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MINING REVIEW

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The CANADIAN MINING REVIEW is devoted to the opening up of the mineral wealth of the Dominion, and its publishers will be thankful for any encouragement they may receive at the hands of those who are interested in its speedy development.

Visitors from the mining districts as well as others interested in Canadian Mineral Lands are cordially invited to call at our office.

Mining news and reports of new discoveries of mineral deposits are solicited.

All matter for publication in the REVIEW should be received at the office not later than the 5th of the month it is to appear.

Address all correspondence, &c., to the Publishers of the CANADIAN MINING REVIEW, Ottawa.

NEW BOOK FOR MINERS.

We understand that a new book, written by Professor Bell, Assistant Director of the Geological Survey, will be issued shortly, on the Mineral Resources of Canada, comprising an account of the Economic Geology of the Dominion and of the progress of mining for the last twenty years. Such a work will supply a long felt want, and no one is better qualified than the author to do justice to the subject.

During the past month inactivity has, to a certain extent, characterized the mining industry in the Dominion, and there has been nothing of much importance to report from the mining centres. In another column will be found extracts from the President's report to the shareholders of the Oxford Gold Mine, Lake Catcha District, N.S., at the first annual meeting of the Company. We learn that many of the gold mines in the Province of Nova Scotia are being profitably worked, and at others development work is being vigorously pushed with satisfactory results. The gold mines of Beauce, in the Province of Quebec, are attracting the attention of capitalists on account of the flattering reports that have been made of the result of last summer's operations, and in the Eastern Townships, County of Megantic, the Asbestos mines have increased in value, owing to the rapidly increasing demand for the mineral. In Ottawa County there is probably more activity displayed at the phosphate mines than in any other mining district of the Dominion, and the demand for phosphate lands is greater than it ever has been known to be, but it is not probable that any sales of undeveloped properties will take place until the snow leaves the ground. In Burgess Township, Province of Ontario, a good force of men are employed at Mr. Allan's mica mine, and a quantity of mica of very fine quality has been shipped. The iron mining industry of Central Ontario is on the boom, and the reciprocity movement, inaugurated by gentlemen across the border, to have coal and iron

ores included in the free list is occupying the attention of the proper authorities in the United States and Canada, and it will doubtless be a question for discussion for some time before a decision will be arrived at. During the past month we have received no reports of progress at the Canadian mines on Lake Superior and at the Lake of the Woods gold mines. The Huronian and Rabbitt Mountain mines are said to be steadily improving as the work of development proceeds. In the Rocky Mountain District mining was almost entirely suspended when the winter set in, but it is expected that operations will be vigorously resumed with the opening of spring. From British Columbia some interesting news has quite recently reached us and is reported in another column.

We are informed that the revised Regulations to govern the disposal of Mineral lands, other than Coal lands, in the Province of Manitoba and the North West Territories have been definitely framed and are at present in the hands of the Minister of the Interior preparatory to being submitted to the Government for adoption—after which it is required that they be on the table of the House for thirty days before becoming law. It is to be hoped that after these Regulations will have been adopted it will not be discovered that they contain impracticable clauses, and still more is it to be hoped that the interests of the prospector have been carefully considered and protected. The important part they play in the opening up of every mineral

district should never be lost sight of by those in whose power it lies to protect and encourage them.

SOLID INDUSTRY.

As so many and important discoveries of economic mineral deposits have been reported by the army of prospectors who are now distributed over the length and breadth of the Dominion of Canada, it becomes the duty of those who desire that these discoveries be made valuable to use every legitimate argument that will invite capital to the country for developing them, and then to be scrupulously careful in seeing that whatever capital may be forthcoming for this purpose will be employed in such a manner as will encourage the investor and convince him that mining operations are not unprofitable. This being the case it is not inopportune to reprint an article which has appeared in the *Chicago Mining Review* under the above heading, as follows:

"While it is certain that no enterprise in which men engage can show more certain and tangible proof of profitable permanence than the mining industry, it is probably true that no avocation is at the present time regarded with so much uncertainty and suspicion as far as a reliable and certain reward is concerned. While the mining field and the product of mining development is the very symbol of solidity and permanence, and all operations connected with it can be definitely estimated and determined, the actual results have not been such as to give to this business a reliable character to which it is entitled. But this reputation we are certain comes more from unfavorable circumstances and lack of judgment and knowledge, on the part of those who have attempted to prosecute this work, than from any possible obstacle or want of value on the part of the mines

or the mineral resources themselves. As a rule mining operations have generally been attempted at such a distance from the source of supplies and the market for ores, that the transportation has been in many cases greater than the value of the ores in the market centres. Under these circumstances no profitable results can be expected, and one mistake has been in expecting immediate results from operations in this direction. No sane man would open up and place in order for production a tract of agricultural land at such a distance from the market and points of consumption that the cost of transportation would be more than the value of the grain when it reached the market, and it is just as absurd to expect profit from mining operations under similar circumstances. All that can really be reasonably demanded from operations in a large proportion of the mining camps at present is development so that the mines may be ready to produce ore when milling, market, transportation and other facilities are available. The fact that under all these adverse circumstances mining operations have been able to show such a favorable result upon the whole, is a most conclusive proof of their magnificent value, when circumstances and conditions are favorable to their legitimate operation and prosecution. We must protest against the common verdict which is rendered against mining, when the true facts connected with its development in the direction of legitimate production are not taken into consideration."

THE PHOSPHATE MINES OF OTTAWA COUNTY.

After a visit to the mines in the near vicinity of the Riviere du Lievre, one cannot fail to be impressed with the belief that phosphate mining is a very profitable industry. For eighteen miles from the village of Buckingham, along the ice road on the river, can be seen a moving stream of teams hauling mineral to the C. P. R. Depot for shipment, and the thousands of tons that have already been delivered there present an interesting sight. Owing to the difficulty of forwarding the ore to point of shipment during the summer it is allowed to accumulate for winter transportation, and at present there are not less than

two hundred and fifty teams continually engaged hauling from the different mines. The road on the ice is, and has been all winter, in excellent condition for this purpose, and the mine-owners are confident they will continue so for a sufficient length of time to enable them to forward all their output to the railway without increasing the carrying force. The mines are turning out phosphate in large quantities, and the average cost of mining, in the du Lievre district, will not exceed \$5 per ton when dressed and ready for shipping. Mining operations are being conducted at present with better system than heretofore, and to an observer the scene at the mines is one of unusual activity.

