

supplied to them for manufacturing purposes shall contain no more than three per cent. of combined oxides of iron and alumina, and they attach penalties to this condition sufficient to secure its observance by miners and shippers. Of the hitherto principal sources of the world's supply of phosphates, many are well known to be slowly but surely failing, and leaving Florida out of the question as a doubtful factor, it is difficult to predict where, if not in Canada, we are to look for increased contributions. If Florida does not fulfil what has been predicted for her, it will not, in any case, be from lack of opportunity, for within the last two years there have been incorporated no less than eighty odd companies for the purpose of wresting from her sandy bosom her presumed exhaustless phosphate treasures. Of this large number some will naturally prove to be merely ephemeral, and will disappear as suddenly as they grew, but there are others which are operated by men in the highest rank of science, industry, commerce and finance; yet what are the results thus far accomplished? They are not difficult to tell, and may be summed up in the brief statement that the total quantity of phosphate shipped to Europe, or in other words to our customers, from all parts of Florida since the commencement of operations in 1889, does not exceed 20,000 tons of an average quality not exceeding 75 per cent.

The Springhill Explosion.

This explosion, the third of the great coal mining disasters in Nova Scotia, has claimed for its victims one hundred and twenty-five men and boys. The collieries of the Cumberland Railway and Coal Company are at Springhill, in Cumberland County. Three seams are worked. The east seam slope, in which the explosion occurred, has reached a depth of 2,500 feet. At a depth of 1,900 feet, a level had been driven about 3,200 feet to the westward, and near the end of this level two counterbalance roads had been driven in the coal to the next level above, a distance of 600 feet. From these balance roads, horizontal workings, or bords, had been started and were being worked at the time of the explosion. About the middle of the workings, in the balance road furthest from the slope, the coal, about eight feet thick, was divided by two feet of stone into two benches five and three feet thick. The lower and thicker band only was worked. At points it was necessary to blow down some of the stone to allow the pit tubs to pass. The evidence showed very clearly that a shot had been fired at this point, in this stone, as the body of the man employed to fire the shots was found a few yards away. It appeared on examination of this part of the mine by the jury, who were mostly practical miners, and took a deep interest in the investigation, that the charge of powder had been excessive, and that the flame of the shot had either kindled some gas or had been powerful enough to distil from the coal-dust enough gas to cause a heavy explosion.

The investigation, before the Coroner, Dr. Black, of Amherst, was of a searching character,

and took in all the details of the management of the mine. The duties of the sulphur men, shot firers, brattice and shift men, their instructions, reports, etc., were fully considered. Evidence was taken as to the ventilation, dryness of the mine, etc. After full and mature deliberation the jury confirmed the public opinion of the mining fraternity, which had been, that at this mine all possible precautions had been taken for the safety of the men.

The verdict returned by the jury read as follows:—

"That the explosion was caused by the flame from a shot fired in No. 3 bord of No. 7 balance, igniting coal dust and a certain proportion of gas which may have been present at the time.

"They also believe that there was an unusual flame from said shot owing to a slip in the stone.

"They believe that the explosion was accidental, that no blame is attached to the management, and that they have taken every precaution for the safety of their workmen, and they make the following recommendations:

"*First.*—That in future, where safety lamps are used, and in very dusty places, powder should not be used.

"*Second.*—They recommend that in gaseous portions of the mine, before the men resume work after dinner, the places should be examined by competent officials.

"*Third.*—They recommend that the Local Government procure for the use of the Deputy Inspector of Mines a Shaw machine for detecting gas."

The above brief recommendations are of a practical nature, and if carried out would assist greatly in the preservation of life and property. Where there is gas enough to warrant the use of safety lamps, it is an anomaly to allow at intervals the discharge of an amount of powder equal in its heat and searching effects to many open lights; and in the same way when it is necessary to use safety lamps where both dust and gas are present, the use of powder is equally inexpedient. The abolition of powder brings up the still mooted question of what explosive can be trusted. The many ingenious expedients of lime cartridges, hydraulic wedges, compressed air, ratchet wedges, etc., have not been practically adopted by coal miners, and each new invention seems to create an equally new crop of objections; presumably the increased cost of the coal is at the bottom. Of the various explosives, roburite, a mixture of nitrated naphthaline and nitrate of potash, seems to have found most favor. It has been used at the Intercolonial Colliery, Pictou County, and, it is stated, with satisfaction.

Should the recommendations of the jury prove agreeable to the Government, and a restriction be placed on the use of gunpowder in the coal mines of the Province, there is no doubt that the cost per ton of the coal will be increased, to an amount more than offsetting the inferior quality of the hand dug coal. As between the Pictou and Cumberland mines this would not cause much discrimination, but in Cape Breton, where some mines show gas, and

others are reported as free from it, such legislation would be felt by some to be a serious matter. However, when regard is had to the immense tonnage of coal in Pictou County destroyed by fires, many of which can be traced to shot-firing, and to the many lives that have been lost, it may be conceded that the Province would be better off had no powder been used there for the past twenty-five years. If the mines be regarded, as they are in point of fact, the property of the people of Nova Scotia held in trust by the local Government, then the interests of our successors deserve consideration. Already in Pictou County there are large tracts of workings in which no powder is used and no open lights are allowed.

It seems incredible that with the advances made in safety lamps, electric lighting, electric and other coal cutting and wedging devices and improved explosives, that the time has not arrived when the use of so rude and dangerous an explosive as gunpowder can be dispensed with. With prophetic eye the miner of the future may be seen working in an atmosphere equally pure with that above ground, lighted by the brilliant rays of electric lamps, and readily and without toil extracting through the giant forces of electricity the treasures of the world below.

Turning from the horrors of this subterranean slaughter, it is pleasing to note the promptness and bravery of the comrades of the victims, who repeatedly risked their lives to rescue not only any possible survivors, but to restore promptly to sorrowing relatives and friends the remains of those who had been killed. This work was steadily carried on amid the foul air and the dangers of falling roof and stone in the exploded district, where every prop and support of the roof had been swept away. The efforts of the relief committee, and their appeals to public sympathy have been promptly answered, and there is every indication that a fund will be raised equal to the task of supporting the dependent relatives for some years to come.

It is also a matter of congratulation in the interest of the general public as well as of the company, that the explosion did not set fire to the mine, as too often happens. The destruction of the two fine mines that were the seat of the disaster, with their slopes, engines, bank-heads, etc., would have crippled the company and the town of Springhill, and have proved a Provincial disaster. There were here at one time four slopes, on the three seams of coal being worked, and they were all connected. The management had isolated two of them and were about to isolate the rest. The wisdom of this course is apparent, as there is little doubt but that had these precautions not been taken a greater loss of life might have happened.

The value of the gold exported by the banks at Victoria during last year was:—

Bank of British Columbia	\$203,111
Garesche, Green & Co.....	183,587
Bank of British North America.....	25,331

\$412,029