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1894

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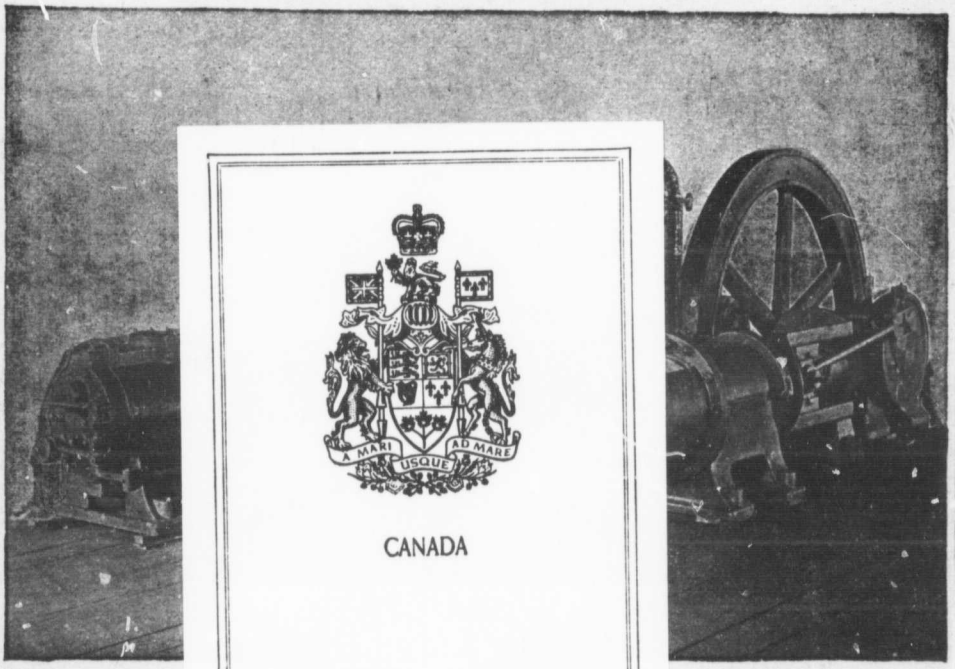

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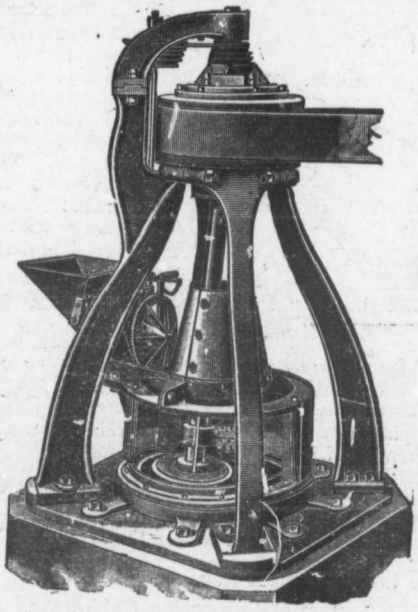

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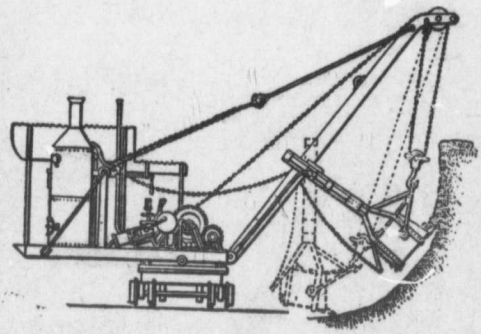

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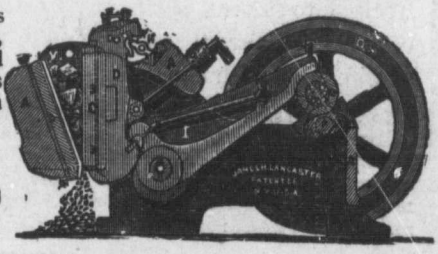

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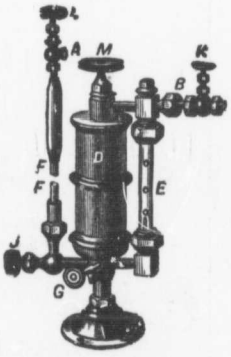

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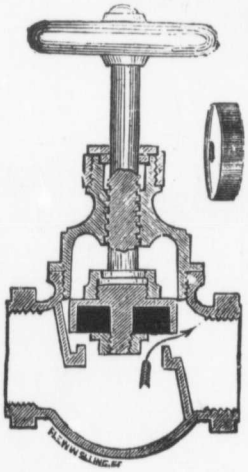

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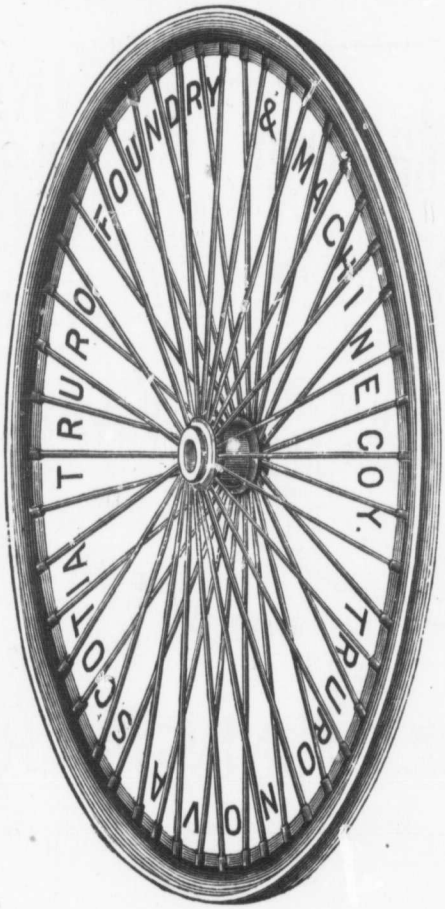

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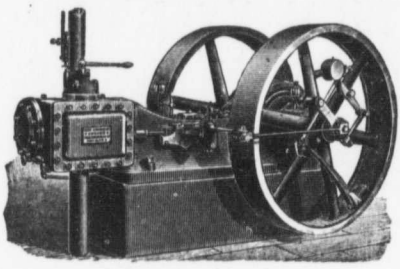

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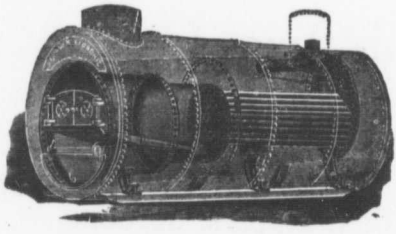

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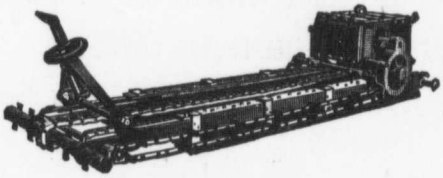

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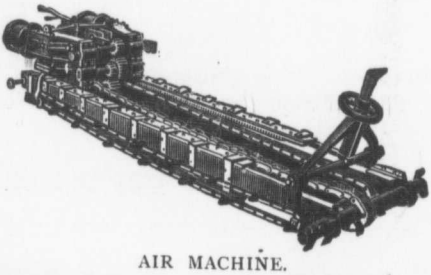

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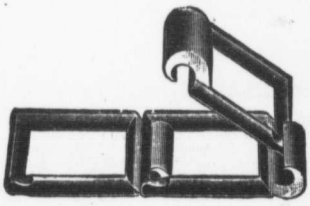

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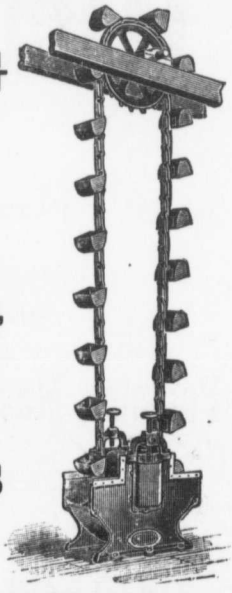

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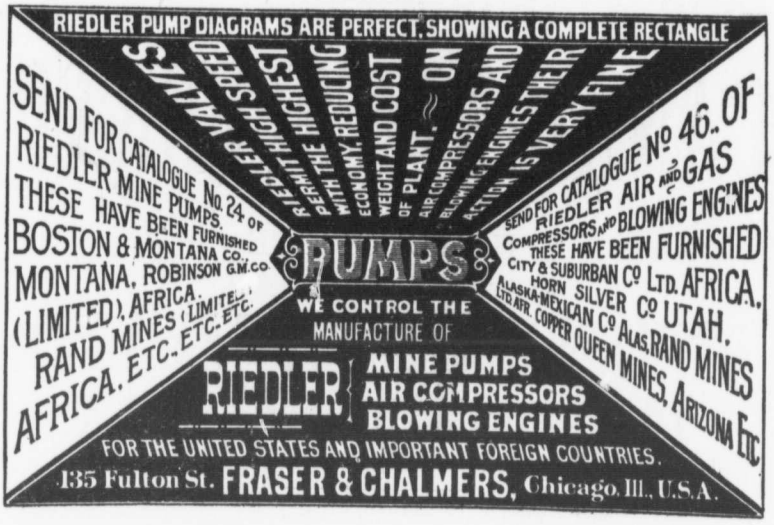

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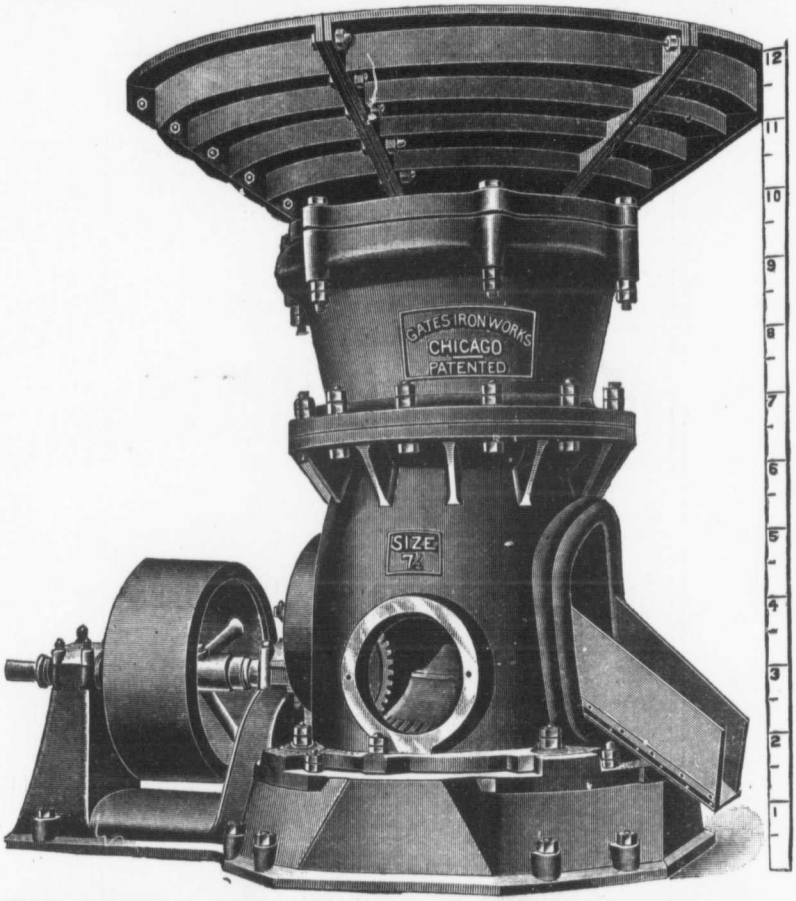

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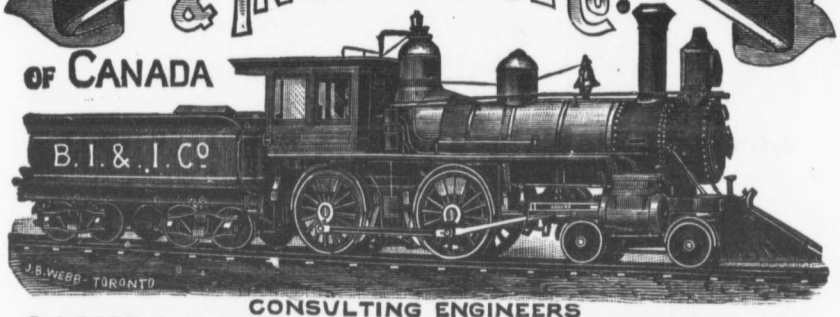

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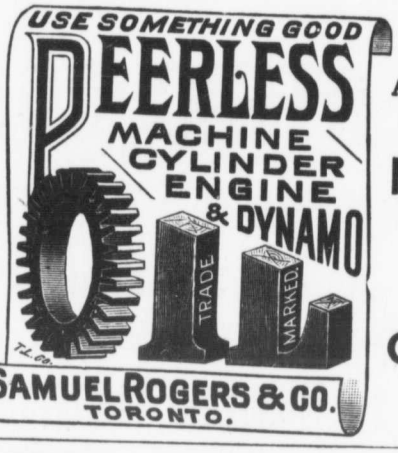

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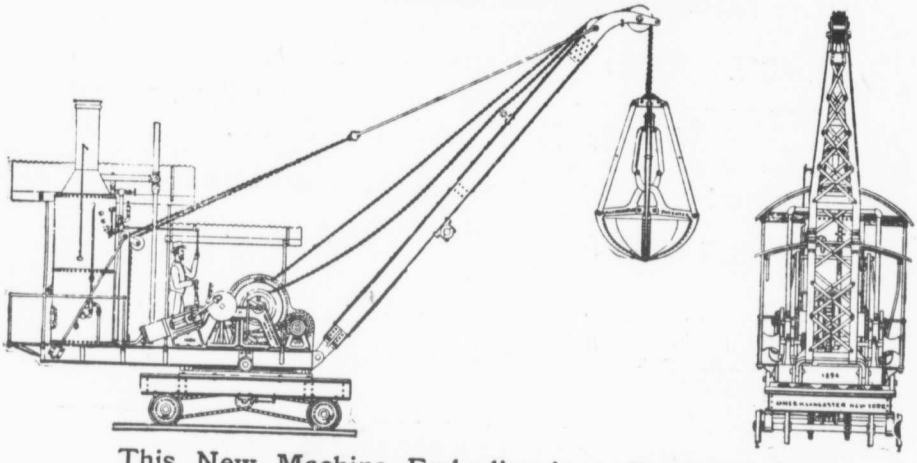

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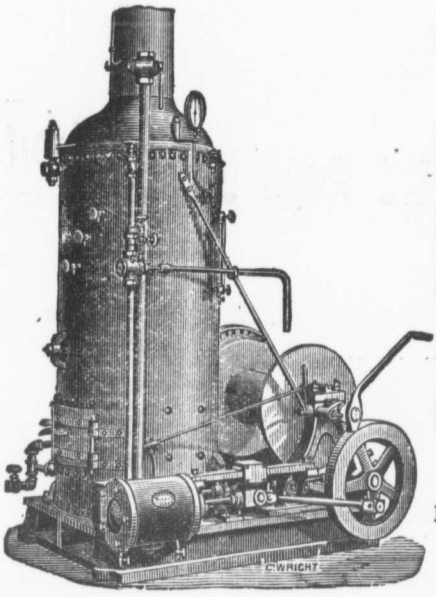

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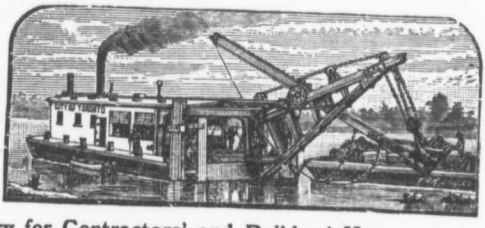

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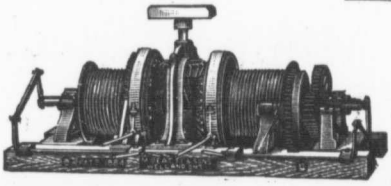

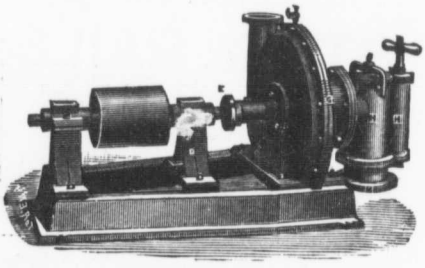

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PREFACE.

The fourth edition of THE CANADIAN MINING MANUAL will, it is hoped, be found to contain, as in former years, much reliable and useful information respecting the mineral industries of the Dominion and the operations of Canadian mines and mining companies. The Mining Laws of each of the Provinces have again been included, but in view of contemplated amendments to some of the Provincial Statutes, the Acts respecting the organization of Joint Stock Companies have, this year, been omitted.

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PART I.

MINING LAWS

CANADA AND NEWFOUNDLAND.

Being the Laws in force regarding the Disposal of Minerals and the Operation of Mines in the various Provinces of the Dominion of Canada and in the Colony of Newfoundland.

Nova Scotia.
New Brunswick.
Quebec.
Ontario.
Manitoba and North-West Territories.
British Columbia.
Newfoundland.

REVISED AND AMENDED TO DATE.

NOVA SCOTIA.

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NOVA SCOTIA.

An Act to Amend and Consolidate the Acts relating to Mines and Minerals in the Province of Nova Scotia.

1. The word "mine" in this Chapter shall mean any locality in which any vein, stratum, or natural bed of coal, or of metalliferous ore or rock exists, or shall or may be worked. The verb "to mine" in this Chapter shall include any mode or method of working whatsoever whereby the ore, earth, or soil, or any rock, may be disturbed, removed, washed, shifted, smelted, refined, crushed or otherwise dealt with for the purpose of obtaining gold, coal, iron, copper or any other ore or metallic substance, and whether the same may have been previously disturbed or not. The term "gold-bearing quartz" shall be held to mean all gold-bearing auriferous rock in situ. "Alluvial mine" shall be held to mean gold-bearing earth or rock elsewhere than in situ. The term "Commissioner" and "Commissioner of Mines" shall be held to mean the Commissioner of Public Works and Mines, and the term "Deputy" shall be held to mean the Deputy Commissioner of Public Works and Mines, and the term "Deputy Commissioner" shall be held to mean Deputy Commissioner of Mines. "Lessee" shall include and mean sub-lessee or any person deriving title to a mine through a lessee of the Crown, unless such interpretation is repugnant to the context or to the spirit of this Chapter. The words "licensed mills," when used in this Chapter, shall signify mills and machinery licensed under this Chapter, and the words "licensed mill owner" the person or persons to whom such license shall be granted. The words "prospecting license," when used in this Chapter, shall signify a license to search for mines of gold or gold and silver. The words "license to search," when used in this Chapter, shall signify a license to prospect or search for mines other than gold or gold and silver.

2. The office of the Commissioner shall be opened at ten of the clock in the forenoon and closed at four of the clock in the afternoon, except on Saturdays, when it shall be closed at one of the clock in the afternoon; public holidays, and such days as the Governor-in-Council may direct; and all applications for licenses or lease shall be made during such office hours, and all such applications made at other times shall be void, save that applications received by post at said office out of office hours shall be deemed to have been received immediately after the commencement of the next office hours.

3. The Governor-in-Council shall continue to be authorized to select and appoint, when and as often as occasion may require, a suitable person to act as Commissioner of Public Works and Mines for the Province, who shall be a member of the Executive Council of the Province, and suitable persons to act as Deputy Commis-

sioners of Mines in the several gold districts hereinafter provided for, and to define the limits of the jurisdictions of such Deputy Commissioners respectively ; and by virtue of and during the continuance of such appointment such Commissioner of Public Works and Mines within the Province, and such Deputy Commissioners within the gold districts for which they are respectively appointed, shall exercise the powers of Justice of the Peace. Provided always, that no such Commissioner or Deputy shall act as a Justice of the Peace at any court of special or general sessions, or in any matter out of session, except for the administering of oaths, the preservation of the peace, the prevention of crimes, the detection and commitment of offenders, and the carrying out of the provisions of this Chapter.

4. The Governor-in-Council is authorized to select and appoint, when and as often as occasion may require, a suitable person to act as Deputy Commissioner of Public Works and Mines for the Province, and to define the limits of his authority and jurisdiction ; and by virtue of and during the continuance of such appointment, such Deputy Commissioner of Public Works and Mines shall within the Province exercise the powers of a Justice of the Peace in the same manner and with the same limitations as in the next preceding section contained as to the Commissioner.

5. The Governor-in-Council is authorized to select and appoint, when and as often as occasion may require, a suitable person to act as Inspector of Mines, who shall be a competent, scientific, practical Mining Engineer, whose duty it shall be to visit and inspect at such times as may be deemed necessary the various mines belonging to or under lease from the Crown, to ascertain if the laws, stipulations and agreements relative to the working and management of such mines, and to the payment of rents and royalties accuring therefrom, are complied with, and if the said mines are being worked in a scientific, workmanlike and effective manner, due regard being had to maintain the value of such mines, and providing for the safety and protection of the persons employed therein, and any further duties that may be assigned to him under the provisions of this Chapter, or of any other Act of the Province now in force or hereafter to be passed by the legislature ; and he shall from time to time report in accordance with the facts to the Commissioner. The Governor-in-Council may appoint one or more Deputy Inspectors, who shall be competent, practical men, and who shall have the same duties as the Inspector, but shall be under his direction. The Governor-in-Council may appoint one or more Mining Surveyors, whose duties shall be performed under the direction of the Inspector of Mines. The salaries of the Inspector and Deputy Inspectors of Mines shall be fixed by the Governor-in-Council.

6. The Commissioner of Public Works and Mines, the Deputy Commissioners of Public Works and Mines, the Deputy Commissioners of Mines, the Inspector and Deputy Inspectors of Mines, shall each hold office during pleasure, and shall give bonds to Her Majesty the Queen for the faithful discharge of their duties in such sums and with such sureties as may be fixed by the Governor-in-Council, and neither they nor any employee of the Mines Department shall be directly or indirectly interested in any mine or mining operations, or in the proceeds or profits thereof, nor shall any of them act as the agent or attorney of any person interested therein, under

penalty of one thousand dollars for every offence against this section, to be recovered in the Supreme Court by action in the name of the Queen, instituted by the Attorney-General.

7. The Deputy Commissioner of Public Works and Mines, the Deputy Commissioner of Mines, and the Inspector of Mines and Deputy Inspectors, shall be incapable of being elected to or of sitting or voting in the House of Assembly, and any or either of them who shall so sit or vote shall forfeit two hundred dollars for every day on which he shall so sit or vote, to be recovered in the Supreme Court by any person suing therefor. None of such officers shall take any part, or use any influence, directly or indirectly, in the election of any representative to sit in the Assembly, under a penalty of two hundred dollars for every such offence, to be recovered in the Supreme Court, by action in the name of the Queen, instituted by the Attorney-General.

8. The Governor-in-Council is authorised to select and appoint a Board of Examiners, to be composed of the Inspector of Mines and nine persons conversant with coal mines, such persons to be appointed biennially by the Governor-in-Council. Three of them shall be mine managers, three working miners, and three experienced mining engineers, or men of practical ability, not in connection with any coal mine in operation. The Deputy Inspectors of Mines may be put on the Board in lieu of mining engineers. It shall be the duty of the Board to examine colliery officials. The Province, for the purpose of this section, shall be divided into three districts, called respectively Cumberland, Pictou, and Cape Breton districts, as defined from time to time by the Commissioner, and the Board for the purpose of examination shall be divided into divisions, one division for each district. Each division shall examine all candidates in its respective district. The papers of the candidates shall, for the purpose of examination, be referred to a general meeting of the Board, at which there must be present at least one member of the Board from each district, and the successful candidates shall be recommended for certificates under this Act, or under Chapter 8, Revised Statutes, "Of the Regulation of Mines."

Of Gold and Gold and Silver Mines.

9. The Governor-in-Council, on being satisfied of the discovery of gold or gold and silver in any locality, may, by proclamation in the *Royal Gazette* of this Province, declare such locality to be a gold district, and assign limits and boundaries to such district, and from time to time enlarge, contract or otherwise alter such limits.

(a) The Governor-in-Council may at any time, by proclamation in the *Royal Gazette* aforesaid, declare that any locality previously proclaimed a gold district has ceased to be a gold district.

10. All mines of gold or of gold and silver shall hereafter be laid off in areas of two hundred and fifty feet length true meridian, north and south, and one hundred and fifty feet east and west. These areas shall be known and described as Class Number One.

11. Mining areas, which, before the passing of this Chapter, have been laid out in the manner heretofore in force, shall not be affected by the provisions of the next preceding section. Should such areas for any cause revert to the Crown, the Commissioner may direct the same, when applied for, to be laid out in such manner as he may deem advisable.

12. Areas shall be laid out as far as possible uniformly and in quadrilateral and rectangular shapes. Surface measurements of areas shall be horizontal, and each area shall be bounded by vertical planes passing through the horizontal surface lines.

13 Surveys of property held under lease may be ordered by the Commissioner, and shall be made by persons duly authorized by the Commissioner. Lessees of the property to be surveyed shall be notified by the surveyor to be present on the ground on the day and hour named for the survey, and the surveyor shall as far as practicable notify the holders of leases of adjoining properties.

(a) At the time appointed, the surveyor shall proceed to make the survey as accurately as possible, and define and mark each corner of the property or properties surveyed. If no objection be taken at the time by any of the parties interested, the corners so marked by the surveyor shall be held to be fixed and determined, save as in the next subsection provided.

(b) If the lessee or lessees interested in the survey, or his or their representatives, on account of unavoidable circumstances fail to appear at the time appointed for the survey to be made, or if he or they feel dissatisfied with the corners marked by the surveyor, he or they must state their objections to the Commissioner, in writing within two months from the date of the survey, otherwise the survey that has been made shall be held to be valid, and the boundaries indicated by such corners to be true and fixed.

(c) The Commissioner, on receiving a statement of objections, as provided in the preceding subsection, and a sum of money equal to double the cost of the first survey, may order a second survey, which shall in all cases be held to be valid and binding on all parties interested. If the first survey is found to be correct, the expense of the second survey shall be paid out of such sum, and the balance of such sum, if any, shall be repaid to the party or parties objecting, otherwise the expenses shall be borne by the Department, and the sum of money deposited by the applicant refunded to him.

(d) Surveyors shall have power and are hereby required to administer oaths to the chainmen and others employed by them to assist in making the survey, binding them to the due and faithful performance of the duties they may be called upon to perform,--the form of oath to be similar to that in Schedule H to this Chapter.

14 The Commissioner shall also cause to be established, within three months after application for the same by any lessee or licensee, in any proclaimed district, and also in any unproclaimed district where at least one hundred areas have been applied for, a base line of not less than four hundred and fifty feet in length, to be laid off true meridian east and west. Such base line shall be marked at its two ends or termini by substantial, permanent, and accessible monuments, with proper inscrip-

tions marked thereon ; and all areas shall be laid off from this base-line by lines parallel to the same or at right angles to it, or its course prolonged ; and any person removing, altering, obliterating or defacing such monument or monuments, or any mark thereon, shall forfeit a sum of not less than one hundred nor more than five hundred dollars for each offence, to be recovered by the Commissioner or any person suing therefor in the same manner as an ordinary debt.

15. There shall be kept at the office of the Commissioner a book of record for proclaimed gold districts, and for unproclaimed districts or places, in which applications for leases of areas shall be entered, and another book in which applications for prospecting licenses shall be entered. All applications for areas shall be entered in the proper book with the precise time of their being made, with the description of the areas applied for, the amounts paid, and the names of the applicants in full, with their address ; and each Deputy Commissioner shall keep a book of record, wherein shall be entered all applications for areas, with the precise times of their being made, showing the descriptions of the areas applied for, the amounts paid, the names of the applicants in full, with the names of the parties paying, the amounts of royalty received from the licensed mill owners, the names of the licensed mill owners, the amounts of royalty received from others than mill owners, the names of parties paying such royalty, the distinguishing numbers of the areas, or the numbers of the leases covering the areas from which the gold, or gold and silver, was obtained, in respect of which such royalty was paid ; and each Deputy shall each week forward a return to the office of the Commissioner, which return shall be a true transcript of the entries made in such book of record during the week previous to the making of such return, and shall then remit to the Commissioner the several sums so paid. Such book of record shall be open at all reasonable times to the inspection of all persons desiring to see the same on payment of a fee of twenty-five cents.

16. The Commissioner shall cause to be prepared, and shall keep in his office, plans of all gold districts, with the areas numbered thereon, and on which all areas applied for shall be distinctly designated by numbers. Each Deputy Commissioner shall prepare and keep a duplicate of a plan of the district under his jurisdiction, on which all areas applied for in such district shall be distinctly designated ; and shall in his weekly returns report the distinguishing numbers of the areas applied for, as indicated on such plan.

17. All applications for leases of areas shall be made to the Deputy Commissioners for the districts in which the areas are situated, if there be Deputies for such districts, and where there are no Deputies for such districts, or where the areas applied for are not within any proclaimed district, the applications shall be made to the Commissioner or Deputy ; and no such applications shall be received from areas already applied for or under license or lease.

18. Every application shall be in writing, defining the area or areas applied for, and shall be accompanied by a payment of two dollars for each and every of such areas ; which shall be considered to be the annual payment in advance for the first

year that the lease is outstanding, and the Commissioner or Deputy, or Deputy Commissioner, as the case may be, receiving such application shall endorse thereon the precise time of such receipt.

(*a*) And whenever any area shall have been leased as herein provided, the lessee thereof shall on or before the expiration of the first year that the lease is in force pay in advance to the Commissioner, Deputy, or Deputy Commissioner, as the case may be, the sum of fifty cents for each and every of such areas or portion of every area contained in his lease, and shall thereafter continue to make the same payments annually in advance, and in the same manner for the remaining number of years that the lease is in force. Should any such annual payment in advance not be made, the lease shall become, and is hereby declared to be, forfeited at the expiration of the twelve months for which the last annual payment was made, the payment made at the time of application being considered the annual payment in advance for the first twelve months, and applications for licenses or leases of the areas so forfeited may be made at the Mines Office at ten o'clock of the morning of the next day after the last day of the twelve months for which the last annual payment was made, and the Commissioner, Deputy, or Deputy Commissioner, as the case may be, may receive the same.

(b) Whenever, during any year, the lessee of any area shall have performed thereon the labor required under section 32 of this Act, and shall have made return thereof to the Commissioner, he shall be entitled, upon application, to a refund of the payment in advance for that year.