THE MINES.

"HIGH ROCK."—Eighty men are employed at this mine and about twenty tons of mineral is estimated to be the daily output. The manager reports that he will deliver 5,000 tons at Railway Depot before the winter roads break up.

THE "UNION" gives employment to 60 miners and the daily output is not less than 20 tons. There has already been forwarded 2,400 tons of very fine mineral, with more to follow. At this mine there are in use steam hoists and drills and other modern machinery, and the buildings on the property are most complete in every respect. Captain Smith, manager for the Union Phosphate Company, deserves much credit for the manner in which he has equipped this property.

"NORTH STAR."—This mine is looking well, in fact better than at any former period. A force of sixty men produce 12 tons daily, and if the property continues to improve as it has done during the past month the daily output will much increase. Seven hundred tons of phosphate have been delivered at the railway depot and 400 tons are mined and awaiting transportation.

THE "WATT," now known as the Little Rapids Mine, has not been worked for ore since Mr. Allan purchased it in the winter, but, preparatory to organizing for active operations in the spring, a small force is employed opening a new deposit which is developing well and adds greatly to the value of the property. The quality of the mineral at this mine is unequalled at any phosphate mine in Canada.

THE "EMERALD" employs 50 men who raise 20 tons daily, and 2,000 tons of fine mineral, now mined and dressed, will be forwarded to point of shipment this winter. A drift has been run from the face of the mountain for 63 ft. in the direction of the main pit, and an-

other for 31 ft. from the pit towards it, which leaves 20 ft. of drifting to be done before they join. When this has been accomplished work will go ahead more rapidly. The phosphate that is being taken from this mine is very clean and pure.

The property adjoining the "Emerald," known as the Fitzgerald Mine, has been purchased by the Dominion Phosphate Company, and mining operations will begin as early as practicable in the spring under the superintendence of Mr. W. H. Smith, the Company's manager at their North Star mine.

In the Township of Templeton the "McLaurin" and the "Post" mines are turning out ore plentifully and the property being worked by Laurie & Co. is developing well.

In Wakefield the "Haldane," the "Gemmill" and the "Moore" mines have been improving for some time past and have developed into very valuable properties. From each of these mines a fairly large quantity of fine mineral will be forwarded for summer shipment, aggregating from 1,000 to 1,200 tons.

Phosphate Quotations.

The latest quotations received from abroad show no variation from last month's report, the ruling price being 1s. 3d. per unit for 80 per cent. mineral on wharf at Liverpool and other points. No recent sales have been reported that would establish a price to govern the season's transactions.

Navigation of the Riviere du Lievre.

It has at last been definitely settled that the much needed improvements at the Little Rapids are to be made, and work will be begun as soon as the ice will have left the river. A petition, signed by a large number of the prominent lumbermen and phosphate miners of the Du Lievre district, was forwarded to the Minister of Public Works praying that a Lock should be built at the Little Rapids, and that the same should be so constructed as to raise the water above the lock sufficiently to make the river navigable as far as High Falls. Subsequently Mr. Alonzo Wright, M.P., in company with Mr. Andrew Holland of this city, representing the petitioners, called upon Sir Hector Langevin who promised them positively that the necessary improvements would be begun in the spring and energetically pushed to completion. An appropriation (\$6,000) is included in the estimates for this purpose, and there now exists no doubt that the day is not far distant when steamers of useful capacity will ply between Buckingham village and High Falls.

Too much credit cannot be given to the popular member for Ottawa County for the deep interest he has always evinced in matters affecting

the requirements of his constituency, and in this instance the granting of the petition has been due to his prompt and earnest action.

It is gratifying to know that the articles which appeared in *Review* directing attention to the necessity of the improvements above referred to, have not been disregarded. Other improvements, strongly urged in its columns, to facilitate the transportation of phosphate from the landing at the Village of Buckingham to the C. P. Ry., will be carried into effect early in spring, arrangements having been completed, we understand, to repair and macadamize the road between these points by private enterprise. This will overcome a most obnoxious hinderance which the phosphate miners have had to contend against since the industry was first started in the district.

OXFORD GOLD MINE.

The report of Mr. M. F. Hunt, President of the Oxford Gold Mining Company, of Lake Catcha District, Nova Scotia, dated New York, 15th December, 1883, addressed to the stockholders, at the Company's first annual meeting, could not fail to have been received by them with unqualified satisfaction. The President after describing the property known as the Oxford Gold Mine, composed of 63 mining areas, proceeds to carefully review the Company's operations from the time of its organization up to December 1st, 1883, and to point out what has been accomplished on the properties since the beginning of actual mining operations in March 1882, and shows that such operations have resulted in producing an output of 2,177 tons of milled ore, yielding an average of \$29.82 per ton, representing a bullion product of \$64,934.31 received in New York from August 9th, 1882, to November 30th, 1883. Attached to the report is the financial statement showing the total receipts from the product of the mine to have reached the handsome sum of \$65,735.55, and the disbursements, for actual operating expenses, to have amounted to but \$30,266.91, in addition to which a large amount is shown to have been expended on plant and \$27,125 paid in dividends.

Since the President's report was published we have learned that the bullion product for the month of December amounted to \$4,380.10, and on December 31st dividend No. 10 was paid, amounting to \$2,875; making a total of \$30,000 paid in dividends during 1883.

Such flattering representations as those we have quoted cannot but lead to the conclusion that the Oxford Gold Mining Company is in a flourishing industrial condition. This state of affairs is not more attributable to any extraordinary richness or extent of the different

lodes on the properties than to careful management and a thorough knowledge of mining on the part of those under whose immediate supervision the operations at the mine have been conducted.

There are many mining companies in Canada at the present time owning valuable properties and carrying on operations at a heavy loss to the shareholders owing to deplorable mismanagement. Such properties might become sources of large revenue if those having control would see that mining operations were prosecuted on scientific principles and would study economy and good management. If such a system could be inaugurated it would, beyond a doubt, give an impetus to, and effectually ensure prosperity for, our mining industries at large, as it has done in the case of the Oxford Gold Mining Company.

ASBESTOS MINES OF THE EASTERN TOWNSHIPS.

