction and use of this or some other similar system of transfer would not only have the effect of facilitating transfer and reducing delays, but it would also result in relieving from active service from 25 to 50 per cent. of the switching engines and crews now in use, thereby effecting a large saving to the roads annually. One manager says that if a general system of transfer, such as herein contemplated, were adopted, more than 25 per cent. of the switching engines now in use on his road would be relieved, thereby effecting a saving of \$100,000 per year to his company.

The report is signed by Messrs. H. H. Porter, J. M. Whitman and Andrew Crawford, Committee, and W. S. Jones, Chief Engineer.

## The New Fast Passenger Ships.

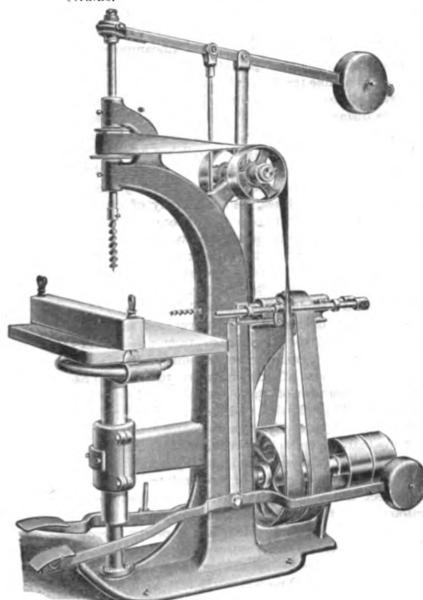
The contracts have been let to the Globe Iron Works, of Cleveland, to build the two passenger ships, heretofore referred to, which are expected to make the run from Buffalo to Duluth in 50 hours. The iron and steel for most of the large ships built on the Great Lakes has been made at the Carnegie and other Pittsburgh mills, but the orders for the steel for these new ships have been awarded to Cleveland firms. The Otis Steel Co. has the contract for all the steel, the Cleveland Rolling Mill Co. for rolling the plates, and the Cleveland City Forge for the heavy shafting.

ago an adjoining farmhouse was let in, and the company found it necessary to prop up a railway bridge to prevent the line from collapsing. It is reported, however, that the workings of the Parkside mines have not been interfered with by the subsidence in the embankment, and that they exist intact under a stratification of rock which is as yet unshaken. The inference is that the vast volume of water which is pumped from the mines has caused percolation through the rock, and left cavities in the upper strata which have caused a subsidence; but there is reason to believe that the subsidence which has now occurred is due mainly to the absolute all-of-earth into old workings, and the fear is entertained that what has occurred at this part of the embankment may be repeated in other places.—*The Engineer*

#### A Vertical and Horizontal Boring Machine.

The accompanying illustration shows one of a new line of boring machines manufactured by the John A. White Co., of Dover, N. H., which are neat and compact in appearance and are designed to meet the demands of the best class of woodworking establishments. The combined horizontal and vertical boring machine has the features of the light vertical and horizontal machines made by the same company and will be found a convenient and compact tool for general shop use.

The frame is cast in one piece, and is so designed as to combine great rigidity with convenient access to every working part and absence of unnecessary weight. A special feature is in bringing the centre line of support for the table directly under the line of thrust of the vertical bit, thus obtaining entire freedom from cross strains.



Combined Vertical and Horizontal Boring Machine.

All shafts are of steel, with babbit lined boxes, except the arbors, which run in bronze bushings. The vertical and horizontal arbors have a longitudinal motion of 9 in. and 8 in., respectively, while the table has a vertical range in adjustment of 10 in. Both arbors are counterbalanced by weighted levers for withdrawing the bit after being fed into the stock by the treadles shown in the cut.

Like other machinery manufactured by the John A. White Co., they are built on the interchangeable plan, every part being made to gauge and numbered.

#### Settlement of a Bank on the New York, New Haven & Hartford.

The following account of a serious settlement of a bank on the New York, New Haven & Hartford is just received from Mr. F. S. Curtis, Chief Engineer of the road.

The embankment on the New London Division, across Lake Saltonstall, about six miles from New Haven, was originally a single track embankment, crossing the lake near its outlet, the top of the bank being about 15 ft. above the general average of the surface of the water in the lake. About 10 or 12 years ago the company enlarged the culvert under the embankment by replacing it with a brick arch 16 ft. wide, built on piles. This is still intact and there is no sign of its being injured.

Last spring the railroad company commenced widening the embankment for the second track, on the opposite side from the main portion of the lake. This was completed about July 1, although since that time the embankment for the additional track has settled down

at different times in all 4 or 5 ft., until, as we supposed, it had reached the solid foundation.