(c) It shall be lawful for the lessee of any area, by duplicate agreement in writing with the Commissioner, to avail himself of the provisions of this Chapter so far as relates to the annual payment in advance and the refund thereof, and such advance payments shall be construed to commence from the nearest anniversary of the date of the lease. So long as the rental is paid as provided in this subsection and subsection *(a)*, the area so held under lease shall not be liable to forfeiture for non-working.

(d) The provisions of this section and subsections shall apply only to mines of gold and gold and silver.

19. Every lease granted under the provisions of this chapter shall be executed on the part of the Crown by the Commissioner of Public Works and Mines under his hand and seal of office, and on the part of the lessee under his hand and seal, signed and affixed thereto by the lessee or his duly authorized attorney ; and when a lease is executed by an attorney, the instrument conferring such power of executing shall be filed in the office of the Commissioner before such lease is executed by such attorney ; and such lease shall be in the form in Schedule A, hereto annexed, and shall contain all the grants, demises, reservations, covenants, promises, provisions, conditions and agreements mentioned or intended in or by such schedule ; and shall be subject to and contain the reservations of the rights of the owners of the soil, their heirs and assigns ; and such lessee, his executors, administrators, or assigns, where such lease is granted on private lands, shall, before making entry on such lands, obtain from the owners thereof permission to enter, either by special agreement or in accordance with the provisions of this Chapter.

20. When the holder of a lease of areas on private lands cannot make an agreement with the owner thereof for leave to enter and for easements, and for damage to such lands, and for the other purposes mentioned in section 22 of this Chapter, it shall be lawful for such holder to give notice to the owner or tenant to appoint an arbitrator to act with another arbitrator named by the lessee of the areas, in order to award the amount of damages to which the owner or tenant shall be entitled, by reason of the opening and working of a mine in such lands and the doing the acts or things contemplated by this section and said section; and if any lessee shall enter and work upon the land leased before he shall have agreed with the owner of the land, or have his damages appraised in accordance with this section, he shall be liable to the owner for trespass as in ordinary cases.

21. The notice mentioned in the last preceding section shall, when practicable, be personally served on such owner or his agent, if known, or tenant; and after reasonable efforts have been made to effect personal service without success then such notice shall be served by leaving it at the last place of abode of the owner, agent or tenant. Such notice shall be served, if the owner resides in the county in which the land is situate, ten days, if out of the county, twenty days. If the proprietor refuses, declines or omits to appoint an arbitrator, or when for any other reason no arbitrator is appointed by the proprietor in the time limited therefor in the notice provided for in the next preceding section, the warden of the municipality wherein the lands lie shall, on being satisfied by affidavit that such notice has come to the knowledge of such owner, agent or tenant, or that such owner, agent, or tenant, wilfully evades the service of such notice, or cannot be found, and that reasonable efforts have been made to effect such service, and that the notice was left at the last place of abode of such owner, agent, or tenant, appoint an arbitrator on his behalf.

22. All arbitrators appointed under the authority of this Chapter, shall be sworn to the impartial discharge of the duties assigned to them; and they shall forthwith proceed to estimate the reasonable damages which the owners and tenants of such lands, according to their several interests therein, shall sustain by reason of the opening of necessary shafts and other excavations, the construction of roads and drains, the erection of necessary works and buildings thereon, and of the occupation of so much thereof (to be determined by the Inspector of Mines, in the event of any dispute arising in respect thereof) as the lessee may require for all purposes connected with the opening and working of a mine to the most advantage thereon, including therein all such spaces as may be necessary from time to time for a dumping ground or grounds, for depositing the mineral mined, as well as slate stone, shale, screenings, waste coal, refuse, rubbish, and all other material mined or excavated by such lessee, and those claiming under him. In estimating such damages, the arbitrators shall determine the value of the land irrespectively of any enhancement thereof from the existence of gold or other mineral ores or metallic substances therein. In case such arbitrators cannot agree, they may select a third arbitrator; and when the two arbitrators cannot agree upon a third arbitrator, the warden of the municipality in which the lands lie shall select such third arbitrator. The award of any two of such arbitrators, made in writing, shall be final.

23. When the person or persons entitled to such damages shall be unknown or uncertain, the lessee shall, by advertisement published in the *Royal Gazette* at Halifax, and in a newspaper, if any, published in the county where the lands lie, for at least thirty days, in which the lands shall be particularly described, call upon all persons having a right to such damages to appear before the warden of the municipality in which the lands lie on or before a certain day therein named, to be not less than thirty days after the first publication of such advertisement, to appoint an arbitrator; and if an arbitrator is not so appointed on or before such day, and notice of his appointment given to said lessee, the warden and lessees shall each appoint an arbitrator, and all further proceedings shall be in accordance with the provisions of this Chapter; and the warden shall receive all moneys awarded in such case, and pay the same over to the treasurer of the municipality, and when the right of the ownership of the land shall be in dispute, the payment for damages awarded shall in like manner be made to the warden, who shall pay the same to the treasurer of the municipality.

24. The payment of such damages by the party liable therefor to the persons designated by the award as entitled thereto, or, if the award shall not designate the persons entitled, to such persons as in the absence of any dispute shall be ostensibly entitled thereto, shall exonerate the party making payment; but any persons subsequently claiming to have been entitled to the damages so paid may prosecute their claims by action for money had and received against the persons to whom the payment shall have been made. In case the award shall not designate to whom the money is to be paid, or in case the party designated shall decline to receive it, the party liable to the payment of the amount so awarded may exonerate himself from all further liability by paying the amount so awarded to the Prothonotary of the Supreme Court for the county. When such appraisement has taken place, such Prothonotary shall, upon receipt thereof, deposit the same, less a commission of one per cent. thereon, at interest in a Government savings' bank, or in a chartered bank nearest to his office. Such Prothonotary shall not be entitled under any circumstances to make any charge beyond such commission.

25. In case of dispute or unknown title, the Supreme Court or a judge thereof, on application of the claimant, shall order the damages paid to the treasurer of the municipality to be paid to the persons who, on due investigation by such court or judge, shall have established their right thereto, but no order shall be made until it shall be shown that notice has been given, sufficient in the judgment of the court or judge to protect the rights of all persons who may be or may claim to be interested.

26. The lessee or licensee shall not be implicated in controversies between persons contesting title to the damages. Upon payment of the amount of damages determined by the arbitrators, the lessee shall be entitled to the use of the lands so acquired during the term of his lease for the purpose specified in Section 22 of this Chapter, and at the end of said lease all rights of the lessee in such lands by virtue of such lease will cease.

27. In no case in which the award shall find the amount of damages with sufficient certainty shall such award be set aside because the persons entitled to damages

are not designated by name or sufficiently designated, or by reason of irregularity as to the persons entitled, or of any matter of form; but the Supreme Court or Judge shall rectify any error or informality, or shall adopt such proceedings as may be necessary for determining to whom the damages may be paid, or for otherwise carrying into effect the provision and intent of this Chapter.

28. The parties obtaining licenses and leases under this Chapter, and those deriving title under them, shall be answerable for damages that may ensue from the falling in of land, or for other injury which may be sustained by the owners or tenants of such land subsequent to the agreement for or award of damages required by the foregoing sections, by reason of the works of the parties holding licenses or leases, or of those under them. Where an agreement cannot be made with the owner of the land for any such subsequent damages, the holder of the leases, or the owners or tenants of such lands, may proceed to have them referred to arbitration in the manner provided and set forth in this and preceding sections with reference to the assessment of damages to lands and for entry.

29. All leases hereafter granted shall be for the term of forty years; but the holder of any lease may at any time surrender the same by notice in writing signed by him, and filed, together with his counterpart of lease, in the office of the Commissioner; but in case the counterpart of the lease has been lost or cannot be obtained, an affidavit to that effect made by the lessee shall be received in place of such counterpart; but nothing herein contained shall be construed to discharge him from liability in respect of any covenants in the lease for or in respect of any act, matter or thing, for which at the date of such surrender he was liable under the terms of such lease.

30. Such leases may be forfeited on failure to pay the stipulated royalties other than those arising from gold, or gold and silver-bearing material, crushed or otherwise treated at a licensed mill, or to keep employed annually on the demised premises the number of days' labor hereinafter specified, or to comply with any other of the provisions and stipulations in the leases contained.

31. The holder of any mining lease shall not use any part of the lands so demised for any other purposes whatsoever, except such as shall be necessary for making roads, opening drains, erecting necessary works, buildings, and all other purposes connected with the opening and working such mines to the most advantage; and all necessary ways and watercourses over the demised premises, whether expressly reserved in such lease or not, shall be considered as reserved to the Crown, and in respect to the making, alteration and use thereof shall be subject to such orders and regulations as the Governor-in-Council may from time to time consider expedient; and all licensees, lessees and other persons employed about the mines on such demised premises, shall use the lands in such manner as will be the least injurious to the owners and occupants of such lands, or any other lands lying contiguous thereto.

32. There shall be employed each year on the demised premises a number of days' labor equivalent to 40 days for every number one area comprised therein. The year for this purpose shall be computed from the first day of January, April, July or October, which shall first ensue after the date of the lease, unless the lease shall be

dated on one of such days, in which case the year shall be computed from the date of the lease; but any lessee holding ten or more, but less than twenty areas of class number one in any gold district, shall not be required during the first year of his holding to keep employed more than three-fourths of the number of days' labor above required to be performed per area; in like manner, if holding twenty or more, but less than thirty of such areas in the same district, he shall be required to keep employed only one-half, and if holding thirty or more, only one-fourth, the above required number of days' labor during such first year.

33. Where a lessee shall have employed in any one year a part only of the amount of labor required to be performed by him annually on the premises demised to him in any one district, or under any one lease, the whole of the areas held by him in such district or under such lease shall not necessarily become forfeited therefor, but only a part of such demised premises, proportioned to the number of days' labor which such lessee has failed to perform, shall become forfeited; and such lessee shall make selection of that part of the demised premises which he will retain. To avail himself of the provisions of this section, a lessee must make known his selection by notice in writing to the Commissioner, within ten days after the termination of the year for the non-performance of labor during which a portion of the premises demised to him becomes forfeited; and the areas selected by him to be retained shall, so far as possible, be in a compact block, and not detached from each other, and no number one area shall be divided in making such selection. Should any one lease contain areas thus retained and also areas which are forfeited, such lease shall be surrendered by the lessee, who shall receive a new lease of the areas so retained.

34. When from any cause whatever a leased mine shall become forfeited to the Crown under the proceedings hereinafter by this Chapter directed, all the right, title, and interest which the holder of such forfeited lease had therein immediately previous to such forfeiture become thereby vested in the Crown; but the lessee of any mine may during his lawful occupancy thereof, or within thirty days from the date of such forfeiture, take down and remove any houses, buildings, machines or other erections, built or placed by him thereon, notwithstanding that the same may be considered in law as attached to the freehold.

35. Any person occupying and staking off any areas, or taking possession of by staking off any areas, on lands not lying within any proclaimed gold district, not exceeding one hundred areas of class number one, shall be entitled to a license or lease, as the case may be, in preference to any other applicant. Every such person shall be entitled to one week and thereafter to twenty-four hours' time for making his application for every fifteen miles distance of the mine so occupied and staked off from the office of the Commissioner at Halifax, by the shortest mail route.

36. The Commissioner of Public Works and Mines may issue licenses to search for gold and silver, to be called "Prospecting Licenses," which shall be subject to the rules prescribed by this Chapter.

37. Any such license may include any area not exceeding one hundred areas of

class number one in extent, so as the same shall be laid off in quadrilateral and rectangular figures, and shall not in length exceed double the breadth thereof.

38. Such license shall be in force for any period not exceeding twelve months from the date of the application therefor.

39. All applications for prospecting licenses shall define by metes and bounds with reasonable certainty the lands applied for and shall be accompanied by a payment at the rate of fifty cents per area.

40. Before such license shall be issued the applicant shall enter into a bond with Her Majesty the Queen with two sureties to the satisfaction of the Commissioner, to recompense the proprietor of the soil, in the event of entry being made on private lands, for damage done to his lands, to make the returns at the expiration of the license, and to pay the royalties hereinafter required.

41. If the proprietor of private lands so entered upon shall seek damages, he shall before the end of three months after the expiration of the license make his claim in writing against the holder of such license, detailing the particulars and amount of claim ; and if the claim is not adjusted by agreement between the parties within one month after notice thereof as aforesaid, either of said parties may give notice to the other to appoint an arbitrator to act with another arbitrator to be named by the party giving the notice. Such notice shall when practicable be personally served on the proprietor or holder, as the case may be, or his agent, or tenant ; and after reasonable efforts have been made to effect personal service without success then such notice shall be served by leaving it at the last place of abode of the proprietor, holder, agent or tenant. Such notice shall be served, if the proprietor or holder resides in the county in which the land is situated, ten days, if out of the county, twenty days. If the proprietor or holder refuses, declines, or omits to appoint an arbitrator, or when for any other reason no arbitrator is appointed by the proprietor or holder in the time limited therefor in the notice provided by this section, the warden of the municipality wherein the lands lie, shall, on being satisfied by affidavit that such notice has come to the knowledge of such proprietor, holder, agent or tenant, or that such proprietor, holder, agent or tenant wilfully evades the service of such notice, or cannot be found, and that reasonable efforts have been made to effect such service, that the notice was left at the last place of abode of such proprietor, holder, agent or tenant, appoint an arbitrator on his behalf.

42. All the provisions of Sections 20, 21, 22, 23, 24, 25, 26, and 27, shall be applicable to and shall govern so far as practicable the proceedings of the arbitrators in the last section mentioned, and their award.

43. Within the period for which the license is granted, the party holding the same shall be entitled to select any area or areas comprised therein of the size and form described in this Chapter ; and shall be entitled to a lease of the areas selected upon the terms imposed herein.

44. No lease nor any prospecting license shall authorize entry upon any buildings or the curtilage appertaining to any house, store, barn or building, or upon

any garden, orchard, or grounds reserved for ornament, or under cultivation by growing crops, or enclosed, except with the consent of the occupier, or by license from the Governor-in-Council authorizing such entry, to be granted on special application, setting forth the circumstances under which the same is applied for, and on such terms as the Governor-in-Council may impose.

45. On all leases of gold, and gold and silver mines, and prospecting licenses to search for gold, there shall be reserved a royalty of two per cent. upon the gross amount of gold and silver mined.

Licensed Mills.

46. The Commissioner may issue a license to any person or persons (to be called "licensed mill owners,") to run or use any mill or machinery (to be called a "licensed mill,") for the purpose of reduction or concentration of quartz or other gold or gold and silver bearing material, or the obtaining of the gold and silver therefrom by crushing, stamping, amalgamating or otherwise, and to retain out of such gold and silver a sufficient amount to pay the royalties prescribed by this Chapter, and no person or persons shall run or use such mill or machinery without such license therefor first had and obtained, except in the case of mills or machinery worked by hand.

47. Before any such license shall be granted, the party applying therefor shall enter into a bond to Her Majesty in the penalty of two thousand dollars, to comply with the requirements of this Chapter in respect to licensed mill owners.

48. Every licensed mill owner shall keep on the demised premises, a book or books of account, to be supplied by the Commissioner, which shall at all times be open to the inspection and examination of the Commissioner, or the deputy, or the Inspector of Mines, or any other person thereto authorized by the Commissioner, in which book or books shall be entered a clear and distinct statement of all quartz or other material reduced, concentrated, crushed, stamped or amalgamated at such licensed mill, and the following particulars in respect of the same :—

I. The name of the owner or owners of each distinct parcel or lot of quartz, or other material crushed.

II. The weight of each such parcel or lot.

III. The date of the crushing of the same.

IV. The actual yield in weight of gold or gold and silver from each such parcel or lot.

V. The royalty thereon, calculated at two per cent.

VI. The number of the lease of the mine or area (so far as the same is known or can be ascertained), from which each such parcel or lot was raised, and if he fail to keep such book or books of account his license shall be revoked.

49. Each licensed mill owner shall pay or cause to be paid, in money, in weekly or other payments, as the Commissioner shall order, to the Commissioner or to the Deputy Commissioner for the district, a royalty of two per cent. on the gross amount of gold obtained by amalgamation or otherwise in the mill of such licensed mill owner,

at the rate of nineteen dollars an ounce troy for smelted gold, and eighteen dollars an ounce troy for unsmelted gold, and of two per cent. on the silver at the rate of one dollar per ounce troy.

50. In case any licensed mill owner shall fail to pay such royalty in the mode and at the time prescribed by or in accordance with this Chapter, he shall be liable to an action at the suit of the Commissioner as for money had and received to the use of such Commissioner; and such action may be brought according to the amount of the claim, in the same court which would have jurisdiction in case the amount claimed were an ordinary private debt, and his license may be revoked.

51. Every licensed mill owner shall file in the office of the Deputy Commissioner for the district, on the first day of the month, or if there be no Deputy Commissioner for the district, then the office of the Commissioner on or before the tenth day of each month, a return being a copy of the entries in such book or books of account for the last preceding month, as prescribed by the forty-ninth section of this Chapter, which return shall be verified by the affidavit of the persons principally employed in keeping such account, and on failure to make such return, or to verify the same as aforesaid, the license of any mill owner may be revoked.

52. If during any month no quartz or other material be reduced, concentrated, crushed, stamped, or amalgamated on such premises, the mil' owner shall make a return to that effect, which return shall be verified by the affidavit of the owner or of the person in charge of the premises, and on failure to make such return or to verify the same as aforesaid, the license of any mill owner may be revoked.

53. Any owner or part owner of any mill or machinery for the crushing or reduction of quartz, or for the obtaining of gold or gold and silver therefrom (other than mills or machinery worked by hand) which shall be engaged, used or employed for the crushing or reduction of quartz or other gold or gold and silver bearing material, or the obtaining of gold or gold and silver therefrom, without a license therefor first had and obtained as prescribed by this Chapter, and any person engaged as agent, servant, workman, clerk, or otherwise, in any such mill, shall forfeit and pay the sum of four hundred dollars for each such offence, and for every day in which such offence shall be committed the same shall be considered a new offence.

54. When the account books prescribed by this Chapter, or any of the accounts hereby required, shall be fraudulently or falsely kept, or the affidavits hereby prescribed or any of them shall be false or fradulent, the license to the mill in respect of which the offense has been committed may be revoked, and the "licensed mill owner" shall be liable for each offence to a penalty of not more than two thousand dollars, to be recovered in the Supreme Court in the name of the Commissioner.

55. In case a "licensed mill owner" is not the owner of the mill or machinery so licensed, the owner thereof may apply to the Commissioner to have said license revoked; and upon proof having first been given that the "licensed mill owner" has received fourteen days' notice that such application would be made, with the date thereof, and that the applicant is the legal owner of said mill and machinery, said license may be revoked.

56. The Commissioner shall have authority to enquire into any legal violation of the sections whereby such mill license may be revoked, and if in his judgement such violation has been committed he may revoke the same, but his judgment shall be subject on appeal to the revision of a Judge at Chambers, who shall make such order in respect to the same as shall be agreeable to law and justice, and if he think fit may order any question of fact to be tried by a jury.

57. Every licensed mill owner who shall in all respects have complied with this Chapter shall be entitled to receive from the Commissioner at the end or expiration of every three months for the date of his license, a sum equal to five per cent. upon the amount paid over by him as royalty during such period ; but no such percentage shall be paid in the case of free leases.

58. A licensed mill owner may at any time surrender his license by delivering the same into the office of the Commissioner with a written surrender endorsed thereon, but no such surrender shall take effect till after the lapse of ten days from the filing at the office of the Commissioner of a notice in writing of the intention of such mill owner to surrender the same.

59. Upon such surrender taking effect as aforesaid such mill shall cease to be a "licensed mill" until again licensed under the provisions of this Chapter. The death of a licensed mill owner shall terminate the license, except that his executors or administrators shall be bound to close up the outstanding business with the department, and the Commissioner may grant a license to any other applicant after such death.

60. The licensed mill owner so surrendering his license and his sureties shall remain liable under their bond for all obligations accruing thereunder up to the time when the surrender takes effect as aforesaid, but shall not be liable for obligations accruing thereafter.

Requirements of Lessees and Licensees.

61. Lessees of mines shall be bound to make to the office of the Commissioner or to the Deputy Commissioner for the district, within ten days after the first days of January, April, July and October in each year, true and correct returns to the best of their knowledge and belief, on forms to be supplied by the Commissioner, in which shall be comprised the following particulars :

I. The number of days' labor performed on the demised premises during the preceding quarter.

II. The number of tons of quartz or other gold or gold and silver bearing material raised from the demised premises during the preceding year.

III. The person or persons to whom the same has been sold or disposed of, and the different lots or parcels in which the same has been sold or disposed of, with dates.

IV. The weight of all quartz or other gold or gold and silver bearing material sent by him during the quarter to any licensed mill, and the name and description of

the mill to which the same has been sent, and, when the same has been sent and kept in distinct parcels, the weight of each separate parcel.

V. The yield of each separate parcel or lot, as returned and allotted by the mill owner, with the date of allotment.

VI. The total quantity of gold or silver obtained from the mine in any manner during the quarter, distinguishing that resulting from the quartz or other gold or gold and silver bearing material crushed at licensed mills, from the gold or gold and silver otherwise obtained. Such returns shall be verified by affidavits, to be made before the Commissioner, or one of the Deputies, or a Justice of the Peace.

62. The lessee and licensee of each mine shall be liable for royalty upon all gold or gold and silver obtained from his mine in any other way than from quartz or other gold or gold and silver bearing material crushed by licensed mills; but he shall be exempt from any claim in respect of gold or gold and silver obtained from quartz or other gold or gold and silver bearing material so crushed, the liability of the mill owner for such royalty being substituted for that of the lessee.

63. When any parcel of quartz or other gold or gold and silver bearing material from a free mine shall have been crushed at a licensed mill, the owner of the quartz or other gold or gold and silver bearing material, on proof of the facts to the satisfaction of the Commissioner, shall be entitled to receive from the Commissioner the amount deducted by the licensed mill owner and paid as royalty under the provisions of this Chapter.

64. In case any holder of a lease granted under this Chapter shall fail to make payment of any royalty accruing under the terms of Section 62 of this Chapter, within ten days after the time prescribed by this Chapter for making his return to the Commissioner or the Deputy Commissioner for the district, he shall be liable to an action at the suit of the Commissioner of Mines, as for money had and received to his use for the value of the royalty so accruing.

65. Such action may be brought, according to the amount claimed, before the same court which would have jurisdiction in case the amount claimed were an ordinary private debt; and on a change of Commissioner, actions prosecuted by him shall be continued and prosecuted by his successor in such manner as the court shall direct; and a Commissioner may prosecute in his own name as for money had and received to his use, although the same may become due to a previous Commissioner.

66. In any case of liability to forfeiture of any gold or gold and silver mining lease for non-compliance by the lessee with the terms, stipulations, and conditions therein contained or by this Chapter required, the Commissioner shall cause a notice in the form in Schedule E to be personally served upon the lessee (or some or one of the lessees, where more than one are included in the lease), or his agent or person principally employed on the premises, or shall cause such notice to be posted upon the premises leased where no person can be found in the gold district where such premises lie, or (in case the leased premises are not within a proclaimed gold district) in the polling district in which such premises are situated, upon whom to make service

thereof, informing him of such charge, and appointing a time (not less than thirty days after the service or posting of such notice) and place for the investigation of the same; and a duplicate of such notice shall also be posted up in the office of the Commissioner for at least thirty days next previous to the time so appointed; and such duplicate shall be kept so posted for at least thirty days after the investigation and decision of the case, with the decision and the date of such decision briefly noted thereon.

67. At the time and place appointed the Commissionor shall proceed to investigate such case, and the service or the posting of the notice shall be proved, either orally at the investigation or by affidavit sworn before a Justice of the Peace or a Commissioner of the Supreme Court. Upon proof of such notice and upon hearing the evidence relating to the case, which shall be taken in writing and signed by the witnesses, the Commissioner, on being satisfied of the non-fulfilment of the conditions of the lease or of the provisions of this Chapter, shall give judgment forfeiting the lease and re-vesting the premises in the Crown; and such judgment shall be in the form of Schedule F, and shall be signed by the Commissioner.

68. From the judgment of the Commissioner the party interested may appeal to a Judge at Chambers, provided that notice of such appeal be given to the Commissioner within thirty days from the date of his decision; provided also that the party appealing shall, on applying for such appeal, make and file with the Commissioner an affidavit that he is dissatisfied with such judgment, and that he verily believes the lease has not been forfeited, and that the conditions in respect of which the forfeiture has been declared have really and truly been performed and fulfilled, and shall within the time limited for appeal enter into a bond to Her Majesty the Queen with two sufficient sureties in the penalty of fifty dollars to enter and prosecute his appeal according to provisions hereof, and pay all costs which may be adjudged against him by the court of appeal.

69. On such appeal being perfected the Commissioner shall transmit to the Prothonotary at Halifax the notice of testimony taken before him, and all exhibits put in evidence.

70. Applications, transfers or other original papers in the Mines office, or any appeal under this Chapter, shall not be transmitted unless the Commissioner so orders, but copies thereof, to be prepared at the expense of the party appealing, and certified by the Commissioner or Deputy, shall be transmitted instead of the originals. Providing that the judge hearing the case may grant an order requiring some officer of the department to attend with the original applications, transfers and other papers for the purpose of inspection.

71. The judge at Chambers shall confirm or set aside the judgment or make such order thereon as is agreeable to justice and in conformity with law.

72. If a judge shall consider that the case involves questions of controverted fact on which he is of opinion that the verdict of a jury should pass, he may make an

order for the trial of the questious of fact in the county where the land lies, in which case all the papers shall be transmitted to the prothonotary of that county, and the cause shall come on for trial in its place in the same way as ordinary jury cases.

73. Upon the finding of a jury on the fact, the judge shall pronounce judgment on the whole case. So soon as judgment declaring forfeiture of the lease shall be given, either by the Commissioner without appeal or by the court of appeal when the Commissioner's judgment is appealed from, the lessee and all persons holding under him shall thereafter cease to have any interest in the mine leased, and a minute of the judgment declaring forfeiture shall be registered in the office of the Commissioner on the expiration of the time limited for appeal in the same manner as prescribed by this Chapter for leases and transfers; and the leased premises shall then be open to be leased to any other applicant in the same way as if no lease thereof had ever passed, and pending the proceedings between the delivery of the first judgement and any subsequent judgment from appeal therefrom such lessee shall suspend all mining operations on the area alleged to be forfeited, otherwise he may at the discretion of the Commissioner, be liable to be treated as a trespasser as hereinafter directed.

74. The Commissioner shall have power to declare forfeited all leases granted for mining gold or gold and silver that are liable to forfeiture that have not been worked or have only been colorably worked for the space of five years next preceding, notice of such intended declaration first having been given to the lessee or lessees for at least three weeks, such notice to be served personally or forwarded by registered letter to the post office address of such lessee or lessees, said notice to state the names of the lessees, the number of the leases, and the date at which such declaration will be made.

75. On the day so named in such notice the Commissioner shall hear any party interested in any such lease, and his judgment shall be final, unless appealed from within thirty days thereafter, such appeal to be made and perfected as provided in section 68 of this Chapter.

76. No application for leases or prospecting licenses for forfeited areas shall be received until the time limited for appeal has expired, or all appeals are finally determined.

77. Whenever after investigation by the Commissioner he is unable to decide who was the first applicant for a prospecting license or lease of gold areas or gold and silver areas, or who was the first applicant for license to search for mines other than gold or gold and silver, or for lease of such mines, the said Commissioner may, after notice to be given in such manner and for such length of time as may seem to him to be proper, cause the right to such prospecting license or lease, or license to search or lease, to be sold, offered for sale at an auction to the conflicting applicants in whole or in part as he shall deem best for the public interest, and the applicant who offers and pays the highest premium above the price fixed by law shall be entitled to be considered the first applicant for such prospecting license or lease for gold or gold and silver, or license to search or lease of minerals other than gold or gold and silver,

provided that in case such conflicting applicant or applicants do not offer any premium above the price fixed by law, the Commissioner may offer the prospecting license, license to search, lease for gold or gold and silver, or for minerals other than gold or gold and silver, so applied for, at public action, in such manner as he may think fit.

Unlawful Entry and Working.

78. The Commissioner of mines shall have power by warrant under his hand and seal, addressed to the sheriff or a constable of the county wherein the gold district lies, to cause any person unlawfully in possession of a mine so judged to be forfeited to be removed from the possession and occupation thereof; and upon receipt of such warrant the sheriff or constable to whom it is directed shall immediately execute the same.

79. Any person found mining gold or gold and silver, or any mineral other than gold or gold and silver, in any land belonging to the Crown or to a private proprietor, the minerals in which belong to the Crown or have been leased or licensed to any licensee, lessee or corporation for the purpose of mining, shall be liable to a penalty for each offence of not less than ten dollars nor more than fifty dollars; but this section shall not extend to parties prospecting or searching for mines.

80. The Inspector or his Deputy, or any person appointed by the Inspector, is hereby authorized to enter on any person's property and premises where he may believe or be informed that such mining of coal or other mineral is being carried on, and make search over such property and premises, and if it be found that such mining referred to in this section has been carried on, it shall be deemed *prima facie* evidence of the guilt of the proprietor or tenant of such property or premises, and the party found guilty shall be compelled to fill up any slope or pit made for the purpose of such mining at his own expense, and to make good any further damages caused by such mining, within a time to be named by the court referred to in section 82 of this Chapter. If the party found guilty does not, within the time so named, fill up such pit or slope, and make good such other damages, he shall be considered guilty of a distinct offence under this section for every day thereafter. This section and sections 81, 82, 83, 84 and 85 of this Chapter shall apply to mines other than gold or gold and silver, as well as to mines of gold and gold and silver.

81. Parties violating the provisions of the preceding sections 79 and 80, shall be considered guilty of a distinct offence for every day they shall unlawfully mine.

82. On complaint in writing made to any Justice of the Peace of the County in respect of such unlawful mining or entry to mine, the justice shall issue his warrant to apprehend the offender and bring him before such justice or any other justice to answer the complaint; such justice shall thereupon forthwith enter upon the investigation of the complaint; and in case he shall find the party guilty, impose such fines or penalties as the party may have incurred under the provisions of this Chapter. In case the defendant requires time for the production of witnesses for the defence, the justice shall adjourn the investigation for any period not exceeding six

days, on being satisfied by affidavit that such time is required for the purpose ; and in such case the defendant shall be committed to gaol, unless he gives security to the satisfaction of the justice to appear at the time and place appointed for such adjourned investigation.

83. The decision of such justice shall be subject to appeal to the Supreme Court or a Judge thereof ; but before such appeal shall be allowed, the appellant shall give a bond, with sufficient sureties in double the amount of the penalties and costs, to appear in the Supreme Court and obey the judgment thereof, and pay such costs as the court may award.

