erally the impression that it would tend to make enginemen dishonest.

10. What influence, in your opinion, has the preparation of coal in small convenient sizes for use in making a good coal record? What is your practice?

To this all agree that the breaking of coal so that there are no lumps larger than three or four inches square has a great influence on fuel economy.

11. Which, in your opinion, will make the best fuel record, run of mine coal or coal that has passed over a three-fourths inch screen, price being considered; or, in other words, which will show greater economy, the amount of mine run coal purchased by $1, or coal that has passed over a three-fourths inch screen? If you consider run of mine will show most economy, give maximum per cent. of slack that can be used to bring about this economy.

Three replies say coal that has passed over a three-fourths inch screen will show greatest economy. The others state that this depends very largely on the field from which the coal is procured. The coal from some fields contains such a large percentage of impurities, that better results are obtained by screening same, in this way, removing a large percentage of the impurities. On the other hand, where the mining conditions are favorable, better results are obtained by burning run of mine coal.

12. What do you consider are the most valuable essentials of fuel economy outside the purchase price?

All replies agree that the most valuable essentials outside the purchase price consist in keeping the engines in thorough repair, eliminating all leaks, blows and waste of steam, ample grate area and heating surface, good terminal facilities for caring for power, enginemen trained to burn fuel economically, the operating department eliminating unnecessary delays, see that the coal delivered is the coal specified in the contract, and lastly, by keeping everlastingly at it.

13. Mention any device or appliance for use on engines and tenders to prevent waste en route, etc., and results obtained from same.

We find that some roads are covering all shaker bar holes and deck plates. The use of a flanged apron between engine and tender is also mentioned as being used to prevent waste.

14. What effect, if any, does the weather have on stored fuel coal where exposed for any length of time?

All answers agree that coal stored will depreciate in value, some classes more than others. Claim is made that on account of losses by exposure to the air and by handling, some coals will depreciate twenty per cent. in sixty days. Your committee believes that with some coals this high percentage of loss is reasonable. Generally speaking, however, five per cent. should cover all depreciation. A great deal depends on the manner in which the coal is stored, also how picked up. If coal is picked up with a clam shell or any other mechanical device, they may gather up quantities of gravel, clay, or other non-combustible substances and the value of the coal is depreciated greatly.

15. Do you furnish an analysis of the constituent parts of coal to your engineers and firemen, and do you consider this practice of value?

One reply states: "We bring this up at the classes, also at examination, to show importance of keeping fire free from clinkers and pans clean. It aids in keeping fire cleaner." Others answer: "No, nor do we think it of much value."

16. Do you consider it of value to furnish to your engineers and firemen an analysis of the gases of combustion, so as to show their relative heat value and consequent loss when unconsumed?

The answers to this question vary somewhat; some do give such instructions and believe it of value; others do not believe it of any value whatever. In the matter of supervision, quite a number of roads keep inspectors at the mines, whose duties are to closely watch the loading of coal into the cars, see that cars are properly cleaned before placed under the tipple, the inspector having authority to reject all cars which contain a high percentage of non-combustible matter, slack, etc. Those reporting in favor of inspectors at the mines claim that they receive a better grade of coal, due to this inspection, also a better loading of cars, thus requiring less cars to haul the same tonnage. In some cases the best mines are selected for loading of their fuel, which would not have been done if inspectors were not on the ground. The cars are cribbed with lumps so as to prevent loss while in transit. The cost of inspection at the mines being more than balanced by the better grade of fuel received. The majority of roads, however, do not employ an inspector at the mines, but rather put it up to the coal company to see that the coal is properly prepared and cleaned. It would appear that the latter method is the wiser, for various reasons. All coal companies employ experienced men to supervise the loading of cars, and at the same time throw out any impurities, bone coal, etc., that may have passed the men in the mine. This being a fact, why should it not be up to the coal company to deliver a grade of coal suitable to the contract or requirements of the contractor?

If you were contracting for a large quantity of flour to be delivered in quantities of 100 barrels each day, said flour to be of a certain grade, you would not feel justified in sending an inspector to watch the milling of this flour, but if the quality did not come up to the agreement, you would hold same for inspection and possibly cancel contract. The same would apply to almost any other business.

Again, would not the cost of this inspection more than offset a large number of small economies brought about in other ways? Presuming that a railway company uses 1,000,000 tons of coal in a year, which is a small average estimate, at one-fourth cent per ton for inspection at the mines, which we believe to be a very modest figure, the inspection will cost $2,500.00, a large sum to expend in looking after what should legitimately be done by the producer. The inspector for some railroad companies must inspect the coal from a number of mines, and as these mines are at times a distance apart, it naturally follows that while he is watching the loading at one mine, his work is being neglected at another, with the result that he knows nothing of the coal that was loaded while he was absent. We all know that you can form but a very poor opinion of coal from the appearance of the top of the car, more particularly if the car is loaded with run of mine coal. The top of a car of run of mine coal looks about as good as one loaded with coal that has passed over a commercial screen. This is due to the methods followed in loading.

We believe that greater economy will be affected by the railroad consumer, contracting for a certain class or grade of coal, instructing its coal dock foremen, as to the quality of coal contracted for, and to hold all cars that do not come up to standard, for inspection by a coal inspector, he, the inspector, to reject or hold for joint inspection with a representative from the coal company. The company's inspector should occasionally visit the mines and watch the preparation of the coal. He then will be in a position to say if the coal company is honestly trying to prepare and deliver the quality of coal contracted for.

Your committee further believes that in selecting coal, railway companies should be guided by practical tests, or in other words, should select a certain engine and assign it to a certain service, this service to compare with ordinary service on that division; weigh the coal, calibrate the tank, so as to know in pounds or gallons the amount of water used each trip, and figure the evaporation results from that data; the coal that shows the greatest evaporation per dollar of cost being selected. We believe this will be much more satisfactory than a laboratory test intended to determine its calorific value, and its chemical constituents. To quote from the West Virginia Survey, vol. 2: "The value of a coal as a steam producer is determined, primarily, by the total amount of heat it will produce in combustion, but in view of the very crude way in which we burn our fuel, even more depends on the manner in which it responds to ordinary conditions of handling and firing."

To illustrate, we will presume that a railway company deems it advisable for business reasons, to use a quick igniting, and somewhat rapid burning coal at two points on two connecting divisions; at another terminal they are offered a slow igniting coal at the same price, that requires a considerably sharper draft than the first mentioned coal to bring about results; they would hesitate in buying this last mentioned coal with a saving in haul, even if its B. T. U.'s value was higher than the first mentioned coal, owing to the fact that having to draft their engines more sharply to burn the slow igniting coal, would result in a considerable waste of the rapidly igniting or easily burned coal which is used at two of the three terminals.

All railways should endeavor to select a certain or suitable grade of coal, assigning it to a certain territory and have it definitely understood that no

Appreciation from England.

H. J. Cowie, who has represented the Canadian Northern Railway interests in England for several years, and who has recently been appointed European Traffic Manager, is a constant reader of The Railway and Marine World, of which he has on several occasions written appreciatively. A short time ago he wrote as follows:—

"The incoming mail brought with it the current number of the Railway and Marine World, and I write a line in appreciation of same, which as usual is full of information. Your publication is certainly invaluable to those who wish to keep 'au courant' with every branch of Canadian transportation."

In addition to its most thorough circulation among transportation officials throughout Canada, our paper is largely taken by representatives of Canadian transportation companies in the United States, in Great Britain, on the European Continent, and in Japan and China. They look to it, not only for information on Canadian transportation matters generally, but especially for news connected with their own lines, very much of which is not obtainable from any other source.