The rapidly increasing demand for the mineral has become a forcible incentive to the owners of asbestos properties to develop the deposits, in order that they may avail themselves of the present advanced price that is being offered by manufacturers in the United States and abroad. An almost unlimited quantity of asbestos of very fine quality is distributed throughout the serpentine belt, traversing a portion of the County of Megantic, which appears to attain its greatest prominence in the Townships of Thetford and Coleraine. In the Township of Broughton, as well, some valuable deposits have been worked to some extent. At the Boston Asbestos Packing Company's Mine, in the first named township, about 70 men are employed; a depth of 75 or 80 feet has been reached, covering a large area, and the daily output averages 2 tons. The "Johnson," "King" and "Ward" mines, also in the Township of Thetford, are being actively worked, and when the snow will have disappeared in the spring, it is not improbable that mining operations will be begun on the Read property in the Township of Coleraine. Some New York capitalists, have, within the past few days, purchased a location in the Township of Broughton from which a fair quantity of mineral has already been shipped, and owing to its superior quality the owner received the highest price for the shipment that has been paid for many years. A firm of Turin, Italy, has recently made a bid for a portion of the output of this district, but as the American manufacturers are offering a much higher figure—about \$25 per ton more—the Italians are not likely to be supplied at present from Canadian mines. New uses, to which this mineral can be applied, are being almost daily discovered in various

quarters of the globe. Its value will increase correspondingly with the demand, and the outlook for owners of asbestos mines in the above named district was never brighter than at the present time.

MICA.

Latest reports from Mr. Allan's mica mine in Burgess are of a very satisfactory nature. As lower level is reached in the different shafts that are being sunk the crystals increase in size and number and the quality steadily improves. A fair force of miners are employed, and, although it was but a few weeks ago that work was started, a considerable quantity of high grade mica, very clear and cut into sheets running as large as 10x6, has been already shipped to dealers in the United States and Canada.

Mr. Allan has just completed the purchase of another mica property in the County of Ottawa, and will begin work just so soon as the snow disappears. Samples of the mica received are very white and clear, and of good size.

ALMANDITE.

An extensive deposit of this mineral, which is a variety of Garnet, has recently been discovered in the Township of Rawdon, Province of Quebec, and has become the property of some enterprising gentlemen identified with the mining industry of Canada. The owners purpose opening up their property without loss of time, and are already in negotiation with New York parties for the sale of their output.

This garnet rock is extensively used as a substitute for emery, being almost equal to it in hardness, and is a valuable mineral. The present sources of supply are the States of North Carolina and Georgia where the few deposits that have been discovered are said to be very profitably worked. It is supposed that the emery mines in Asia are working out, and if this be so, it is only a question of time when such substances as garnet and sapphire stone, etc., will be almost exclusively used as a substitute. It is therefore a source of gratification to learn that deposits of this mineral have been found to exist in Canada in workable quantity.

THE HAYCOCK IRON MINE.

Since the last number of the REVIEW was published, earnest enquiry as to the cause of delay in the negotiations in England for the transfer of this property has failed to elicit any information beyond the fact that there is a hitch, the nature of which, however, has not yet been ascertained. It is to be hoped that nothing has occurred to alter what had appeared to be a positive decision on the part of the English company

to accept the terms upon which the property was offered to them. It is a great pity that this mine and the company's plant should continue in its present deserted state year after year and, at a time when the public were led to expect early resumption of operations, mysterious delays, or, for aught they know, definite abandonment of negotiations, are very disappointing.

A Fatal Mistake. (Wall Street News.)

The president of a New Mexico mining company—headquarters in Boston—entered his office the other day to find everything and everybody in a hubbub, and his demand to know the cause was replied to with:

"Our mine has been turning out ore."

"No!"

"It's so! Here's a telegram announcing that we have actually struck it rich!"

"Great Scots!" gasped the president, as he sank back into a chair. "What did those idiots want to go and discover ore for just as we had got ready to levy an assessment of \$2 per share to dig a three-mile tunnel to drain our hole. Why, stockholders will be kicking like steers in less'n a week."

MINING NOTES.

GOLD MINING.

Mr. Allan of this city and Mr. Humphrey of Quebec are sinking a shaft on the old bed of a river near St. George East, Beauce County. The shaft is now down about 135 feet and properly timbered. Bed rock has not yet been struck, but pay dirt has shown itself, and it is safe to predict that when a 10 ft. lower level has been reached the richness of the dirt will have much increased, and the value of the property will be established.

It is stated that an American Company has purchased a portion of the Canada Gold Mining Company's property in Beauce, and will organize at once for early mining operations.

The Barker claim in Cariboo District, B.C., continues on good paying ground. On January 22nd a wash-up for two day's work produced 62 ounces. On 26th, another wash-up gave 102 oz., making a total for one week of 164 ounces, and ground continuing good paying. The work of the week previous produced 90 ounces and as much as \$6 to one pan was washed up. It is stated that on other claims down the creek miners have commenced taking out pay.

News from Cassair, B. C., states that at the gold mines at McDame's Creek the snow is 17 feet deep, and that in November the thermometer registered 40° below zero. There are 80 men at the mines—whites and Chinamen—and on account of the severe cold the latter were obliged to tuck in their shirts. *Fools if they didn't.*

In the Halifax *New Era* it is stated that the Bridgewater gold mines are improving very rapidly, the richest lode, giving about 11 oz. to the ton, increased from 8 inches in thickness to 15 inches, and in going down 80 ft. shows the same ore all through.

A report of progress in operations at the Canada Consolidated Gold Mining Company's property, in Hastings County, Province of Ontario, will be gratefully received.—[Ed.]

PRODUCTION OF GOLD.

The returns thus far received by the Director of the mint indicate that during 1883, the production of gold in the United States amounted to \$30,000,000.

Mining in Canada—Sulphur Ores and Phosphate.

(From the N. Y. Engineering and Mining Journal.)

Time works marvels in the lives and interests of individual citizens, but much more so in the history of manufactures and of states. We live on the eve of great changes, and the wisest among us, not blinded by political bias, can see that the probable reform of the tariff in the near future must bring with it certain radical alterations in our manufactures and commerce. Whether serious changes in the trade of the two countries occur or not, there are raw materials in Canada which are now valuable, and will speedily become more so as our consumption of sulphuric acid and fertilizers increases. Except coal, sulphur ores, and phosphates, the minerals of Canada possess but little interest for the American investor. Now and then, he may meet with something worth notice in other directions, but not often. In the case of sulphur ores and phosphate, it is not so; for outside of our Carolina supplies of phosphate, there is none so near or so rich as the apatite of Canada, while our available sulphur ores are widely distributed.

