

are well aware that his work is beset with many difficulties. The narrow and limited, and comparatively valueless lines upon which the Report is cast, were formulated before his day. But circumstances have changed. Each of the provinces has now its own Mining Bureau and its special mining officers, and armed with legislative powers which the Geological Survey does not possess, they are in a far better position to obtain and publish in their yearly reports, all the statistical information up to date, that is ordinarily required by the miner. If the Survey desires to keep abreast with the times and the requirements of the Canadian mining industry, it will proceed immediately to remodel this report. Perhaps we might suggest a careful study of that published by our cousins across the line, under direction of Dr. Day. Anyway, let us have a Report that will be of some use, and, above all, let its contents be fresh.

The many friends and acquaintances of Mr. Walter W. Pickford, for many years manager of the High Rock phosphate mine, and now superintendent of the Illinois Phosphate Co., Florida, were pleased to welcome him and his bride in their midst for a few days during a brief visit to Canada, on their way to Florida, from England. *The Review* joins with Mr. Pickford's galaxy of friends in the phosphate business, in extending to him and his charming bride, its heartiest good wishes and congratulations.

Students of physics should welcome the appearance of an English rendering of Professor Mach's essay on "The Science of Mechanics." As a rule, mechanics has been treated as a branch of mathematics, and the Prague professor opened a new vein of inquiry when he began in an earlier work to regard it as one of the physical sciences. His views have since had development and confirmation from other independent sources, and the sense of his teaching on this matter was set forth for general students in the treatise which he contributed some ten years ago to Brockhaus' "Internationale Wissenschaftliche Bibliothek." It is from the second edition of that work that Mr. McCormack has made his excellent translation. The book, setting forth as it does the elements of its subject with a lucidity, clearness, and force unknown in the mathematical text books, is admirably fitted to serve students as an introduction on historical lines to the principles of mechanical science; and this business-like rendering of the treatise deserves the attention of both teachers and students of this important branch of knowledge. The work is published on this side by the Open Court Publishing Co., Chicago.

The *REVIEW* desires to acknowledge the courtesy of the *Engineering and Mining Journal*, New York, in kindly forwarding for its use in the present issue the engravings illustrating the exhibits of nickel from the Canadian Copper Co. at the World's Fair, Chicago.

In this number we present our readers with a mass of information, statistical and descriptive, respecting the mica mining industry of Canada. Of interest, too, should prove the data given respecting the properties, operations, output and shipments of the Lake Girard Mica Mining System—probably the largest and best equipped mica producer on the continent. Some idea of the extensive operations of this company may be gathered from the fact that since its organization up to the end of the year ended 31st July last, it has expended in the acquisition of lands and buildings, \$97,500, and on machinery and plant equipment, \$24,000. 200 persons found employment in and about the mines, and 20 men, 30 boys and 45 girls at the factory. 15 men were also employed in teaming mica and supplies. The distribution of its expenditure on account of wages during the same period was: at the mines, \$56,276; in teaming, \$6,830; or a total of \$63,106, which, together with \$20,090 at the factory and \$1,875 in management, brings the amount up to \$85,071 for a period of 26 months. The shipments of cut mica from September, 1891, to September, 1892, were 55,824, and from September, 1892, to July 1893, 66,140 lbs. Of trimmed mica from September, 1891, to September, 1892, 36,545 lbs.; from September, 1892, to July, 1893, 73,022 lbs. An idea of the capacity of the System's factory can be gathered from the fact that during the months of January and February, 1893, 16,315 lbs. of cut mica and 12,292 lbs. of trimmed mica were prepared for shipment. The average monthly output has been in the neighborhood of 5,000 lbs. of cut, and 6,000 lbs. of trimmed mica, while the stock of mica on hand at date includes some 1,200 tons of merchantable mica and about 250 tons of material for grinding.

By agreement under date of 30th September, Mr. W. R. Elmenhurst, Montreal has transferred and conveyed all his interest in the System to Capt. T. J. Watters, of Ottawa, who carries on the business under the same style and management as before. It is understood that the System will shortly be put before the public in the form of a joint stock enterprise with a view to enlarged capitalisation for more extended working. Until it is ascertained upon what basis the enterprise is to be floated the *REVIEW* refrains from further comment merely referring those of our readers who may be interested to the facts and data reproduced elsewhere in this issue.

As all our readers know, in consequence of the depression in the fertilizer market the production of Canadian phosphate this season has reached its lowest ebb, the majority of the mines having closed down. But the actual figures may prove of interest, so we quote the shipments from Montreal to Europe during the year as given by Customs Manifests:

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|-------------------------------------|------------|
| By Wilson & Green | 2,606 tons |
| By British Phosphate Co. (Ltd.) ... | 1,590 " |
| By General Phosphate Corporation. | 716 " |

Total reported at 14th Oct 4,912 "

Several shipments have also been made to the United States, but no returns have been received at date of going to press.

The *Otago Daily Times* of May 8th says:—One of the largest blasts that has taken place in New Zealand with the explosive roburite came off on Friday evening, in the Blue Spur Company's mine, under the supervision of Mr. C. E. Stokes, representative in Australasia for the Roburite Explosives Company, London. The manager, Mr. J. Howard Jackson, had a tunnel driven into the face of the cement 36 feet, from which were two drives measuring each about 30 feet, in the ends of which were deposited 700 lbs. and 300 lbs. of roburite respectively. These charges were detonated with electric fuses connected with the dynamo. The face of the cliff was about 76 feet high, and the surface operated on extended about 150 feet. The manager estimates the cement dislodged by the explosion at 22,500 tons, but a great deal more than this would be the ultimate result gained. On examining the ground above the cliff enormous fissures were found extending back to a distance of nearly 80 feet, and it is expected that when the present dislodged mass is removed fully 25,000 tons more cement will be available without any further blasting. This strongly illustrated the power of this explosive, which is three times more powerful than blasting powder, and disintegrates the cement more efficiently. The cost is said to be about 25 per cent. less. In addition to this, greater safety is claimed for roburite, as it can only be exploded by a powerful detonator. The manager estimates that by this blast a supply for at least three months has been furnished from that portion of the claim.

One of the most important instances of the application of water power for electric power transmission in Great Britain at present is that at the Greenside silver-lead mines in Cumberland, which was designed by Mr. A. T. Snell about three years ago in conjunction with the mine manager, Mr. Borlase. These mines are among the few that find it possible to compete with foreign mines, and this is the case partly owing to a fine grade of ore which contains a large percentage of silver cheaply extracted by crystallisation, but largely because the use of electricity for winding, hauling and pumping has decreased the cost of working. On the east slopes of Helvellyn lies a small natural lake called the Red Tarn, and on the north-east the impounded water of Keppel Cove. Between the two waters rises the hill of Catstycam, at the base of which the two overflows join, and near to which the Greenside Silver Lead Mining and Smelting Company have erected their turbine-dynamo station. The water is led from an elevation of 1,750 ft. above sea level, and flows through an open watercourse $1\frac{1}{4}$ miles in length to a large reservoir, from which it is conveyed down the hillside for a distance of 360 yards in 15 in. cast iron pipes. The fall at the station is equivalent to a vertical head of 400 ft., and the effective horse power is about 200. The generating station contains one of Gilkes & Co's vortex