Last Thursday, Oct. 13, it was noticed that the embankment for the new track, which has not yet been put in service, had settled a few inches and that there were signs of its separating from the old embankment, there showing at the same time a small opening or crack between the two tracks. When this was noticed it was not considered of any very great account, but late in the evening the old embankment began to settle, and kept doing so until about 11 p. m., when it had settled about 15 ft. in all, taking the old track with it and more or less of the embankment for the new track, and what was left was some 4 ft. below the original level, and leaving the new track lying over on the edge of the slope, which of course stopped all travel. This new track was then moved to the south as far as possible and filling put in during the next day, when it was repaired sufficient to allow it to be used for trains, but of course at a very low rate of speed, as each time a train went over it, it settled more or less, and is still doing so, although we are putting in each day about 150 carloads of sand and gravel, or nearly 1,500 cubic yards.

The probability is that the hard bottom slopes very steeply toward the main body of the lake, and, in addition, when the original fill was made, more or less brush or loose filling was put in under the bottom of the embankment, and the new filling pressing against it on one side and the water in the lake being some 4 or 5 ft. lower than usual, caused the difficulty, that is, the bottom sliding into the lake. Still, there is something strange that the whole of the embankment did not go out into the lake, instead of the bottom portion letting the track down 15 ft., and leaving it only a few inches out of line. The length of the whole settlement was about 400 ft., being from the arch to the east side of the lake.

It is difficult to tell how long it will take or how much material to refill the gap, but from appearances I have an idea that a very few days, with the amount of material we are putting in daily, will do it.

#### The Q & C Car Mover.

The illustration shows a new and simple car starter, which is now being put on the market by the Q & C Company. A shows its position on the axle to push the car from the operator and B shows its position to draw



the car toward the operator. The device weighs about 30 lbs. It is easily applied to the axle and will start a loaded car with small exertion. It is self-adjustable to any axle, has an instantaneous grip and release and can be worked between cars to open up the train, and the car can be moved in either direction without change of position of the operator. The grip on the axle is obtained by a sharp pull on the handle, and with a little practice the operator is enabled to take advantage of the momentum gained and keep the car moving at a good speed. It is said that one man can move a loaded car quite readily. This device has been quite thoroughly tested on the Pacific coast, and some strong testimonials are on file in the office of the company who offer to send one for 10 days' trial, asking that parties ordering it shall pay the freight charges.

#### The Denver & Rio Grande Strike.

President Jeffery has issued under date of Oct. 18 a circular giving a short history of the strike of trainmen on the Second Division of that road which began Oct. 15. It ended the 18th, when the men went to work, pending an inquiry. This was after the President's order was issued discharging peremptorily all men who did not go to work that day. The circular tells the story of a flagrant case of high-handed unionism, and therefore we reproduce its main parts.

On August 22, 1892, the following order regarding fast trains Nos. 61 and 64 was bulletined by the Division Superintendent, Mr. R. M. Ridgway:

*Bulletin, No. 23.*  
"Train and engine men on trains 61 and 64 must not detain their trains to get meals at Malta or Glenwood. On leaving terminals you must go prepared to go through, as these trains must make time."

This was bulletined for the information of employees at the terminals of runs on the division. On Aug. 24, two days after the issuance of the bulletin order, Engineer William Gordon was listed to take westbound California fast freight train No. 61 from Minturn to Grand Junction. As the train was ready to leave Minturn, Engineer Gordon called the Trainmaster, who was in Minturn, upon his engine and informed him that unless bulletin order No. 23, relating to detentions of trains 61 and 64 at Malta and Glenwood by train and engine men taking meals, was recalled, he would not leave Minturn with the train. He used violent language and stated he "did not care a damn if he never worked another minute;" he would not go out until the order was recalled, and told the Trainmaster to go to the office and repeat this to division headquarters. This the Train-

master did at once. In order to avoid contention and disarrangement of the train service, the Division Superintendent, on being advised by telegraph of the situation, directed the Trainmaster to remove the order from the bulletin board, and train No. 61 was then taken out by Engineer William Gordon.

An investigation into the action of Mr. Gordon was ordered by the General Superintendent, and was held at Salida at 10:30 a. m., October 3d, at which were present the following persons, constituting the Board of Investigation: R. M. Ridgway, Division Superintendent, Chairman; A. W. Jones, Division Master Mechanic; J. E. Barnes, Traveling Engineer; G. H. Barnes, Trainmaster; I. G. Baker, Locomotive Engineer (selected by Mr. Gordon).

[A verbatim transcript of the proceedings of the investigating board follows, but we give only the results.]

