

sent a neat and clean appearance. It was decided to devote Saturday afternoons to cleaning up station grounds, picking up scrap and looking after switches, frogs and guard rails. The subject of burning off right of way was gone into and foremen were instructed to give this feature of the work proper attention.

PERSONAL INJURIES: Roadmaster Hinkle gave the foremen a short talk in regard to accident prevention and asked their cooperation in reducing personal injuries, which he stated can be accomplished through proper supervision of work, seeing that tools are in proper shape and in teaching the new men the proper manner of doing his work.

A short talk was made by roadmaster's clerk regarding the importance of handling correspondence promptly. He called attention to several instances in which superintendent had traced a roadmaster for correspondence when it was necessary that this roadmaster hear from a foreman before replying whom he would have to trace three or four times before getting the desired information.

ATTENTION FOREMEN.

The Frisco having purchased Hexagon Grip Nuts, attention is called to the fact that the Grip Nut is not a jam nut, but locks through friction of the deflected nut thread on the bolt thread. *Start the Grip nut with the fingers.* You can screw the nut on three threads of the bolt, then you will *have to wrench the nut* to the point desired. *Do not jam* the Grip Nut against the holding nut, mere contact being all that is necessary. The Grip Nut can be reapplied numerous times.—*Adv.*

Insists on Too Much.

The trouble with the man who blows his own horn is that he so often insists on being the whole orchestra.

How to Get the Best Results From Empire Fireproof Paint

On shingle roofs, first remove all decayed or split shingles, then repair and paint the roof. Be sure paint is always hot when being applied, as it will then penetrate.

On wooden trestles, be sure that no surface is left unpainted.

In some instances it will be found advisable to use 4-inch hand brushes, and in others 4-knot brushes.

For painting composition or metal roofs, 4-knot brushes can be used exclusively as you can cover more surface each day.—*Adv.*

Attention T. A. H.!



As an example of the economy practiced at the Kansas City Station, an envelope that has been carried on fifty round trips by Messenger Michael P. Reardon, between the freight house and office of superintendent terminals, has been forwarded to **The Frisco-Man**.

To "Messenger Mike" is due the credit of making this envelope serve as a carrier 100 trips of one mile each, and that you may know him when you meet him, his photograph is herewith reproduced.

THE CHILLED IRON CAR WHEEL.

By F. K. VIAL, Chief Engineer Griffin Wheel Company.

The chilled iron car wheel is today the standard for freight cars and is also extensively used for engine and passenger car service.

The railway traffic of the United States and Canada amounts roughly to 750,000,000,000 gross ton-miles per annum. To carry this tonnage about 23,000,000 car wheels are used, of which about 22,000,000 are chilled iron, distributed as follows:

In freight service	21,500,000
In locomotive service	320,000
In passenger service	85,000
Total	21,905,000

The number of freight cars in service, of various capacities, is as follows:

Cars of 60,000 pounds capacity and under	1,163,088
Cars of 70,000 pounds capacity and under	42,844
Cars of 80,000 and 90,000 pounds capacity	797,063
Cars of 100,000 and 115,000 pounds (inclusive) capacity	748,360
Cars of 120,000 to 200,000 pounds (inclusive) capacity	5,550
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	2,756,905

Steam shovels, snow plows, wreckers, etc.	24,732
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The Interstate Commerce Commission statistics on railways in the United States show the following locomotive and passenger cars:

Locomotives, all classes, exclusive of those owned by private companies	61,010
Passenger cars, all classes, exclusive of those owned by the Pullman Company and other private lines	51,358

The chilled iron wheel is not used because it is cheap or easily manufactured but because of certain inherent properties which are especially adapted to wheel service and are not found in any other

metal. The requirements of economical wheels are as follows:

First: That the wearing surface shall be of sufficient hardness to carry the heaviest concentrated loads without excessive deformation over irregular tracks at high speeds.

Second: The wearing surface must be such that a maximum service can be rendered per unit of metal worn away.

Third: The tread surface having the greatest co-efficient of friction when in contact with the brake shoe.

Fourth: The character of the tread surface that will allow the greatest brake shoe durability per unit of retardation.

Fifth: The character of the wearing surface must be such as will be least destructive to the rail. The intensity of the internal stresses in the rail depend somewhat on the character of the metal of the wheel, which transmits the heavy concentrated load through a very small surface of metal.

Sixth: The character of the wearing surface of the tread must be such as will produce the least amount of rail abrasion.

Seventh: The surface of the tread of the wheel must be such that train resistance arising from tread slippage and flange friction shall be at a minimum.

Each of the foregoing properties is fundamental as far as economy is concerned, although, for the most part, the economies arising therefrom are hidden and are not always detected, because the savings are absorbed in such items of expense as train resistance, rail abrasion, brake shoe consumption, shop repairs, investment in shop facilities, interest on investment, etc.