84. Gold or gold and silver in quartz or otherwise unlawfully mined on the property of any lessee of the Crown shall be considered in law the personal property of the owner of the mine ; and a search warrant may be issued for the same by any Justice of the Peace for the County in the same manner as for stolen goods ; and upon the recovery of any gold or gold and silver under such warrant, the justice shall make such order for the restoration thereof to the proper owner as he shall consider right.

85. Nothing in this Chapter contained shall prevent Her Majesty from having or using any other remedy now available to recover possession of any mine forfeited from causes cognizable before the Commissioner of Mines, or from any other causes from which the same may be liable to forfeiture.

86. No lessee shall mine within ten feet of the boundary line of property held by him under lease, but he shall leave a barrier of unwrought strata of at least ten feet in thickness between his workings and his boundary ; and no opening shall be made in this barrier without the consent in writing of the lessee of the adjoining land or areas ; and the party injured by such unlawful mining shall have an action at law, in addition to the penalty, against the offender for all damages incurred by or consequent upon such unlawful working or mining. Provided however that if the lessee shall deem the above restriction to be a hardship he may apply to the Commissioner to have the case examined by the Inspector of Mines, and the Commissioner, upon receiving the report of the Inspector in such case, shall have it in his discretion to release the lessee from the foregoing restriction.

87. Any party aggrieved by a decision of the Commissioner of Mines respecting any application for a prospecting license, or a lease of a gold area or gold and silver area, or a license to search, or lease of any area other than a gold or gold and silver area, may appeal from such decision to the Supreme Court *in banco.*

88. Any party desiring to appeal from such decision shall give notice in writing to the Commissioner of his intention to appeal within twenty days after such decision, or within twenty days after such decision being made known to the party dissatisfied therewith, but always within one year from the date of such decision, and shall make and file with such notice an affidavit that he is dissatisfied with such judgment or decision, and that he verily believes he is entitled to the license or lease applied for, and shall also set forth therein the grounds of his appeal, and shall within ten days

thereafter enter into a bond to Her Majesty the Queen with two sureties in the penalty of two hundred dollars to enter and prosecute his appeal, and pay all costs which may be adjudged against him by the court of appeal; and thereupon the Commissioner shall file such notice and affidavit, together with all papers and documents connected with such appeal, with the Prothonotary at Halifax on or before the first day of such term.

89. Order LVII., Rules 2 and 9, and Order LVIII., Rules 5, 6 and 7, of Chapter 104 of the Revised Statutes, Fifth Series, shall apply to every such appeal.

90. The provisions of the foregoing sections from nine to eighty-nine, both included, shall apply exclusively to gold and gold and silver mines, except where any of such sections are expressly mentioned to apply to mines other than gold and gold and silver mines or where the provisions of such sections are extended to mines other than gold and gold and silver by the subsequent sections of this Chapter.

Of Mines Other Than Gold Mines.

91. The Commissioner may upon application grant license to search, to be in force for one year and six months from the date of application therefor. Any such license shall entitle the holder to enter upon any land covered thereby, and dig and explore for such minerals therein, other than gold or gold and silver, as the Crown hold for the benefit of the Province of Nova Scotia, that is to say, for tin, lead, copper, coal, iron and precious stones, and any other minerals hereafter reserved by the legislature of this Province.

92. No application for a license to search shall be valid or of any effect unless made in writing, and accompanied by a payment of thirty dollars. This section shall also apply to applications for licenses to search, called second rights.

93. Before the Commissioner shall grant a license to search, he shall require and receive from the applicant for such license a bond in the penal sum of eight hundred dollars, with sufficient sureties to the satisfaction of the Commissioner, conditioned that in the event of entry being made upon private lands, recompense shall be made for damages in the manner hereinafter provided.

94. A license to search may cover any single tract of ground not exceeding five square miles in extent, and not exceeding two and one-half miles in length.

95. No license to search or lease shall be granted over land for which a license to search or a lease has already been applied for or granted, save as hereinafter provided.

96. Upon application for a license to search being made, the Commissioner, where necessary, shall cause the lands applied for to be surveyed and laid off, and a full description thereof shall be embodied in the license to search, but no such license shall authorize entry upon any lands which, in accordance with section 44 of this Chapter, are forbidden to be entered upon, except as in that section provided.

97. The cost of such survey shall be defrayed by the licensee, and the search for minerals under such license shall be made free of all expense to the Government; and

the holder of the license shall within the time that the same shall be in force, and with all convenient speed make a full and correct report of the result of his exploration to the Commissioner.

98. When a license to search for mines other than gold or gold and silver has been applied for or granted it shall be lawful for the Commissioner to receive applications for other licenses to search (called second rights) over the same tract.

99. On the expiration of the license to search granted upon the first application, or on the selection of an area for lease by the holder thereof, a license to search over such tract, or the remainder thereof, as the case may be, may be granted to the first of the applicants for license to search (called second rights). Upon expiration of this license or selection of an area by the holder, the second of such applicants may be granted a license over such tract, or the remainder thereof, as the case may be, and so on until all such applications for areas in the tract have been exhausted.

100. If the proprietor of private lands, entered under such license, shall seek damages, the proceedings for ascertaining the amount of such damages and making payment of the same shall be the same as provided for by this Chapter in the case of prospecting licenses for gold.

101. The holder of a license to search may at any time before the expiration thereof select from the tract covered by such license an area of which he may upon application to the Commissioner obtain a lease for the purpose of mining any mineral he may name.

102. Upon such application being made, the Commissioner shall cause the portion so selected to be surveyed and laid off, and the applicant shall defray the expense of such survey, and the persons making such survey shall make a full and accurate plan thereof, and transmit the same to the Commissioner.

103. Any person may apply for a lease without having previously obtained or applied for a license to search, and in such case his application shall embody a description of the area applied for.

104. Every application for a lease, whether made by the holder of a license to search or any other party, shall be made in writing to the Commissioner, and shall state the mineral for the purpose of mining which a lease is sought, and shall be accompanied by a payment of fifty dollars. An application failing to comply with each and all the requirements of this section shall be invalid and of no effect.

105. All the provisions herein contained relative to settlement by agreement or arbitration with the owner of the soil, where the same is private land, for damages done to his land, and to payment therefor as set forth in sections 20 to 27 inclusive, and to the occupation of such lands as set forth in section 31, and to the exemption of certain descriptions thereof from liability to be entered, as specified in section 44, and to the vesting of interests forfeited under this Chapter, as specified in section 34, shall be applicable and in force in the case of mines other than gold or gold and silver mines, equally as in gold or gold and silver mines.

106. A lease for the purpose of mining coal or iron may cover any single tract of ground not exceeding one square mile in extent, and not exceeding two miles in length. For the purpose of mining copper or lead a lease may cover any single tract of ground not exceeding one half sqnare mile in extent and one mile in length; and for the purpose of mining tin or precious stones may cover any single tract of ground not exceeding one quarter of a square mile in extent and one half mile in length.

107. Where a lease of a tract of land for the purpose of mining a particular mineral has been applied for or granted, the Commissioner may, at his discretion, and upon such further terms and conditions, not at variance with this Chapter, as he may deem just and proper, issue licenses to search over the same tract, or any part thereof, for the purpose of mining other minerals, and may also receive applications, and upon like terms and conditions refuse leases of the same tract, or any part thereof, for the purpose of mining other minerals.

Leases.

108. Leases of mines other than gold mines or gold and silver mines, granted under the provisions of this Chapter, shall be executed by the Commissioner and the lessee, in the same manner as provided in section 19 of this Chapter for leases of gold mines.

(*a.*) Leases of mines other than gold or gold and silver mines, shall be for the term of twenty years, and shall contain all the conditions, provisions, and reservations generally contained in such leases, or that may be required for the safe and proper working of the mines, or that may be required by an order of the Governor-in-Council, or by this Chapter or any Act hereafter passed by the Legislature of this Province; and such leases may be renewed on the same terms and conditions as are hereinafter provided, but such renewals shall not extend or be construed to extend to a period beyond eighty years from the date of the lease.

(*b.*) In the granting of leases hereafter there shall be reserved as a barrier a space of ten yards in width running all round the area leased, which barrier shall not be opened or mined except by the consent of the owner of the adjoining area and by the order of the Governor-in-Council, and in case of a mine in lands covered with water, the barrier of reservation as above shall be twenty-five yards in width, and shall not be opened or mined unless by the consent of the owner of the adjoining area, and by the order of the Governor-in-Council. Provided that the Governor-in-Council shall have power at any time upon the production of satisfactory evidence that the opening or working of any barrier would tend to the safety of a mine or of the workmen employed therein, or to prevent the waste of coal, to order that such barrier be opened or worked in such manner as may be deemed advisable. The cost of making such opening, working, etc., shall be borne by the party to be benefitted, and he shall pay to the other party any necessary annual rental for drainage, ventilation, damages or other loss or damage that may arise. The party to be benefited shall also give bonds to the Queen, in twice the amount estimated by the Governor-in-Council as necessary to make such opening or working, to ensure the proper execution and completion of

such opening or working. Should any question arise as to the cost of making such opening or working, or in respect of the manner of making such opening or working, or in respect of any annual rental for drainage or ventilation, or any repairs or damages to such opening, or in respect to any point in connection with the opening or working of such barrier not herein provided for, the question shall be referred to three arbitrators, the award of a majority of whom shall be final. Two of these arbitrators shall be appointed, one by each lessee and the third by the two arbitrators conjointly, or if they do not agree, by the Governor-in-Council. These arbitrators shall also direct that satisfactory security be given to the Queen with proper securities for the payment of an annual rental for water or air leave, or for repairs or damages that may arise out of such opening or working by the party to be benefited. Provided that the provisions of this sub-section shall not be construed to permit of any opening being made that may tend to the injury of the property of either lessee unless with the consent in writing of both lessees. Any lessee having occasion to believe that the barrier of an adjoining area has been encroached upon shall upon application to the Commissioner receive permission to enter such area personally or by his agent with the Inspector or his Deputy, and to make such survey as may be required to define the relations of such workings to the barrier.

(*c.*) A lessee of any mine other than of gold or gold and silver, granted under this Chapter or any Act passed by the Legislature of this Province, shall not at any time during the term of his lease or any renewal thereof, assign, transfer, set over, mortgage or otherwise part with the premises granted or any part thereof, or such term or any portion thereof, to any person whomsoever, without the license, consent or approbation of the Governor-in-Council first had and obtained for the purpose, and signified under the hand and seal of the Commissioner of Mines.

(*d.*) The ratification by the Governor-in-Council, signified under the hand and seal of the Commissioner of Mines, shall be equivalent in all cases to the license, consent and approbation of the Governor-in-Council first had and obtained for the purpose under sub-section (*c*), and any assignment or transfer which has been so ratified or may hereafter be ratified is and shall be of the same force and effect as if such license and consent and approbation had been given before such transfer.

(*e.*) Any lease may at any time be surrendered by the lessee in the same manner and upon terms similar to those hereinbefore prescribed for the surrender of a gold or gold and silver mining lease.

(*f.*) Whenever an area shall have been leased for working minerals other than gold or gold and silver, the owner thereof shall pay annually in advance to the Commissioner of Public Works and Mines, the sum of thirty dollars for each square mile or part of a square mile contained therein. Should such annual payment in advance not be made, the lease shall become, and is hereby declared to be, forfeited at the expiration of the twelve months for which the last annual payment was made, provided that notice must be forthwith sent by the Commissioner or Deputy by registered letter to the post office address of the lessee or lessees of such default, and if such rental be not paid within thirty days after the posting of such notice, then such area shall be-

come and be forfeited, the payment made at the time of application being considered the first annual payment in advance, and application for leases or licenses of the areas so forfeited may be made at the Mines office, at ten o'clock of the morning of the next day after the last day of the twelve months for which the last annual payment was made and the Commissioner or Deputy-Commissioner, as the case may be, may receive the same; as long, however, as said payment is made annually in advance, the lease shall not be forfeitable for non-working. It is declared that this summary declaration of forfeiture shall apply to all leases already issued, containing the conditions of an annual rental, and to all leases brought under the conditions of said annual rental by written agreement. Should the payment of royalty from any lease exceed the annual rental in any one year, such annual rental may be credited to the lessee as the annual rental for the following year.

(*g.*) Whenever any lease shall become forfeited under the preceding sub-section, it shall be held to be subject to the conditions of sections 130 and 131 of this Chapter.

(*h.*) Whenever the lessee of an area other than gold or gold and silver, shall in any one year pay royalty on minerals mined out of such area amounting to a sum greater than that due as the annual payment herein provided from the area leased by him, he shall be entitled, on application, to a refund of the annual payment due for that year.

(*i.*) It shall be lawful for any person at present holding a lease under the provisions of this Chapter for minerals other than gold or gold and silver, by duplicate agreement in writing with the Commissioner to avail himself of the provisions of this Chapter, so far as it relates to the annual payment and its refund as in preceding sub-sections *(f)*, *(g)*, *(h)*, such payments and refunds to be construed to commence from the nearest anniversary of the date of the lease, and the payments to be at the rate of thirty dollars for each square mile or portion of a square mile contained therein, and as long as said payment is made annually in advance the lease shall not be forfeitable for non-working.

109. All leases of mines of gold and of gold and silver, and of mines other than mines of gold and gold and silver, shall contain the provisions respecting the payment of rental and its refund under certain conditions as provided herein.

110. The Governor-in-Council may by special order authorize the granting of a lease of a larger area than one square mile if, on investigation of the special circumstances of the case, it is shown that by reason of a deficiency of mineral or other natural causes an area of one square mile was insufficient to make a profitable mine (but in no case to exceed two square miles), and in such case may impose such further conditions, not at variance with the spirit of this Chapter, as may be deemed just, and in like manner and on the same conditions two leases of one square mile each may be held and treated as one lease. And the Governor-in-Council may in a similar manner and for similar reasons increase in the same proportion any leased areas of one half or one quarter of a square mile.

111. All leases of copper and lead mines which have been or may be issued under this Chapter or any Act passed by the Legislature of this Province, shall be held

and construed to convey to the lessee or lessees therein named and his or their assigns all ores and metals held in composition, associated with or contained in the copper or lead ores therein conveyed, and the same shall be subject to the same royalties as are hereinafter provided for such ores and metals.

112. Parties having renewal of coal leases under subsection *(b)*, section 124, of this Chapter, for a period not exceeding five years, shall be entitled, upon the passage of this Act, to have the same extended by endorsement of the Commissioner for a period of twenty years, subject to the provisions of sub-section *(i)* of section 108 of this Chapter, in respect to rentals and refunds.

113. Leases of minerals other than of gold or gold and silver may be renewed in accordance with the provisions of this Chapter; provided, however, that the legislature shall have power to increase the amount of annual rental to such an extent as may be deemed proper and necessary.

114. All lessees of mining areas other than gold or gold and silver mining areas shall within six months after the issuing of such leases, place or cause to be placed at each and every corner of the areas contained in their respective leases a post or monument of stone or other durable material, of such size, nature and character as the Commissioner may determine.

(*a.*) Each post or monument shall have distinguishing letters or a suitable inscription cut or marked thereon, designating the corner where placed. Provided always that in cases of areas any corners of which are covered with water, or where the placing of such posts or monuments at such corners would cause private or public inconvenience, it shall be lawful and requisite for the lessees, with the consent of the Commissioner, to place such posts or monuments on the land adjoining such corners, in such positions as shall be approved by the Commissioner.

(*b.*) The area of each lease shall be defined as herein required according to the priority of the granting of such lease, and the lessee of the area first leased shall give to the lessees of the adjoining areas or their agents a written notice that on a day named—to be not less than 10 days after the service of such notice—a survey will be made for the purpose of establishing the boundaries of the area and placing the posts or monuments required by this Chapter. Such survey shall be made by a sworn surveyor, whose appointment shall be sanctioned by the Commissioner; and such surveyor shall make a return of such survey with an accurate plan thereof to the Commissioner.

(*c.*) If within forty days after such return has been made by the surveyor to the Commissioner no complaint be made to the Commissioner that the boundary lines of the area as so defined are not in accordance with the lines as originally defined, the boundary lines of the area as so defined by the surveyor shall, as between the lessees, be held to be the true and correct boundary lines of the area.

(*d.*) If within the year above mentioned, from disagreement or otherwise, such boundary lines are not established and defined as required by this Chapter, the Com-

missioner may cause a survey to be made and the area to be defined as hereinbefore required, and the boundaries so established shall be held to be finally determined.

(*e.*) The expenses of all such surveys and of the placing or erection of all such posts or monuments as required by this Chapter, shall be paid by the lessees of the areas defined, and where such surveys are made and such posts or monuments are established by virtue of the next preceding section, such expenses may be sued for and recovered from the lessees in the name of the Commissioner, as an ordinary debt of like amount.

(*f.*) Each monument or post as often as it shall be destroyed or removed, shall be replaced by the lessee at his own expense within one month; and the proceedings therefor shall be the same as hereinbefore required for the original definition of the area.

(*g.*) Where the lessee is not the owner of the land included in the area leased, and on which the boundary posts or monuments are required to be placed, he shall be at liberty to set them up on such land, but shall pay the proprietor for the damages caused thereby.

(*h.*) If the proprietor and the lessee cannot agree on the amount of such damages, the lessee may call on any three disinterested Justices of the Peace for the county in which the area is to appraise the same; the justices so called upon shall forthwith appraise such damages; and their award or that of any two of them shall be final.

(*i.*) Each of such Justices of the Peace shall be entitled to one dollar a day for the time actually and necessarily employed in making such appraisement, besides travelling fees at the rate of ten cents per mile, to be computed from the residence of the justice to the place where the appraisement is made; such pay and travelling fees to be paid by the lessee.

(*j.*) Any lessee neglecting to set up such posts or monuments, or to renew or replace the same when removed or destroyed, as required by this Chapter, shall forfeit a sum not exceeding one hundred dollars for every such post or monument he shall neglect to set up or replace.

(*k.*) Any person wilfully destroying, defacing, injuring or removing any such post or monument, or attempting so to do, shall forfeit a sum not exceeding one hundred dollars for each offence.

(*l.*) Any penalty under this Chapter shall be recovered in the name of the Commissioner, before two Justices of the Peace for the county wherein the offence is committed, in the same manner as an ordinary debt.

115. It is hereby declared and enacted that Chapter 23 of the Acts of 1889 shall not be deemed to have taken and did not take from any holder of a license to search in force at the time of passing of said Chapter, the right to select an area and apply for and obtain a license to work the same in the same manner as such holder could have had said Chapter not been enacted, and said Chapter shall not be deemed to have taken and did not take from any holder of a license to work at the time of the passing of

said Chapter the right to obtain an extension of such license to work to three years upon the additional payment being made as provided in Section 95, of Chapter 7 of the Revised Statutes, Fifth Series, but all holders of licenses to search at the said time shall be deemed and are hereby declared to have had the same right to select, apply for and obtain licenses to work, and all holders of licenses to work at the said time, shall be deemed, and are hereby declared to have had the same right to such extension as aforesaid, as they would have had if said Chapter had not been enacted, and all licenses to work and all such extensions of such licenses to work as aforesaid, shall be held to have been and to be as valid and good as they would have been had said Chapter 23 not been enacted.

Quarterly Returns.

116. On or before the tenth day of each of the months of January, April, July and October in each and every year, the owner, agent, or manager of every mine (other than a gold or gold and silver mine) leased from the Crown, shall send to the Commissioner a correct return specifying the quantity of coal, iron ore, or other mineral wrought or gotten in such mine, the probable use and destination of the same, and the amount of royalty which has accrued upon such material extracted during the last previous quarter, and on or before the last days of January, April, July and October in each year, a correct return specifying the number of days' labor and the number of persons ordinarily employed in or about such mine below ground and above ground, and the different classes of the persons so employed, and the cost and description of all the shafts, quarries, slopes, levels, planes, works, machinery, tramways and railways sunk, driven, opened or constructed during the preceding quarter. Such returns shall be sworn to by the agent or manager and by one or more credible persons principally employed in or about the working and management of such mine, before the Commissioner or a justice of the peace.

Royalties.

117. All ores and minerals (other than gold or gold and silver) mined, wrought, or gotten under authority of licenses or leases granted under the provisions of said Chapter 7 of the Revised Statutes, Fifth Series, or of any Act heretofore passed by the Legislature of this Province, shall be subject to the following royalties to the Crown for the use of the Province, that is to say,—

(*a.*) COAL.—Ten cents on every ton of two thousand two hundred and forty pounds of coal sold or removed from the mine, or used in the manufacture of coke or other form of manufactured fuel. The words "removed from the mine" in this subsection, shall not be held to apply to coal used for domestic purposes by the workmen employed in and about such mine; nor to coal used in mining operations in and about the mine from which such coal has been gotten; but coal so used shall not be liable to pay royalty.

(*b.*) COPPER.—Four cents upon every unit, that is, upon every one per cent. of copper contained in each and every ton of two thousand three hundred and fifty-two pounds of copper ore sold or smelted.

(*c.*) LEAD.—Two cents upon every unit, that is, upon every one per cent. of lead contained in each and every ton of two thousand two hundred and forty pounds of lead ore sold or smelted.

(*d.*) IRON.—Five cents on every ton of two thousand two hundred and forty pounds of ore sold or smelted.

(*e.*) TIN AND PRECIOUS STONES AND ANY OTHER MINERALS THAT MAY BE RESERVED.—Five per cent. on their values.

(*f.*) Provided that in respect to the payment of royalties on copper, lead, iron, tin, precious stones and any other minerals that may be reserved as provided for in sub-sections (*b*), (*c*), (*d*), (*e*) of this section, the Governor-in-Council shall have power to lower the rates of royalty thereby prescribed for any term up to the first day of May, 1897, on being satisfied that the owners of such leased minerals have commenced effective mining operations for the extraction of such minerals or any of them.

118. All leases of coal mines issued after the passing of this Act shall contain a provision that the royalties may be increased, diminished, or otherwise changed by the Legislature.

119. All royalties now or hereafter due to the Province shall bear interest at the rate of five per centum per annum.

Renewals.

120. All lessees of mines other than gold or gold and silver mines in this Province, their executors, administrators and assigns, shall, upon giving notice in writing to the Commissioner of mines at least six months previous to the expiration of their leases, respectively, of their intention to renew such leases, respectively, for a further period of twenty years from the expiration thereof, be entitled to a renewal thereof for such extended term upon the same terms, conditions and covenants as contained in the original lease, or as prescribed by this Chapter or by any Act that may be passed by the Legislature of this Province, and in like manner upon giving a notice before the expiration of such renewal term to a second renewal and extension of term of twenty years from and after the expiration of such renewal term, and in like manner upon giving like notice before the expiration of such second renewal term, to a third renewal and extension of twenty years from and after the expiration of such second renewed term, provided that at the time of giving such notices and the expiration of such terms, respectively, the said lessees, their executors, administrators and assigns, are and shall continue to be bona fide working the areas comprised within their respective leases, and complying with the terms, covenants and stipulations in their respective leases contained within the true intent and meaning of section 126 of this Chapter; and provided that the lessees have paid all rentals due on leases not actually being worked; and provided that in no case shall such renewal or renewals extend, or be construed to extend to a period beyond eighty years from the date of the original lease, but the renewed lease shall not include in respect of each mine worked a larger area than five square miles.

(*a.*) In case the workings of a colliery extend under ground covered by two or more leases, the Commissioner may renew such leases on it being satisfactorily proven to the Commissioner that the ground covered by said leases is necessary to the satisfactory and profitable working of said mine.

(*b.*) In case the workings of one area have been extended into an adjoining area, even if there is now no coal being mined in the first area, both leases may be renewed in whole or in part as may be decided by the Commissioner on the special circumstances of the case.

(*c.*) In the case of works being prosecuted outside of an area for the purpose of winning the coal in said area, the lease of said area may be renewed on it being satisfactorily shown to the Commissioner that said works are being continuously and effectively prosecuted.

(*d.*) In the case of an unworked area adjoining a mine being worked, the works of which would be a natural outlet of said unworked area, and that it was necessary to the profitable working of the mine, the lease of said area may be renewed on it being shown to the Commissioner that the said workings would be a natural outlet for the product of said unworked area, and that said unworked area was necessary to the profitable working of the mine.

(*e.*) Subject to the approval of the Governor-in-Council, the Commissioner of Public Works and Mines may renew any lease, notwithstanding that the full sum due for royalties shall not have been paid, if the holder of such lease shall produce evidence satisfactory to the Governor-in-Council that such non-payment is due to the depression in the trade, or other exceptional circumstances, and that there is reasonable prospects of payment being made if an extension of time be allowed.

Surrender.

121. The holder of any lease may at any time surrender the same by notice in writing, signed by him and filed, together with his counterpart of lease, in the office of the Commissioner; but in case the counterpart of the lease has been lost, or cannot be obtained, an affidavit to that effect, made by the lessee, will be received in place of such counterpart; but nothing herein contained shall be construed to discharge him from liability in respect of any covenants in the lease, for or in respect of any act, matter or thing, for which at the date of such surrender he was liable under the terms of such lease. Provided that the Commissioner of Mines has not served a notice for forfeiture on the lessee or lessees, as provided for in this Chapter of the Revised Statutes; in such case the area or areas leased cannot be surrendered without the consent of the Government, but must await the decision of the Commissioner of Mines as to forfeiture.

Forfeiture.

122. Where it shall be represented to or come to the knowledge of the Commissioner of Mines that any mines or minerals claimed under a lease from the Crown, or under a lease granted pursuant to this Chapter, have been abandoned for the space of one year, have not been effectively and continuously worked, or have been worked

only colorably, or to prevent a forfeiture under the terms of such lease, the Commissioner of Mines shall cause a notice, to the effect of the form of Schedule E., to be personally served upon the lessee, or some one of the lessees where more than one of them are included in the same lease, or his or their agent, or person principally employed on the premises, or shall cause such notice to be posted up upon the premises leased, where no person can be found upon whom to make service thereof, informing him of such charge, and appointing a time, to be not less than six months after the service or posting up of such notice, and also a place, for the investigation thereof. At the time and place appointed, the Commissioner of Mines shall proceed to investigate such case, and decide thereon, and shall thereupon give notice of his decision to the lessee or his agent, by causing such notice to be served or posted up, as in this section above directed; and if within such term of six months, the lessee or his assignee shall do and commence and prosecute effective mining operations, to the satisfaction of the Commissioner of Public Works and Mines, according to the true intent and meaning of the terms, covenants and stipulations in the lease contained, and of this section, or within the period of six months shall avail himself of the provisions of sub-section (*i*) of section 108 of this Chapter in respect to rentals, such mining areas so leased shall not be forfeited.

123. No mere colorable working shall prevent a forfeiture; and the Commissioner aforesaid shall have power to examine witnesses on oath, and to receive all other necessary testimony, in respect of the mining operations; and if the decision shall be that such operations are not effective, but merely colorable, the mine or mines shall be declared forfeited, and notice of the decision shall be given in accordance with the provisions in section 126.

124. The decision of such Commissioner shall be in the form in Schedule F; and the lessee or assignee may appeal to the Supreme Court, or a Judge thereof at Chambers, against such decision; any party desiring to appeal from such decision, shall give notice in writing to the Commissioner of his intention to appeal within twenty days after such decision being made known to the party dissatisfied therewith, but always within one year from the date of such decision; and shall make and file with such notice an affidavit, sworn to before a Commissioner of the Supreme Court, that he is dissatisfied with such judgment or decision, and that he verily believes the lease should not have been forfeited, and shall also set forth therein the grounds of his appeal, and shall, within ten days thereafter enter into a bond, with two sureties, in the penalty of six hundred dollars, to enter and prosecute his appeal according to the provisions of this Chapter, and pay all costs which may be adjudged against him by the court of appeal, and thereupon the Commissioner shall file such notice and affidavit, together with all papers and documents connected with such appeal, with the Prothonotary at Halifax, on or before the first day of such term.

125. Where notices are to be posted on the premises under this Chapter, or any of the sections thereof, and the areas in respect of which the notices are to be posted shall be covered with water, the notices may be posted on the land as near as conveniently may be to the areas so covered with water.

126. Whenever a lease of a mine other than of gold or gold and silver shall become forfeited, by the terms of the lease, the Governor-in-Council may direct such additional terms to those prescribed hereby on which such mine shall be re-let or re-granted by the Commissioner.

127. And whenever royalties are due from a mine so forfeited, the Governor-in-Council may make regulations for the payment of royalties then due by any applicant for a new lease or license.

128. There shall be kept in the office of the Commissioner of Mines, maps of the different mining districts in the Province, on which shall be delineated as accurately as may be, all the areas under license or lease as mines other than gold or gold and silver mines; and also a book or books of registry, in which shall be registered all the licenses and leases of such areas, and such maps and book or books shall be open to the inspection of the public upon payment of a fee of twenty-five cents.

129. The provisions of the foregoing sections, from 91 to 132 both inclusive, shall apply only to mines other than gold and gold and silver mines.

Miscellaneous.

130. No lease granted under the provisions of this Chapter shall be void against any subsequent purchaser, mortgagee for valuable consideration, or judgment creditor, by reason of such lease not having been previously registered in accordance with the provisions of the Chapter of the Revised Statutes, "Of the Registry of Deeds and Encumbrances Affecting Lands."

131. The Governor-in-Council may at any time, by proclamation, as in this Chapter provided, declare any district which shall contain an area or areas under license or lease, for the purpose of searching for or working mines and minerals other than gold or gold and silver, to be a gold district; and in such case the area or areas under such license or lease shall, notwithstanding such license or lease, become subject to all the provisions of this Chapter which relate specially to all gold districts, and gold and gold and silver mines, under such regulations as the Governor-in-Council shall make.

132. The Governor-in-Council is authorized to make rules and regulations relative to gold districts and gold or gold and silver mines, and mines other than gold or gold and silver mines, and licensing and leasing the same, and to the pumping, draining, ventilation, working, management, care, possession and disposal of the same, and to all other matters connected with the same; and to make such rules and regulations general or applicable only to particular districts or localities, as may be deemed best; and all such rules and regulations, when published in the *Royal Gazette*, shall have the force of law until annulled by the Governor-in-Council; provided such rules and regulations shall not be repugnant to the laws of the Province or provisions of this Chapter; and such rules and regulations may in like manner be altered, modified or cancelled, as circumstances shall require.

133. The forms to be used under this Chapter shall be substantially the same as those heretofore in use, subject, however, to such amendments and alterations as the Commissioner may from time to time make or direct.