It is not many years ago since Canada phosphate began to attract notice in the United States and Europe. Of late years, Americans have kept a steady lookout for property in Canada which they could work themselves for the requirements of their own factories. The importance of the fertilizer trade in its present condition, and the proportions it promises to assume in the near future, are the principal causes of this diversion of interest. It is not many years ago that the home manufacture was expressed in five figures; now it takes seven. This change has

been accomplished in the short space of ten years. What it will be in the next decade will depend mainly on the supply of the raw material, and especially on the cost of the sulphuric acid. When Canada's apatite first came on the market, some eight years ago, practical men shook their heads at the hard and unpromising looking material. Many of the mills then in use in fertilizer-works were the buhrstones used to pulverize coprolite and other comparatively soft material. The difficulty of grinding has now been overcome, and it is no longer a source of danger to workmen and of perplexity to manufacturers. Instead of using it as they did coprolite, it is mixed largely with other softer materials, which enables the operating chemist to first saturate the apatite with sulphuric acid, and use Carolina phosphate or bone-ash as a drier. The use of these materials assists largely in lengthening the chemical action of decomposition; the carbonic acid of the softer materials offers a mechanical agent to sustain the acid in its attack on the hard and crystalline apatite. Up to the close of June, 1881, the total export of Canada phosphate was 15,600 tons, the average value of which was about \$16 a ton. In 1882, these figures were increased to 18,000 tons, which commanded a higher average of value. Last year, the amount was 23,000 tons, and a slightly increased value over the year previous. Being a more concentrated phosphate than any other in the world, it has very naturally been sought for to bring up the acid phosphate fertilizer to high percentages of phosphoric acid. A statement of the analytical composition of a few of the leading phosphates of commerce will indicate the high value of Canadian apatite:

Raw phosphates.	Content of tri-basic phosphate of lime. Per cent.
Russian:	
Government of Orel.....	29.14
Government of Podolia.....	66.78
English:	
Cambridge coprolite.....	57.78
French:	
Ardennes coprolite.....	45.21
Bordeaux phosphate.....	77.41
Spanish:	
From two mines, from.....	74.85
West Indian:	
Navassa Island.....	72.43
Old Curacao Island.....	70.99
New Curacao Island.....	88.80
Sombbrero.....	81.88
Redonda.....	87.73
Elroque.....	69.86
Rio Grande:	
Bone-ash.....	70.80
South Carolina:	
Coprolite.....	48.60
Phosphate.....	51.61
Canada:	
Apatite.....	72.94

Those who have secured properties in the Ottawa District have worked them most energetically for all they are worth, and their returns have been very encouraging so far. The expenses vary of course with the conditions; but as a rule, range from four to five dollars per ton, often less, sometimes a little more. These figures are, however, the result of the experience of a number of workings, embracing, at least, seven large mines in the great Ottawa District. The cost of the mineral laid down in Montreal may be estimated at from \$7 to \$9 per ton. Freights to New York may be had at from \$3 up by boat, and for long contracts easy railroad rates may be secured directly from the mine to destination. Prices this season in Montreal have ranged from \$18 to \$22 for choice shipments.

The quantity of this material which our market can deal with will depend mainly on the cost of our sulphuric acid. Already a great change has recently taken place in the plant of several American manufacturers and acid has occasionally touched very low figures. Among manufacturers of acid, opinion has changed in regard to the economy of pyrites over brimstone. Some of the best known pyrites contain in average samples about as follows:

	Virginia.	Capelton, Canada.	San Domingo.	Spanish.
Sulphur ..	47.50	46.60	49.00	46.00
Iron.....	44.00	45.00	43.50	43.50
Copper.....	2.60	4.10	3.20	3.10

Hitherto, the extraction of copper was the basis of operations at Capelton, and the sulphur was allowed to diffuse itself as dioxide (SO₂) for miles around, injuring vegetation and otherwise damaging property. If the process were reversed, and the ores were worked for their sulphur, the by-product would become a snug little profit, as it is in Europe. The

Capelton District could supply a very large demand for sulphur for some time to come, and its ores could be worked either in the immediate locality, or at some other point more convenient for coal and distribution of the raw material.

It is an immense economy to erect fertilizer-works alongside the acid chambers, as it saves the cost of concentrating the acid required for superphosphate manufacture. As is known to practical men, the acid is used at chamber strength of 1.20 sp. gr. As the competition in the manufacture of fertilizers increases, it will become necessary for almost every maker to manufacture his own acid, to secure his full share of profit. Inability to supply one's self with acid of home make has knocked many a British manufacturer out of the market in his own country. The conditions of a trade do not always remain the same; and if American manufacturers have been able to make a decent profit on well made fertilizers, it is because the amount of capital in the business was not so large that competition became ruinous. As capital increases and the consumption of fertilizers becomes more general, competition will be keener, and every source of economy, whether it promises much or little, will be squeezed to yield its best results. A few years ago, a prominent statistician gave the consumption of fertilizers for a few of the Southern States, which ran somewhat as follows:—

State.	Acres.	Fertilizers in tons per year.
Georgia.....	6,000,000	100,000
North Carolina.....	4,663,000	80,000
Virginia.....	3,500,000	40,000

If the other States could be added, it would soon be found how large is the consumption of manufactured fertilizers. If the home work be taken at twelve hundred thousand tons, then fully a half million tons of sulphuric acid would be required to treat the raw material producing the manufactured articles and subsidiary purposes. The large deposits met with between New York and Montreal might be used to satisfy the entire wants of this business. Whether any changes are made in the tariff or not, Americans would not be prevented from drawing supplies of sulphur from Canada. Should any alteration be made in the direction of free importation of sulphuric acid, then new circumstances may arise which may render it desirable to make the acid where the raw materials are found. Those found in Canada are likely to receive an increased share of attention from year to year, both because of their proximity and high value.