Iron in some form is the only metal that to date has been found suitable for the manufacture of car wheels. Pure iron is so soft and ductile and of such low tensile strength that it is wholly unfit for wheel

service. It is therefore necessary that iron be combined with carbon to produce the required results. The hardness of the metal increases and better wearing qualities are obtained as the percentage of carbon increases. The percentage of carbon in ordinary steel rail runs about .70. In the chilled iron wheel the percentage of combined carbon in the plates and hub is from .60 to .70 per cent, while the percentage in the tread is 3.40 per cent. This is the reason why the chilled iron tread is so hard that it cannot be machined.

On account of the hardness of the metal at the wearing surface it takes a high polish when in service and produces the least amount of rail abrasion and the minimum flange friction; 25 to 50 per cent less metal is worn away from the brake shoe when used on a chilled iron wheel on account of the smoothness of the tread and at the same time 20 per cent greater braking efficiency is secured.

The Griffin Wheel Company have foundries located in Chicago, Pullman, Ill., Detroit, Mich., Denver, Colo., St. Paul, Minn., Tacoma, Wash., Kansas City, Kans., Boston, Mass., and Los Angeles, Cal., having a total annual capacity of 2,000,000 wheels. The foundry located at Kansas City, Kans., has a daily capacity of 650 wheels. In the quality of its output and the extent of its business, the Griffin Wheel Company stands without a peer in the manufacture of chilled iron car wheels. It has been the undisputed leader in the development of the chilled iron wheel during the last twenty years, and in the face of tremendously increased requirements of service conditions it has more than kept pace.

The Griffin Wheel Company has received the Grand Prize at the Panama Pacific International Exposition at San Francisco, 1915, for the highest proficiency in the art of manufacturing chilled iron wheels for Steam and Electric Railway Service.

Engine History.

F. L. Street.

As the third or fourth oldest engineer in point of service on the Frisco, it may be interesting to some of the "kids" to know a little about how many and what kind of engines were used on the road at the time I cast my lot with it in June, 1880.

There were on the 625 miles of road, or very close there about, six switch engines, No. 1 to No. 6. Nos. 7, 8, 9, 10, 11, 12, 21, 22, 27, 28, 29, 33 and 34 were all the passenger engines we had—all small Hinkley's, 16x24-inch cylinders, with the exception of the Nos. 10 and 11, which were the 15x22-inch cylinders. Nos. 21 and 22 were very pretty little double-dome, straight-boiler Baldwins, also 15x22 and did the work on the Joplin and Girard Branch. The late "Tom" Murray and "Uncle Joe" Collins ran 33 and 34 on trains 19 and 20, between Oswego and Wichita, until they were sold.

At that time our trains used the Missouri Pacific track from St. Louis to Pacific, our road having no line of its own between those two points, and Missouri Pacific engine crews handled our trains. Engines Nos. 7, 8, 9, 27, 28 and 29 were then doing passenger work St. Louis to Oswego, Kans.

Nos. 13, 14, 15, 16 and 17, were all small 8-wheel Hinkley's. No. 18 was built by M. Kearney, that time superintendent of motive power, from parts of several old engines and made one of the best engines of its size on the road. It was a 17x24. Nos. 19 and 20, also 17x24, were two THEN-modern Hinkley's. Nos. 23, 24, 25 and 26, were also small Hinkley freight engines. Nos. 30, 31 and 32 were small Baldwin freight engines, bought from the Moffitt's of Joplin, Mo., from what was known as the Moffitt road, now part of the Frisco line around Joplin. Nos. 35, 36, 37, 38 and 39 were old straight-boiler Baldwin ten-wheelers.

With the exception of Nos. 30, 31, 32, 19 and 20, all the engines I have heretofore mentioned were old timers, built in the 70's. About 1879 the following freight locomotives were bought: Nos. 40, 41, 42, 43, 44, 45, 46, 47, 48, and 29, Baldwin wagon top ten-wheelers, and Nos. 50, 51, 52, 53, 54, and 55, Rogers wagon top ten-wheelers. I believe all of these are in the 2000 and 3000 class now in switch service.

This completes the total number of engines on the road when I entered service.

Service.

It's just one little word, but how much it means when it comes to the matter of metallic packings. The Hewitt Company are primarily manufacturers of metallic packings, manufacturing high grade machine finished packings of all kinds and for all purposes. The above company, however, also sells service together with their packings. The latter being furnished free; therefore, this little talk on metallic packing.

First of all, it should be borne in mind to have the right kind of material in the packing ring; for instance, white metal rings ordinarily will not pack superheaters successfully, while the reverse may be true, it would not be economy to use superheater packing on saturated engines. See to it that packing rings are furnished by responsible specialists who can be depended upon to furnish the best there is for the purpose and who can furnish service as well as packing rings. Having good packing rings you should then see to it that packing equipment, especially vibrating cups, are made absolutely standard; that your ball joint rings are in every case properly ground in and that a good swab is made a part of the equipment. A good idea in connection with swabs is to have swabbing in a pail or tank thoroughly soaked in valve oil ready to use and cut as neces-

sary. It is, of course, important to keep your pistons and crossheads in line, so that the weight of same is not riding on the metallic packing rings. Keep the water out of the cylinders in starting out. Water cuts out metallic packing rings faster than any other agent. It is a well established fact that engineers should drift with a cracked throttle on superheater locomotives. This to conserve the packing among other things.

