

Fuel Efficiency

Robt. Callett, Supt. Loco. Performance

An innovation, as I understand it, means—Doing some old thing in a new way or to make changes in something already established. Our work has not been so much on the order of attempting new methods, but rather an attempt to follow to a conclusion methods that were pretty generally known.

The graphic chart, on opposite page, shows the actual consumption per month, in freight and passenger, commencing with July, 1910, six months before the fuel economy campaign started, but for comparative purposes the saving does not include the first six months after the performance sheets were started. It will be noted that the accumulative saving in the thirty-two months, up to March 1st, was \$650,248.50. This saving, however, was the saving of the fiscal year of 1911-12 versus 1910-11 and 1913-14 versus 1911-12.

Let us suppose that the consumption through the period July, 1911, had been on the same basis per 1000 gross ton mile and per passenger car mile as it was for the preceeding year - it would then have cost the Frisco Railroad \$1,036,937.40 more for fuel for freight and passenger locomotives alone than it did. This does not take into account anything except the actual cost of the coal placed on the locomotive tank, exclusive of freight charges and all of the collateral costs such as cost of coal cars, interest on investments, etc.

The saving is found as follows:—
If in January, 1913, we used 306 lbs. of coal to handle 1000 tons one mile, and in January, 1914, we used 286 lbs., we saved 20 lbs. of coal in January,

1913, for each 1000 gross ton miles handled on the system.

The nearest thing to an innovation has been an endeavor to find out what we were doing, what we ought to do, and how to do it. This has been mentioned before, but it is worth repeating and is worth keeping continually before us. The saving was brought about by everyone finding out as much as he could about the business and telling someone who was in a position to correct it, something about the things that were wrong. There is scarcely an item connected with the operation of trains that does not have some influence, and scarcely an employe but that can assist in some way in reducing the fuel bill. A good flue borer is one of the most important men on the railroad. A good way to find out about anything is to do it yourself, and that is one idea that has been followed up with our boys on the different divisions, to find out what each man's needs were, and try to assist in ironing out any difficulties surrounding the work. There has been a great deal of help and encouragement given by all departments, Mechanical, Fuel and Transportation, in fact there is hardly any department any more on the Frisco, we are just one large family and we have come to be pretty broad guaged in the matter of discussing our limitations with each other and inviting criticism.

Getting back to the engines—we used to think that we had to do a lot of shifting around of things in the front ends of the engines, but we commence at the other end now. If everything is all right there we apply the water cure. It is a wonderful defective. Most of the engineers won't run engines that are choked in the exhaust passages now, they can't make

the time or pull the tonnage with them. Formerly we reduced the tonnage to the condition of the engine. Some of you engineers who like a free working engine would scarcely believe that at one time we ran a 705 class engine with a $4\frac{3}{4}$ inch nozzle with a $\frac{1}{2}$ inch square bridge, and the 1200s with as small as $4\frac{1}{2}$ inch nozzle, and then swore at the engines because they wouldn't go anywhere.

We have learned a lot of things and put into effect some other things that we already knew but had grown somewhat careless in; for example, we found that we did not give our ash pans half enough air. It would be a long chapter of experiences to tell of all of the things that have been suggested, and most of them worked out with a view of improving the engines and the fuel consumption. Not all of the things we would like to have done have been put into effect, but the improvement has been gradual and steady. A very great many suggestions came from engineers and firemen, and when we found one man who had a good "kink" about the running or firing we told the other fellow about it who hadn't gotten next to that particular scheme, and perhaps we got one from him to give to someone else and so on down the line.

There is a lot of hard work connected with locomotive and train operation, but it is always interesting, and it is a man's work to get the best results from the manipulation of the handles in the cab, especially on the recent types of locomotives. One of the most important handles is attached to the scoop shovel.

We have done well, but we don't want to stop at that. We want other railroads to look at the Frisco as the place where fuel is used properly and locomotives, whether superheated or

otherwise, operated in the most scientific way possible.

What can we do to make further improvement, and how much do we lack of obtaining maximum efficiency? On March 26th engine 1298 from Ft. Scott to Kansas City used 8 tons of coal, 92 lbs. per 1000 ton mile. The average for the Kansas City Sub-Division for the month in through freight was 166 lbs. Average tons per train was 1515 tons, tons handled on above trip 1775. If we could arrange for all engines to make a similar performance we could save, in through freight alone on that Sub-Division, at \$2.00 per ton—\$4,215.20. There would be a 45% saving. A similar reduction in our total fuel bill per month would be \$140,041.80. For not obvious reasons this is not possible but every step in that direction helps that much. Light tonnage, double-heading, and many other items have a bearing, but by all concerned giving special attention the Railroad Company will have a great deal more money than they now have to spend on locomotive and car repairs, track maintenance, etc. The Management would like very much to clean the engines, and will when the money is available. Lets all get busy and make a good start toward saving this money out of the coal bill. I know a great many of the chief dispatchers, yard masters and callers, and most of the engineers and firemen, and I never talked to one of these men yet who opposed a practical suggestion. I am, therefore, going to suggest a few things for us to keep an eye on—not "Don't's" but "Do's:—

Mr. Chief Dispatcher and Yardmaster:—If you can give the Roundhouse Foreman a line-up of the engines coming in and when, he will be in a position to deliver better engines, also give him good figures on when they

are wanted for service—standing under steam a long time wastes coal, and the contraction and expansion due to changes in fire box temperature, and the way injector is sometimes used is bad for flues, and engine may go to leaking about leaving time.