Those who have watched the quiet revolution which has taken place in the flour milling trade during the last five years, must have noticed not merely the rapid reduction of the buhrstones and the substitution of rollers; but the very large increase of capital, which has been attracted to the business. Important as flour milling is to a country, and the adoption of the new methods, so rapid a change was not more needed in the miller's trade than it is in the manufacture of acids. If ever the United States becomes great as a manufacturing nation, it will be largely the result of cheapened sulphuric acid. So manifold are its uses apart from the fertilizing trade, that one can scarcely think of an industry which can be carried on without its aid in some one or other of its operations. Cheap acid is the basis of all chemical industry, and to be in the front rank as a manufacturing nation has long been the wish and aspiration of the country. For several years, railroad activity has not been less than it is now. There is less competition for money for this purpose than there has been for some time. Taken up by manufacturers, there is less likelihood of such a scheme falling through after a flush of excitement. With the steady growth in the fertilizer trade, and the lessened demand for capital out west for the next few years, there will undoubtedly be a larger share of it for employment east. If the home proportion of the manufacture is to increase, acid must be as cheap here as it is in Europe. The quantity of acid a country consumes is often assumed as a test of progress in the manufacturing arts and of its position in the commerce of the world. The consumption is determined by the cost of the article, and this again may be governed by the people themselves. Not consumption only, but the amount which a country can manufacture, may also be rightly regarded as a proof of its civilization. J. C.

The author of the foregoing intelligently written article has made one or two incorrect statements to which attention should be directed. In giving the per centage of tribasic phosphate of lime, contained in the raw phosphate of various parts of the world, he credits Canada apatite with but 72.94 per cent. whereas it actually contains 89.91 per cent. tribasic phosphate of lime according to the most authentic analysis that we have on record, made from hand picked sample selected from the heap as being the most free from admixture with foreign mineral matter. Cargo samples, analyzed in England, have returned 85 to 86 per cent. for shipments from certain Canadian mines, which result has been attributable to the careful cobbing of the mineral.

Again the amount of apatite shipped from Canada during last year aggregated but 17,840 tons instead of 23,000 tons as stated. The annual output of the Canadian phosphate mines during the past six years has been as follows:—1878, 3,701 tons; 1879, 11,927 tons; 1880, 7,974 tons; 1881, 15,601 tons; 1882, 17,181 tons; 1883, 17,840 tons, and it is not unreasonable to expect that the output for the present year will reach quite 24,000, probably 25,000 tons.—[Ed.]

The Reciprocity Movement by United States Citizens with Canada on Coal and Iron Ore.

The Association for Reciprocity in Coal and Iron Ore held its second meeting at the Windsor Hotel, N. Y., the afternoon of January 24th. The association was formed at the Fifth Avenue Hotel on January 3rd, to secure, if possible, a reciprocity treaty between Canada and the United States, by which coal and iron ore would be placed upon the free lists of the two countries. E. N. Frisbie, of New York, was elected President; W. C. Andrews, Treasurer; and C. J. Pusey, Secretary. Gentlemen were present representing the coal and iron interests of Cleveland, Youngstown, Toledo, and other points. A committee was appointed which, with one from the Board of Trade of Montreal, came to Ottawa, and on Saturday, 19th January, held a conference with Sir Leonard Tilley, Minister of Finance, and the Hon. Mr. Bowell, Minister of Customs. In their report to the association at the meeting on the 24th January, the committee stated that it found the Canadian Ministers anxious to have lumber and salt included in the proposed treaty, but the New York committee was not prepared to give any encouragement on that point. The committee had every reason to believe that the Dominion Government was very favorably disposed to the proposed treaty, and that, if Congress should place Canadian iron ore and coal on the free list, the Dominion Cabinet would exercise the power vested in it and place the same products of the United States on a similar list. A committee headed by the Hon. Galusha A. Grow was appointed to press the matter of a treaty at Washington.

Mr. Charles J. Pusey, the secretary of the new organization, has made the following statement concerning its objects:

"A committee, consisting of E. N. Frisbie, James Tillinghast, John Moulton, H. C. Roberts, Samuel Thomas, W. C. Andrews, and Charles J. Pusey, was appointed to visit Ottawa and ascertain the disposition of the Canadian Government toward such a movement. This committee has been at Ottawa, in consultation with the Ministers of Finance and Customs, and was assured by them of the favorable action of the Canadian Cabinet."

"A wrong impression is abroad that this movement originated in Canada. It had its origin in the United States. The fact that a delegation from the Montreal Board of Trade accompanied our committee to Ottawa may explain the mistaken impression. We propose to ask the present Congress to pass an act allowing Canadian coal and iron ore to be entered here free of duty, provided that the Canadian Parliament will also pass a similar act in regard to our iron ore and coal. Efforts will be made to urge immediate action on the part of Congress, and I may say, without mentioning names, that we have several Congressmen pledged to support our movement at the proper time. Should such legislation be obtained as desired, both here and in Canada, the greatest benefit will be ours; for Canada will be giving up revenue to the amount of about \$1,000,000, while the United States will have to give up only about \$250,000 in revenues. The amount of coal imported into Canada from the United States for the year ended June 30th, 1883, is shown here:"

To Provinces.	Anthracite.	Bituminous.	Coke.	Total.
Ontario.....	439,586	736,176	7,267	1,183,029
Quebec.....	208,532	3,869	494	212,895
Nova Scotia.....	19,355	3,618	.....	22,973
New Brunswick.....	43,911	638	.....	44,549
Manitoba.....	13,919	90,628	129	104,676
British Columbia.....	356	373	2	731
Prince Edward Island.....	1,597	43	.....	1,640
	727,256	835,345	7,892	1,570,493

"The amount of coal and iron ore exported from Canada to the United States for the year ended June 30th, 1883, was as follows:

From.	Coal.	Iron ore.
Ontario.....	.....	42,745
Quebec.....	2,120	.....
Nova Scotia.....	110,150	.....
New Brunswick.....	17,670	.....
British Columbia.....	172,863	1,890
	302,803	44,635

"It will be seen that Canada gives up much more at first than the United States does; but Canada looks forward to the development of her

iron mines, whose ores are especially adapted to making Bessemer steel, and in the long run the advantages will undoubtedly balance."

The producers of bituminous coal in Northwestern Pennsylvania, who seek a market in and through Buffalo and Rochester, held a meeting on January 25th, to consider the annual production and to consult with the agents of the railroads leading to these points, as to the freight rates on their products during the year, and as to the general interest of the bituminous coal trade. The meeting was largely attended by prominent gentlemen representing different companies. Hon. Galusha A. Grow was elected chairman, and A. Dowdell secretary. A committee was appointed to report on the annual production of bituminous coal for the Buffalo and Rochester markets and the best method to regulate the output. The following resolution was unanimously adopted, on motion of E. N. Frisbie:—

Resolved, That we are in favor of reciprocity with Canada on coal and iron ore, and we heartily approve of the efforts making by the "Association for Reciprocity on Coal and Iron Ore" to secure the necessary action by the governments of the United States and Canada to obtain such a result.