134. Any lessee or licensee of mining areas lying beneath the waters of the sea may make or cause to be made tunnels from the adjacent land above high-water mark, under the waters to such mining areas, doing as little damage as possible to the owners or tenants and lessees of the minerals of the land in which such tunnels shall be made, and the intervening land covered with water, and the mines therein contained. The damages of such tunnelling shall be agreed for, determined, settled and paid, as directed in this Chapter from section 20 to section 27 inclusive, and also section 105.

135. If the lessee or licensee of such mining areas cannot agree with the owner or owners of the land, or the lessee or licensee of the mining areas through which it is necessary to drive such tunnels, the Commissioner of Public Works and Mines, subject to the approval of the Governor-in-Council, shall determine where such tunnels shall be made or commenced, the number of such tunnels, the size, width and depth thereof, the quantity of land to be taken and occupied for the same, and the course and direction which such tunnels are to take through the intervening land covered with water and the mines therein contained; and he shall cause a plan thereof to be made and filed in the office of the Registrar of Deeds for the County where the land so taken for the commencement of the tunnel shall be situated.

136. Leases of mining areas shall be issued in duplicate; and such leases shall be registered in the office of the Commissioner of Mines by the Commissioner or some person by him thereto authorized.

137. A certificate of such registry, with the day and year thereof, shall be endorsed on the duplicate delivered to the lessee.

138. All leases which have been passed prior to the passing of this Chapter that are not void or forfeited, shall be registered and certified as above if not already so registered.

139. In the case of a lease or a license where there is more than one lessee, declaration in duplicate may be made and signed under seal by all the lessees or their heirs and assigns, stating the proportion owned by each lessee. Such declaration shall be duly proved on oath before any Justice of the Peace or a Commissioner of Mines, and registered as hereinbefore mentioned.

140. All transfers of any interest in mining leases hereafter to be made shall be registered as aforesaid; and a certificate of such registry shall be endorsed on every such transfer, as in the case of mining leases; and such registry and certificate shall be conclusive evidence of the transfer of such mining interest.

141. The forms of declaration and transfer for the purpose of this Chapter shall be as in Schedules B and C, respectively.

142. Every company now or hereafter incorporated under any Act of this Legislature, or by any other competent authority, holding or working mines under

this Chapter, shall file a copy of their Charter or Act of Incorporation and by-laws or regulations in the office of the Commissioner of Mines, before any such company shall commence work, together with a list of the officers of such company; and all changes of officers made shall also be certified to the office of the Commissioner of Mines; and until such certificate is filed no such new official need be recognized by the Commissioner of Mines as an official of any such company. Any corporation neglecting or refusing to comply with this section shall be liable to a penalty of not exceeding one hundred dollars, to be recovered in the name of the Commissioner as an ordinary debt.

143. A description of all mortgages, bills of sale, attachments, judgments, transfers and documents of title, of any kind relating to or in any way affecting the title of gold, or gold and silver, coal or other mines, shall be recorded according to Schedule D in the office of the Commissioner of Mines; and all licenses and a description of all mortgages, bills of sale, attachments, judgments, transfers and documents of title of any kind affecting such licenses, shall be registered in the book of application for mining rights in the office of the Commissioner in the same manner as such licenses and descriptions are now registered; provided that such mortgages, bills of sale, attachments, judgments, transfers or documents of title, shall proceed from or be charged against the parties who may appear upon the registry to be the lessees or licensees of such gold and silver, coal or other mines, so to be transferred or to be encumbered; and any such mortgage, bill of sale, attachment, judgment, transfer or document of title shall be void as against any subsequent *bona fide* mortgage, bill of sale, attachment, judgment, transfer or document of title which shall be previously registered. A duplicate or true copy, certified by a notary under his seal, of every transfer, mortgage, or other conveyance, registered as above, shall be filed in the office of the Commissioner of Mines before a certificate of registry is given. The fee to be paid to the Commissioner for the registration of any document of title under this Chapter shall be fifty cents.

144. If the applicant for a mining lease shall not execute such lease and file it in the office of the Commissioner for execution and registry by the Commissioner within one year from the time of his application, the areas shall be considered vacant, and applications for a lease or license may be received.

145. The Commissioner shall have power to cause witnesses brought before him in all contested cases or matters which he has power to investigate and decide to be examined under oath, which oath the Commissioner is hereby empowered to administer, and the Commissioner shall have the power to compel the attendance before him of all witnesses in such cases or matters by subpœna under his hand and seal, and said witnesses upon being served with a copy of said subpœna, and paid the conduct money allowed to witnesses for travel and attendance in the Supreme Court, shall be subject to the same penalties for disobeying said subpœna as they are liable to for disobedience to subpœna in the Supreme Court. Application for proceedings in contempt under this section may be made to the Supreme Court or any judge thereof, who may treat failure to obey a subpœna duly issued by the Commissioner in

the same manner as disobedience to a subpœna issued in the Supreme Court; and like powers are hereby conferred on Deputy Commissioners in all contested cases and matters before them which they have power to investigate and decide, and the Commissioner and Deputy Commissioners shall have power to take affidavits under oath and administer the oath in all such cases, and to administer oaths in all such cases where affidavits are required by this Chapter, except where such oath is required to be administered by a Commissioner of the Supreme Court. The Chief Commissioner or any Deputy Commissioner shall not receive any application for license or lease of any mines or mining areas the right to a license or lease of which is at the time of such application in dispute before the Commissioner or Deputy or any court of appeal.

146. Where royalties are due and owing to the Crown, the Governor-in-Council shall have power to order the Commissioner of Mines to issue a warrant under his hand and seal of office directed to the Sheriff of the County where the mine in respect of which such royalties are due is situated, requiring such Sheriff immediately on receipt thereof to levy on the goods and chattels used in working and operating such mine; and if within the space of twenty days next after such levy such royalties so due are not paid to said Sheriff to proceed to sell the same or so much of such goods and chattels as shall be sufficient to pay such royalties and his fees, first having publicly advertised the same for the space of not less than ten days before such sale and to make return of such warrant, and pay over the sum due for such royalties, to the Commissioner of Mines within thirty days from the issuing thereof. Upon the receipt of such order the Commissioner shall issue such warrant and deliver the same to such Sheriff, who shall immediately execute the same according to the exigencies thereof, and the Sheriff's fees on such execution shall be the same as for executing a writ of execution out of the Supreme Court in a civil suit.

147. Leases and licenses shall terminate on the recurrence of the day on which they bear date in the year of their termination, and after ten of the clock of the forenoon of the following day the areas may be leased or licensed anew; but nothing contained in this section shall prevent the renewal and extending of licenses and leases as hereinbefore provided.

148. If any lease, or any share or interest therein, becomes transmitted or transferred, in consequence of the death, bankruptcy or insolvency of any lessee, or in consequence of the marriage of any female lessee, or by any means other than a transfer according to the provisions of this Chapter, such transmission or transfer shall be authenticated by a declaration of the person to whom such lease or share or interest therein has been transmitted or transferred, stating the circumstances of such transmission or transfer, and describing the manner in which and the person to whom such property has been transmitted or transferred; and such declaration shall be made before the Commissioner, Deputy Commissioner of Public Works and Mines, or a Justice of the Peace.

149. If such transmission or transfer shall have taken place by virtue of the bankruptcy or insolvency of any lessee, such declaration shall be accompanied by such

evidence that may for the time being be receivable in courts of justice as proof of the title of persons claiming under any bankruptcy or insolvency; and if such transmission has taken place by virtue of the marriage of a female lessee, such declaration shall be accompanied by a copy of the register of such marriage, or other legal evidence of the celebration thereof, and shall declare the identity of such female lessee; and if such transmission shall have taken place by virtue of any testamentary instrument or by intestacy, then such declaration shall be accompanied by the probate of the will or the letters of administration, or any copy thereof that may be legal evidence, or would be received in courts of justice as proof of such transmission.

150. The Commissioner of Mines, upon receipt of such declaration, so accompanied as aforesaid, shall enter the name of the person entitled to the lease, or any share or interest therein under such transmission or transfer, in the books of registry, as so entitled thereto.

151. Any affidavit required by any section of this Chapter may be sworn before the Commissioner or Deputy Commissioner, or before a Commissioner of the Supreme Court, or a Justice of the Peace.

152. All applicants for leases or licenses under this Chapter shall furnish their address, which shall be registered with their leases and licenses, and may at any time be changed by written application of the lessee or licensee. All summonses, notices or other documents, required to be served under this Act, shall be considered as served if sent by registered letter to such address, or left at such address. In the case of a summons or notice or other document sent by registered letter, the date of such service shall be assumed to be the date at which such letter would have been received in the ordinary course of mail. Where there is more than one applicant for leases or licenses, such service upon any one of the lessees or licensees shall be deemed service upon all.

153. Chapter 7, Revised Statutes, Fifth Series, "Of Mines and Minerals" and all Acts and parts of Acts in amendment thereof, are hereby repealed.

154. This Chapter may be legally known and cited as "The Mines and Minerals Act, 1892."

155. The Governor-in-Council may, at any time within one year from the passing of this Act, authorize the Commissioner of Public Works and Mines to accept the surrender of any lease of a coal mine, and may issue in lieu thereof a new lease on the same terms and conditions as such surrendered lease, except as respects the royalty to be paid to the Crown for the use of the Province. Such new lease may omit the provisions required by section 4 of Chapter 4, of the Acts of 1885, and substitute for such provision the following or words to the like effect, that is to say: "That the royalty of ten cents per ton on all coal, as fixed by the 117th section of this Chapter, shall not be increased prior to the 25th day of August in the year of our Lord one thousand nine hundred and six; that the royalty shall not exceed twelve and one half cents per ton prior to the 25th day of August in the year of our Lord one thousand

nine hundred and twenty-six, and that in the case of any renewal of a lease to which the holder may be entitled on the 25th day of August in the year of our Lord one thousand nine hundred and twenty-six, under the provisions of the law now existing, the Governor-in-Council shall fix a rate of royalty which shall be specified in such renewed lease, and shall not be increased prior to the twenty-sixth day of August in the year of our Lord one thousand nine hundred and forty-six."

156. Notwithstanding anything contained in the 117th, 118th or 120th sections, or in any other part of this Chapter, whenever it shall appear to the satisfaction of the Governor-in-Council that any company or person working or proposing to work any coal mine or mines, is willing to pay to the Province a greater royalty per ton than that fixed by the said 117th section, or is prepared to prosecute coal mining operations on such an extensive scale as would, without a higher rate of royalty, largely increase Provincial revenue derivable from royalties, the Governor-in-Council may authorize the Commissioner of Public Works and Mines to accept the surrender of any coal lease or leases held by such company or person under the law now existing, on any lease or leases that may be issued under the provisions of the 155th section of this Chapter, and may issue in lieu thereof a new lease or leases, containing such terms and conditions as may be deemed expedient as respects the area of any such lease, the period for which the lease shall run, the rate of royalty to be imposed during the whole or any part of such period, and the taxation that may be levied on the property of such company or person; provided, however, that in no case shall any such new lease fix the rate of royalty lower than that fixed by the 117th section of this Chapter.

An Act Respecting the Royalties on Coal.

(Passed the 30th day of April, A.D., 1892.)

Whereas, by section 117 of an Act of the present session, entitled "An Act to amend and consolidate the Acts relating to Mines and Minerals," it is provided that the royalty on coal payable to the province shall be ten cents per ton; and whereas, it is expedient to fix the date at which such royalty shall take effect, and to make certain provisions respecting the payment of royalties during the present year.

Be it therefore enacted by the Governor, Council and Assembly, as follows:

1. The royalty of ten cents per ton on coal, as fixed by the said section, shall be held to have taken effect on the twenty-third day of February, 1892.

2. The owner, agent or manager of any coal mine in making his quarterly return to the Commissioner of Public Works and Mines as provided by law, may attach to such return an affidavit in the following form, which may be sworn to before the Commissioner of Public works and Mines, or his Deputy, or any Judge of the Supreme or County Court:

I, ... being the owner, agent or manager of the coal mine worked under authority of lease Number... .... at .... in the County of .... make oath and say that I have the means of knowing, and do know, that of the coal sold from the said mine during the quarter ended.... .... tons were sold and delivered under contracts which were actually made and entered into prior to the twenty-third day of February, 1892, and that such contracts were made by me or my company in the belief that the royalty on coal as then existing was not to be increased during the year 1892.

Sworn to before me ....
in the County of. ....
this .....day of.....A.D., 189..

3. Upon the receipt of a return and affidavit in proper form as provided by the foregoing section, the Commissioner of Public Works and Mines shall not impose upon the coal mentioned in the said affidavit the royalty of ten cents per ton, but shall receive payment of royalty on such coal at the rate established by law prior to the passing of this Act.

4. Whereas, it has been represented that certain coal companies which had not accurately entered into written contracts for the sale of coal prior to the twenty-third day of February, 1892, had made certain *bona fide* offers of their coal to certain railway companies, which offers were outstanding on the twenty-third day of February, and which was subsequently accepted by such railway companies, it is hereby enacted that the Commissioner of Public Works and Mines may enquire into any such case that may be brought to his notice, and if satisfied by affidavit, which may be sworn to before him or the Deputy Commissioner, that such representations are correct, and that the sales were *bona fide* made by reason of such offers, he may receive payment of the royalty on such coal at the rate existing before the passing of this Act.

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NEW BRUNSWICK.

—

An Act Relating to Mines and Minerals in the Province of New Brunswick.

—

1. This Act may be cited as the "General Mining Act."

2. Where the following words occur in this Act and in Orders in Council or Regulations under the Act, they shall be construed in the manner hereinafter mentioned, unless a contrary intention appears:—

(1) The word "Mine" shall mean any locality in which any vein, stratum or natural bed of coal or metalliferous ore or rock exists, or shall or may be worked;

(2) The verb "To Mine" and participle "Mining" shall mean and include any mode or method of working whatsoever, whereby the soil or earth or any rock, stone or quartz may be disturbed, removed, carted, carried, washed, sifted, smelted, refined, crushed, or otherwise dealt with for the purpose of obtaining any metal or metals therefrom whether the same may have been previously disturbed or not;

(3) "Mining Division" shall mean and include any tract of country declared to be a mining division within this Act;

(4) "Gold bearing quartz" shall be held to mean all auriferous rock *in situ*;

(5) "Alluvial Mines" shall be held to mean gold-bearing earth or rock elsewhere than *in situ*;

(6) "Party Wall" shall mean a bank of earth or rock left between two excavations;

(7) "Lessee" shall include and mean sub-lessee, or any person deriving title to a mine through a lessee of the Crown;

(8) "Licensed Mills" shall signify mills and machinery licensed;

(9) "Mill Owners" a person or persons to whom such license shall be granted;

(10) "License" is held to mean any person holding a license under this Act;

(11) "Prospecting License" shall signify license to search for mines of gold, or gold and silver;

(12) "License to search" shall mean a license to prospect or search for mines other than gold, or gold and silver.

3. Aliens as well as British subjects may enjoy the benefit of this Act by complying with its provisions and submitting thereto.

4. It is hereby declared to be the law that in all grants in which mines and minerals have been excepted and reserved to the Crown, such mining rights are property separate from the soil covering such mines and minerals, and constitute

a property under the soil which is public property independent from that of the soil which is above it.

5. All veins or deposits of coal, on granted lands, known as surface veins, and not exceeding two feet in thickness, are excepted from the operations of this Act. They may be mined and worked, and said coal removed, shipped and disposed of without the payment of any royalty whatever.

6. The administration of this Act shall devolve upon and be attached to the Department of Crown Lands, and the Surveyor General will be charged with the duty of carrying out and enforcing the provisions hereof.

7. Neither the Surveyor General, Deputy Surveyor General, nor any officer appointed under the authority of this Act, shall be directly or indirectly interested in any mine or mining operations, or in the proceeds or profits thereof, nor shall any of them act as agent or attorney of any person interested therein, under a penalty of one thousand dollars for each offence, to be recovered in the Supreme Court.

Of Gold, and Gold and Silver Mines.

8. The Governor in Council on being satisfied of the discovery of gold, or gold and silver in any locality, may by proclamation in the Royal Gazette, declare such locality to be a gold district, and assign limits and boundaries to such district, and from time to time enlarge, contract or otherwise alter such limits.

9. Quartz mines shall, so far as local peculiarities or other circumstances may permit, be laid off in areas of one hundred and fifty feet lengthwise of the general course of the strata, so far as can be determined at the time of making the first survey authorized by the Surveyor General, and two hundred and fifty feet across, which shall hereafter be known and described as Class Number One.

10. Areas shall be laid out as far as possible uniformly and in quadrilateral and rectangular shapes. Measurements of areas shall be horizontal, and each area shall be bounded by land vertical with the horizon.

11. Alluvial mines shall be laid out, as far as local peculiarities will allow, as directed in the case of quartz mines. The course of the respective boundary lines of such mines to be decided by the Surveyor General or officer appointed by him, and advance payment or rents and royalties shall be the same as those of quartz mines.

12. There shall be kept at the Department of Crown Lands a book of record for proclaimed gold districts and for unproclaimed districts or places in which applications for leases of areas are made, and another for prospecting licenses, wherein shall be entered all applications for areas, with the precise times of their being made, showing the descriptions of the areas applied for, the amounts paid, and the names of the applicants in full, the names of the licensed mill owners, and the amounts of royalty received from them, and from others. Such book of record shall be open at all reasonable times to the inspection of all persons desiring to see the same.

13. The Surveyor General shall cause to be prepared, and shall keep in his department, plans of all gold districts with the areas entered thereon, and on which all areas applied for shall be distinctly designated by numbers.

14. All applications for leases of areas shall be made to the Surveyor General but no application shall be received for areas already applied for, or under license or lease.

15. Every application shall be in writing, defining the area or areas applied for, and shall be accompanied by a payment of two dollars for each and every of such areas, which shall be considered to be the annual payment in advance for the first year that the lease is outstanding, and the Surveyor General receiving such application shall endorse thereon the precise time of such receipt.

(1) Whenever any area shall have been leased as herein provided, the owner thereof shall on or before the expiration of the first year that the lease is outstanding, pay in advance to the Surveyor General the sum of fifty cents for each and every such area or portion thereof contained in his lease, and shall thereafter continue to make the same payments annually in advance, and in the same manner for the remaining years for which the lease shall continue. Upon failure in the payment of such sum in advance, the lease will become, and is hereby declared to be forfeited at the expiration of the then current twelve months in which default was made, the first payment in advance being considered the annual payment for the first twelve months; and applications for licenses or leases in respect of the areas hereby declared forfeited, may be made at the Office of the Department on the day after such twelve months shall expire.

16. Every lease granted under this Act shall be executed on the part of the Crown by the Surveyor General under his hand and seal, and on the part of the lessee under his hand and seal, or that of his duly authorized attorney or agent, and when such lease is executed by such attorney or agent, the instrument conferring such power shall be filed in the Office of the Department before such execution takes place, and such lease shall be in the form in the Schedule (A) hereto annexed, and such lessee, his executors, administrators or assigns, where such lease is granted on private lands, shall, before making entry on such lands, obtain from the owner thereof permission to enter, either by agreement with such owner or otherwise in accordance with the provisions of this Act.

17. When the holder of a lease of areas on private lands cannot make an agreement with the owner thereof, and with the tenant where a tenant is occupying, for leave to enter and for easements and for any damage which may be done such lands, and for other purposes mentioned in the 19th Section of this Act, it shall be lawful for such holder to give notice to the owner and tenant to appoint an arbitrator to act with another arbitrator named by the lessee of areas in order to award the amount of damages to which the owner and tenant shall be entitled by reason of the opening and working of a mine in such lands, and the doing of the acts or things authorized and contemplated by this Act, and if any lessee shall enter and work upon land leased

before he may have agreed with the owner and tenant of the land, or have proceeded to have his damages appraised in accordance with this Act, the owner and tenant may complain to a Judge in the Supreme Court, who shall, in a summary way, investigate the complaint, and if the same is substantiated, shall declare the lease forfeited.

18. The notice mentioned in the last preceding Section shall, when practicable, be personally served on such owner, or his agent and tenant, of such lands (if any), but if after reasonable efforts have been made to effect such personal service such service cannot be effected, then such notice may be served by leaving it at the last known place of abode of the owner, or his agent and tenant. If the owner resides in the County in which the land is situate, such notice shall be served ten days before the expiration of the time limited therein; if out of the County and within the Province, twenty days, and if out of the Province thirty days before such expiration. If the owner and tenant both refuse, omit or decline to appoint an arbitrator, or when for any other reason no arbitrator is appointed by the owner or tenant in the time limited therefor in the notice, the Warden of the Municipality wherein the lands lie shall, on being satisfied by affidavit that such notice has come to the knowledge of such owner, agent or tenant, or that such owner or agent or tenant wilfully evades service of such notice, or cannot be found, and that reasonable efforts have been made to effect such service, and that notice was left at the last known place of abode of such owner or agent or tenant, appoint an arbitrator on his behalf. One arbitrator only shall be appointed by the owner and tenant, and if they do not agree in the choice of an arbitrator, the one chosen by the owner shall be entitled to act.

19. All arbitrators appointed under the authority of this Act shall be sworn before a Justice of the Peace to the faithful discharge of the duties assigned them, and they shall forthwith proceed to estimate the reasonable damages which the owners and tenants of such lands according to their several interests therein shall respectively sustain by reason of the opening of necessary shafts and other excavations, the construction of roads and drains, the erection of necessary works and buildings thereon, and of the occupation of so much thereof (how much to be determined by an officer appointed by the Surveyor-General in the event of any dispute arising in respect thereof) as the lessee may require for all purposes connected with the opening and working of the mine to the most advantage thereof, including therein all such spaces as may be necessary from time to time for dumping ground or grounds, for depositing the mineral mined as well as the refuse, rubbish, waste and other material mined or excavated by such lessee. In estimating such damages the arbitrators shall determine the value of the land irrespective of any enhancement thereof from the existence of minerals therein. In case such arbitrators cannot agree, they may select a third arbitrator, and when the two arbitrators cannot agree upon a third arbitrator, the Warden of the Municipality in which the lands lie shall select such third arbitrator. The award of any two arbitrators made in writing shall be final.

20. When the owner of such lands shall be unknown or uncertain the lessee shall by advertisement published in the Royal Gazette and in a newspaper (if any) published in the County where the lands lie, for at least thirty days, and in which ad-

vertisement the lands shall be particularly described, call upon all persons having a right to such damages to appear before the Warden of the Municipality in which such lands lie, on or before a certain day therein named, to be not less than thirty days after the publication of such advertisement, to appoint an arbitrator, and if an arbitrator is not so appointed on or before such day, the Warden and lessee shall each appoint an arbitrator, and all further proceedings shall be in accordance with the provisions of this Act, and the Warden shall receive all moneys awarded in such case, and pay the same over to the Treasurer of the Municipality; and when the right to ownership of the land shall be in dispute the payment for damages awarded shall in like manner be made by them to the Warden, who shall pay the same to the Treasurer of the Municipality.

21. Payment of such damages by the party liable therefor to the person designated by the award as entitled thereto, or if the award shall not designate the persons entitled, to such persons as in the absence of any dispute shall be ostensibly entitled thereto, shall exonerate the party making payment, but any person subsequently claiming to have been entitled to the damages so paid, may prosecute his claim by action for money had and received against persons to whom payment shall have been made. In case the award shall not designate to whom the money is to be paid, or in case the party designated shall decline to receive it, the party liable to the payment of the amount so ordered may exonerate himself from all further liability by paying the money so ordered to the Clerk of the Pleas of the Supreme Court. The Clerk of the Pleas, upon receipt thereof, shall deposit the same, less a commission of two and a half per cent. thereon, at interest in the Government Savings Bank or in a Chartered Bank. Such Clerk of the Pleas shall not be entitled, under any circumstances, to make any charge beyond the said commission.

22. In case of dispute or unknown title, a Judge of the Supreme Court, on application of claimant, may order the damages paid to the Treasurer of the Municipality or Clerk of the Pleas to be paid to the persons who shall establish their right thereto to the satisfaction of such Judge, but no order shall be made until sufficient notice has been given in the judgment of the Judge to protect the rights of all persons who may be, or who may claim to be interested.

23. The lessee or licensee shall not be implicated, nor shall he be made a party in any contestation between the parties, respecting such right to such damages.

24. In no case in which the award shall find the amount of damages with sufficient certainity, shall such award be set aside because persons entitled to damages are not designated by name, or otherwise insufficiently designated, or by reason of error or irregularity as to the persons entitled, or on account of any matter of form, but the Supreme Court, or any Judge thereof, may rectify any error or informality, and may adopt such proceedings as may be deemed advisable for determining to whom the damages may be paid, or for otherwise carrying into effect the provisions and intent of this Act.

25. The payment of all damages awarded in accordance with the preceding

Sections shall be made by the lessee or licensee before entry on the lands included in his lease or license, in the manner hereinbefore provided.

26. All persons obtaining licenses and leases under this Act, and those deriving title under them, shall be answerable for all damages that may ensue from the falling in of lands, or for other injury which may have been sustained by the owners or tenants of such lands for which damages have not been awarded, by reason of the work of the parties obtaining licenses or leases or those under them or deriving title from or through them. Where an agreement cannot be made with the owner and tenant (if any) of the lands for any such subsequent damages, the holder of the lease may proceed to have them referred to arbitration in the manner hereinbefore provided for, and relating to the assessment of damages before entry.

27. All leases shall be for the term of twenty years, but the holder of any such lease may at any time surrender the same by notice in writing, signed by him and filed, together with his counterpart of the lease, in the office of the Surveyor-General. In case the counterpart of the lease has been lost or cannot be obtained, an affidavit to that effect made by the lessee shall be received in place of such counterpart, but nothing herein contained shall be construed to discharge him from liability in respect of any covenants in the lease or in respect of any act, matter or thing for which at the time of such surrender he was liable under the terms of such lease.

28. Such leases may be forfeited on failure to pay the stipulated Royalties other than those arising from gold or gold and silver bearing material, crushed or otherwise, treated at the licensed mill, or to keep employed annually on the demised premises the number of days' labor hereinafter specified, or to comply with any other of the provisions and stipulations in the leases contained.

29. The holder of any such mining lease shall not use any part of the lands so demised for any other purpose whatsoever, except such as shall be necessary for making roads, opening drains, erecting necessary works, buildings and all other purposes connected with the opening and working of such mines to the most advantage; and all necessary ways and water courses, whether expressly reserved in such leases or not, shall be considered as reserved to the Crown, and in respect to the making, alteration and use thereof, shall be subject to such Orders and Regulations as the Governor in Council may from time to time consider expedient; and all licensees and lessees and other persons employed about the mines on such demised premises shall use the lands in such manner as will be least injurious to the owners and occupants of such lands, or any other lands lying contiguous thereto.

30. The Governor-in-Council may, by Order and Regulations, prescribe the number of days' labor which any lessee shall be required to perform in respect of the areas which may be included in his lease, and may fix and determine the conditions of such labor and the evidence, whether by affidavit or otherwise, the lessee shall be required to furnish of the compliance on his part with such conditions, and may determine and prescribe the circumstances under which compliance with these conditions may be dispensed with.

31. When from any cause whatever, a leased mine shall become forfeited to the Crown, under the proceedings herein provided, all the right, title and interest which the holder of such forfeited lease had therein previous to such forfeiture shall become thereby vested in the Crown, and the lessee of any mine, may, during his lawful occupancy thereof, take down and remove any house, buildings, machines, or other erections built or placed by him thereon, notwithstanding that the same may be considered in law as attached to the freehold.

32. Any person occupying and staking off any areas, or taking possession of by staking off any areas from the lands not lying within any proclaimed gold district, not exceeding one hundred acres of Class No. 1, shall be entitled to a license or lease, as the case may be, in preference to any other applicant; every such person shall be entitled to one week, and thereafter to twenty-four hours' time for every fifteen miles distance of the mine so staked off from the office of the Surveyor-General at Fredericton, for making his application.

33. The Surveyor-General may issue licenses to search for gold and silver, to be called prospecting licenses, which shall be subject to the Rules prescribed by this Act, or by the Governor-in-Council under the authority of this Act.

34. Any such license may include an area not exceeding 100 acres of Class No. 1, in extent, so as the same shall be laid off in quadrilateral and rectangular figures, and shall not in length exceed double the breadth thereof.

35. Such license shall be in force for any period not exceeding twelve months from the date of application therefor, in the discretion of the Surveyor-General.

36. All applications for prospecting shall accurately define by metes and bounds the lands applied for, and shall be accompanied by a payment at the rate of fifty cents per area for every area up to ten areas in extent, and of twenty-five cents for every area in addition to that extent.

37. Before such license shall be issued the applicant shall enter into a bond with two sureties to the satisfaction of the Surveyor-General to recompense the proprietor of the soil, in the event of entry being made on private lands, for damages done to his lands, to make the returns at the expiration of the license, and of the renewal, and to pay the royalties hereinafter required.

38. If the proprietor of private lands so entered upon shall seek damages, he shall, before the end of three months after the expiration of the license, make his claim in writing against the holder of such license, declaring the particulars and amount of claim, and if the claim is not adjusted by agreement between the parties within one month after notice thereof, as aforesaid, it may be settled by arbitration in accordance with the provisions of Section 17 and subsequent Sections of this Act, but in such case either of the parties may give the required notice to appoint an arbitrator, and the Warden of a Municipality may appoint an arbitrator on behalf of either of such parties neglecting or refusing to make such appointment.

39. The holder of a prospecting license, who shall have fulfilled all the terms and conditions thereof, shall be entitled to a renewal thereof for a second period of not

exceeding twelve months, upon like terms and conditions, except that the price of the same space shall only be half that paid on the previous application.

40. Within the period for which license or renewed license is granted the party holding the same shall be entitled to select any area or areas comprised therein, of size and form described in this Act, and shall be entitled to a lease of areas selected, upon the terms imposed herein.

41. No lease nor any prospecting license or license to search shall authorize entry upon any buildings or the curtilage appertaining to any house, store, barn or building, or upon any garden, orchard, or ground reserved for ornament or under cultivation for growing crops, or enclosed, except with the consent of the occupier or by license of the Governor in Council authorizing such entry to be granted on special application setting forth the circumstances under which the same is applied for, and on such terms as the case may require.

42. On all leases of gold and gold and silver mines, or prospecting licenses to search for gold or silver, there shall be reserved a royalty of two and one-half per cent. upon the gross amount of gold and silver mined.

