

to be general manager of the Acadia Coal company, and the elevation of George Gray to be assistant to the general manager.

What of 1916? Presently the prospects are cheering. There should be increased shipments, unless, indeed, there is a labor shortage. It is estimated that two thousand men have, so far, been recruited from the colliery districts. But take notice that the figures do not represent the actual labor loss to the companies. Why? Ah, well, it may not do to be specific, but still it may be hinted that the men who volunteered were the men who had "go" as a characteristic. The 2,000 who went represent the labor of a much larger number of the average of colliery workers they left behind.

I. C. R. TAKES OVER LINE TO MUSQUODOBOIT.

Halifax, Dec. 31.—The operation of the Dartmouth to Deans branch of the government railway system will be undertaken on Monday, January 3rd. The trains will run from Upper Musquodoboit, leaving at 5:30 in the morning and arriving at Dartmouth at 10 o'clock in the forenoon, thus making the run of 70 miles in four hours. Returning the train will leave Dartmouth at 3 o'clock in the afternoon arriving at Upper Musquodoboit at 7:30 o'clock in the evening. The trains will run on three days each week—Tuesdays, Thursdays and Saturdays. It will be a mixed service—passenger and freight. Caviechi and Pagano, the contractors who built the road, have been running the service for some months and have thereby been a great convenience to the people travelling from Halifax to Middle Musquodoboit. Now it is to be undertaken by the I. C. R. as a branch of the system that extends from Halifax to Winnipeg. The desire of the people on the shore and through the Musquodoboit valley is at last to be gratified with the operation of the road as a part of the I. C. R., and in this respect the beginning of 1916 will be memorable. It will be noted that the road in the meantime will be operated not to Deans, but to Upper Musquodoboit.

SHELL MAKING.

(Mr. Drummond, in Halifax Herald.)

Many people declare they do not clearly understand why so much and so nice labor is involved in the production of shells, made to be shot from cannons' mouths, and explode and go to pieces at a given spot, or at a given time, nor can they understand why a shell has to undergo so many different and intricate processes before it is entitled to be called "finished." To have more than a hazy idea of shell making, one has either the processes explained to him or better, be a witness of the processes. Assuming that many Herald readers never had the opportunity to tramp the rounds of a shell factory, I shall make an attempt to refer to the processes in short detail. Should an expert, after reading the description, pronounce it superficial, I hope I may have grace given me to throw a kiss to the critic.

Several firms in Nova Scotia are largely engaged in turning out shells, the two principal ones being the Nova Scotia Steel and Coal Company and the Dominion Steel Company. These two companies are much in the public eye, and are in a class by themselves. My remarks therefore will cover what I saw

in a smaller plant. I take that of J. W. Cummings and Son, New Glasgow, for three reasons; first, it was near by; second, the firm is more or less directly connected with coal mining, being makers of mining tools and equipment from a coal drill to a mine car; and third, because it may be taken as ideal, and typical of similar finishing plants in the province, of which there are several. By the way, an enumeration of the processes may convince some that the making of shells costing from ten to twenty-five dollars is not the huge bonanza they suppose.

The plant of J. W. Cummings and Son, will compare favorably with any of the kind in the Maritime Provinces. They were the second firm in Nova Scotia to make high explosive shells. The government inspector thinks highly of the plant and the character of its product. In short it is an up-to-date plant with a capacity of two hundred and fifty finished shells in a twenty-four hour working day.

The shell machines are placed in groups on each side of the shop, and are driven by a powerful engine; the air for the expanding man drills is supplied by a Canadian air compressor. I shall set progressive figures before the several processes.

The shell forgings are supplied by the "Scotia" Company. The first operation then is cutting the forging to length by a five inch cutting off machine. The operator of this machine does the second (2) operation which is "centering" by a 22 inch drill. The two machines are so placed that fifteen shells are turned out per hour continuously.

Three. Rough turning. The lathe for this work is a powerful and special "simplex," which makes short work of turning the rough forging to size in one cut.

Four. Inside boring. Done on two 28 inch and one 16 inch lathes, specially fitted with turrets, in which are four bars of special design to hold the necessary roughing and finishing cutters.

Five. Cutting to length is done on a special cutting-off machine, fitted with a gauge so that all shells are cut accurately.

Six. Heating the shell for nosing or bottling. For this an ingenious soft coal furnace is employed, filled with a water-cooled front, which keeps the body cool while the nose of the shell is being heated.

Seven. Boring and top nosing. This is done by a 24-inch lathe, fitted with a turret, into which is fitted "roughing" and finishing boring tools and a collapsible top for threading the nose. On this machine many shells can be bored and nosed in ten hours.

Eight. Finishing the body. Done on the 24-inch lathes with tape attachments fitted with special cams; turrets are fitted to these machines.

Nine and Ten. Wave ribbing. Done by an attachment fitted to a 20-inch lathe which holds four tools operated against the cams to make the waves. The shell is undercut also on this machine.

Eleven. Boring out base. Three lathes, 24-inch to 28-inch, shell projections first cut-off and the base roughed out for finishing lathes. The shell is now ready for government preliminary inspection.

Twelve-Fifteen. Shells examined in batches of fifty. When stamped O. K., are sent back for completion.

Sixteen. Rivet in base plate. After base plates are finished, riveting is done by a hammer running 2,800 revolutions per minute. The shell now looks