Roundhouse Foremen:—Please teach your fire builders to give the crews the kind of fire you would want if you were firing—have grates in good order, no broken fingers, dump grates level, no holes except of standard size, lost motion up in rigging before fire is built, the ashes from firing want to be left on the grates to prevent clinkers from forming and not shaken through in an attempt to level the grates, keep the superheaters and steam pipes tight, *Flues Clean*, valves square and the blows out, and there isn't anything that will be too good for you.

Mr. Fire-Boy:—Be stingy with the Blower. If you will watch closely you may not need to use it at all except to kill the gas, and by not letting engine pop may get out of town without having to pump the engine more than once and this might help out on running a tank. Firemen have put on the blower and forgot it until the pop raised. Fire light—I have watched a lot, and the fireman who puts in eight shovels per fire can't make it go twice as far as the one who puts in four shovels per fire. First, last, and all the time play for a clean fire.

The engineer has a lot to think about but these things pay—to size up the coal and the fire, and start out figuring on both. To strong right on the start may partially turn the fire, or jerk a hole in it, having to crowd the fire to fill a hole may mean a dirty fire and a bad trip, better ease off and use the blower a few seconds until you get started right. I know,

I've tried it both ways. A clean fire and good lubrication are big factors toward a comfortable trip. It's worth while to notice how strong the injector has to work to maintain the water level or, in other words, to see how light it can be worked and still the engine do what you want it to do. If everything is up to the minute the minimum capacity ought to pretty near do the business.

In a very short time we expect to have a system of records that will show what each engine is costing per mile or per 1000 gross ton miles handled for, fuel, repairs and lubrication, and with our regular engines on freight this will be an incentive for all to make a good performance.

As I said before, we have never found Frisco men unwilling to cooperate. Let us make some new marks, and don't forget that the Management wants your suggestions.

The future looks very bright. We are fast getting around to the old plan of regular crews on freight engines, and my personal observation thus far leads me to the conclusion that we have very fine locomotives, for each crew says their engine is the best. There are now regular freight engines over about four-fifths of the entire system.



The Misses Lettie and Lottie Wright, daughters of J. W. Wright, section foreman, Marshfield, Mo.



RECLAMATION PLANT VIEWS AND EMPLOYEES.

Reproductions at top and bottom of page show a birds-eye view of the plant. Center, to left, R. F. Whalen, superintendent; to the right, C. R. Busch, chief clerk.

A FEW POINTERS

Why the most careful attention should be given to the handling of
LESS-THAN-CARLOAD MERCHANDISE.

POSSIBILITIES FOR INCREASING THIS TRAFFIC.

The co-operation that we are receiving from everyone, particularly our Agents and Conductors, in securing business and making friends for the Company has suggested the thought that some information as to the value of this traffic might be of interest.

- ☐ The Frisco handles One Million Tons of Less-Than-Carload shipments each year.
- ☐ The weight varies from a few pounds to several hundred. The average weight is probably less than 100 pounds per package.
- ☐ This gives some idea of the enormous number of packages moved and the opportunity that offers for Loss, Damage and Delay.
- ☐ Less-Than-Carload business represents only Six percent of the Tonnage, but produces Twenty-two percent of the Total Freight Revenue of the Company.
- ☐ It calls for the most careful and intelligent handling and should be the most profitable business that we secure.
- ☐ It is vigorously solicited by every railroad and the most successful is the one that handles it just a little better than any one else.
- ☐ Our prosperity depends on the number of shippers who are not only willing but anxious to patronize us.
- ☐ There are more shippers interested in the handling of L. C. L. business than in all other traffic. They are particularly interested in the delivery of the **ENTIRE SHIPMENT** in **GOOD ORDER** and within a **REASONABLE TIME**.
- ☐ No shipper likes damaged goods nor wants to make claims.
- ☐ Handling the business satisfactorily is the most effective form of solicitation.
- ☐ In the **RED BALL SERVICE** the Frisco has a scientific and effective plan for the **TRANSPORTATION** of this L. C. L. traffic.
- ☐ Its service and standing with the shipping public are second to none and better than the most of their competitors'.