43. The Surveyor General may issue a license to any person or persons (to be called "licensed mill owners") to run or use any mill or machinery (to be called a "licensed mill,") for the purpose of the reduction or concentration of quartz or other gold or silver bearing material, or the obtaining of the gold and silver therefrom by crushing, stamping, amalgamating, or otherwise, and to retain out of such gold and silver a sufficient amount to pay the royalties prescribed by this Act, and no person or persons shall run or use such mill or machinery without such license therefor first had and obtained, except in the case of mills or machinery worked by hand.

44. Before any such license shall be granted, the party applying therefor shall enter into a bond to Her Majesty in the penalty of two thousand dollars, to comply with the requirements of this Act in respect of licensed mill owners.

45. Every licensed mill owner shall keep on the demised premises a book or books of account, to be supplied by the Surveyor General, which shall at all times be open to inspection and examination of the Surveyor General or deputy, or any other person thereto authorized by the Surveyor General, in which book or books shall be entered a clear and distinct statement of all quartz or other material reduced, concentrated, crushed, stamped or amalgamated at such licensed mill, and the following particulars in respect of the same :—

I. The name of the owner or owners of each distinct parcel or lot of quartz or other material crushed.

II. The weight of each such parcel or lot.

III. The date of the crushing the same.

IV. The actual yield in weight of gold, or gold and silver, from each parcel or lot.

V. The royalty thereon, calculated at two and one-half per cent.

VI. The number of the lease of the mine or area (so far as the same is known or can be ascertained), from which each such parcel or lot was raised.

And if he fail to keep such book or books of account, his license may be revoked.

46. Each licensed mill owner shall pay, or cause to be paid, in money, in weekly or other payments, as the Surveyor-General shall order, to the Surveyor-General or his deputy, a royalty of two and one-half per cent. on the gross amount of gold obtained by amalgamation or otherwise in the mill of such licensed mill owner, at the rate of nineteen dollars an ounce troy for smelted gold, and eighteen dollars an ounce troy for unsmelted gold, and of two and one-half per cent. on the silver at the rate of one dollar per ounce troy.

47. In case any licensed mill owner shall fail to pay such royalty in the mode or at the times prescribed by or in accordance with this Act, he shall be liable to an action at the suit of the Surveyor-General for money had and received to the use of such Surveyor-General, and such action may be brought according to the amount of the claim, in the same Court which would have jurisdiction in case the amount claimed were an ordinary private debt, and his license may be revoked.

48. Every licensed mill owner shall file in the Office of the Surveyor-General on or before the tenth day of each month, a return, being a copy of the entries in such book or books of account, for the last preceding month as prescribed by the 45th Section, which return shall be verified by the affidavit of the person principally employed in keeping such account; and on failure to make such return, or to verify the same as aforesaid, the license of any mill owner may be revoked.

49. Any owner or part owner of any mill or machinery for the crushing or reduction of quartz, or for the obtaining of gold or gold and silver therefrom (other than mills or machinery worked by hand), which shall be engaged, used or employed for the crushing or reduction of quartz or other gold or gold and silver bearing material, or the obtaining of gold or gold and silver therefrom, without a license therefor first had and obtained, as prescribed by this Act; and any person engaged as agent, servant, workman, clerk or otherwise in any such mill, shall forfeit and pay the sum of four hundred dollars for each such offence; and for every day in which such offence shall be committed, the same shall be considered a new offence.

50. When the account books prescribed by this Act, or any of the accounts hereby required shall be fraudulently or falsely kept, or the affidavits hereby prescribed or any of them, shall be false or fraudulent, the license to the mill in respect of which the offence has been committed may be revoked and the "licensed mill owner" shall be liable for each offence to a penalty of not more than two thousand dollars, to be recovered in the Supreme Court in the name of the Surveyor-General.

51. In case a "licensed mill owner" is not the owner of the mill or machinery so licensed, the owner thereof may apply to the Surveyor-General to have said license revoked, and upon proof having first been given that the "licensed mill owner" has received reasonable notice that such application would be made, with the date thereof, and that the applicant is the legal owner of said mill and machinery, said license may be revoked.

52. The Surveyor-General shall have authority to enquire into any alleged violation of the Sections whereby such mill license may be revoked, and if in his judgment such violation has been committed, he may revoke the same, but his judgment shall be subject on appeal to a revision of a Judge of the Supreme Court at Chambers, who shall make such Order in respect to the same as shall be agreeable to law and justice, and if he think fit, may order any question of fact to be tried by a jury.

53. Every licensed mill owner who shall, in all respects, have complied with this Act, shall be entitled to receive from the Surveyor-General at the end or expiration of every three months from the date of his license, a sum equal to five per cent. upon the amount paid over by him as royalty during such period; but no such percentage shall be paid in the case of free leases.

54. A licensed mill owner may at any time surrender his license by delivering the same into the Office of the Surveyor-General with a written surrender endorsed thereon; but no such surrender shall take effect till after the lapse of ten days from the filing at the Office of the Surveyor-General of a notice in writing of the intention of such mill owner to surrender the same.

55. Upon such surrender taking effect as aforesaid, such mill shall cease to be a "licensed mill" until again licensed under the provisions of this Act.

56. The licensed mill owner so surrendering his license, and his sureties, shall remain liable under their bond for all obligations accruing thereunder up to the time when the surrender takes effect as aforesaid, but shall not be liable for obligations accruing thereafter.

Requirements of Lessees and Licensees.

57. Lessees of mines shall be bound to make to the Crown Land Office within ten days after the first days of January, April, July and October in each year, true and correct returns to the best of their knowledge and belief, on forms to be supplied by the department, in which shall be comprised the following particulars:—

I. The number of days' labor performed on the demised premises during the preceding quarter;

II. The number of tons of quartz or other gold or gold and silver bearing material raised from the demised premises during the preceding quarter;

III. The person or persons to whom the same has been sold or disposed of, and the different lots or parcels in which the same has been sold or disposed of, with the dates;

IV. The weight of all quartz or other gold or gold and silver bearing material, sent by him during the quarter to any licensed mill, and the name and description of the mill to which the same has been sent; and when the same has been sent; and kept in distinct parcels, the weight of each separate parcel;

V. The yield of each separate parcel or lot, as returned and allotted by the mill owner, with the date of allotment;

VI. The total quantity of gold or silver obtained from the mine in any manner during the quarter, distinguishing that resulting from the quartz or other gold or gold and silver bearing material crushed at licensed mills from the gold or gold and silver otherwise obtained.

And such returns will be verified on oath.

58. The lessee and licensee of each mine shall be liable for royalty upon all gold or gold and silver obtained from his mine in any other way than from quartz or other gold or gold and silver bearing material crushed by licensed mills; but he shall be exempt from any claim in respect of gold or gold and silver obtained from quartz or other gold or gold and silver bearing material so crushed, the liability of the mill owner for such royalty being substituted for that of the lessee.

59. When any parcel of quartz or other gold or gold and silver bearing material from a free mine shall have been crushed at a licensed mill, the owner of the quartz or other gold or gold and silver bearing material, on proof of the facts to the satisfaction of the Surveyor-General, shall be entitled to receive from the Surveyor-General the amount deducted by the licensed mill owner and paid as royalty under the provisions of this Act.

60. In case any holder of a lease granted under this Act shall fail to make payment of any royalty accruing under the terms of section 58 within ten days after the time prescribed by this Act for making his return to the Surveyor-General, he shall be liable to an action at the suit of the Surveyor-General, as for money had and received to his use for the value of the royalty so accruing.

61. Such action may be brought, according to the amount claimed, before the same Court which would have jurisdiction in case the amount claimed were an ordinary private debt; and on a change in the Office of the Surveyor-General, actions prosecuted by him shall be continued and prosecuted by his successor in such manner as the Court shall direct, and the Surveyor-General may prosecute in his own name as for money had and received to his use, although the same shall have become due to a previous Surveyor-General.

62. In any case of liability to forfeiture of any gold, or gold and silver mining leases, for non-compliance by the lessee with the terms, stipulations and conditions therein contained, or by this Act required, the Surveyor-General shall cause a notice in the form in Schedule (E) to be personally served upon the lessee (or some or one of the lessees, where more that one are included in the lease), or his agent or person principally employed on the premises, or shall cause such notice to be posted upon the premises leased, where no person can be found in the gold district where such premises lie, or (in case the leased premises are not within a proclaimed gold district), in the Parish, or in one of the parishes in which such premises are situated, upon whom to make service thereof, informing him of such charge, and appointing a time (not less than thirty days after the service or posting of such notice) and place for the investigation of the same; and a duplicate of such notice shall also be posted up in the Office of the Crown Land Department at least thirty days next previous to the

time so appointed ; and such duplicate shall be kept so posted for at least thirty days after the investigation and decision of the case, with the decision and the date of such decision briefly noted thereon.

63. At the time and place appointed, the Surveyor-General shall proceed to investigate such case, and the service or posting of the notice shall be proved, either orally at the investigation or by affidavit. Upon proof of such notice, and upon hearing the evidence relating to the case, which shall be taken in writing and signed by the witness, the Surveyor-General, on being satisfied of the non-fulfilment of the conditions of the lease or of the provisions of this Act, shall give judgment forfeiting the lease and revesting the premises in the Corwn ; and such judgment shall be in the form of Schedule (F) and shall be signed by the Surveyor-General.

64. From the judgment of the Surveyor-General, the party interested may appeal to the Judge of the Supreme Court at Chambers, provided that notice of such appeal be given to the Surveyor-General within thirty days from the date of his decision ; provided, also, that the party appealing shall, on applying for such appeal, make and file with the Surveyor-General an affidavit that he is dissatisfied with such judgment, and that he verily believes the lease has not been forfeited, and that the conditions in respect of which forfeiture has been declared have really and truly been performed and fulfilled, and shall within the time limited for appeal enter into a bond with two sufficient sureties in the penalty of fifty dollars to enter and prosecute his appeal according to the provisions hereof, and pay all costs which may be adjudged against him by the Court of Appeal.

65. On such appeal being perfected, the Surveyor-General shall transmit to the Clerk of the Pleas at Fredericton the notes of testimony taken before him, and the Judge at Chambers shall confirm or set aside the judgment or make such Order thereon as is agreeable to justice and in conformity with law.

66. If the Judge shall consider that the case involves questions of controverted fact on which he is of opinion that the verdict of a jury should pass, he may make an Order for the trial of the questions of fact in the County where the land lies, in which case all the papers shall be transmitted to the Clerk of the Circuits of that County ; and the cause shall come on for trial in its place in the same way as ordinary appeals ordered to be tried by a jury.

67. Upon the finding of a jury on the fact, the Judge shall pronounce judgment on the whole case. So soon as judgment declaring forfeiture of the lease shall be given either by the Surveyor-General without appeal, or by the Court of Appeal when the Surueyor-General's judgment is appealed from, the lessee, and all persons holding under him, shall thereafter cease to have any interest in the mine leased, and a minute of the judgment declaring forfeiture shall be registered in the Crown Land Office on the expiration of the time limited for appeal, in the same manner as prescribed by this Act for leases and transfers ; and the leased premises shall then be open to be leased to any other applicant in the same way as if no lease thereof had ever passed ; and pending the proceedings between the delivery of the first judgment and any subsequent

judgment upon appeal therefrom, such lessee shall suspend all mining operations on the area alleged to be forfeited; otherwise he may, at the discretion of the Surveyor-General, be liable to be treated as a trespasser as hereinafter directed.

68. The Surveyor-General shall have power to declare forfeited all leases granted for mining gold or gold and silver that are liable to forfeiture that have not been worked or have only been colorably worked for the space of five years next preceding, notice of such intended declaration first having been advertised for three weeks in the Royal Gazette, and in a newspaper, if any there be, in the County in which the areas contained in such lease or leases lie, said advertisement to show the names of the lessees, the number of the leases, and the date at which such declaration will be made. On the day so named in such notice the Surveyor-General shall hear any party interested in any such lease, and his judgment shall be final, unless appealed from within thirty days thereafter, such appeal to be made and perfected as provided in Section 64 of this Act.

69. No applications for leases or prospecting licenses for forfeited areas shall be received until the time limited for appeal has expired, and all appeals are finally determined.

70. Whenever any areas which are or shall be under lease for gold mining or for gold and silver mining shall be forfeited under the provisions of this Act, and whenever after the investigation by the Surveyor-General he is unable to decide who was the first applicant for a lease of said areas, the said Surveyor-General may, after public notice to be given in such manner and for such length of time as may seem to him to be proper, cause the right to the lease of the said areas to be sold at auction, in whole or in part, as he shall deem best for the public interest, and the person or persons who shall offer and pay the highest premium therefor at such sale shall be entitled to receive from the Surveyor-General a lease or leases of such area or areas as he or they may have purchased as aforesaid, in preference to any other applicant or applicants.

Unlawful Entry and Working.

71. The Surveyor-General shall have power by Warrant under his hand and seal, addressed to the sheriff or a constable of the County wherein the gold district lies, to cause any person unlawfully in possession of a mine so judged to be forfeited, to be removed from the possession and occupation thereof, and upon receipt of such Warrant, the sheriff or constable to whom it is directed shall immediately execute the same.

72. Any person found mining in any land belonging to the Crown or to a private proprietor, the minerals in which belong to the Crown, or entering thereon for the purpose of mining, shall be liable to a penalty for each offence of not less than ten dollars nor more than fifty dollars; but this section shall not extend to parties prospecting or searching for mines.

73. Parties violating the provisions of the preceding Section shall be considered guilty of a distinct offence for every day they shall unlawfully mine.

74. On complaint in writing made to any Justice of the Peace of the County in respect of such unlawful mining or entry to mine, the Justice shall issue his Warrant to apprehend the offender and bring him before the Justice to answer the complaint, such Justice shall thereupon forthwith enter upon the investigation of the complaint; and in case he shall find the party guilty impose such fines or penalties as the party may have incurred under the provisions of this Act. In case the defendant requires time for the production of witnesses for the defence, the Justice shall adjourn the investigation for any period not exceeding six days, on being satisfied by affidavit that such time is required for that purpose; and in such case the defendant shall be committed to jail, unless he gives security to the satisfaction of the Justice to appear at the time and place appointed for such adjourned investigation.

75. The decision of such Justice shall be subject to appeal, as in ordinary cases; but before such appeal shall be allowed, the appellant shall give a Bond, with sufficient sureties, to the satisfaction of the Clerk of the Peace of the County where the lands lie, in double the amount of the penalty and costs, to appear in the Supreme or County Court and obey the judgment thereof, and pay such costs as the Court may award.

76. Gold or gold and silver, in quartz or otherwise, unlawfully mined on the property of any lessee of the Crown, shall be considered in law the personal property of the owner of the mine and a Search Warrant may be issued for the same by any Justice of the Peace for the County, in the same manner as for stolen goods; and upon the recovery of any gold or gold and silver under such Warrant, the Justice shall make such Order for the restoration thereof to the proper owner as he shall consider right.

77. Nothing in this Act contained shall prevent Her Majesty from having or using any other remedy now available to recover possession of any mine forfeited from causes cognizable before the Surveyor-General, or from any other causes from which the same may be liable to forfeiture.

78. Any party aggrieved by a decision of the Surveyor-General respecting any application for a prospecting license or a lease of a gold area or a gold and silver area, or a license to search, or a license to work, of any area other than a gold or gold and silver area, may appeal from such decision to the Supreme Court at the next term or the following term by leave of the Court.

79. Any party desiring to appeal from such decision shall give notice in writing to the Surveyor-General of his intention to appeal within twenty days after such decision, or within twenty days after such decision being made known to the party dissatisfied therewith, but always within one year from the date of such decision; and shall make and file with such notice an affidavit that he is dissatisfied with such judgment or decision, and that he verily believes he is entitled to the license or lease applied for, and shall also set forth therein the grounds of his appeal, and shall within ten days thereafter enter into a bond with two sureties in the penalty of two hundred dollars to enter and prosecute his appeal according to the provisions of this Act, and pay all costs which may be adjudged against him by the Court of Appeal;

and thereupon the Surveyor-General shall file such notice and affidavit, together with all papers and documents connected with such appeal with the Clerk of the Pleas at Fredericton, on or before the first day of such term.

80. The provisions of the foregoing Sections from 9 to 79, both included, shall apply exclusively to gold and to gold and silver mining, except where any such Sections are expressly mentiond to apply to mines other than gold and gold and silver mines by the subsequent Sections of this Act.

Of Mines other than Gold Mines.

LICENSES TO SEARCH AND WORK.

81. The Surveyor-General may upon application grant licenses to search, to be in force for one year from the date of application therefor, to enter upon any lands in this Province not already applied for or under license or lease for mining purposes, and to dig and explore for such minerals other than gold or gold and silver as the Crown holds for the benefit of the Province, a bond being first given to the Surveyor General with sufficient sureties to his satisfaction that in the event of entry being made upon private lands, recompense shall be made for damages in the manner hereinafter provided.

82. No such application shall be valid unless accompanied by a payment of twenty dollars, and the license to search may cover any single tract of ground not exceeding five square miles in extent, but not more than two and a half miles in length.

83. Upon such application and payment being made, the Surveyor-General, where necessary, shall cause the lands applied for to be surveyed and laid off, and a full description thereof shall be embodied in the license to search, but no such license shall authorize entry upon any lands which in accordance with Section 41 of this Act are forbidden to be entered upon except as in that Section excepted.

84. The cost of such survey shall be defrayed by the licensees or lessees, and the search for minerals under such licenses shall be made free of all expense to the Government ; and the holder of the license shall, within the time that the same shall be in force, and with all convenient speed, make a full and correct report of the results of his exploration to the Surveyor-General.

85. The said license to search may be renewed for a further period of twelve months, on application therefor to the Surveyor-General, setting forth the special circumstances of the case, not less than thirty days before the expiration thereof, and on payment of the further sum of twenty dollars ; subject, however, to the approval of the Governor-in-Council, upon consideration of the special circumstances submitted.

86. When a license to search for mines, other than gold and silver, has been applied for, it shall be lawful for the Surveyor-General to receive applications for other licenses to search, (called second rights) over the same area ; provided that he shall receive no more applications than there are areas of one square mile each contained

within the area so first applied for, and on the expiration of the license to search granted under the first application, or on the selection of the one square mile thereunder, the license to search can be granted under the second application, and so on, until the whole area is disposed of.

87. If the proprietor of private land entered under such license shall seek damages, the proceedings for ascertaining the amount of such damages and making payment of the same, shall be the same as provided for by this Act in the case of prospecting licenses for gold.

88. The holder of a license to search may, at any time before the expiration thereof, select from the land covered by such license an area of one square mile for the purpose of working the mines and minerals therein, and may make an application in writing to the Surveyor-General for a license to work the same, which application shall be accompanied by a payment of fifty dollars.

89. Upon such application and payment being made, the Surveyor-General shall cause the porton so selected to be surveyed and laid off, and the applicant shall defray the expense of such survey, which said portion shall be in one block, the length of which shall not exceed two and a half miles; and the person making such survey shall make a full and accurate plan thereof, and transmit the same to the Surveyor-General.

90. All the provisions herein contained relative to settlement by agreement or arbitration with the owner of the soil, where the same is private land, for damages done to his land, and to payment therefor as set forth in Sections 17 to 25 inclusive, and to the occupation of such lands as set forth in Section 29, and to the exemption of certain descriptions thereof from liability to be entered as specified in Section 41, and to the vesting of interests forfeited under this Act as specified in Section 31, shall be applicable and in force in the case of mines other than gold or gold and silver mines, equally as in gold or gold and silver mines.

91. Upon complying with the requirements of this Act, the applicant shall be entitled to a license to work the one square mile applied for; the bond given for the license to search, under which the license to work was obtained, remaining in full force and virtue.

92. Every license to work shall be for a term of two years from the date of application, and shall be extended to three years upon the additional payment by the holder of the license of one half of the amount originally paid for such license; and within such term the holder of the license shall commence effective and not colorable mining operations, and shall continue the same in good faith until the termination of such term; and in case the same person shall hold licenses to work over several adjoining areas, and shall have commenced effective mining operations on one of these areas, the Surveyor-General may, if it be shown to his satisfaction that the area so opened is by reason of a deficiency of mineral or other natural cause insufficient for effective working, allow one of the adjoining areas to be combined to it, and the two so combined to be considered as one area with respect to the commencement and continuation of effective mining operations.

93. Any party may apply for a license to work without having previously obtained or applied for a license to search, and in such case his application shall embody a description of the area applied for, and upon complying with all the antecedent conditions hereinbefore set forth, except those which relate solely to licenses to search, and a bond being given to the Surveyor-General as for a license to search, he shall be entitled to such license to work.

94. The holder of a license to work, or those representing him, having complied with the terms of the preceding Section, shall on or before the termination of his license be entitled to a lease of the premises described therein, which lease shall contain all the ordinary provisions of mining leases, with such conditions as the Govornor-in-Council may think necessary to ensure the effective and safe working of the mines on such premises.

Leases.

95. No lease shall be issued unless it shall have been shown to the satisfaction of the Surveyor-General that the conditions relative to commencement and continuance of effective mining operations in the license to work have been fully complied with.

96. Leases of mines, other than gold mines, or gold and silver mines, granted under the provisions of this Act, shall be executed by the Surveyor-General and the lessee in the same manner as provided in Section 16 of this Act for leases of gold mines.

(*a.*) Leases of mines, other than gold, or gold and silver mines, shall be for the term of twenty years, and shall contain all the conditions, provisions, provisos, and reservations usually contained in such leases, or that may be required for the safe and proper working of the mines, or that may be required by an Order of the Governor-in-Council, or by this Act or any Act hereafter passed by the Legislature of this Province; and such leases may be renewed on the same terms and conditions as are hereafter provided, but such renewals shall not extend or be construed to extend to a period beyond eighty years from the date of the lease;

(*b.*) In the granting of leases hereafter, there shall be reserved as a barrier, a space of ten yards in width, running all around the area leased, which barrier shall not be opened or mined, except by the consent of the owner of the adjoining area, or by the Order of the Governor-in-Council; and in case of a mine in lands covered with water, the barrier of reservation as above, shall be twenty-five yards in width, and shall not be opened or mined, unless by the consent of the owner of the adjoining area, or by the order of the Governor-in-Council;

(*c.*) A lessee of a coal mine granted under this Act or any Act passed by the Legislature of this Province, shall not at any time during the term of his lease, or any renewal thereof, assign, transfer, set over or otherwise part with the premises granted or any part thereof, for such term or any portion thereof, to any person whatsoever without the license, consent or approbation of the

Governor-in-Council first had and obtained for the purpose, and signified under the hand and seal of the Surveyor-General ;

(*d.*) The ratification by the Governor-in-Council signified under the hand and seal of the Surveyor-General shall be equivalent in all cases to the license, consent and approbation of the Governor-in-Council first had and obtained for the purpose under sub-Section (*c*), and any assignment or transfer which has been so ratified, or may hereafter be ratified, is and shall be of the same force and effect as if such license and consent and approbation had been given before such transfer ;

(*e.*) Any lease may at any time be surrendered by the lessee in the same manner and upon terms similar to those hereinbefore prescribed for the surrender of a gold or gold and silver mining lease ;

97. The Governor-in-Council may by special Order authorize the granting a lease of a larger area than one square mile, if on investigation of the special circumstances of the case it is shown that by reason of a deficiency of mineral or other natural causes an area of one square mile was insufficient to make a profitable mine, (but in no case to exceed two square miles), and in such case may impose such further conditions, not at variance with the spirit of this Act, as may be deemed just, and in like manner and on the same conditions two leases of one square mile each may be held and treated as one lease.

98. All leases of copper and lead mines which have been or may be issued under this Act or any Act passed by the Legislature of this Province, shall be held and construed to convey to the lessee or lessees therein named, and his or their assigns, all ores and metals held in composition, associated with or contained in the copper or lead ores therein conveyed, and the same shall be subject to the same Royalties as are hereinafter provided for such ores and metals.

Corner Posts.

99. All lessees of mining areas other than gold or gold and silver mining areas shall, within six months after the issuing of such leases, place or cause to be placed at each and every corner of the areas contained in their respective leases, a post or monument of stone or other durable material, of such size, nature and character as the Surveyor-General may determine.

(*a.*) Each post or monument shall have distinguishing letters or a suitable inscription cut or marked thereon, designating the corner where posted ; provided always, that in cases of areas, any corners of which are covered with water, or where the placing of such posts or monuments at such corners would cause private or public inconvenience, it shall be lawful and requisite for the lessees, with the consent of the Surveyor-General to place such posts or monuments on the land adjoining such corners, in such position as shall be approved by the Surveyor-General.

(*b.*) The area of each lease shall be defined as herein required, according to the priority of the granting of such lease, and the lessee of the area first leased

shall give to the lessees of the adjoining areas or their agents, a written notice that on a day named, to be not less than ten days after the service of such notice, a survey will be made for the purpose of establishing the boundaries of the area and placing the posts or monuments required by this Act. Such survey shall be made by a sworn surveyor, whose appointment shall be sanctioned by the Surveyor-General, and such surveyor shall make a return of such survey with an accurate plan thereof to the Surveyor-General.

(*c.*) If within forty days after such return has been made by the surveyor to the Surveyor-General, no complaint be made to the Surveyor-General that the boundary lines of the area as so defined are not in accordance with the lines as originally defined, the boundary lines of the areas as so defined by the surveyor shall as between the lessees be held to be the true and correct boundary lines of the area ;

(*d.*) If within the year above mentioned, from disagreement or otherwise, such boundary lines are not established and defined as required by this Act, the Surveyor-General may cause a survey to be made and the area to be defined as hereinbefore required, and the boundaries so established shall be held to be finally determined ;

(*e.*) The expenses of all surveys and of the placing or erection of all such posts or monuments as required by this Act shall be paid by the lessees of the areas defined ; and where such surveys are made and such posts or monuments are established by virtue of the next preceding Section, such expenses may be sued for and recovered from the lessees in the name of the Surveyor-General as an ordinary debt of like amount ;

(*f.*) Each monument or post, as often as it shall be destroyed or removed, shall be replaced by the lessee at his own expense within one month ; and the proceedings therefor shall be the same as hereinbefore required for the original definition of the area ;

(*g.*) Where the lessee is not the owner of the land included in the area leased, and on which the boundary posts or monuments are required to be placed, he shall be at liberty to set them up on such land, but shall pay the proprietor damage caused thereby ;

(*h.*) If the proprietor and the lessee cannot agree on the amount of such damages, the lessee may call on any three disinterested Justices of the Peace for the County in which the area is, to appraise the same. The Justices so called upon shall forthwith appraise such damages, and their award, or that of any two of them, shall be final ;

(*i.*) Each of such Justices of the Peace shall be entitled to one dollar a day for the time actually and necessarily employed in making such appraisement ; besides travelling fees at the rate of two cents per mile, to be computed from the residence of the Justice to the place where the appraisement is made, such pay and travelling fees to be paid by the lessee ;

(*j.*) Any lessee neglecting to set up such post or monument or to renew or replace the same when removed or destroyed, as required by this Act, shall

forfeit a sum not exceeding one hundred dollars for every such post or monument he has neglected to set up or replace ;

(*k.*) Any person wilfully destroying, defacing, injuring or removing any such post or monument, or attempting so to do, shall forfeit a sum not exceeding one hundred dollars for each offence ;

(*l.*) Any penalty under this Act shall be recovered in the name of the Surveyor General, before two Justices of the Peace for the County wherein the offence is committed, in the same manner as an ordinary debt.

Quarterly Returns.

100. On or before the 10th day of each of the months of January, April, July and October in each and every year, the owner, agent or manager of every mine, (other than a gold or gold and silver mine) leased from the Crown, shall send to the Surveyor-General a correct return, specifying the quantity of coal, iron ore or other mineral wrought or gotten in such mine, the probable use and destination of the same, and the amount of Royalty which has accrued upon such materal extracted during the last previous quarter ; and on or before the last days of January, April, July and October in each year, a correct return specifying the number of days' labor and the number of persons ordinarily employed in or about such mine below ground and above ground, and the different classes of the persons so employed, and the costs and description of all the shafts, quarries, slopes, levels, planes, works, machinery, tramways and railways, sunk, driven, opened or constructed during the preceding quarter. Such return shall be sworn to by the agent or manager and by one or more credible persons principally employed in or about the working and management of such mine.

Royalties.

101. All ores and minerals (other than gold or gold and silver) mined, wrought or gotten under authority of licenses or leases granted under the provisions of this Act or of any Act heretofore passed by the Legislature of this Province, shall be subject to the following Royalties to the Crown, for the use of the Province, that is to say :—

COAL—(1) Ten cents on every ton of two thousand two hundred and forty pounds of coal sold or removed from the mines or used in the manufacture of coke or other form of manufactured fuel.

(2.) The words "removed from the mines" in the preceding Section shall not be held to be applied to coal used for domestic purposes by the workmen employed in and about each mine ; nor to coal used in mining operations in and about the mine from which such coal has been gotten ; but coal so used shall not be liable to pay Royalty.

(3.) Nothing in this Act shall compel lessees of coal mines in this Province to pay Royalties on coal other than on the terms prescribed in the leases now outstanding until said leases expire ; but any such lessee may take advantage of the provisions of this Act from the date of its passage, if so disposed.

COPPER—Four cents upon every unit, that is, upon every one per cent. of copper contained in each and every ton of two thousand three hundred and fifty-two pounds of copper ore sold or smelted.

LEAD.—Two cents upon every unit, that is, upon every one per cent. of lead contained in each and every ton of two thousand two hundred and forty pounds of lead ore sold or smelted.

IRON.—Five cents on every ton of two thousand two hundred and forty pounds of ore sold or smelted.

TIN AND PPRECIOUS STONES.—Five per cent. on their value.

(4.) All leases of coal mines issued after the passing of this Act shall contain a provision that the Royalties may be increased, diminished or otherwise changed by the Legislature.

(5.) From and after the passing of this Act, all Royalties due to the Province shall bear interest at the rate of five per cent. per annum.

Renewals.

102. The lessees of mines other than gold or gold and silver mines in this Province, their executors, administrators and assigns, and mining companies, shall, upon giving notice in writing to the Surveyor-General at least six months previous to the expiration of their leases respectively, of their intention to renew such leases respectively, for a further period of twenty years from the expiration thereof, be entitled to a renewal thereof for such extended term, upon the same terms, conditions and covenants as contained in the original lease, or as prescribed by this Act, or by any Act that may be passed by the Legislature of this Province; and in like manner upon giving a like notice before the expiration of such renewal term to a second renewal and extension of term of twenty years from and after the expiration of such renewal term, and in like manner upon giving like notice before the expiration of such second renewal term, to a third renewal and extension of twenty years from and after the expiration of such second renewal term, provided that at the time of giving such notices and the expiration of such terms respectively, the said lessees, their executors, administrators and assigns, are and shall continue to be *bona fide* working the areas comprised within their respective leases, and complying with the terms, covenants and stipulations in their respective leases contained, within the true intent and meaning of Section 104 of this Act; and provided that in no case shall such renewal or renewals extend, or be construed to extend to a period beyond eighty years from the date of the original lease, but the renewed lease shall not include in respect of each mine worked a larger area than five square miles.