The committee on coal production reported in favor of appointing a committee representing the railroads and the producers of bituminous coal, which should have power to regulate the annual production.

THE IRON DEPOSITS OF CENTRAL CANADA.

(Continued from Page 5, Vol. 2, No. 1)

Every indication points to the fact that the ore was originally deposited in beds in open cavities and subsequently buried under a mass of material. The series of upheavals, has brought ore to the surface in positions which simulate the form of metallic veins. But they are evidently true beds and of remarkable extent and purity.

A few miles north of Madoc village is a hematite mine from which many thousands of tons of first class ore have already been taken, nearly exhausting the open pit from which the ore has been mined. But the ore passes from this pit under the highway and a shaft sunk on the opposite side of this highway has struck ore of a high grade, while the horizon of the ore can be traced for a long distance by numerous outcrops in both directions. It is probable that this locality will furnish much more ore than has been already mined.

The most important deposits are the magnetic ores found at varying distances north of this mine. The first of these on the line of the Railroad on which any work has been done is

THE EMMA MINE.

This is on lots 6, 7 and 8 of the 19th Concession of Tudor Township where the ore is shown on the slopes and crest of a ridge rising about 180 feet and can be traced by debris of the ore and by the needle for a horizontal distance of some two thousand feet, the needle indicating an ore body from 80 to 100 feet or more in thickness. The upheaval has produced here an anticlinal and on a ridge a little to the south, this mine is duplicated by a body of ore dipping in the opposite direction called the Robinson mine. On the latter a pit has been sunk into the ore which is of excellent quality and appears to be in bed. The thickness here has not

yet been determined. On the highest part of the ridge of the Emma were large angular masses of very pure ore protruding from the surface which were supposed to be in their natural bed, but a cut into the slopes shows that at the time of the upheaval they were torn off from the mass of the ore and elevated above it. Their size proves that they come from a large body and their angular form that they have not been carried far from their parent bed. A careful study of the succession and dip of the strata and the indications of the dipping needle warrant the conclusion that there is here, just below the cut already made into the hill, a body of ore at least about 80 feet thick, and extending a long distance along the ridge. It should be remarked that in all parts of this territory examined, except one, there is a sharp transition from the ore bodies to the including rocks, none of the latter being magnetic, so that the indications of the needle are unusually reliable. A sample of this ore was analyzed by Professor E. J. Chapman, of University College, Toronto, with the following results:

Ferrous oxide.....	28.32
Ferric oxide.....	63.24
Chromic oxide.....	trace
Titanic acid.....	none
Phosphorous.....	trace
Sulphur.....	0.02
Silicious rock matter.....	8.36

Mr. H. M. Curry, of the firm of Carnegie Brothers & Co., of Pittsburgh, also made analyses of specimens taken by him from the mine, with the following results:

	Hard ore.	Soft ore.
Silica.....	5.370	5.080
Iron.....	65.194	65.604
Phosphorous.....	.051	.009
Sulphur.....	None	None

These indicate an ore of unusual excellence, and it may be regarded as certain that in extent the Emma and Robinson combined will take a rank among the largest iron ore mines known.

THE BAKER MINE.

The next in order along the line of the road, and about four miles from the Emily is the Baker mine.

Here glacial action has stripped much of the ore leaving it uncovered along a crescent like ridge, the whole length of which is considerably over one mile. The outcrops are not continuous, and there are breaks in the line of magnetic attraction, so that until further explorations are made, it might be proper to speak of the three Baker mines on their crescentic ridge. Enough is, however, disclosed to prove they contain a very large amount of ore. A horizontal cut has been made in one place through 30 feet of solid ore; and enough can be seen to show that it has a similar thickness in other places. Two analyses of this ore have been made, the first by Professor Chapman of the University College, Toronto, and the second by Mr. H. M. Curry, of the firm of Carnegie Bros. & Co.

No. 1.

Ferrous oxide.....	29.18
Ferric oxide.....	54.95
Titanic acid.....	none
Phosphorous.....	trace
Sulphur.....	0.13
Silicious rock matter.....	5.66

No. 2.

Silica.....	5.500
Phosphorous.....	0.088
Sulphur.....	0.000
Metallic iron.....	66.288

These indicate an ore of remarkable excellence, indications which have been fully sustained by the cut into the solid body of the ore except in one particular. The ore contains much more sulphur than disclosed by these analyses, so much as to render it probable that the bulk of the ore will have to be roasted before it is introduced into the smelting furnace. The great abundance of hardwood on that property and in the immediate neighborhood will make this inexpensive, and as an immense amount of ore can be taken out above drainage, the cost of mining and of roasting will for a long time be less than the cost of mining alone at most mines.

THE COE HILL MINING CO. MINE.

This mine, formerly called the Batchelor mine, is in Wallaston Township, and about 20 miles in a northwest direction from the Baker. It is a double mine on an anticlinal, one part already opened and worked and the location of the other disclosed by the dipping needle. At the mine now opened a cut was originally made into the hill on the level of the space selected for the dump which passes through a horizontal thickness by careful measurement of 68 feet of solid ore, with but slight intrusion of rock matter, the bottom of this cut was from 20 to 25 feet below the top of the ore; and from the bottom a shaft has been sunk in solid ore to the depth of 40 feet. The ore has also been

pierced by the Diamond drill at the depth of 230 feet from the surface, disclosing 70 feet of solid ore. The testimony of all who have examined this property is that, considering the quantity and quality of the ore and the small amount expended in development, no more promising mine has ever been found upon the continent.

The following analyses will indicate the character of the ore:—

BY PROFESSOR CHAPMAN.

Ferrous oxide.....	26.12
Ferric oxide.....	65.20
Titanic acid.....	none
Phosphorous.....	0.02
Sulphur.....	0.07
Silicious rock matter.....	8.48

BY MR. CURRY.

Silica.....	5.770
Phosphorous.....	trace
Sulphur.....	0.238
Metallic iron.....	63.554

SECOND SAMPLE.

Silica.....	8.320
Iron.....	60.611
Phosphorous.....	trace
Sulphur.....	0.440

Mr. Rattle, of the Cleveland Rolling Mill Company, has also made an analysis of a sample from this mine with the following results:—

Iron.....	68.180
Silicon.....	3.200
Sulphur.....	0.000
Titanium.....	0.000
Phosphorous.....	trace

It should be said, in regard to the varying amounts of sulphur shown by the analyses of the ore of the Batchelor mine, that it does contain visible pyrites, but so segregated and separated from the mass of the ore that the great bulk of it can be sorted out in mining; while compared with the mass of the ore, the quantity is so small as not materially to detract from its value.

