

"man behind the gun." Firing a locomotive can be reduced to a science, and sometimes is, but my observations have led me to the belief that this side of the question is too often lost sight of by the most interested persons. A few years ago the question of the one shovel system or smokeless firing was agitated over the country, and, judging from the expressions of firemen from off of many of the roads, but little good was accomplished, and, probably, in many cases, the results were more harmful than otherwise. This certainly was not the fault of the system, for there can be no doubt that the greater is the regularity with which the coal is fed to the fire the higher will be the efficiency attained. With certain kinds of Pennsylvania and West Virginia soft coals, which carry rather a high percentage of volatile matter of the nature of coal tar, it is impossible to fire the average locomotive and entirely avoid black smoke unless some special apparatus is provided for the purpose. But why dwell so strongly on the waste due to the escape of the carbon which gives color to the smoke? To be sure, black smoke is a nuisance about stations, but is the loss so great? I do not think so. Rather is it indicative of a condition in the firebox that is not conducive to high temperatures. And it is this condition that firemen, through practical demonstration and instruction, should be brought to understand, realize and avoid.

It occurs to me that the beginning of the trouble is with the hiring of the men. A young man presents himself at the office of the locomotive foreman or the master mechanic and makes application for a job of wiping. If business demands, he is hired and put to work, with but little thought having been given to his capacity for future advancement and success. After a period of wiping he is advanced to the left-hand side of the yard engine, where, through observation, casual remarks, or orders he may receive, he learns three things, namely: that to evaporate water in the boiler he must heave coal into the firebox; that to keep the crown sheet from burning it must be kept covered with water, and that it is expected that he will keep his head out of the cab window three-fourths of the time to take the signals of the switchmen. What, then, would naturally be his method of firing the engine? Get down from his seatbox; throw the firebox door open; reach for the scoop and heave from four to ten scoops of coal in on the fire. Then to the seatbox again. Pretty soon the steam pressure begins to drop, and as the fire has become too heavy or banked in places, and the grates may be seen at other places because of the method of firing, the poker is brought into action and the fire thoroughly raked. Or it may be that the injector is started, without regard to the amount of water it will throw, and when the boiler is filled up the injector is shut off. If the boiler does not make steam under these favorable circumstances the next step is to resort to the blower, and in a little time the whole process is repeated, and the poor engine must stand the brunt of it all. "As the twig is bent the tree's inclined." And so it is with the fireman. The ideas and habits he acquires as a student will stick to him, in seven cases out of ten, till he passes over to the right-hand side of the engine. The system of promoting wipers to the position of fireman does not appeal to one as being the best method. There are usually a sufficient number of men about who are incapacitated from doing heavier work, who make good switch engine firemen, and when a man is hired for road service he should be placed on a road engine forthwith, in company with the regular man, and at his own expense, and made to serve as an apprentice or student till he is pronounced competent by the crew with whom he is working. But his education should not stop at this point. A travelling fireman should then take him in hand and give him practical lessons and instructions on

his work and duties. Following out these lines in the making of firemen cannot but be pregnant with good results, and ultimately lead to the highest efficiency in fuel economy.

The foregoing paper was read at a recent meeting of the Canadian Railway Club.

C.P.R. Directors' Tour.

Sir T. G. Shaughnessy, President, C.P.R., accompanied by Sir G. A. Drummond, E. B. Osler, R. B. Angus, directors; and W. F. Tye, Chief Engineer, returned to Montreal recently, having completed an inspection of the company's transcontinental line, and of its subsidiary lines in the U.S. C. R. Hosmer, a director, accompanied the party to Winnipeg, and W. Whyte, 2nd Vice-President, joined it at Fort William, Ont., and went out to the Pacific coast. The trip was very largely one of inspection with a view of looking over the work which had been done in the way of reducing gradients, etc., on the line, extending and re-arranging the shops and terminal facilities at Winnipeg, and the new lines completed in the Northwest. The President and directors made a general inspection of all these works. At Winnipeg the President stated that it was not proposed to add very much more at present; it was thought that the company was doing quite enough for present needs, and should be sufficient to meet the requirements for a little while to come. Of course there would have to be further developments later, as it was not expected that the present work would be sufficient to meet the requirements for all time. In respect to the new short line now nearing completion by the Minneapolis, St. Paul and Sault Ste. Marie Ry., from Glenwood to the International boundary near Emerson, Sir Thomas said by it the C.P.R. would be able to cut the time between Winnipeg and St. Paul, Minn., and make as quick or better time between these points as any other road.