(*a.*) In case the workings of a colliery extend under ground covered by two or more leases, the Surveyor-General may renew such leases on it being satisfactorily proven to him that the ground covered by said leases is necessary to the satisfactory and profitable working of said mine;

(*b.*) In case the workings of one area have been extended into an adjoining area, even if there is now no coal being mined in the first area, both leases may be renewed in whole or in part, as may be decided by the Surveyor-General on the special circumstances of the case;

(*c.*) In the case of works being prosecuted outside of an area for the purpose of mining the coal in said area, the lease of said area may be renewed on it being satisfactorily shown to the Surveyor-General that said works are being continuously and effectively prosecuted ;

(*d.*) In the case of an unworked area adjoining a mine being worked, the works of which would be a natural outlet of said unworked area, and that it was necessary to the profitable working of the mine, the lease of said area may be renewed on it being shown to the Surveyor-General that said workings would be a natural outlet for the product of said unworked area, and that said unworked area was necessary to the profitable working of the mine.

Surrender.

103. The holder of any lease may at any time surrender the same by notice in writing, signed by him and filed together with his counterpart of lease in the Crown Land Office ; but in case the counterpart of the lease has been lost or cannot be obtained, an affidavit to that effect made by the lessee will be received in place of such counterpart ; but nothing herein contained shall be construed to discharge him from liability in respect of any covenants in the lease for, or in respect of any act, matter or thing for which at the date of such surrender he was liable under the terms of such lease.

Forfeiture.

104. Where it shall be represented to or come to the knowledge of the Surveyor-General, that any mines or minerals claimed under a lease from the Crown, or under a lease granted pursuant to this Act, have been abandoned for the space of one year, have not been effectively and continuously worked, or have been worked only colorably, or to prevent a forfeiture under the terms of such lease, the Surveyor-General shall cause a notice, to the effect of the form of Schedule (E), to be personally served upon the lessee, or some or one of the lessees, where more than one of them are included in the same lease, or his or their agent or person principally employed on the premises, or shall cause such notice to be posted upon the premises leased, where no person can be found upon whom to make service thereof, informing him of such charge, and appointing a time to be not less than twelve months after the service or posting up of such notice, and also a place for the investigation thereof. At the time and place appointed, the Surveyor-General shall proceed to investigate such case and decide thereon, and shall thereupon give notice of his decision to the lessee or his agent, by causing such notice to be served or posted up, as in this Section above directed ; and if within such term of twelve months the lessee or his assignee shall and do commence and prosecute effective mining operations to the satisfaction of the Surveyor-General, according to the true intent and meaning of the terms, covenants and stipulations in the lease contained, and of this Section, such mining areas so leased shall not be forfeited.

105. No mere colorable working shall prevent a forfeiture ; and the Surveyor-General shall have power to examine witnesses on oath, and receive all other necessary

testimony in respect of the mining operations; and if the decision shall be, that such operations are not effective, but merely colorable, the mine or mines shall be declared forfeited, and notice of the decision shall be given in accordance with the provisions in Section 104.

106. The decision of such Surveyor-General shall be in the form in Schedule (F), and the lessee or assignee may appeal to the Supreme Court or a Judge thereof at Chambers against such decision; any party desiring to appeal from such decision shall give notice in writing to the Surveyor-General of his intention to appeal within twenty days after such decision, or within twenty days after such decision being made known to the party dissatisfied therewith, but always within one year from the date of such decision, and shall make and file with such notice an affidavit that he is dissatisfied with such judgment or decision, and that he verily believes the lease should not have been forfeited, and shall also set forth therein the grounds of his appeal, and shall within ten days thereafter enter into a bond with two sureties, in the penalty of six hundred dollars, to enter and prosecute his appeal according to the provisions of this Act, and pay all costs which may be adjudged against him by the Court of Appeal; and thereupon the Surveyor-General shall file such notice and affidavit, together with all papers and documents connected with such appeal, with the Clerk of the Pleas at Fredericton, on or before the first day of such term.

107. Where notices are to be posted on the premises under this Act, or any of the Sections thereof, and the areas in respect of which the notices are to be posted shall be covered with water, the notices may be posted on the land as near as conveniently may be to the areas so covered with water.

108. Whenever a lease of a mine other than of gold or gold and silver shall become forfeited under this Act, the Governor-in-Council may direct such additional terms to those prescribed thereby on which such mine shall be relet or regranted by the Surveyor-General.

109. There shall be kept in the Office of the Surveyor-General maps of the different mining districts in the Province, on which shall be delineated as accurately as may be, all the areas under license or lease as mines other than gold or gold and silver mines, and also a book or books of registry in which shall be registered all the licenses and leases of such areas, and such maps and book or books shall be open to the inspection of the public.

110. The provisions of the foregoing Sections from 81 to 109, both inclusive, shall apply only to mines other than gold or gold and silver mines.

Miscellaneous.

111. The Surveyor-General may lease Crown Lands, being within the limits of any proclaimed gold district, or comprising any tract within which the mines and minerals other than gold or gold and silver are under license or lease, for purposes other than mining, reserving always the right of present or future lessees of mining areas therein, and subject to such other reservations, and for such time and upon such

conditions as the Governor-in-Council may direct; and may also sell any timber not previously disposed of growing or being upon any part of the Crown domain included within such gold district, or other tract under license or lease for mines or minerals other than gold or gold and silver, upon such terms as the Governor-in-Council shall authorize and direct.

112. No lease granted under the provisions of this Act shall be void against any subsequent purchaser, mortgagee for valuable consideration, or judgment creditor, by reason of such lease not having been previously registered in accordance with the provisions of the Chapter of the Consolidated Statutes, of the "Registry of Deeds and Wills."

113. The Governor-in-Council may at any time by proclamation as in this Act provided, declare a gold district, which shall contain an area or areas under license or lease, for the purpose of searching for or working mines and minerals other than gold or gold and silver; and in such case the areas under such license or lease shall, notwithstanding such license or lease, become subject to all the provisions of this Act which relate specially to all gold districts and gold and silver mines, under such regulations as the Governor-in-Council shall make.

114. The Governor-in-Council is authorized to make rules and regulations relative to gold districts and gold or gold and silver mines, and mines other than gold or gold and silver mines and licensing and leasing the same, and to the pumping, draining, ventilation, working, management, care, possession and disposal of the same, and to all other matters connected with the same; and to make such rules and regulations general or applicable only to particular districts or localities, as may be deemed best; and all such rules and regulations when published in the *Royal Gazette* shall have the force of law until annulled by the Governor-in-Council; provided such rules and regulations shall not be repugnant to the laws of the Province or the Provisions of this Act; and such rules and regulations may in like manner be altered, modified or cancelled as circumstances shall require.

115. The forms to be used under this Act shall be prescribed by the Governor-in-Council from time to time.

116. Any lessee or licensee of mining areas lying beneath the waters of the sea may make, or cause to be made, tunnels from the adjacent land above high water mark under the water to such mining areas, doing as little damage as possible to the owners or lessees of the land in which such tunnel shall be made, and the intervening land covered with water, and the mines therein contained.

117. The damages of such tunnelling shall be agreed for, determined, settled and paid, as directed in this Act from Section 17 to Section 27 inclusive, and also Section 90.

118. If the lessee or licensee of such mining areas cannot agree with the owner or owners of the land, or the lessee or licensee of the mining areas through which it is necessary to drive such tunnel, the Surveyor-General, subject to the approval of the Governor-in-Council, shall determine where such tunnels shall be made or commenced,

the number of such tunnels, the size, width and depth thereof, the quantity of land to be taken and occupied for the same, and the course and direction which such tunnels are to take through the intervening lands covered with water, and the mines therein contained, and he shall cause a plan thereof to be made and filed in the office of the Registrar of Deeds for the County where the lands so taken for the commencement of the tunnels shall be situated.

119. Leases of mining areas shall be issued in duplicate; and such lease shall be registered in the Crown Land Office.

120. A certificate of such registry, with the day and year thereof, shall be endorsed on the duplicate delivered to the lessee.

121. In case of a lease or license where there are more than one lessee, a declaration in duplicate may be made and signed under seal by all the lessees, or their heirs and assigns, stating the proportion owned by each lessee, and such declaration shall be duly proved on oath and registered as hereinbefore mentioned.

122. All transfers of any interest in mining leases hereafter to be made, shall be registered as aforesaid, and a certificate of such registry shall be endorsed on every transfer, as in the case of mining leases; and such registry and certificate shall be conclusive evidence of the transfer of such mining interests.

123. The forms of declaration and transfer for the purposes of this Act shall be as in Schedules (B) and (C) respectively.

124. Every Company now or hereafter incorporated under any Act of this Legislature, or by any other competent authority, holding or working mines under this Act, shall file a copy of their Charter or Act of Incorporation and by-laws or regulations in the Crown Land Office, before any such Company shall commence work, together with a list of the officers of such Company, and all changes of officers made shall also be certified to the Crown Land Office; and until such certificate is filed no such new official need be recognized by the Surveyor-General as an official of any such Company.

125. A description of all mortgages, bills of sale, attachments, judgments, transfers and documents of title of any kind (except licenses) relating to or in any way affecting the title of gold or gold and silver, coal or other mines, shall be recorded according to Schedule (D) in the Crown Land Office; and all licenses and a description of all mortgages, bills of sale, attachments, judgments, transfers, and documents of title of any kind affecting such licenses, shall be registered in the book of application for mining rights in the Crown Land Office, in the same manner as such licenses and descriptions are now registered; provided that such mortgages, bills of sale, attachments, judgments, transfers, or documents of title, shall proceed from or be charged against the parties who may appear upon the Registry to be the lessees or licensees of such gold or gold and silver, coal or other mines, so to be transferred or to be encumbered; and any such mortgage, bill of sale, attachment, judgment, transfer or document of title shall be void as against any subsequent *bona fide* mortgage, bill of sale, attachment, judgment, transfer or document of title which shall be previously registered.

126. A duplicate or true copy certified by a Notary under his seal, of every transfer, mortgage or other conveyance registered as above, shall be filed in the Crown Land Office before a certificate of registry is given.

127. If the applicant for a mining lease shall not execute such lease and file it in the Crown Land Office for execution and registry by the Surveyor-General within one year from the time of his application, the area shall be considered vacant, and applications for a lease or license may be received.

128. The Surveyor-General shall have power to cause witnesses to be brought before him in all contested cases or matters which he has power to investigate and decide, to be examined under oath, which oath the Surveyor-General is hereby empowered to administer, and like powers are hereby conferred on his Deputy in all contested cases and matters before them which they have power to investigate and decide; and the Surveyor-General and Deputy shall have power to take affidavits under oath, and to administer the oath in all such cases, and to administer oaths in all cases where affidavits are required by this Act, except where such oath is required to be administered by a Commissioner of the Supreme Court. The Surveyor-General, or any Deputy Surveyor-General, shall not receive any application for license or lease of any mines or mining areas, the right to a license or lease of which is at the time of such application in dispute before the Surveyor-General or Deputy, or any Court of Appeal.

129. Where royalties are due and owing to the Crown, the Governor-in-Council shall have power to order the Surveyor-General to issue a Warrant under his hand and seal of office, directed to the Sheriff of the County where the mine in respect of which such royalties are due is situated, requiring such Sheriff, immediately on receipt thereof, to levy on the goods and chattels used in working and operating such mine; and if within the space of twenty days next after such levy, such royalties so due are not paid to such Sheriff, to proceed to sell the same, or so much of such goods and chattels as shall be sufficient to pay such royalties and his fees, first having publicly advertised the same for the space of not less than ten days before such sale, and to make return of such Warrant, and pay over the sum due for such royalties to the Surveyor-General within thirty days from the issuing thereof. Upon the receipt of such Order, the Surveyor-General shall issue such Warrant and deliver the same to such Sheriff, who shall immediately execute the same, according to the exigencies thereof, and the Sheriff's fees on such execution shall be the same as for executing a writ of execution out of the Supreme Court in a civil suit.

130. Leases and licenses shall terminate on the recurrence of the day on which they bear date in the year of their termination, and after ten of the clock of the forenoon of the following day the areas may be leased or licensed anew; but nothing contained in this Section shall prevent the renewal and extending of licenses and leases as hereinbefore provided.

131. If any lease or any share or interest therein become transmitted or transferred in consequence of the death, bankruptcy or insolvency of any lessee, or in consequence of the marriage of any female lessee, or by any means other than a transfer

according to the provisions of this Act, such transmission or transfer shall be authenticated by a declaration of the person to whom such lease or share or interest therein has been transmitted or transferred, stating the circumstances of such tranmission or transfer, and describing the manner in which and the person to whom such property has been transmitted or transferred; and such declaration shall be made before the Surveyor-General or Deputy Surveyor-General, or a Justice of the Peace.

132. If such transmission or transfer shall have taken place by virtue of the bankruptcy or insolvency of any lessee, such declaration shall be accompanied by such evidence as may for the time being be receivable in Courts of Justice, as proof of the title of persons claiming under any bankruptcy or insolvency; and if such transmission has taken place by virtue of the marriage of a female lessee, such declaration shall be accompanied by a copy of the register of such marriage, or other legal evidence of the celebration thereof, and shall declare the identity of such female lessee, and if such transmission shall have taken place by virtue of any testamentary instrument or by intestacy, then such declaration shall be accompanied by the probate of the will, or the letters of administration, or any copy thereof that may be legal evidence, or would be received in Courts of Justice as proof of such transmission.

133. The Surveyor-General upon the receipt of such declaration so accompanied as aforesaid, shall enter the name of the person entitled to the lease, or any share or interest therein under such transmission or transfer, in the books of registry as so entitled thereto.

134. The Lieutenant-Governor-in-Council is hereby authorized and empowered to name any head of department in the Government to perform the duties and exercise the powers by this Act conferred upon the Surveyor-General, in case of the absence of the Surveyor-General, or of vacancy in the office, or for any other cause deemed by him sufficient therefor, and such other head of department shall in performing any of the duties or exercising any of the powers conferred by this Act, be styled "Acting Surveyor-General."

135. The Deputy Surveyor-General may act for and instead of the Surveyor-General, or for and instead of the Acting Surveyor-General in any emergency, and the Governor-in-Council is also hereby authorized to appoint a Chief Inspector, or County Inspectors, of mines, or such other officers as he may deem necessary for the due carrying out of the provisions of this Act, and such officers shall be paid such compensation for their service as may be fixed by the Governor-in-Council. Payment to be made by Warrant in the usual manner out of the moneys received under this Act.

136. The provisions of this Act shall become applicable to all mining leases and the lessees under all mining leases and their representatives and assigns, which have been issued prior to the going into operation of this Act, so far as such provisions are capable of being applied thereto, but this Section shall not be operative until the expiration of one year after the passing of this Act.

137. Any of the powers by this Act conferred upon the Warden of a Municipality may, in case the Warden is an interested party, or there be no Warden at the time, be exercised by a Judge of the County Court of the County in which the lands lie, or a Judge of the Supreme Court.

138. In respect of granted lands wherein the owner of such lands (or the assignee of such owner who has gone to expense in the purchase, as he believed, of mining rights or interests) has made explorations, or actually commenced mining operations before the passing of this Act, no lease or license shall be made under this Act to any person, other than such owner or assignee, until such owner or assignee has had notice of application having been made therefor, which notice may be sufficiently given by publication thereof by the Surveyor-General for thirty days in the *Royal Gazette*, or in such manner as the Surveyor-General shall direct, and thereupon the Governor-in-Council shall examine into the matter, and take such action as in his discretion shall seem just, taking into account the circumstances of each case; provided, however, that any such owner or assignee shall be subject to the payment of all royalties, and to the other provisions of this Act, so far as the same are applicable to his case.

139. Chapter 18 of the Consolidated Statutes of "Mines and Minerals," is hereby repealed, and so much of Chapter nineteen of the Consolidated Statutes, of "The Escheat of Mining Leases and Mill Reserves," which is inconsistent with any of the provisions of this Act, is also hereby repealed.

An Act to Amend "The General Mining Act."

(Passed the 7th day of April, A.D., 1892).

Sec.
1. Section 101 of the General Mining Act amended by adding sub-Section 6.
2. How leases of mines, &c., exempt from royalty may be granted.
3. Surveyor-General may grant License to search for and mine Manganese only.
4. This Act to be read as part of The General Mining Act.

Be it enacted by the Lieutenant-Governor, Legislative Council and Assembly, as follows:—

1. Section one hundred and one of the said Act is hereby amended by adding the following as sub-Section 6: "All other ore shall be subject to such Royalty as shall be from time to time imposed by Order-in-Council. Notwithstanding anything in this Act contained, the Governor-in-Council may, by Order-in-Council, whenever it shall be deemed necessary to assure speedy development, provide that the Royalty reserved under this Act shall not be imposed or collected upon any ores mined, wrought or taken, until after five years from the date of the mining lease; and whenever concentrating, smelting, reducing or other works are established within the Province, the Governor-in-Council may, by Order-in-Council, make a reservation of a sufficient tract of woodland in the vicinity of such works as may be deemed necessary to provide fuel and timber for mining purposes, in connection with the successful operation of said works.

2. A lease of Mines and Minerals, which by Statute or otherwise have been exempt from Royalty to the Crown, covering an area not exceeding one square mile in one block, may be granted by order of the Governor-in-Council after a license to Search or Work has been granted upon application of the Licensee or his executors, administrators or assigns, subject to the provisions contained in Section 138.

3. Notwithstanding anything in this Act contained, the Surveyor-General shall have the power, whenever he may deem it advisable so to do, upon the application of any person interested, to grant upon such terms and for such period as he may see fit a license to the owner of any land to search for and mine therein Manganese only.

4. This Act shall be taken, read and construed as part of The General Mining Act.

QUEBEC.

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QUEBEC.

The Mining Act of the Province of Quebec.

§ 1.—Declaratory and Interpretative.

1421. In the construction and application of this section, which may be cited as the "Quebec Mining Law," and of all Orders-in-Council or Regulations under it, if not inconsistent with the context or subject matter, the following terms have the respective meanings hereby assigned to them, that is to say:

1. The words "to mine" and "mining" mean and designate any mode or method of working whatsoever, whereby the soil or earth, or any rock or stone may be disturbed, removed, carted, carried, washed, sifted, smelted, refined, crushed, or otherwise dealt with, for the purpose of obtaining any minerals;

2. The words "mines" and "minerals" mean and include all quarries of stone of whatever kind, and all stones or rocks, earth or soil, whether alluvial or not, in which are found gold, silver, copper, phosphate of lime, asbestos, or any mineral substance having an appreciable value;

3. The words "mining division" mean and designate any tract of country erected into a "mining division" under this law;

4. The words "public lands" or "Crown Lands" mean and designate all Crown Lands or Ordnance Lands transferred to the Province, Clergy lands or lands of the Jesuits' Estates, Crown Domain or Seigniory of Lauzon, which have not been alienated by the Crown;

5. The words "private lands" designate all lands conceded or otherwise alienated by the Crown, other than mining concessions or lands conceded by the Crown as such, or which shall be hereafter conceded;

6. The words "private person" mean any person who possesses a lot of land, as proprietor or usufructuary, upon which mines or minerals exist or are supposed to exist;

7. The word "licensee" designates any person, firm or company, who may have obtained a license under the present law;

8. The words "party wall or *passage*" designate a bank of earth or rock left between two excavations;

9. The words "mill or machine license" mean a permit to use machinery for the purpose of extracting or preparing minerals;

10. The words "licensed mills or machines" designate the mills or machines so licensed for extracting gold or silver from stone or quartz; and the words: "licensed mill or machine owner" designate the person to whom any such license has been granted;

11. The words "superior metals" include the ores of gold, silver, lead, copper, nickel, and also graphite, asbestos, mica and phosphate of lime; and the words: "inferior metals," mean and include all the minerals and ores which are not included in the preceding definition and which are of appreciable value;

12. The words "mining concession" mean any tract of country sold for the purpose of mining;

13. The words "underground mining concession" mean any underground mining property sold for the purpose of mining under the present law;

14. The word "Commissioner" when used alone, means the Commissioner of Crown Lands;

15. All measurements and distances under this section are made and taken to be according to English measurement. 43-44 V., c. 12, ss. 1 and 164; 51-52 V., c. 15, s. 9, and R. S. Q., 1421.

§ 2.—Privileges of Aliens and Reserve of Mining Rights.

1422. Aliens, as well as British subjects, may enjoy the benefit of this law, by complying with its provisions and submitting thereto. 43-44 V., c. 12, s. 2, and R. S.Q., 1422.

1423. It shall not be necessary, in any letters-patent for land granted for agricultural purposes, to mention the reserve of mining rights, which reserve is always considered as existing under the provisions of this law.

As respects the Crown, such mining rights, so tacitly reserved, shall be property separate from the soil covering such mines and minerals comprised in such rights, and shall constitute a property under the soil which shall also be public property independent from that of the soil which is above it, unless the proprietor of the surface or superficial property have purchased it from the Crown as a mining concession or otherwise, in which case the properties, superficial and underground, constitute only one private property. 43-44 V., c. 12, s. 3; 47 V., c. 22, s. 1, and R. S. Q., 1423 and 1424.

§ 3.—Exceptional Provisions.

1424. Whenever a person who has become owner of the soil and of the property under the soil, under any title, before the tenth of June, 1884, sells, hypothecates, leases or affects the mining rights in such property to another person under article 2099 of the Civil Code of Lower Canada, such soil and the property under the soil again become two properties perfectly distinct and independent from each other, for all lawful purposes, as they were when in the possession of the Crown, so that the sale, judicial or otherwise, of one of these properties, does not in any way affect the other.

2. It is, however, well understood that the rights acquired over such property, during the confusion in the ownership of the soil and of the property under the soil, are in no wise affected by the subsequent sale of mining rights and the division of the property in the soil and of that under the soil arising therefrom; only that the owner

of the property under the soil shall be sued and made a party to the suit in the same manner as if he had purchased a part or portion of the soil. 47 V., c. 22, s. 1, and R. S. Q., 1424.

1425. Any person who, previous to the 24th July, 1880, obtained by letters-patent, for agricultural purposes, but with reservation by the Government of the mining rights, any lot whatever, forming part of the public lands of this Province, may, if he or his legal representative discovers and wishes to work a mine, purchase the mining rights so reserved by the Government, by paying in cash to the Commissioner, over and above the price already paid for said lot, a sufficient additional amount to make up the sum required by article 1444. 43-44 V., c. 12, s. 4, and R.S.Q., 1425.

1426. Every proprietor of land sold for agricultural purposes, by letters-patent, previous to the 24th July, 1880, but without any reservation by the Government of the mining rights, or the legal representative of such proprietor who discovers upon such land a gold or silver mine, may work the same, by paying to the Commissioner, over and above the price already paid for such land, a sufficient additional amount to make up the sum required by article 1444. 43-44 V., c. 12, s. 5, and R.S.Q., 1426.

1427. Every proprietor of land sold by letters-patent for agricultural purposes since the 24th July, 1880, or which may be sold in the future, but without any reservation by the Government of the mining rights, or the legal representative of such proprietor who discovers a mine on such land, may work the same by paying to the Commissioner, over and above the price already paid for such land, a sufficient additional amount to make up the sum required by article 1444.

1428. In seigniories in which the Crown still holds mining rights, any *censitaire* or his legal representative who discovers a mine upon his land, may work the same, by paying to the Commissioner the sum required by article 1444, less fifty cents per acre, for the whole of his land, or for at least one hundred acres, at one and the same time;

2. The seignior or proprietor of the unconceded portion of a seigniory, if he or his legal representative discovers a mine, and wishes to work the same, may do so, by paying to the Commissioner the sum required by article 1444, for the whole extent of such unconceded part of the said seigniory, as limited by the following paragraph:

In all cases, no such proprietor, in virtue of letters-patent, *censitaire* or seignior, can thus obtain mining rights on a larger extent than that fixed by article 1443. 43-44 V., c. 12, s. 6, and R.S.Q., 1427.

1429. If, on any lot of land granted by letters-patent, since the ninth March, one thousand eight hundred and seventy-eight, or which shall hereafter be granted, on the usual terms and conditions, for agricultural purposes, a mine of phosphate of lime has been found to exist, any purchaser of such lot or his legal representative, shall, if he wishes to work such mine, pay in cash, to the Commissioner, a sufficient additional amount to make up the sum required by article 1444. 43-44 V., c. 12, s. 7, and R.S.Q., 1428.

1430. The grantees of lands under gratuitous title, or their legal representatives, are subject to the provisions of articles 1425, 1426, 1427, 1428 and 1429; 43-44 V., c. 12, s. 9, and R.S.Q., 1430.

1431. Every person, who has obtained or who may hereafter obtain, by letters-patent, for the purpose of mining for inferior metals, one or more lots forming part of the public lands of this province, shall, if he or his legal representative discovers and wishes to work, or cause to be worked, any mine of superior metals, pay to the Commissioner, over and above the price already paid for such mining land, a sufficient additional amount to make up the sum required by article 1444 for the purchase of mining lands containing superior metals; provided always that the sum already paid does not reach the latter amount. 43-44 V., c. 12, s. 10, and R. S. Q., 1431.

1432. Every person who has obtained, since the 24th of July, 1880, or who may obtain in the future, by location ticket only, a lot of land from the Crown, on the usual terms and conditions, for agricultural purposes, and has not fulfilled or does not fulfil the required conditions, may, if he or his legal representative discovers upon such land a mine of any kind and wishes to work the same, work such mine, on paying to the Commissioner an additional amount as mentioned in articles 1425, 1426, 1427, 1428 and 1429; otherwise the title to the property so made may be cancelled by the Commissioner. 43-44 V., c. 12, s. 12, and R. S. Q., 1433.

1433. Whenever an additional sum is paid under the preceding articles, a receipt establishing such payment shall be endorsed upon such document or letters-patent, by which the land has been so granted, and signed by the Commissioner or his assistant, or other person duly authorized for that purpose, and afterwards registered in the office of the Provincial Registrar with a reference to the document to which such receipt relates. 43-44 V., c. 12, s. 11, and R. S. Q., 1432.

1434. The Lieutenant-Governor-in-Council has, in virtue of the provisions of article, 1580, power to increase the price per acre of the lands mentioned in articles 1425, 1426, 1427, 1428, 1429 and 1432; and all persons desirous of availing themselves of the provisions of the said last mentioned articles must pay the increased prices fixed by Order-in-Council, under the provisions of the said article 1580. 49-50 V., c. 30, s. 1, and R. S. Q., 1434.

§ 4.—Royalty.

1435. The Lieutenant-Governor-in-Council may, if he thinks proper, and in accordance with the conditions and formalities which he may deem advisable, claim, at any time, the royalty due to the Crown upon any land already sold, conceded or otherwise alienated by the Crown or which may be hereafter sold, but only five years after the date of such alienation.

Such royalty, unless otherwise determined by letters-patent or other title from the Crown, is fixed by the Lieutenant-Governor-in-Council, in accordance with the report of the mining inspector, and taking as a basis the value, at the mine, of the mineral extracted, after deducting the cost of the extracting, and it must not exceed three per cent. of such value. 43-44 V., c. 12, s. 13, and R. S. Q., 1435.

§ 5.—Mining Concessions, their Form and Dimensions.

1436. Mining concessions are divided into three classes, and each of them respectively, in addition to the usual allowance of five per cent. for highways, in each case, shall be of the following form and dimensions, viz:

1. In unsurveyed territory :

The first class contains 400 acres :—52 chains in width, by 80 chains and 80 links in depth ;

The second class contains 200 acres :—26 chains in width, by 80 chains and 80 links in depth :

The third class contains 100 acres :—13 chains in width, by 80 chains and 80 links in depth ;

2. In surveyed townships :

The three aforesaid classes respectively comprise : one, two and four lots, as regularly divided, or more or less, as the case may be, if such lots, being of irregular form, contain more or less than one hundred acres each, in superficies. 43-44 V., c. 12, s. 25, and R. S. Q., 1453.

1437 In townships which are merely projected, the side lines of such concessions must be parallel to the side lines of the said townships, and the front and rear lines must conicide with the range lines as projected.

2. In unsurveyed territory, the direction of the exterior lines of all mining concessions, shall be determined by the Commissioner. 43-44 V., c. 12, ss. 26 and 27, and R. S. Q., 1454 and 1455.

1438. When mining concessions, in unsurveyed territory, border upon lakes or rivers, they shall front on such lakes or rivers and be subject, in all cases, to the public rights in navigable and floatable waters.

Further, along such lakes or rivers, there is reserved a right of way, one half chain in breadth, which shall be comprised in the allowance of five per cent. specified in article 1436. 43-44 V., c. 12, s. 30, and R. S. Q., 1458.

1439. All mining concessions, comprised in an unsurveyed territory, shall be surveyed by a provincial land surveyor, acting under the instructions of the Department of Crown Lands, and be connected with some known point in previous surveys, so as to be laid down upon the office maps of such territory, of record in the Department.

Such surveys are made at the cost of the applicants, who are required to furnish, with their application to purchase, the plan of the surveyor establishing the position and dimensions of the concessions they desire to purchase, with the field notes and *procès-verbaux* of the operations ; the whole in conformity with the present law and to the satisfaction of the Commissioner. 43-44 V., c. 12, s. 28, and R. S. Q., 1456.

§ 6.—Acquisition of Mining Lands.—Duties of Proprietors who Sell their Rights.

1440. All lands, supposed to contain mines or ores, belonging to the Crown, may be acquired from the Commissioner of Crown Lands :

1. As a mining concession by purchase, or

2. Be occupied and worked under a mining license. 43-44 V., c. 12, s. 21, and R. S. Q., 1439.

1441. The mining rights belonging to the Crown, in the property under the soil, under article 1423, may be acquired from the Commissioner in the manner indicated in the preceding article, by the proprietor of the soil, who has a preferential right thereto.

2. Articles 1466 and following, relating to mining on private lands, apply equally to property under the soil, referred to in this article, when the owner of the soil refuses to mine. 47 V., c. 22, s. 3, and R.S.Q., 1440, 1443, 1444 and 1445.

1442. Every owner of mining land is bound, whenever he sells, transfers or alienates his rights in such land, to give notice thereof to the Commissioner, within thirty days of such sale, transfer or alienation, under the penalties mentioned in article 1527.

§ 7.—Price of Mining Concessions—Reserve of the Right of Cutting Timber thereon.