*Findings.*—Engineer Gordon acknowledges having used the language in his conversation with Mr. Barnes at Minturn, as reported, and that he refused to obey the bulletin order or go out until it was recalled.

A copy of the proceedings of the Board of Investigation was forwarded to the General Superintendent on Oct. 4, with the following letter of transmission, signed by Mr. R. M. Ridgway, Superintendent of Division, and Mr. A. W. Jones, Master Mechanic:

"You will note that Engineer Gordon acknowledges having used the language as reported by Trainmaster Barnes, also that he refused to obey the bulletin order or go out on train 61 of Aug. 24 until it was recalled. This is a case that merits dismissal from the service, and we would recommend that it be done."

The General Superintendent in considering the matter gave due weight to the previous record of Engineer Gordon, and in consideration thereof overruled the recommendation of the Division Superintendent and Master Mechanic, and directed that Engineer Gordon be suspended for 30 days. In conformity with the order of the General Superintendent, Engineer William Gordon was notified of the decision, his suspension taking effect from Oct. 2, the day he was taken from his run pending investigation and decision.

The care taken to obtain all the facts, and in a calm and judicial spirit take action in the case, is illustrated by the deliberation and patience shown in the action of the officers as above outlined.

The case was taken up by the employees of the Second Division, and apparently secret meetings were held, and at 2:10 o'clock on the morning of Saturday, Oct. 15, the following message was received by General Superintendent Sample, at his residence in Denver:

MINTURN, Colo., Oct. 14, 1892.

Mr. N. W. Sample, General Superintendent D. & R. G., Denver.

By action of employees taken at a union meeting at Minturn, Oct. 7, we as a committee hereby request the reinstatement of Engineer William Gordon and full time from the date of his suspension. This matter to be made known by a bulletin being posted at Salida, Leadville, Minturn and Grand Junction. This bulletin to be conspicuously posted by 7 o'clock a. m., Oct. 13, and unless such bulletin is posted by such time, we as the engineers, conductors, firemen and brakemen positively refuse to handle trains on Second Division after 7 o'clock a. m., Oct. 13.

By order of

(Signed) COMMITTEE.

In accordance with the threat expressed in the telegram the engineers, conductors, firemen and brakemen of the second division, which extends from Salida to Grand Junction, abandoned and refused to take out their trains at seven o'clock in the morning of the same day (Oct. 15, 1892) and no trains have moved over the division since that time.

The notification received by the General Superintendent at 2:10 a. m., Oct. 15, five hours before that portion of the line was tied up, was the first information, or even intimation, received by the company of the contemplated strike. Believing that friendly conferences between employer and employees for the purpose of adjusting differences are desirable, and that to avert a strike, disastrous alike to the company and the men, and in its effects greatly injurious to the public, arbitration in this case might be resorted to, the following telegram was sent at 5:10 p. m. to the Division Superintendent:

"I shall be glad to confer with any committee of our employees for the adjustment of any grievances, and, if we cannot agree, will be willing to arbitrate matters of difference; in the mean time, the men should return to work and remain at work pending the adjustment, either by conference or arbitration. The company has always treated its employees liberally and justly, and the present strike, almost without notice, will not be sustained by railway employees generally, or the public. Give a copy of this message to the committee."  
(Signed) N. W. SAMPLE.

To this the following reply was received by the Division Superintendent:

"We, the employees of Second and Third Divisions, instruct our committee to inform you that we will not accept Mr. Sample's terms, and that we will remain out until a settlement is made amicable to ourselves."

From the foregoing, it will be seen that even arbitration, for which so many labor organizations have contended, is refused by the men through their duly appointed committee.

#### Interlocking in Illinois.

We have received a copy of the rules governing the uses of interlocking devices in Illinois, as adopted by the Railroad and Warehouse Commission, and the statutory provisions. By an act of 1887 trains may pass grade crossings or drawbridges without stopping, provided those places are protected by interlocked signals approved by the Commissioners. By an act of 1891, the Board of Commissioners may order a grade crossing protected by interlocked signals upon the petition of any railroad company using the crossing; or upon other petitions or information, and may apportion the cost of installing and operating the plant among the railroads interested. The Consulting Engineer of the Commission, Mr. Charles Hansel, has arranged the rules and requirements which were adopted Sept. 14 and which appear in this pamphlet. A copy can be had by addressing the Secretary of the Railroad and Warehouse Commission, Mr. J. H. Padonck, Springfield, Ill. The rules strike us as being generally good. Some appose signals are required for uniformity. Derailers are required and facing point locks and detector bars. Preliminary locking is also specified. On the whole, the rules make a compact and very instructive little treatise on interlocking.