

ordinary mine after spending money in going down a few feet without result is apt to abandon what might prove a richly productive lead. The diamond drill explores at one-tenth of the above cost, and if this were generally used miners could be informed whether outlay upon a shaft would be remunerated by the production of the mineral. A company owning a diamond drill might find a good field for operation among our apatite mines, or if the miners would combine and procure a drill it would be of great service in developing the industry and in preventing unprofitable outlay.

It has been suggested that the Government, through the Geological Survey, might properly conduct some explorations with the diamond drill upon public lands where there are good shows of apatite. If persistent deposits were found, the lands could be sold or leased on royalty and an ample return of the outlay would be obtained. If the search for apatite was not productive, other discoveries might be made or information be secured that would give valuable additions to the geological knowledge of our country.

Low Grade Phosphates.

Owing to the large production by various countries of phosphates containing from fifty to seventy per cent. of phosphate of lime, it has been found difficult to sell the lower qualities of Canadian apatite at remunerative prices. On the other hand there is a scarcity of high grade phosphates, and the demand seems abundant for all that Canada can supply. Whereas the price in England for eighty per cent. Canadian phosphate is now a shilling per unit or eighty per ton, the price for seventy per cent. is only eight pence per unit or four and six-eighths per ton, a difference of eight dollars per ton. It is, therefore, imperative that the quality of the Canadian product should be raised to the highest point in order to secure the most remunerative results. In many districts the impurities associated with the apatite are chiefly micaceous, and experiment has shown that by grinding the ore and by a carefully devised system of blowing and screening a large proportion of the mica can be taken out. In this way sixty per cent. phosphate has been raised to eighty per cent., and the mica saved has gone a considerable way towards defraying the cost of the process. The mica is so freely disseminated that to cob the ore by hand would be expensive and impracticable, whereas it is readily taken out by machinery at an expense of one or two dollars a ton and a saving of perhaps ten dollars a ton is effected. It appears as though the future of our phosphate industry must tend largely in the direction of producing high grade phosphates in a pulverized form, and the consideration of the proper machinery and the establishment of mills in suitable locations are among the most important claims upon the attention of our phosphate producers.

Our Mineral Exports.

The following official figures are given by the Department of Agriculture to show the value of exports, distinguishing Canadian produce from those of other countries, for the years ending 30th June, 1884, 1885 and 1886:—

MINERAL.	1884.	
	Domestic.	Foreign.
Coal	\$1,201,172	\$157,177
Gold-bearing quartz, dust, nuggets, etc.	952,131	.....
Gypsum, crude	160,607	.....
Oils, mineral, crude and refined ..	7,546	192
Ore, antimony	4,855	.....
“ copper	214,044	.....
“ iron	66,549	.....
“ lead	5	.....
“ manganese	15,851	.....
“ silver	12,920	.....
Phosphates	453,322	.....
Plumbago .....	.....	.....
Salt	17,408	37,387
Sand and gravels	14,152	.....
Slate	11,445	.....
Stone and marble, unwrought ..	52,478	.....
Other articles	62,607	643
Total produce of the mine...	\$3,247,092	\$195,399

MINERAL.	1885.	
	Domestic.	Foreign.
Coal	\$1,468,166	\$180,046
Gold-bearing quartz, dust, nuggets, etc.	9,907	.....
Gypsum, crude	120,046	.....
Oils, mineral, crude and refined ..	27,303	548
Ore, antimony	33,700	.....
“ copper	246,230	.....
“ iron	132,074	.....
“ lead	36	.....
“ manganese	22,790	.....
“ silver	7,539	.....
Phosphates	362,288	.....
Plumbago	60	50
Salt	12,326	14,223
Sand and gravels	23,590	.....
Slate	4,642	.....
Stone and marble, unwrought ..	52,206	700
Other articles	127,534	1,366
Total produce of the mine...	\$3,639,537	\$196,933

MINERAL.	1886.	
	Domestic.	Foreign.
Coal	\$1,416,160	\$182,717
Gold-bearing quartz, dust, nuggets, etc.	1,210,864	.....
Gypsum, crude	114,736	.....
Oils, mineral, crude and refined ..	30,957	214
Ore, antimony	38,320	.....
“ copper	291,397	.....
“ iron	23,039	.....
“ lead .....	.....	.....
“ manganese	45,608	.....
“ silver	25,137	.....
Phosphates	431,951	.....
Plumbago	1,481	.....
Salt	26,749	13,204
Sand and gravels	23,195	.....
Slate	4,552	.....
Stone and marble, unwrought ..	61,950	.....
Other articles	205,051	5
Total produce of the mine...	\$3,951,147	\$196,140

From these figures it will be seen that there has been an increase in the total amount of \$310,817, the principal progress being in gold, copper, phosphates and salt. The decrease in iron, has been considerable, but under the new protective tariff this industry is now rapidly regaining ground, and there can be no doubt that much improvement will have to be recorded by next year.

We Doubt It.

It is reported that the Hon. Mr. Mowat has returned from Europe greatly impressed with the wisdom of British Mining Laws and Regulations. The Ontario Premier has en-

quired closely into this matter, and it is said that as a result of his studies the office of his Commissioner of Lands and Forests, and particularly that section of it relating to the mining portion of the community, is immediately to undergo a thorough and complete overhauling. Political wirepullers and other carpet baggers, who have grown fat at the expense of honest prospectors, are no longer to have an unjust monopoly of the cream of Ontario mining lands. Acres heretofore given away to speculators and non-residents, without restriction as to residence and development, are in future to be reserved for those who, by their experience, will best utilize them for the good of the province and of the country. Indeed, we understand that the whole rotten system of Mining Laws now existing in Ontario is to undergo an immediate change for the better. Verily, if true, this will be “tidings of comfort and joy” to those who have so long contended against a code of laws which places a legitimate and immensely profitable source of revenue at the mercy of ignorant untrained persons and unscrupulous speculators, which discourages exploration, and deprives the worthy discoverer of minerals of the just reward of his labour.

Iron and Steel Institute.

The first volume for 1887 of that valuable work, the Journal of the Iron and Steel Institute, London, England, has been received. This book is so well known and has been so often described in these columns that it requires no further mention here more than to state that the very high reputation the work has acquired in past years as an excellent compendium of knowledge bearing on the iron and steel industries is fully borne out by the present edition. Besides containing full reports of the various papers submitted to the Annual Meeting of the institute in May last, Mr. Jeans, the editor, has gathered together and arranged in a very handy manner a vast amount of useful information. We are indebted to this work for several paragraphs in our present issue, and we hope in future numbers to be able to reproduce some of the larger papers for the benefit of our readers.

The Phosphate Trade of Canada.

By H. B. Small, Ottawa.

Continued from August issue.

Dr. Sterry Hunt, who has made a persistent study of the Laurentian rocks for upwards of thirty years, says the question of the continuity of the deposits is important. Veins fitting fissures in the rocks are sometimes continuous for great lengths and to great depths, but their extent varies. Inclined beds of the material, which once were horizontal sheets inclosed in strata that have since been folded or convoluted, should be as persistent in depth as in length and when traced in the outcrop for hundreds of feet may be expected to continue downwards as far, unless a turn of the enclosing strata brings