I.—PRICE OF MINING CONCESSIONS.

1443. No sales of mining concessions, containing more than four hundred acres in superficies, shall be made to the same person.

The Lieutenant-Governor-in-Council has, nevertheless, the right to grant to any person, upon sufficient proof of his capital and resources, a larger extent of territory, but not in any case to exceed one thousand acres. 43-44 V., c. 12, s. 24, and R.S.Q., 1451 and 1452.

1444. With such applications to purchase and the production of the documents mentioned in this law, applicants are required to pay to the Department of Crown Lands the entire price of the mining concessions which they desire to purchase at the following rates:

1. If for the mining of superior metals on lands situated more than twelve miles from a railway in operation, five dollars an acre, and if on lands situated less than twelve miles from such railway, ten dollars an acre;

2. If for the mining of inferior metals on lands situated more than twelve miles from a railway in operation, two dollars an acre, and if on lands situated less than twelve miles from such railway, four dollars an acre. 43-44 V., c. 12, s. 29 and R.S.Q., 1457.

1445. The Commissioner may, from time to time, and as often as circumstances require, offer and put up for sale such number of mining concessions as he may deem proper.

This sale is made by public auction, after notice duly given and published, during at least four weeks, in the Quebec *Official Gazette*, and at least in one French and one English newspaper, if there be any published in these two languages, in each of the cities of Montreal, Quebec and Ottawa.

At each such sale, the upset price or first bid is fixed and determined by the Commissioner, but shall not, in any case, be less than the total amount determined in the preceding article; and the entire price of adjudication is payable in cash, under penalty of the absolute nullity of the sale. 43-44 V., c. 12, s. 158, and R.S.Q., 1580.

1446. Unless stipulated to the contrary in the letters-patent :

1. In concessions for the mining of superior metals, the sale of such concessions shall give to the purchaser the right to mine for all metals which may be found therein ;

2. In concessions for the mining of inferior metals, the sale of such concessions shall give to the purchaser the right to mine for inferior metals only.

1447. In townships duly erected, as well as in unsurveyed territory, no lands shall be sold under this law, unless there be some real indications of the presence of minerals ; and the proof of such indications must be shown by the exhibition of specimens found upon or in such land, accompanied by affidavits of competent and credible persons, establishing that the specimens exhibited came therefrom. 43-44 V., c. 12, s. 31, and R.S.Q., 1459.

II.—RESERVE OF RIGHT OF CUTTING TIMBER ON MINING CONCESSIONS.

1448. The holders of licenses to cut timber have, under such license, the privilege of cutting on all mining concessions granted, within their limits, pine timber measuring twelve or more inches in diameter, on the stump, and spruce timber measuring nine or more inches in diameter on the stump :

This privilege shall, however, finally expire after a period of three years from the date of the issue of the deed of sale. 43-44 V., c. 12, s. 32, and R.S.Q., 1460.

1449. The letters-patent for Crown Lands, sold as mining concessions, within the meaning of this law, shall contain a clause reserving all trees of pine or spruce timber, in favor of the Crown ; and, subject to the provisions of the preceding article, the Commissioner may grant, to any person whomsoever, the right of entering upon the said lands, and cutting and taking therefrom, according to the regulations, the trees so reserved, and making and keeping in repair, across the said mining concessions, all roads necessary for such operations. 43-44 V., c. 12, s. 33, and R.S.Q., 1461.

1450. The purchasers or proprietors of such mining concessions have, in the case of the two preceding articles, the right to cut and take away, for their own use, such trees as they may require for the construction of the buildings and dependencies necessary for their operations. 43-44 V., c. 12, s. 33, and R.S.Q., 1461.

§ 8.—Cancelling of Sales of Mining Lands.

1451. Mining lands shall be sold on the express condition that the purchaser shall commence *bona fide* the mining of the minerals therein contained, within two years from the date of purchase, and that, during such delay, the purchaser shall, in such working spend a sum of not less than five hundred dollars, if for superior metals, and of not less than two hundred dollars, if for inferior metals.

The Commissioner may cancel the sale of such mining land in default of the performance of the conditions herein mentioned, according to the mode followed for the cancellation of sales of public lands.

Letters patent shall be issued only on satisfactory proof that the foregoing conditions have been fulfilled. 43-44 V., c. 12, s. 34, and R.S.Q., 1462.

§ 9.—Licenses.

I.—EXPLORATION AND POSPECTING LICENSES.

1452. Any person, firm or company may, without a license, prospect and search for mines or ores upon public lands, not already occupied as mining concessions or otherwise.

When any such person, firm or company, may desire to enjoy the benefit of such license, he shall obtain from the Commissioner such license for such purpose, on conforming to the provisions of the following article.

1453. The application for an exploration and prospecting license shall contain as exact a description as possible of the land required, to the satisfaction of the Commissioner and shall be accompanied by the following fees, as the case may be:

1. If the mine is upon private lands, two dollars for every hundred acres; every less number of acres to count as one hundred:

2. If the mine is upon Crown lands;

(*a*) In surveyed territory, five dollars for every hundred acres; every less number of acres to count as one hundred;

(*b*) In unsurveyed territory, five dollars for each square mile.

Such license is valid for three months and may be renewed. 43-44 V., c. 12, s. 22; 47 V., c. 22, ss. 4 and 5, and R.S.Q., 1446 and 1447.

1454. The applicant for an exploration and prospecting license shall furnish good and sufficient security, subject to the approval of the Commissioner, to answer for all losses and damages that he may cause to the proprietor of the soil in making such searches or explorations. 47 V., c. 22, s. 5, and R.S.Q., 1448.

1455. Whoever, under such license, searches and prospects as aforesaid, shall make a report to the Commissioner, or to the inspector, of the result of his operations. 47 V., c. 22, s. 5, and R.S.Q., 1449.

1456. The holder of such license may afterwards purchase such mine, by paying the prices mentioned in article 1444 and by conforming to the present law, and also to the regulations passed in virtue thereof; the whole, however, subject to the right of preference granted to the proprietor of the soil, to be himself, to the exclusion of all others, the purchaser of the mines and minerals discovered, or which might be afterwards discovered in the soil under his property.

1457. Articles 1494, 1495 and 1496 apply also, in so far as consistent with the provisions of the preceding articles, to the person, firm or company who, holding a license as above, has discovered a new mine. 47 V., c. 22, s. 5, and R.S.Q., 1450.

II.—MINING LICENSES.

1.—Mining Without License Forbidden.

1458. Every person is prohibited, under pain of the fines and penalties mentioned in article 1526, for mining in any mine, either upon public or private lands,

when the mining rights belong to the Crown, without having previously purchased the same, in virtue of the present law, or without having obtained, to that effect, a mining license, and paid the fee and rent required by article 1461. 43-44 V., c. 12, s. 47, and R. S. Q., 1475.

1459. Every person, firm or company, is further prohibited, under the penalties mentioned in article 1528, from commencing mining operations without having given notice in writing, without delay, to the inspector, according to the form of Schedule F, containing the name, the description of the land and the place of domicile of such person, firm or company. 43-44 V., c. 12, s. 48, and R. S. Q., 1476.

2.—Form of Mining Licenses.

1460. There are two descriptions of licenses for mining, known as follows, to wit:

1. Private lands' license, where the mining rights belong to the Crown;

2. Public lands' license.

The first is made in the form of Schedule A of this law, and the second in the form of Schedule B. 43-44 V., c. 12, s. 50, and R. S. Q., 1478.

3.—Granting and Duration of Licenses.

1461. Mining licenses are granted on payment of a fee of five dollars, and of an annual rental of one dollar per acre.

2. Every such license is valid for one year from the date of its issue, and is transferable only with the consent of the Commissioner.

3. It cannot be granted for an extent of over two hundred acres in superficies, unless the Lieutenant-Governor-in-Council otherwise decides, in virtue of article 1580.

4. The licensee may, before the expiry of his license, and not later that ten clear days thereafter, renew such license, on payment of a like fee of five dollars, or of any such other sum, as may be determined by law, at the time of its issue, and of an annual rental of one dollar per acre.

5. No such mining license can be renewed except upon payment of the said fee and of the said annual rental.

1462. It shall be lawful for the Lieutenant-Governor-in-Council whenever he deems it expedient, to require the payment of the royalty, in lieu and stead of fees for a mining license and of an annual rental as aforesaid, except, however, in places in this Province in which the royalty due to the Crown under letters-patent is paid by means of fees for mining licenses. 43-44 V., c. 11, s. 52; 47 V., c. 22, ss. 9 and 10, and R. S. Q., 1480.

1463. Every inspector is bound to keep a book in which the licenses are registered, and he must further enter therein, upon notice given under articles 1492 and 1493, the names of the applicants for a license, the description of mining lands staked out by them under the provisions of article 1491, and the date of the choice of such land. 43-44 V., c. 12, s. 43, and R. S. Q., 1471.

1464. Such book is to be open to the inspection of any one desiring to examine the same, upon payment of a fee of twenty cents to the inspector. 43-44 V., c. 12, s. 43, and R. S. Q., 1471.

4.—Powers of Licensees on Private Lands.

1465. Every holder of a private lands' license is authorized to search on any private lands, whenever such private person voluntarily consents or is compelled thereto under the provisions of the following articles. 43-44 V., c. 12, s. 53, and R.S.Q., 1481.

5.—Arbitration for Mining on Private Lands.

1466. Every person, who desires to mine on the lands of a private person, must first cause to be served a notice in writing, according to the form of Schedule C of this law, stating:

1. That he intends to mine on the lands of such private person;

2. That he is ready to pay the damages arising from such mining operations, to be assessed by mutual agreement. 43-44 V., c. 12, s. 55, and R.S.Q., 1483.

1467. The notice shall give a delay of one month, from the date of the service, to the said private person, to answer and make such agreement, if present, and if absent from the Province, double delay, and in the latter case the notice shall be inserted in French and English, three times in a newspaper of the district, if there is such newspaper, if not, in a newspaper of an adjoining district. 43-44 V., c. 12, s. 56, and R.S.Q., 1484.

1468. Whenever a private person refuses to come to a mutual understanding for mining on his land, the petitioner may then cause a plan of the land, absolutely necessary for his mining operations, to be made by a sworn land surveyor, who, for that purpose, is authorized to enter upon the said property with his employees, and cause to be served upon the said private person another notice, according to the form of schedule D of this law, containing:

1. A description of the land to be taken for mining purposes;

2. A copy of the land surveyor's plan;

3. A declaration that he is ready to pay a certain sum, in money or rent, as the case may be, as a compensation for the said land or damages, and

4. The name of a person whom he appoints as his arbitrator, if his offer is not accepted, also a demand upon the said private person to appoint and declare the name of his arbitrator. 43-44 V., c. 12, s. 58, and R.S.Q., 1486.

1469. Every such private person may, however, within the delays aforesaid, take out a mining license to mine his land, in conformity with the present law; provided, however, that he has not divested himself of his right of pre-emption in favor of a third person. 43-44 V., c. 12, s. 57, and R.S.Q., 1485.

1470. The delay to answer such notice is ten clear days, if the opposite party is present in this Province. 43-44 V., c. 12, s. 59, and R.S.Q., 1487.

1471. If the opposite party is absent from the Province, or is unknown, then, upon a petition addressed to the inspector of the mining division in which the land is situat d, accompanied by a return of service, certifying that the said person is absent from the Province, and could not be found therein, the said inspector orders under his signature, that the notice, drawn up according to the form of schedule D of this law, be inserted, three times in the French and English languages, during ten days, in a newspaper published in such district, if there is such newspaper, if not, then in a newspaper of a neighboring district. 43-44 V., c. 12, s. 59, and R. S. Q., 1487.

1472. The answer, to be given to the said notice, is made in terms of the form of Schedule E of this law. 43-44 V., c. 12, s. 59, and R. S. Q., 1487.

1473. If, during the ten days after the service of the notice, or the eight days following the last publication (as the case may be), the opposite party does not inform the petitioner that he accepts his offers, or does not give the name of the arbitrator appointed by him, then the inspector of the mining division, upon application of the said petitioner, appoints a competent person to be sole arbitrator, to determine the compensation which the opposite party has a right to receive. 43-44 V., c. 12, s. 60; 47 V., c. 22, s. 17, and R. S. Q., 1488.

1474. If the opposite party, during the above prescribed delay, notifies to the petitioner the name of the arbitrator whom he has chosen, the two arbitrators jointly name a third. 43-44 V., c. 12, s. 61, and R. S. Q., 1489.

1475. Such arbitrators appointed by the parties must, within eight days after the opposite party has made known the name of his arbitrator, meet to agree upon the choice of a third. 43-44 V., c. 12, s. 61, and R. S. Q., 1489.

1476. If the two arbitrators cannot agree upon the choice of a third, the inspector is bound, upon application of any of the parties, notice of at least two clear days having been previously given to the other, to appoint such third arbitrator himself. 43-44 V., c. 12, s. 61, and R. S. Q., 1489.

1477. The arbitrators or two of them, or the sole arbitrator, after having taken an oath before a justice of the peace of the district, or before the inspector of the mining division, in which such land is situated, to faithfully and impartially fulfil the duties of their office, immediately proceed to establish the compensation to be paid by the petitioner, as the majority may decide; and the award of the arbitrators or of the sole arbitrator, as the case may be, is final and without appeal. 43-44 V., c. 12, s. 62, and R. S. Q., 1490.

1478. No proceedings can be commenced by the arbitrators before a sum of fifty dollars is deposited with the inspector of the mining division, to defray the costs of the arbitration, and a certificate of the inspector be delivered to them certifying such deposit.

The arbitrators may require the deposit of any other sum deemed necessary during the proceedings. 43-44 V., c. 12, s. 62, and R. S. Q., 1490.

1479. No award can be given, and no official act done by the majority of the arbitrators, unless at a meeting of which the other arbitrator has received notice, at

least two clear days before, of the time and place at which such meeting is to be hed

The service of a notice on the parties is not necessary. 43-44 V., c. 12, s. 63, and R. S. Q., 1491.

1480. In deciding upon the value or the compensation to be paid, the arbitrators are authorized and required to take into consideration the inconveniences, loss or damages arising from the fact that a third party takes possession or makes use of the land for mining purposes. 43-44 V., c. 12, s. 64, and R.S.Q., 1443 and 1492.

1481. If the arbitrators are not satisfied with the plan drawn by the land surveyor, as mentioned in article 1468, they may cause another to be made, at the cost of the petitioner, by any other land surveyor, to whom they have a right to give the necessary instructions. 43-44 V., c. 12, s. 65, and R.S.Q., 1493.

1482. The arbitrators, in proceeding with such arbitration, must allow only the land, strictly requisite for mining purposes, which can, in no case, exceed fifteen acres in superficies, over and above the land deemed necessary, on the same property, for right of way with horses and vehicles to and from the nearest highway. 43-44 V., c. 12, s. 66, and R.S.Q., 1494.

1483. The costs are paid by the petitioner, except however those of the arbitrator of the opposite party, which are paid by him, if the award does not allow him a higher compensation than that offered before the arbitration.

In all cases, the costs are taxed by the inspector of the mining division. 43-44 V., c. 12, s. 67, and R.S.Q., 1495.

1484. The arbitrators may swear the parties and their witnesses, and, in their discretion, interrogate them under oath or solemn affirmation. 43-44 V., c. 12, s. 68, and R.S.Q., 1496.

1485. In the case of a sole arbitrator, if the latter dies before giving his award, or if he becomes ill, or refuses, or neglects to act, within a reasonable delay, the inspector, upon satisfactory proof thereof, appoints another in his stead ; but the latter arbitrator cannot recommence or repeat any of the previous proceedings. 43-44 V., c. 12, s. 69, and R.S.Q., 1497.

1486. When the award of the arbitrators is given, the amount of the damages awarded and costs must be paid into the hands of the inspector of the mining division having jurisdiction. 43-44 V., c. 12, s. 70, and R.S.Q., 1498.

1487. The inspector must give a receipt for the sums so paid ; but no work shall be commenced, without the express permission of the inspector, or before the amount of the compensation has been paid or lawfully tendered to the private person or to the proprietor of the soil. 43-44 V., c 12, s. 71 ; 47 V., c. 22, s. 18, and R.S.Q., 1499.

1488. The amount of the compensation, and the costs so paid, are afterwards distributed, within the shortest possible delay, by the inspector to the persons entitled thereto. 43-44 V., c. 12, s. 72, and R.S.Q., 1500.

1489. Every petitioner, as aforesaid, may also, by following the procedure above set forth, obtain from neighboring proprietors and others, the right of way over their

lands with horses and vehicles, and the right to make the works necessary thereon for conveying the water required by him for the better working of his mining lands; provided however, that he does not apply for anything which might have the effect of turning the course of any spring, river or stream, so as to deprive the inferior riparian proprietors of the use of such spring, river or stream. 43-44 V., c. 12, s. 73, and R.S.Q., 1501.

1490. The preceding article is applicable to every person who works a mine of any kind in this Province. 43-44 V., c. 12, s. 73, and R.S.Q., 1501.

6.—Miscellaneous Provisions Respecting Applicants for, and Holders of Licenses, and Persons Workiug Mines.

1491. Every applicant for a license to mine upon public lands, has a right to plant a wooden picket at each cornor of the lot for which he desires to obtain such license. 43-44 V., c. 12, s. 71, and R.S.Q., 1504.

1492. Every such applicant, after having staked out the location of his land in the manner determined in the preceding article, is bound to give written notice thereof, without delay, to the mining inspector, in the form of schedule F of this law. 43-44 V., c. 12, s. 81, and R.S.Q., 1508.

1493. Such notice shall give the name of the applicant, indicate the place where the land is situated, contain a complete designation and description of the land, and mention where such applicant elects his domicile, under the penalties mentioned in article 1528. 43-44 V., c. 12, s 18, and R.S.Q., 1508.

1494. The discoverer of a new mine on public lands is entitled to a free mining license, in the form of schedule J. of this law, valid for twelve months for the area allowed by article 1461, or by any regulations which may be issued under it, and in force when such discovery is made; provided that such discovery has been immediately reported, in writing, to the inspector of the mining division. 43-44 V., c. 12, s. 83, and R.S.Q., 1510.

1495. Any one who does not immediately report such discovery, shall be deprived, for the space of one year, of the right to mine on public lands. 43-44 V., c. 12, s. 83, and R.S.Q., 1510.

1496. No person is considered to be the discoverer of a new mine, unless the place of the alleged discovery is in a region unknown as a mining region, or at least at a distance of thirty miles from the nearest mine. 43-44 V., c. 12, s. 84, and R.S Q., 1511.

1497. Every person holding a mining license, upon renewing the same, is bound, under penalty of the refusal of such renewal, to make to the inspector of the mining division, in addition to the annual statement which he is bound to furnish in virtue of the following article, a full and true statement, under oath, of the work performed, and of the minerals obtained by him, during the term of such license, which statement may be entered upon the expiring license. 43-44 V., c. 12, s. 86, and R.S.Q., 1513.

1498. Every person working a mine must furnish, during the month of January, every year, a sworn statement of his operations for the previous year, containing the quantity of mineral extracted, its value at the mine, and the number of workmen employed, as also a statement giving the names of persons killed or wounded in working the mines.

1499. No title to a mining concession or license shall, witho t the formal consent of the proprietor of the soil, give a right to mine or to open pits or galleries, or to erect machines or stores, in fields, yards or gardens, or upon lands close to dwelling houses, or boundary fences within a distance of three hundred feet from such fences or dwellings, nor even to enter such yards or habitations. 43-44 V., c. 12, s. 76, and R. S. Q., 1444 and 1503.

1500. Every person who prospects or mines for minerals upon lands adjoining a mining division, is subject to the provisions of this law, as if he worked within the limits of such mining division. 43-44 V., c. 12, s. 98, and R. S. Q., 1525.

1501. Every licensee, under this law, is bound, under the penalties mentioned in article 1538, whenever required so to do, to exhibit his license to the inspector of the division, or to any constable or peace officer deputed by the said inspector, and to prove to the satisfaction of every such officer, making such demand, that the license which he holds is in force. 43-44 V., c. 12, s. 99, and R. S. Q., 1526.

1502. Every licensee is bound under the penalties mentioned in article 1539, to allow the inspector of the mining division, or any constable or other peace officer, deputed by the said inspector, to enter upon the lands which he works, and to afford them all necessary facilities and assistance for that purpose. 43-44 V., c. 12, s. 100, and R. S. Q., 1527.

III.—MILL OR MACHINE LICENSE.

1.—Price of License.

1503. Every person who desires to employ or make use of any mill or machinery, other than those worked by hand, for crushing quartz or reduction of quartz, or the obtaining of gold and silver therefrom, by crushing, stamping, amalgamating or otherwise, is required, under the penalties mentioned in article 1535, to obtain beforehand a special license therefor, from the inspector of the mining division, upon payment of a fee of five dollars.

Such license is in the form of Schedule H of this law. 43-44 V., c. 12, s. 90, and R. S. Q., 1517.

2.—Duties of Mill or Machine Owners.

1504. Every licensed mill or machine owner, as aforesaid, is required, under the penalties mentioned in article 1536, to keep an account book in which he is bound to enter a clear and distinct statement of any quartz crushed, reduced or amalgamated by such mill or machine, and also the following particulars :—

1. The name of the owner or owners of each distinct parcel or lot of quar crushed ;

2. The weight of each such parcel or lot ;

3. The date of the crushing of the same ;

4. The actual yield in weight of mineral obtained from each such parcel or lot ;

5. The description of the mining land worked. 43-44 V., c. 12, s. 91, and R. S. Q., 1518.

1505. Every owner of a licensed mill or machine is bound, under the penalties mentioned in article 1536, to furnish, monthly, to the inspector of the mining division, a return under oath, compiled from the book containing the aforesaid statements and details for each and every day of the month then last past, together with such other information as the inspector or the Lieutenant-Governor-in-Council may require. 43-44 V., c. 12, s. 92, and R. S. Q., 1519.

§ 10.—Special Provisions Respecting Mining.

I.—PARTY WALLS OR PASSAGES.

1506. A party wall or *passage*, at least three feet thick, shall be left between each holding worked as well on public as on private lands ; which said party wall or *passage* is to be used in common by all parties as a mode of access to the stream, where one exists ; and no one shall obstruct such party wall or *passage* by throwing soil, stones or other material thereon, under the penalties mentioned in article 1530. 43-44 V., c. 12, s. 93, and R.S.Q., 1520.

1507. Any person interested may, at any time, remove a party wall or *passage*, as aforesaid, if he thinks it necessary, but he shall, if required so to do, construct a new mode of access to the the water, offering the same facilities as an approach as the party wall or *passage* so removed, under the penalties enacted in article 1531 ; but such removal cannot be effected without the written permission of the inspector of the mining division, who shall summarily decide, after hearing the adverse party, or in his absence, if he has been duly notified. 43-44 V., c. 12, s. 94 ; 47 V., c. 22, s. 21, and R.S.Q., 1521.

II.—DAMAGES RESULTING FROM MINING OPERATIONS.

1508. No person working mines shall cause any damage or injury to the occupant of any other mining land, by throwing earth, clay, stones or other material upon such other land, or by causing or allowing any water which may be pumped or baled, or may flow from his land, to flow into or upon such other land, under the penalties mentioned in article 1532, over and above the damages caused. 43-44 V., c. 12, s. 95, and R.S.Q., 1522.

III. —WATER-COURSES AND EXCAVATIONS.

1509. Every miner who makes a pit, shaft or any excavation whatever, to a depth of four feet and over, is bound, under the penalties mentioned in article 1537, to enclose the same with a fence, at least four feet in height, if he discontinues working the same for a period of eight days. 43-44 V., c. 12, s. 97, and R.S.Q., 1523.

1510. All owners of claims and mining locations, bounded by water courses or rivers, upon public as well as upon private lands, may make use of such water-courses

or rivers in working their respective claims or locations, but without hindering each other, subject in all cases to the provisions of article 1489, if they apply. 43-44 V., c. 12., s. 96, and R.S.Q., 1524.

1511. Every dispute, arising between the parties on this subject, is settled and decided by the inspector of the mining division; and whosoever disobeys the order of the inspector is liable to the penalties mentioned in article 1533. 43-44 V., c. 12, s. 96, and R.S.Q., 1524.

§ 11.—Inspectors and other Officers.

I.—APPOINTMENT.

1512. The Lieutenant-Governor-in-Council may, on the recommendation of the Commissioner, appoint all inspectors, policemen or police force and other officers (except constables) deemed necessary for the carrying out of the present section, fix their rank and salaries, and prescribe their duties not formally herein prescribed. 43-44 V., c. 12, s. 36, and R.S.Q., 1464.

1513. The inspectors must be mining engineers, possessing sufficient knowledge of mineralogy and metallurgy, and have exercised their profession during at least five years.

1514. The inspectors may be appointed for one or more mining divisions, as the Lieutenant-Governor-in-Council thinks proper, under the name of "Inspector for the mining division of (*name of the division*) or for the mining divisions of (*name of the divisions*)" as the case may be. 43-44 V., c. 12, s. 37, and R.S.Q., 1465.

1515. If, in any mining division, no inspector has been appointed, or if there is one, and he is unable, for any reason whatsoever, to perform the duties of his office, or, if such office is vacant, the Commissioner may order an officer of his department or any other competent person to temporarily perform the duties of inspector in such division. 43-44 V., c. 12, s. 38, and R.S.Q., 1466.

1516. The policemen or police force are subject to the regulations established by the Lieutenant-Governor-in-Council; and such policemen and members of the police force so appointed have, while they are in office, all the powers and immunities of constables and peace officers, and all such extraordinary powers and authority as the Lieutenant-Governor-in-Council may confer on them. 43-44 V., c. 12, s. 39, and R.S.Q., 1467.

1517. They may also be employed in such duties as the Lieutenant-Governor may, from time to time, determie. 43-44 V., c. 12, s. 39, and R.S.Q., 1467.

1518. All inspectors and other officers appointed under this law are under the general control and management of the Commissioner. 43-44 V., c. 12, s. 35, and R.S.Q., 1463.

II.—POWERS AND DUTIES.

1519. Every inspector or other officer who receives public moneys, under the present law, is accountable therefor to the Commissioner, into whose hands he is bound to pay the same, at the dates and in the manner prescribed by the latter. 43-44 V., c. 12, s. 40, and R.S.Q., 1468.

1520. In rendering his accounts to the Commissioner, the inspector shall transmit, in addition to the information required, a return showing the sums collected by him, and the names of the persons who have obtained licenses. 43-44 V., c. 12, s. 40, and R.S.Q., 1468.

1521. The inspector of a mining division may, with the approval of the Commissioner, from time to time, appoint constables to the number of twelve at most; the persons so appointed are hereby respectively constituted constables and peace officers, for the purpose of this law, for the time and in the mining divisions for which they are respectively appointed.

2. The inspector has special control over the constables and police force appointed for his division. 43-44 V., c. 12, ss. 41 and 42, and R.S.Q., 1469 and 1470.

1522. He may give such orders or make such regulations, subject to the approval of the Commissioner, as he may deem expedient, respecting the general government of such officers, their classification, rank and particular services, their distribution, inspection, and place of residence.

He has absolute power, at any time, to suspend them from their functions, and, with respect to constables, to remove them, with the approval of the Commissioner. 43-44 V., c. 12, s. 42, and R. S. Q., 1470.

1523. All such constables, while in office, have all the powers, authority, rights, and privileges conferred on the police force of the cities of Montreal and Quebec respectively, by the provisions of sections one and four of chapter first of title seventh of these Revised Statutes. 43-44 V., c. 12, s. 42, and R. S. Q., 1470.

1524. Every inspector, constable or peace officer, in a mining division, may, at any time, enter upon private or public lands that are being mined in the said division, and examine the pits, shafts, tunnels, subterranean passages or other mining works or excavations constructed or commenced in any manner whatsoever, and require, from the proprietors of such pits, shafts, tunnels and other mining works, and from their employees, all the facilities and assistance necessary for that purpose. 43-44 V., c. 12, s. 45, and R. S. Q., 1473.

1525. No inspector of a mining division, under the penalties mentioned in article 1540, can, at any time, either directly or indirectly, so long as he is in office, take any share, in his own name, or in the name of another for him, in the working of the mines at large in the mining division for which he has been appointed. 43-44 V., c. 12, s. 46, and R. S. Q., 1474.

§ 12.—Penalties.

1526. Every person who works a mine in public or private lands, when the claim belongs to the Crown, without having first acquired the same under the present law, or without having first obtained a license and paid the fee and rental required by article 1461, is liable to a fine of two hundred dollars and costs for every contravention, and, in default of payment, to imprisonment for a period not exceeding three months. 43-44 V., c. 12, s. 102, and R. S. Q., 1528 and 1529.

1527. Every owner of mining land who sells, cedes, transfers or alienates his mining right, without having given notice to the Commissioner of Crown Lands within thirty days after such sale, transfer or alienation, is liable to a fine of fifty dollars and costs, and in default of payment, to an imprisonment of three months.

1528. Every person who commences mining, or every applicant for a license who has staked out a mining lot, in conformity with article 1491, without having furnished to the inspector the name of the person, the full designation and description of his mining land and declared his place of residence, is liable to a fine not exceeding twenty-five dollars and costs, and, in default of payment, to imprisonment for a period not exceeding one month. 43-44 V., c. 12, s. 103, and R. S. Q., 1530.

1529. Every person who, by himself or his agents, employs a woman or girl, or who employs any male child in the working of such mine, contrary to the provisions of article 1548, is liable to a fine not exceeding twenty dollars for each offence and the costs, and, in default of payment, to an imprisonment not exceeding one month.

1530. Whosoever obstructs a party wall or *passage* upon lands worked as mines under this law, by throwing thereon earth, stones or other material, is liable to a fine not exceeding five dollars and costs, and, in default of payment, to imprisonment for a period not exceeding one month. 43-44 V., c. 12, s. 104, and R.S.Q., 1531.

1531. Whosoever removes a party wall or *passage* and does not, if thereunto required, provide another mode of access to the water-course, is liable to the penalty mentioned in the preceding article. 43-44 V., c. 12, s. 105, and R.S.Q., 1532.

1532. Whosoever, while engaged in mining, causes damage or injury to the occupant of another mining land by throwing earth, clay, stones or other material in and upon such claim, or by causing or allowing any water, which may be pumped or baled or which may flow from his claim, to flow into or upon such land, is liable to a fine not exceeding five dollars and costs, and, in default of payment to imprisonment for a period not exceeding one month. 43-44 V., c. 12, s. 108, and R.S.Q., 1533.