THE ARTHUR MINE.

This is a new mine in Chandos township about 6 miles southwest of the last, and to which it is proposed to extend the railroad. It illustrates the advantage of that absence of ore in the ordinary rock strata referred to above, making the indications of the dipping needle more than ordinarily reliable. A month ago a careful examination was made of this property. Along a ridge in a dense forest rising steeply to the height of about fifty feet there was a very strong attraction of the needle, the limits of which were clearly defined. The hill was covered with forest trees with a thin covering of soil and the debris of the ordinary wall rocks of the ore of this neighborhood, and some fragments of ore. After a careful investigation the conclusion was reached that the stripping of the hill would disclose a body of ore denuded of the wall rock. This work of stripping has now been carried over the hills from one base to the other for a breadth of about 20 feet. It discloses a verticle

height of 50 feet of solid ore with no indications of sulphur and without any rock covering, the base of the uncovered part having a thickness of about 70 feet. The indications point to a deposit of ore fully equal in quality and in quantity to that in Wallaston.

(To be continued.)

DIVIDENDS DECLARED.

The Quincy Copper Mining Company, of Michigan, will pay a dividend of \$4.50 per share on 20th inst., aggregating \$180,000. Total dividends \$3,790,000.

The Central Copper Mining Company, of Michigan, paid their annual dividend on 1st inst. of \$2.00 a share, aggregating \$40,000. Total of dividends to date, \$1,710,000.

The Atlantic Copper Mining Company, of Michigan, paid a dividend of \$1.00 a share on 1st inst., aggregating \$40,000.

The Hecla Consolidated, of Montreal, has paid dividend No. 2 this year of 50c. a share, aggregating \$15,000 each. Total \$30,000.

The Ontario Silver Mining Company, of Utah, on 31st January, paid a dividend of 50c. a share, aggregating \$75,000. Dividends to date, \$5,225,000.

The Standard Consolidated, of California, on the 12th inst., paid a dividend of 25c. a share, aggregating \$25,000, making \$50,000 already paid this year.

The Horn Silver Mining Company, of Utah, have declared a dividend of 75c. a share, aggregating \$300,000, payable on 15th inst., thus swelling the total of dividends to \$3,100,000.

For the information of those of our readers who have invested in U.S. Mining Stocks we publish the following:

ASSESSMENT DIRECTORY.

(N.Y. Mining Record.)

This table is prepared from the official advertisements published by the organ of the San Francisco Stock Exchange.

(Stocks are sold in New York with assessments paid fifteen days anterior to the date of delinquency at office of the Company, as given in the table below.)

Name of Company.	No.	Amount.	When Levied.	Delinquent in Board.	Delinquent in Office.	Day of Sale.
Tohongo.....	1	30	Dec. 18...		Jan. 23...	Feb. 16...
Overman.....	54	25	Dec. 22...	Jan. 22...	Jan. 26...	Feb. 18...
Aultman M. & M.....	1	02	Dec. 22...		Jan. 29...	Feb. 18...
Acme M. & M.....	7	08	Dec. 22...		Jan. 29...	Feb. 18...
Santa Anita.....	61	01	Dec. 22...		Jan. 29...	Feb. 18...
Holmes.....	81	00	Dec. 26...	Jan. 26...	Jan. 29...	Feb. 19...
Mexican.....	25	50	Dec. 26...	Jan. 26...	Jan. 30...	Feb. 20...
Christy M. & M.....	2	20	Dec. 26...		Jan. 31...	Feb. 21...
Julia.....	19	10	Jan. 3...	Feb. 3...	Feb. 5...	Feb. 23...
Copperopolis.....	1	05	Jan. 2...		Feb. 6...	Feb. 25...
Belle Isle.....	6	15	Jan. 3...	Feb. 3...	Feb. 6...	Feb. 27...
Union Con.....	25	50	J.n. 4...	Feb. 4...	Feb. 7...	Feb. 27...
Visitacion W. Co.....	41	00	Dec. 11...		Jan. 12...	Feb. 28...
North Belle Isle.....	7	10	Jan. 3...	Feb. 3...	Feb. 8...	Feb. 28...
Bodie Con.....	4	50	Dec. 21...	Jan. 21...	Jan. 30...	Feb. 29...
Pittsburg.....	17	20	Jan. 5...		Feb. 8...	Feb. 29...
Good-haw.....	15	10	Jan. 10...	Feb. 10...	Feb. 12...	Mar. 3...
Utah.....	471	00	Jan. 4...	Feb. 4...	Feb. 11...	Mar. 3...
Eintract Gravel.....	14	05	Jan. 8...		Feb. 14...	Mar. 4...
New York Hill.....	7	20	Jan. 9...	Feb. 9...	Feb. 13...	Mar. 5...
D-y.....	14	30	Dec. 1...	Jan. 1...	Jan. 7...	Feb. 5...
Alpha Con.....	17	50	Jan. 4...	Feb. 4...	Feb. 11...	Mar. 5...
Rainbow.....	9	20	Jan. 3...		Feb. 5...	Mar. 6...
Martin White.....	17	25	Dec. 24...	Jan. 24...	Feb. 7...	Mar. 7...
Scorpion.....	17	10	Jan. 8...	Feb. 8...	Feb. 14...	Mar. 7...
California.....	10	20	Jan. 4...	Feb. 4...	Feb. 11...	Mar. 8...
Eur-ka Con.....	71	00	Jan. 15...	Feb. 15...	Feb. 18...	Mar. 10...
Mammoth Bar.....	4	15	Jan. 14...		Feb. 18...	Mar. 10...
San Miguel & La Trinidad.....	4	50	Jan. 11...		Feb. 19...	Mar. 10...
Potosi.....	14	50	Jan. 18...	Feb. 18...	Feb. 20...	Mar. 13...
Marshall.....	1	10	Jan. 24...		Feb. 23...	Mar. 14...
Blue Bluff Gravel.....	5	02	Jan. 17...		Feb. 26...	Mar. 14...
Carborca.....	8	10	Jan. 9...		Feb. 15...	Mar. 17...
Sierra Nevada.....	781	00	Jan. 16...	Feb. 16...	Feb. 20...	Mar. 17...
Union Gravel.....	18	50	Jan. 18...		Feb. 26...	Mar. 18...
The Morrell Con.....	1	10	Jan. 24...		Feb. 28...	Mar. 19...
Hale & Norcross.....	80	50	Jan. 15...	Feb. 15...	Feb. 19...	Mar. 19...
Wall St. Quicksilver.....	6	09	Jan. 22...		Mar. 1...	Mar. 20...
New Coso.....	17	40	Jan. 18...		Feb. 28...	Mar. 31...

