

just how long an electric locomotive would run before being rebuilt, but he felt certain that it would play out some time or other and would have to be renewed just the same as any other engine. It is not the boiler and engine that costs all the money for repairs, he said, but the running gear and general breakages,—expenses that would be attributable alike to electric locomotives.

When he was on the C.P.R. he had investigated electrification frequently, he declared, and he was always interested in it and never opposed to it. He recognized its advantages in the way of smoke elimination and avoidance of delays. He had proposed electrification for the Quebec section of the C.P.R., intending to obtain 25-cycle power from Shawinigan; but when they estimated the cost, they found that they could strengthen their old bridges and buy more modern steam equipment at less expense, and they did that instead of electrifying.

May Electrify Smith's Falls to Ottawa

They also examined in detail the costs of electrifying from Fort William to Winnipeg, but it was difficult, said Mr. Vaughan, to show a very great saving. Other lines also were figured out but under the existing conditions of traffic, the saving shown was not as great as expected.

There is one section of the C.P.R., however, which he thought would be electrified before long, if the traffic increases, or as the Montreal terminal facilities get crowded, and that is the Smith's Falls to Ottawa division, including the Montreal terminal. He believes that the traffic there warrants electrification and that electrification would be the next move toward increasing the Montreal terminal facilities.

Railroads hesitate, said Mr. Vaughan, to tie up great investments in one specific district when they can put the same money into locomotives which can be swung from one

district to another wherever the power may be needed. An earning of possibly 7½% might be shown on the cost of electrification where the same money put into modern steam plant might show earnings of 25%. Like all other business problems, said Mr. Vaughan, it is a question of dollars and cents.

In this country, however, where so much water power is available, there is another side to the question, he admitted, which cannot be ignored, and that is that electrification would avoid the burning up of a supply of coal which some day our descendants will sorely need.

Competing Systems Hampered Progress

Mr. Vaughan expressed an opinion that greater progress had not been made in railway electrification, largely because the big electrical companies in past years had competing systems. If a railroad invested millions in one system, he said, the other company would tell them that they had made a tremendous mistake, for which they would be sorry. If the chief engineer of another railroad were to report in favor of the other system, then the electrical engineers of the competing concern would intimate to the directors that their engineer was not quite fully posted on the problem.

While he understood that these matters had been adjusted now, said Mr. Vaughan, and that all electrical engineers are nearer in accord as to the proper systems to use, still these earlier disagreements had had their effect and had caused railroads to hesitate until everyone was in agreement as to the very best system of electrification. He was glad to see the electric railway engineers reaching agreements about these problems and thought that once it was mutually agreed by all engineers as to just how electrification should be accomplished, that many more railroads would take up the question and much more rapid progress would result.

First Thought of the Government Will Be To Prevent Unemployment, says Minister of Public Works

HON. Frank B. Carvell, minister of public works, was the speaker last Thursday noon at the luncheon held by the Engineering Institute of Canada in connection with the Ottawa professional meeting.

Mr. Carvell said that until the country gets back upon a normal peace basis, the first thought of the Dominion government is to provide employment where necessary. The chief need will be in the larger cities, he thinks. In the Maritime Provinces there is no unemployment, in Montreal there is some, in Toronto much more.

"I do not believe that we have Bolshevism in Canada now, but if men get hungry we will face a most unpleasant situation," he declared. "The government must spend money, and any amount necessary, to give our returned soldiers an opportunity to work."

Soldiers will be demobilized at the rate of 30,000 to 40,000 monthly from now on, and while they will not all want employment as soon as they get home, most of them will want it within a few months or a year. Mr. Carvell told how politics had been generally mixed up with the spending of public money in Canada, and promised that in the future vote-getting would not dictate the spending of public funds. Referring to highways, he said that he knew of no way in which public money could be spent to better advantage to create employment, or where the people would get better value for their money.

"The engineer will be the most important man in the working out of our road policies," said Mr. Carvell. "In the past more money has been squandered on building roads than any other public work, because the right kind of roads have not been built. There is no use building roads which become mud holes in a year or two." He referred to the necessity for adequate drainage and said that it would be the federal

government's policy in road work to have engineers on the job from the first to last.

"There is no reason for pessimism," declared Mr. Carvell, "because Canada has come through the ordeal of war in better shape than any other allied nation, and economically to-day is in a better position than any of them. Once we get back to a peace basis, we will experience a period of prosperity heretofore undreamed of."

"But there is another side to the question," he continued. "For months past people have been coming to Ottawa in processions pointing out to the government where money can be spent to advantage on public works. I don't object to that, for under our system of government that is the right of the people, but we must not forget that before the war we had a national debt so small that it was hardly worth considering. It was about \$330,000,000, and we never counted it when considering expenditures. We had a revenue of \$150,000,000 to \$160,000,000 per year, and we could take care of the interest on the debt without trouble. If we wanted to spend \$15,000,000 or \$20,000,000 for a public work, we had the money to do it. And besides that we had a good surplus. In fact a large part of the cost of the construction of the National Transcontinental Railway was taken care of out of our surplus. As it stands to-day, or as it will stand when our men get home, the public debt of Canada is about two billions of dollars and the interest on that will be from \$110,000,000 to \$115,000,000 per year or almost as much as our total liquid revenue before the war."

"To this interest we must add \$50,000,000 per year for pensions and that must be paid no matter what else suffers, for that is a debt we owe to the soldiers and it must be liquidated to the last dollar. Soldiers' hospitals must be maintained and there must be other expenditures in connection