W. F. Tye, Chief Engineer, speaking of the work in progress between Fort William and the western boundary of the Territories, said the most important improvement in the engineering department was the reduction of gradients between Fort William, Ont., and Winnipeg, and Swift Current and Moose Jaw, Assa. The work was of the highest importance and the gradients had been reduced from 50 ft. to the mile to 20 ft. to the mile. The reduction was more than one-half, and its effect was to enable the locomotives to haul double the tonnage formerly hauled. The subway at Winnipeg would soon be completed, and the work of altering the tracks in connection with it would shortly be commenced. It was the intention of the company to have the station, subway and freight sheds all completed by 1905, and the hotel during 1906. The harvesting and moving of the crop affected work on the line, as every available man was needed for that work and taken away from general construction work. The average weight of the rails on the line between St. John, N.B., and Vancouver, B.C., was 80 lbs. a yard, and compared favorably with old country lines. As fast as rails on the main line got too light for the increased traffic other and heavier rails were substituted and the light rails used on the smaller branches where the necessity for heavy rails was not so great.

At Vancouver the President said he considered the B.C. railway tax heavy and unjust, and because of it being so much of a burden he did not think the company would build any extensions of the railway in the interior unless they were paying propositions from the start. He further stated that the company had not a line through the Similkameen in view.

Regarding the improvement and alteration of the Hotel Vancouver, he said that the plans of the company are to reconstruct the older

portion and have it conform with the new section. The work will be carried out as soon as opportunity offers, but when a start will be made he could not say definitely. The party then made a trip to Victoria and inspected the site of the new hotel there, the foundations of which are being put in. In speaking of the work of extending lines in the Boundary country, Sir Thomas stated at Nelson, B.C., that the company had not decided on its western boundary extensions, and added that the plan eventually to be followed would be one not yet referred to by the press, and most probably not along any of the lines suggested heretofore. He added that one line from Fort Steele to a point on the main line, probably Golden, would be commenced very likely in the spring. The company did not propose at present to make any move in the Flathead River district. The lead corroding works in the east are to be commenced, the C.P.R. having sold lands to the corroding company upon which the new plant is to be erected.

The party returned east over the Minneapolis, St. Paul and Sault Ste. Marie Ry., and on reaching Montreal, Sir Thomas, in the course of an interview, said the works of improvement which have been in progress during the past two years are now practically completed. These include the arrangement of yards and terminals, the construction of shops, changes and improvements of the roadbed, laying of heavier rails, ballasting, etc. On these items the company had within the two years spent about \$32,000,000. There might come a time when the entire C.P.R. system might have to be double-tracked; they all looked forward to it, but the company at present had no intention of doing anything along that line.

Cartage Charges for Freight.

The Canadian Freight Association has adopted new cartage arrangements to govern at cartage points on all lines in Ontario and Quebec, superseding all arrangements previously in effect.

Canadian Freight.—At all stations at which the railway companies undertake to perform a cartage service, through their cartage agents, the additional charge for the service will be: On 1st, 2nd, 3rd, 4th and 5th class freight, 1½c. per 100 lbs., subject to a minimum cartage charge of 12c. for any one consignment. When commodity rates lower than 5th class are made on cartage freight, such rates are entirely exclusive of cartage, and if cartage service is performed, the additional charge in such case shall be 2c. per 100 lbs., but the gross rate not to exceed 5th class rate, plus 1½c. per 100 lbs. On classes lower than 5th class (when cartage is undertaken) not less than 2c. per 100 lbs., but the gross rate not to exceed 5th class rate, plus 1½c. per 100 lbs. U.S. or Import Freight.—At all stations at which the railway companies undertake to perform a cartage service, through their cartage agents, the additional charge for the service will be: Governed by Canadian Freight Classification. On 1st, 2nd, 3rd, 4th and 5th class freight, also on raw cotton pressed in bales, 1½c. per 100 lbs. Subject to a minimum cartage charge of 12c. for any one consignment. Exceptions.—When commodity rates lower than 5th class are made on cartage freight, such rates are entirely exclusive of cartage, and if cartage service is performed, the additional charge in such case shall be 2c. per 100 lbs., subject to the usual minimum. Should the cartage be undertaken of freight classifying 6th class, as per Official Classification, or of commodities which classify 5th class or higher (Official Classification) but upon which lower than 5th class tariff rates may be authorized, the additional charge for the service will not be less than 2 cents per 100 lbs.