A. E. Munch, Service Engineer.

Specializing.

*O. E. Marlin, Agent
Burdette Junction, Ark.*

A well managed railroad has employes who know the game in general, not that alone, but men who have specialized in the handling of various transportation problems.

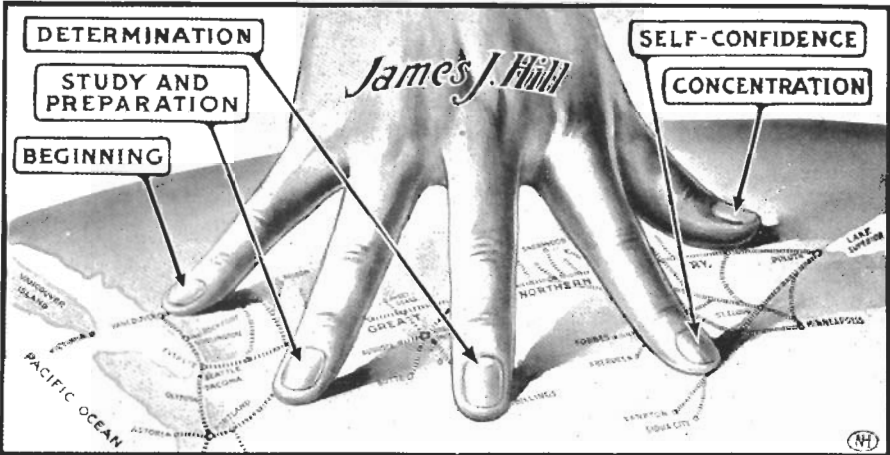
The brakeman knows the game in general, but the conductor has specialized, hence he is manager of his train. In our fair American Government we have our representatives. So it is with our trainmen, the brakemen are the representatives in the conductor's government of his train. Such government being a representative government, naturally, all employes of a train are interested in the government of that train.

This applies to each employe of the road in his particular line of work. The necessity of having men specialize in the handling of the more important transportation problems is essential.

All employes are represented, and, naturally become interested in the prevention of freight claims. This being the case it is not merely the right of employes to participate in the prevention of claims, but a duty they owe to their employer.

It is pleasing to note the example the Frisco has set in this regard.

A foreign line agent in Oklahoma was requested by the management of his road to write an article dealing with freight



MEN WANTED

For Good-Paying Traffic Positions
\$35 to \$100 a Week

In the above picture is shown the hand of James J. Hill, who controls the great railroad system extending from Lake Superior to Puget Sound. Mr. Hill began railroading while a young man, under circumstances much less favorable than those under which young men of today can begin. His first railroad job was that of a telegraph operator. Perhaps there is not a man who will read this announcement who is not familiar with the record of this noted, self-instructed, self-made railroad and transportation king. There is nothing mysterious about his rapid rise from a little country railroad station job to a position of power and affluence. The above drawing shows the five main elements of Mr. Hill's success—the five elements that will make you successful. But YOU can now readily

Train for Promotion At Home By Mail

Perhaps you have not known that with the use of your spare time and evenings you can qualify for work done by the man higher up.

Take a look at yourself and see how nearly you measure up to the standard of efficiency which railroad men must possess to win advancement. Could you hold down a responsible railroad position if actually offered to you? How much longer are you willing to arrange sleepers at a station agent, a telegraph operator, a general office clerk, or bookkeeper at \$60 to \$85 a month?

Write at once and learn all about the great opportunities in this field. Send the Coupon today. You are wanted not only by the railroads, but by the big steel corporations, the big coal companies, big lumber concerns, and hundreds of thousands of large industrial shippers, who are glad to pay big salaries to men competent to handle their transportation problems with maximum efficiency. If you have an ordinary education you are eligible for the training given by our expert instructors.

Free Book Coupon

Send postal or the coupon right now and get our big book of facts telling all about the work of the expert traffic man, and how we can train you quickly at home. The cost is small. Easy monthly payments accepted.

LaSalle Extension University,
 Dept. 145. C. Chicago, Ill.

The railroads of the United States have grown faster than in any other country in the world. They now aggregate the enormous total of 35,000 miles. The supply of trained traffic men has not kept up with the demand. Modern transportation is a jungle of routes and rates calling for specialists—men who are highly trained in Freight Classification, Rate Making and Construction, Industrial and Railroad Shipping, Handling of Claims, Ocean Trade and Traffic, Railway Organization and Management, Interstate Commerce Regulations and Proceedings, etc.

Free Book Coupon

LaSALLE EXTENSION UNIVERSITY,
 Dept. 145. C. Chicago, Ill.

Please send "Ten Years' Promotion In One" and your book telling how I may, without interrupting my present employment, prepare myself for a good paying traffic position.

Name.....
 Address.....
 Occupation.....