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having use for it. Particulars can
be obtained on application to the
publishers of the CANADIAN MINING
REVIEW.

MAIL CONTRACT.
SEALED TENDERS, addressed to the Post-
master General, will be received at Ottawa
until noon, on FRIDAY, the 22nd February,
1884, for the conveyance of Her Majesty's
Mails, on a proposed Contract for four years,
eighteen times per week each way, between
NEW EDINBURGH AND OTTAWA
from the 1st April next.
The conveyance to be made on foot or other-
wise.
The Mails to leave New Edinburgh Post
Office daily, Sundays excepted, at 8 a.m.,
1 p.m. and 7 p.m. and to arrive at the Ottawa
Post Office at 8.20 a.m., 1.20 p.m. and 7.20 p.m.
respectively.
To leave Ottawa Post Office immediately
after each exchange of mails and to return to
New Edinburgh Post Office within twenty
minutes afterwards.
Printed notices containing further informa-
tion as to conditions of proposed Contract
may be seen, and blank forms of Tender may
be obtained at the Post Offices of New
Edinburgh and Ottawa, and at the office of
the subscriber.
J. P. FRENCH,
P.O. Inspector.
Post Office Inspector's Office,
Ottawa, Jan. 17th, 1884.

ESQUIMALT GRAVING DOCK,
British Columbia.
The time for inspection of plans and speci-
fications for the completion of the Graving
Dock at Esquimalt, British Columbia, is
extended to Thursday, the 17th day of Jan-
uary next, inclusively, and for receiving
Tenders to Friday the 27th day of February.
By order,
F. H. ENNIS,
Secretary.
Department of Public Works, }
Ottawa, 20th Dec., 1883.


NOTICE TO CONTRACTORS.

SEALED TENDERS, addressed to the un-
dersigned and endorsed "Tender for Drill
Hall, Quebec," will be received at this office
until WEDNESDAY, the 5th day of MARCH
next, inclusively, for the erection and com-
pletion of
DRILL HALL, QUEBEC.
Plans and Specifications can be seen at the
Department of Public Works, Ottawa, and at
the Dominion Public Works Office, Post Office
Quebec, on or after Friday the 15th instant.
Persons tendering are notified that tenders
will not be considered unless made on the
printed forms supplied, the blanks properly
filled in, and signed with their actual signa-
tures.
Each tender must be accompanied by an
accepted bank cheque, made payable to the
order of the Honorable the Minister of Public
Works, equal to five per cent. of the amount of
the tender, which will be forfeited if the
party declines to enter into a contract when
called on to do so, or if he fail to complete the
work contracted for. If the tender be not ac-
cepted the cheque will be returned.
The Department will not be bound to accept
the lowest or any tender.
By order,
F. H. ENNIS,
Secretary.
Department of Public Works, }
Ottawa, 4th Feb., 1884.


Notice to Contractors.

SEALED TENDERS addressed to the un-
dersigned, and endorsed "Tender for
SOUTHAMPTON WORKS," will be received
until FRIDAY, the 29th day of February, in-
stant, inclusively, for the construction of an
addition to the Landing Pier at Southampton,
Bruce County, Ont., according to a plan and
specification to be seen on application to Mr.
James T. Conway, Town Clerk, from whom
forms of tender can be obtained.
Persons tendering are notified that tenders
will not be considered unless made on the
printed forms supplied, the blanks properly
filled in, and signed with their actual signa-
tures.
Each tender must be accompanied by an
accepted bank cheque, made payable to the
order of the Honorable the Minister of
Public Works, equal to five per cent. of the
amount of the tender, which will be forfeited
if the party decline to enter into contract
when called on to do so, or if he fail to com-
plete the work contracted for. If the tender
be not accepted the cheque will be returned.
The Department will not be bound to accept
the lowest or any tender.
By order,
F. H. ENNIS,
Secretary.
Department of Public Works, }
Ottawa, 4th Feb., 1884.

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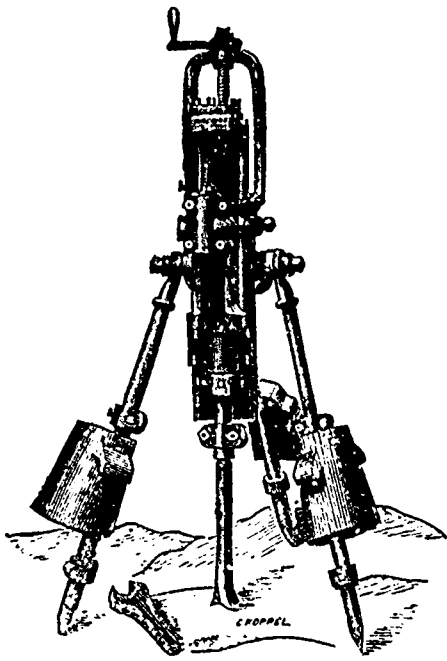
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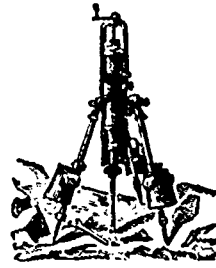
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	3	14	23	640	
	17	14	23	640	
	15	14	23	640	
	19	14	23	640	
W $\frac{1}{2}$ and N. E $\frac{1}{4}$	35	14	23	480	
N $\frac{1}{2}$ and S. E $\frac{1}{4}$	19	15	23	480	
S $\frac{1}{2}$ and N. E $\frac{1}{4}$	15	16	23	480	
E $\frac{1}{2}$ of N. W $\frac{1}{4}$	15	16	23	80	
	S $\frac{1}{2}$	3	17	23	320
	N $\frac{1}{2}$	9	15	23	320
	S. W $\frac{1}{4}$	31	18	26	160

4,880

Title direct from the Crown.

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 " " " No. 26, in the 4th Range.
 " " " No. 20, in the 5th Range.

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