1533. Whosoever, in working a mine, does not comply with the decision of the inspector with respect to the use he is to make of a water-course, canal, drain, shoot, or other aqueduct, is liable to a fine not exceeding fifty dollars and costs, and, in default of payment, to imprisonment for a period not exceeding one month. 43-44 V., c. 12, s. 107; 47 V., c. 22, s. 22, and R.S.Q., 1534.

1534. Any person found removing or disturbing intentionally, any stake or picket planted under the provisions of this law, is liable to a fine not exceeding ten dollars and costs, and, in default of payment, to imprisonment for a period not exceeding one month. 43-44 V., c. 12, s. 108, and R.S.Q., 1535.

1535. Whosoever makes use of any mill or machine, other than those worked by hand, within or near any mining division, for the crushing or reduction of quartz or the obtaining of gold therefrom, by crushing, stamping, amalgamating or otherwise, without a license therefor, is liable to a fine not exceeding one hundred dollars and costs, and, in default of payment, to imprisonment for a period not exceeding two months. 43-44 V., c. 12, s. 109, and R.S.Q., 1536.

1536. Every licensed mill or machine owner, or, in the case of an incorporated company, every manager or agent thereof, who omits to enter the statement of any of the details which he is required to enter, in his book, under articles 1504 and 1505, or delays sending in the return which he is bound to make, is liable, for every day of such ommission or delay, to a fine not exceeding twenty dollars and costs, and in default of payment, to imprisonment for a period not exceeding one month. 43-44 V., c. 12, s. 110, and R.S.Q., 1537.

1537. Every person who discontinues working in any pit, shaft or excavation whatsoever of four feet or more in depth, without fencing in the same to a height of at least four feet, is liable, for each offence, to a fine not exceeding fifty dollars and costs, and, in default of payment, to imprisonment for a period not exceeding one month. 43-44 V., c. 12, s. 111, and R.S.Q., 1538.

1538. Every licensee, who, when required so to do, refuses to exhibit his license to the inspector of the mining division, or to any constable or peace officer deputed by such inspector, is liable to a fine not exceeding five dollars and costs, and, in default of payment, to imprisonment for a period not exceeding one month. 43-44 V., c. 12, s. 112, and R.S.Q., 1539.

1539. Every person, engaged in mining upon any land whatever, who refuses to allow the inspector of the division, or any constable or peace officer, authorized by such inspector, to enter, for the performance of their official duties, upon the lands on which he is so working, or, who refuses, when thereunto required, to afford them the facilities and assistance necessary for such purpose, is liable to a fine not exceeding five dollars and costs, and, in default of payment, to imprisonment for a period not exceeding one month. 43-44 V., c. 12, s. 113, and R.S.Q., 1540.

1540. Every inspector of mines, who, while he is in office, takes a share in the working of the mines generally, either in his own name or in that of another for him, directly or indirectly, is liable (in addition to dismissal from office, and the nullity of the title or interest which he has obtained) to a fine not exceeding four hundred dollars and costs, and, in default of payment, to imprisonment, for a period not exceeding one year. 43-44 V., c. 12, s. 114, and R.S.Q., 1541.

1541. Every witness lawfully summoned, who refuses to appear or to take the oath and to answer, is liable to a fine of five dollars and costs, for every such refusal, or to be imprisoned until he consents to take the oath or affirmation and to answer. 43-44 V., c. 12, s. 115, and R.S.Q., 1542.

1542. Every person, who, knowingly or under reasonable belief that an arrest under this law is to be made, prevents the arrest of any one violating this law, is liable to a fine not exceeding forty dollars, and, in default of payment, to imprisonment for a period not exceeding two months. 43-44 V., c. 12, s. 148, and R.S.Q., 1570.

1543. Every person, contravening this law or any order or regulation made under it, where no other penalty or punishment is imposed, is liable, for every day on which such contravention occurs, continues, or is repeated, to a fine not exceeding twenty dollars and costs, and, in default of payment, to imprisonment not eaceeding one month. 43-44 V., c. 12, s. 121, and R.S.Q., 1543.

1544. Every term of imprisonment counts from the day of incarceration. 43-44 V., c. 12, s. 149, and R.S.Q., 1571.

§ 13.—Riots in the Neighborhood of Mines.

1545. The Lieutenant-Governor-in-Council may, by proclamation, whenever he deems it necessary, declare that section eleventh of chapter eighth of title fourth of these Revised Statutes, respecting riots near public works, shall apply to one or more mining divisions, in so far as its provisions may be applicable ; the said section shall have force of law, from and after the date of such proclamation, in the mining division or divisions mentioned in the proclamation. 43-44 V., c. 12, s. 125, and R.S.Q., 1546.

1546. The Lieutenant-Governor-in-Council may, in the same manner, from time to time, declare the said section to be no longer in force in such mining division or divisions, and again put the same in force when he deems it advisable. 43-44 V., c. 12, s. 125, and R. S. Q., 1546.

1547. No such proclamation can have any effect within the limits of a city. 43-44 V., c. 12, s. 125, and R. S. Q., 1546.

§ 14.—Protection of Workmen in Mines.

1548. No woman or girl shall be employed in the working of any mine.

2. No male child under fifteen years shall be employed in the underground works of any mine or quarry.

3. No male child of fifteen years but under seventeen years shall be employed in a mine as above, more than 48 hours per week, said week being considered as beginning at midnight on Sunday and ending at midnight on the following Saturday.

4. No male child of less than twenty years shall be employed in working machinery in or near a mine, with the exception of machinery put in motion by horses or other animals, in which case their driver may be sixteen years of age.

1549. Every proprietor of a mine in operation, who, by himself or his agents, contravenes the provisions of the preceding article, is subject to the penalties mentioned in article 1529.

1550. Regulations may be made by the Lieutenant-Governor-in-Council, respecting the sanitary condition and safety of the works in mines, so as to protect the life and health of the workmen therein employed.

Such regulations, after their promulgation in the Official Gazette, become law, and a copy of the same shall be posted up in the most conspicuous places of the mine, in conformity with the instructions of the mining inspector.

1551. Every three months the inspector shall make a report to the Commissioner with respect to the fulfilment of the provisions of the present paragraph within the limits of his mining division.

§ 15.—Sale of Intoxicating Liquors Near Mines in Operation.

1552. The sale or exchange of intoxicating liquors, within a radius of seven miles of any mine in operation, is prohibited unless a license to that effect has been obtained from the inspector of the mining division, in conformity with section twelfth of chapter fifth of title fourth of these Revised Statutes, under the penalties set forth in the 893rd and following articles. 43-44 V., c. 12, s. 49, and R. S. Q., 1477.

1553. The inspector of a division has the supervision of those who therein sell intoxicating liquors; he alone may refuse or grant such licenses and cancel the same within such radius of seven miles. 43-44 V., c. 12, s. 49; 45 V., c. 14 s. 1, and R. S. Q., 1477.

§ 16.—Prosecutions.

I.—LAWS APPLICABLE.

1554. All the provisions of this law, relating to indictable offences or summary convictions, as well as to the proceedings to be adopted in each of such cases, shall be so interpreted that the Revised Statutes of Canada, chapters one hundred and seventy-four and one hundred and seventy-eight, shall be applicable thereto, as also the provisions of articles 2713 to 2720 of these Revised Statutes. 43-44 V., c. 12, s. 126, and R.S.Q., 1547.

II.—IN WHOSE NAME BROUGHT.

1555. Prosecutions for the recovery of royalties due to the Crown, for sums due for the purchase of mining concessions or mining rights, and for mining or exploration licenses, are brought in the name of the Commissioner of Crown Lands, before any court of competent civil jurisdiction, and other prosecutions for contraventions of this law are brought in the name of a complainant or by the collector of provincial revenue for the district in which such offence was committed. 43-44 V., c. 12, s. 127; 47 V., c. 22, s. 23, and R.S.Q., 1548.

III.—INSPECTOR'S COURT AND JURISDICTION.

1556. Prosecutions for the recovery of fines imposed by this section, or by the regulations made in virtue thereof, for the recovery of fees exigible thereunder, other than those mentioned in the preceding article, and for all contraventions of the provisions thereof, are brought before the inspector of each mining division having jurisdiction. 43-44 V., c. 12, s. 128, and R.S.Q., 1549.

1557. The inspector of each mining division is, *ex-officio*, a justice of the peace for the district which may comprise or include, in whole or in part, the mining division for which he has been appointed, or in which district or portions thereof there may be one or more mining divisions, in which he is bound to perform his duties. 43-44 V., c. 12, s. 129, and R.S.Q., 1550.

1558. It shall not be necessary that the inspector have any property qualification, to allow of his lawfully acting as a justice of the peace. 43-44 V., c. 12, s. 130, and R.S.Q.. 1551.

1559. As a justice of the peace, the inspector (except in suits relating to rights or titles to immovable property, in which he must decline to act, if such cases occur,) possesses the jurisdiction, authority, rights and privileges which may be conferred, by the laws then in force, upon any police magistrate, district magistrate, judge of the sessions of the peace, justice of the peace, sheriff or recorder, throughout the whole extent of the territory for which he has been appointed.

2. He decides, in a summary manner, all contestations respecting the dimensions or boundaries of mining lands under mining license, the use of water-courses and the access thereto.

His decision is final and without appeal, in all things within his jurisdiction.

3. He takes cognizance of and finally determines all suits of a purely personal nature, and those affecting movables, between persons or companies engaged in mining, or their agents, or other persons or companies, and *vice versa;* providing the amount in dispute does not exceed twenty-five dollars.

The proceedings are summary. 43-44 V., c. 12, ss. 131 and 132; 47 V., c. 22, s. 24, and R.S.Q., 1553 and 1554.

1560. For the execution of judgments under this law, the proceedings are the same as those in the Circuit Court. 47 V., c. 22, s. 24, and R. S. Q., 1554.

1561. The inspector may:

1. By writ of summons, cause defendants to appear before him;

2. Summon any person who is pointed out to him as an important witness in a case;

3. Condemn a witness to the penalties mentioned in article 1541, whenever he refuses to appear, when lawfully summoned, or to take the oath and to answer;

4. Receive and cause to be taken in writing, upon the application of the plaintiff or of the defendant, in his discretion, the depositions of the witnesses then present, and adjourn the case to a future day, which he shall then fix for such purpose;

5. Determine such complaint, in the presence or absence of the defendant, in a summary manner, upon the evidence given under oath by one or more witnesses, sworn before him, and levy such sum as he may adjudge to be due by such person or company to such laborers or servants, together with such costs as he may deem proper, by a warrant of distress and sale of the defendant's goods and chattels;

6. Convict, within his division, upon view, any person for any contravention punishable under the provisions of this law or the regulations made in virtue thereof. 43-44 V., c. 12, ss. 134, 135, 136, 137, 138, 139 and 140, and R. S. Q., 1555, 1556, 1557, 1558, 1559, 1560 and 1561.

IV.—CLERKS OF INSPECTORS.

1562. The clerks of inspectors of mining divisions are appointed by the Commissioner of Crown Lands, and shall be entitled to the same fees as clerks of commissioners' courts, or clerks of justices of the peace, as the case may be. 47 V., c. 22, s. 25, and R. S. Q., 1562.

V.—PROCEDURE.

1563. In any prosecution, instituted under this section, it is not necessary, in the declaration, information, complaint or summons, to allege any negative fact, or any fact which it is the duty of the defendant to prove. 43-44 V., c. 12, s. 143, and R.S.Q., 1565.

1564. Any declaration, complaint or summons may be amended, without costs, if there be any defect in the form thereof, and, upon such amendment, the defendant may obtain a further delay to plead and adduce evidence. 43-44 V., c. 12, s. 144, and R. S. Q., 1566.

1565. It is not necessary, in a complaint, to state the exact day on which the offence was committed; it is sufficient that the day and hour be approximately stated. 43-44 V., c. 12, s. 145, and R. S. Q., 1567.

1566. The fees to which bailiffs, constables and clerks of inspectors of mining divisions are entitled, are those mentioned in articles 2585 to 2592, which fees each is respectively allowed to collect; but, as regards the fees of advocates and other costs, they are taxed in a reasonable and equitable manner, in the discretion of the inspector. 43-44 V., c. 12, s. 146; 49-50 V., c. 34, s. 1, and R. S. Q., 1568.

1567. Every service, under this law, is made by a bailiff of the Superior Court, or a constable appointed for the mining division in which the suit is instituted, by leaving a copy, certified by the inspector of the said division, with the defendant personally, or with a reasonable person of his family, at his domicile or place of business. 43-44 V., c. 12, s. 141, and R.S.Q., 1563.

1568. The return of service by a bailiff is made under his oath of office.

That made by a constable is proved by a certificate, sworn before a justice of the peace, or the inspector of the mining division. 43-44 V., c. 12, s. 142, and R.S.Q., 1564.

VI.—EXECUTION OF JUDGMENTS.

1569. In default of immediate payment of the fine and costs, the inspector may either cause the defendant to be imprisoned at once, or cause the defendant's goods and chattels to be seized and sold to pay the same; and if he have no goods and chattels, or not sufficient goods and chattels, cause him to be imprisoned for the period mentioned in the judgment.

Nevertheless, the defendant may, at any time, obtain his discharge, by paying the fine and costs. 43-44 V., c. 12, s. 147, and R.S.Q., 1569.

1570. No appeal lies from any conviction by or judgment of the inspector, in conformity with the provisions of this law. 43-44 V., c. 12, s. 150, and R.S.Q., 1572.

§ 17.—Miscellaneous Provisions.

I.—APPLICATION OF DUES, FEES AND FINES.

1571. All dues, fees and fines collected under this law, as well as the price of mining concessions, unless otherwise provided, form part of the consolidated revenue fund of this Province. 43-44 V., c. 12, s. 151, and R.S.Q. 1573.

1572. Any proportion of such dues, fees and fines may, from time to time, be applied by the Lieutenant-Governor-in-Council, towards meeting the expenses incurred in carrying out this law. 43-44 V., c. 12, s. 151, and R.S.Q., 1573.

1573. The fines are applied as follows :—

1. If the fine and costs are wholly recovered in the name of a complainant, after the costs are paid, one half of the penalty belongs to such complainant, and the balance is paid to the Provincial Treasurer ;

2. If the fine and costs have not been wholly recovered, then, after payment of the costs, the balance is distributed in the proportion indicated in the preceding paragraph. 43-44 V., c. 12, s. 152, and R.S.Q., 1574.

1574. The aforesaid distribution is made by the inspector of the mining division himself. 43-44 V., c. 12, s. 143, and R.S.Q., 1575.

II.—GEOLOGICAL EXPLORATIONS.

1575. The Commissioner of Crown Lands may, from time to time, and so often as he may deem advisable, cause geological explorations or other searches to be made, in order to ascertain what lands contain ores or minerals of any kind. 43-44 V., c. 12, s. 156, and R.S.Q., 1578.

1576. He may, at the same time, cause to be surveyed, and boundaries and limits set to mining concessions, in localities which are not yet subdivided, and in his discretion, cause each lot to be marked out in accordance with the meaning of this law. 43-44 V., c. 12, s. 156, and R. S. Q., 1578.

III.—SALE OF LANDS, AND RESERVES OF MINING LANDS.

1577. Lands sold by the Crown for the working of mines in general, shall be sold in conformity with the provisions of this law. 43-44 V., c. 12, s. 154, and R. S. Q., 1576.

1578. The Commissioner may, when he sees fit, reserve and withold from sale, for colonization purposes, lands in which the existence of mines, which may be worked, has been established, with the object of selling them, at a suitable time, as mining concessions. 43-44 V., c. 12, s. 157, and R. S. Q., 1579.

IV.—VALUATION OF TAXABLE MINING LANDS.

1579. In making the valuation of taxable mining lands in a municipality in which there exists an immovable property, containing a mine which is being worked, the valuators shall, up to the 24th July, 1900, value such immovable, without taking into consideration the increased value arising from the existence of such mine, and minerals, ores, pits, shafts, excavations, tunnels, mills, machines and other buildings, structures and dependencies, used or to be used exclusively for the working of such mine. 43-44 V., c. 12, s. 122, and R. S. Q., 1544.

V.—REGULATIONS BY THE LIEUTENANT-GOVERNOR.

1580. The Lieutenant-Governor-in-Council may, from time to time, make any regulations which he may deem necessary or expedient :—

1. For diminishing or increasing the size of lands for which mining licenses are granted under this law, or for altering the shape thereof ;

2. For altering the price, terms and conditions of mining licenses, and for increasing the price of mining concessions ;

3. For reserving land found to be rich in mines and minerals, or for withdrawing them temporarily from sale ;

4. For classifying in one of the two categories of paragraph 11 of article 1421 such ores and minerals which are not therein specially named, or for changing the category of those already therein named ;

5. For the opening, construction, maintenance and use of the shafts, conduits, sluices, through or upon claims or mining concessions, or on lands under mining license, to facilitate the carriage and passage of water for mining purposes ;

6. For erecting into mining divisions any part of the province which he may deem proper, for enlarging or diminishing, from time to time, such divisions, or for abolishing them at any time he may consider necessary ;

7. For establishing and maintaining roads through mining divisions, and generally for the better carrying out of the provisions of the present law.

All such regulations, after being published in the Quebec Official Gazette, shall have force of law. 43-44 V., c. 12, s. 124 ; 49-50 V., c. 30, s. 1, and R. S. Q., 1546.

§ 18—Final Provisions.

1581. The Commissioner shall submit, with his annual return to the Legislature, a statement respecting mines in this Province. 43-44 V., c. 12, s. 159, and R. S. Q., 1581.

1582. The forms 1, 2, 3, 4, 5, 6 and 7 of the present law, or any other forms to the same effect, may be employed whenever deemed necessary. 43-44 V., c. 12, s. 163, and R. S. Q., 1582.

2. The Acts 54 Victoria, chapters 15 and 16, are hereby repealed.

3. The present Act shall not affect any promises of sale of mining concessions which may have been made, under the provisions of the Act 54 Victoria, chapter 15, for a greater extent than that authorized by the present law, nor shall it affect any acquired rights.

4. The present Act shall come into force on the day of its sanction.

ONTARIO.

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ONTARIO.

The Mines Act 1892.

Her Majesty, by and with the consent of the Legislative Assembly of the Province of Ontario, enacts as follows :

1. This Act may be cited as *The Mines Act 1892.*

Part I—General Provisions.

INTERPRETATION CLAUSES.

2. Where the following words occur in this Act, and in Orders-in-Council or Regulations under it, they shall be construed in the manner hereinafter mentioned unless a contrary intention appears :—

1. "Mine" includes every shaft in the course of being sunk, and every adit, level and inclined plane in the course of being driven for commencing or opening any mine, or for searching for or proving minerals, and all the shafts, levels, planes, works, machinery, tramways and sidings, both below ground and above ground, in and adjacent to a mine, and any such shaft, level and inclined plane belonging to any mine to which this Act applies, together with all rocks, soils or strata containing any ores or minerals, and all places where the work of mining may be carried on.
2. The verb "mine" and the participle "mining" shall mean and include any mode or method of working whatsoever whereby the soil or earth or any rock, stone or quartz may be disturbed, removed, carted, carried, washed, sifted, smelted, refined, crushed or otherwise dealt with for the purpose of obtaining any metal or metals therefrom, whether the same may have been previously disturbed or not.
3. "Mining division" shall mean and include any tract of country declared to be a mining division within this Act.
4. "Crown lands" shall mean and include all crown lands, school lands or clergy lands not in the actual use or occupation of the Crown, or of any public Department of the Government of the Dominion of Canada or of this Province, or of any officer or servant thereof, and not under lease or license of occupation from the Crown or the Commissioner of Crown Lands, and as to which no adverse claim exists which is subsequently recognized by the Commissioner of Crown Lands.
5. "Surface rights" shall mean lands granted, leased or located for agricultural or other purposes and in respect of which the ores, minerals and mines thereupon or under the surface thereof are by statute, the patent or lease, or otherwise, reserved to the Crown.

6. "Mining rights" or "mineral rights" shall include the right to the ores, minerals and mines upon or under or connected with the surface rights.
7. "Party wall" shall mean a bank of earth or rock left between two excavations.
8. "Shaft" includes pit, and "plan" includes a map and section, and a correct copy or tracing of any original plan as so defined.
9. "Machinery" includes steam or other engines, boilers, furnaces, stampers or other crushing apparatus, winding or pumping gear, chains, trucks, tramways, tackle, blocks, ropes or tools, and all appliances of whatsoever kind used in or about or in connection with the mine.
10. "Owner" when used in relation to any mine means any person or body corporate who is the immediate proprietor or lessee, or occupier of any mine, or of any part thereof, and does not include a person or body corporate who merely receives a royalty, rent or fine from a mine, or is merely the proprietor of a mine subject to any lease, grant or license for the working thereof, or is merely the owner of the soil and not interested in the minerals of the mine.
11. "Agent" when used in relation to any mine means any person having, on behalf of the owner, care or direction of any mine, or of any part thereof, and includes the words "manager" and "superintendent."
12. "Inspector" includes any inspector appointed under this Act, and whether for a mining division or any part thereof or for the Province. R. S. O., 1887. c. 31, s. 2; 53 V., c. 10, s. 3.

Royalties on Ores or Minerals.

3. All royalties, taxes or duties which by any patent or patents issued prior to the 4th day of May, 1891, have been reserved, imposed or made payable upon or in respect of any ores or minerals extracted from the lands granted by such patents, and lying within this Province, are hereby repealed and abandoned; and such lands, ores and minerals shall henceforth be free and exempt from every such royalty, tax or duty; and all reservations of gold and silver mines contained in any patent issued prior to the date aforesaid, granting in fee simple land or lands situate within this Province, are hereby rescinded and made void, and all such mines in or upon such lands shall be deemed to have been granted in fee simple as part of such lands and to have passed with such lands to the subsequent and present proprietors or owners thereof in fee simple; but the provisions of this section shall not be construed to apply to lands patented under *The Free Grants and Homesteads Act.* R. S. O., 1887, c. 31, s. 3, 4.

4.—(1) All ores and minerals mined, wrought or taken from lands located, sold and granted or leased by the Crown on or after the 4th day of May, 1891, shall be subject to a royalty to the Crown for the use of the Province, to be reckoned at the following rates, whether such royalty be reserved in the grant, patent or lease, or not;

(*a.*) Silver, nickel, or nickel and copper, three per cent.

(*b.*) Iron ore, not exceeding two per cent.

(*c.*) All other ores, such royalty as shall be from time to time imposed by Order-in-Council, not exceeding three per cent.

Nevertheless it is provided that the royalty hereby reserved shall not be imposed or collected upon any ores mined, wrought or taken until after seven years from the date of the patent or lease. No higher rate of royalty shall be levied upon ores and minerals taken from land than that provided for by the statute in force at the time of the sale or lease of such land.

(2) All royalties shall be calculated upon the value of the ores or minerals at the pit's mouth, less the actual cost of labor and explosives for mining and raising the same to the surface, and shall be payable at such time and times and the values shall be fixed and ascertained in such manner as shall be provided by regulation to be made by the Lieutenant-Governor-in-Council in that behalf. 54 V., c. 8, s. 3.

(3) Where a prospector or explorer who originally discovers valuable ore or mineral on or in a vein or lode at least three miles from the nearest known mine or discovery on the same vein or lode, or in or upon a vein or lode theretofore unknown or undiscovered at a distance of one mile from any other known or discovered mine, lode or vein, and in the patent, grant or lease whereof such prospector or explorer is described as the original discoverer, the grantee or lessee, his executors, administrators or assigns shall be exempted from paying royalty on any part of the ore, produce or profit of such mine to the Province for a term of fifteen years, to be computed from the date of such patent, grant or lease ; provided nevertheless that it shall be incumbent upon the applicant to show :

(*a.*) That the discovery was made after the coming into force of this Act and that the application for a grant or lease was made to the Department within one month from the time of the alleged discovery ;

(*b.*) Or that the discovery was made since the 4th day of May, 1891, and that application for a grant or lease has been heretofore made to the Department or was made within one month from the coming into force of this Act.

5. The Lieutenant-Governor-in-Council may by regulation provide that the ores of any mine taken or to be taken out by way of experiment and for the purpose of ascertaining the quality and value of the mineral and mine shall be free from royalty upon the recommendation of the Director of Mines. 54 V., c. 8, s. 4.

Regulations.

6. (1) The Lieutenant-Governor-in-Council may from time to time make such regulations as he deems necessary or expedient for the appointment of Arbitrators or Mining Boards to hear and determine appeals from the decisions of Inspectors of divisions ; for the prescribing, defining and establishing the powers, duties and mode of procedure of the Arbitrators or Mining Boards ; for the opening, construction, maintenance and using of roads through or over mining claims, mining locations or lands hereafter sold as mining lands ; and for the opening, construction, maintenance and using of ditches, aqueducts or raceways through or over such claims, locatons or lands

for the conveyance and passage of water for mining purposes, and generally for the purpose of carrying out this Act; and such regulations, after publication in the *Ontario Gazette*, shall have the force and effect of law. R. S. O., 1887, c. 31, s. 35.

(2) Any regulations made under this Act by the Lieutenant-Governor-in-Council shall, if made when the Legislative Assembly is sitting, be laid upon the table of the House during the then session, and if made at any other time shall be laid upon the table of the House within fifteen days from the beginning of the next session thereof. 54 V., c. 8, s. 11.

MINERALS ON CROWN LANDS.

7. Any person or persons may explore for mines or minerals on any Crown lands, surveyed or unsurveyed, and not for the time being marked or staked out and occupied as hereinafter mentioned. R. S. O. 1887, c. 31, s. 6.

8. Crown lands supposed to contain ores or minerals may be sold as mining lands, or may when situate within a mining division be occupied and worked as "mining claims" under miners' licenses, as hereinafter provided. R. S. O. 1887, c. 31, s. 7.

9. Such lands so sold when situate in unsurveyed territory, or in townships surveyed into sections or lots, shall be sold in blocks to be called "mining locations." R. S. O. 1887, c. 31, s. 8.

Part II.—Mining Locations.

FORM AND PRICE OF LOCATIONS.

10. Mining locations under this Act shall conform to the following requirements:

1. In the unsurveyed territory within the districts of Algoma, Thunder Bay and Rainy River, and that part of the district of Nipissing which lies north of the French River, Lake Nipissing and the River Mattawa, every regular mining location shall be rectangular in shape, and the bearings of the outlines thereof shall be due north and south and due east and west astronomically; and such location shall be of one of the following dimensions, namely, eighty chains in length by forty chains in width, containing three hundred and twenty acres, or forty chains square containing one hundred and sixty acres, or forty chains in length by twenty chains in width, containing eighty acres, or twenty chains in length by twenty chains in width, containing forty acres.
2. Where a mining location in the unsurveyed lands in the territory aforesaid borders upon a lake or river a road allowance of one chain in width shall be reserved along the margin of the lake or river, and the width of the location shall front on the road allowance, and the bearings of the other outlines of the location shall be due north and south and due east and west astronomically, and the location shall otherwise conform to the requirements of the preceding sub-section as nearly as the nature of the land will admit. But the Commissioner of Crown Lands may, where in his opinion the public interests will not be prejudiced, specially direct that such reservations shall not be made in the case of any island or islands which contain not more than thirty acres.

3. In the townships in the said territory surveyed or hereafter to be surveyed into sections or lots every mining location after such survey shall consist of a half, a quarter, an eighth, or a sixteenth of a section or lot as the case may be, but so that the area of any such mining location shall be not less than forty acres.

4. In all patents and leases for mining locations in the territory aforesaid there shall be a reservation for roads of five per centum of the quantity of land professed to be granted.

5. In the unsurveyed lands not situate within the limits of the territory aforesaid mining locations shall be as may be defined by any Order-in-Council hereafter to be made. R.S.O. 1887, c. 31, s. 9; 53 V., c. 9, s. 1.

11. Mining locations in unsurveyed territory shall be surveyed by a Provincial Land Surveyor, and be connected with some known point in previous surveys, or with some other known point or boundry (so that the tract may be laid down on the office maps of the territory in the Department of Crown Lands), at the cost of the applicants, who shall be required to furnish with their application the surveyor's plan, field notes and description thereof, showing a survey in accordance with this Act and to the satisfaction of the Commissioner of Crown Lands. R.S.O. 1887, c. 31, s. 10.

12.—(1) The price per acre of all Crown lands to be sold as mining lands or locations in the districts of Algoma, Thunder Bay, Rainy River and that part of the district of Nipissing which lies north of the French River, Lake Nipissing and the River Mattawa shall be:

a. If in a surveyed township and within twelve miles of any railway.... $3 50
b. If within twelve miles of any railway but in unsurveyed territory..... $3 00
c. All other mining lands in surveyed territory..... $3 00
d. All other mining lands in unsurveyed territory..... $2 50

(2) The price per acre of all other Crown lands sold as mining lands or locations and lying south of the aforesaid lake and rivers shall be:

a. If in a surveyed township and within twelve miles of any railway.... $2 50
b. If situate elsewhere..... $2 00

(3) Where any locality or territory is shown to be rich in mines and minerals the Lieutenant-Governor-in-Council may by regulation set apart the whole or part of such locality or territory, and may fix the price per acre at any greater sum than is hereinbefore mentioned, or may temporarily withdraw the same from sale. 54 V., c. 8, s. 1.

TENURE OF LOCATIONS.

13.—(1) The grantee and owner of any mining location or lot or parcel sold and patented under the preceding section shall, during the seven years immediately following the issue of the patent therefor, expend in stripping or in opening up mines, in sinking shafts or in other actual mining operations where the quantity contained in the patent exceeds 160 acres, $4 per acre during the first seven years; where the quantity contained in the patent is 160 acres or less, $5 per acre during the first seven years.

(2) The said expenditure may consist of labour actually performed by grown men at the rate of two dollars and a half per day, or of payment therefor, or for explosives or other mining material for use on the particular parcel of land.

(3) In default of such expenditure during the said period the mines and minerals, with the right of access thereto and removal therefrom, and all rights of mining upon, under or connected with any such lot or part of lot, or so much thereof as shall be owned by any person who has failed to make the expenditure in respect of the portion or parcel owned by him shall, upon the report of the Director of Mines that such expenditure has not been made, confirmed by an Order of the Lieutenant-Governor-in-Council, revert to, become the property of and be vested in Her Majesty, her successors and assigns, and shall cease to be the property of any other person or persons whatsoever; but the grantee or owner shall retain all his other interests in the land or soil as agricultural land distinct from the mines and minerals. 54. V., c. 8, s. 2.

14.—(1) Instead of granting any mining lands in fee simple the same may be leased or demised for a term of ten years with the right of renewal for a further term of ten years at the same rental if the covenants and conditions have been performed and fulfilled.

(2) Unless otherwise provided by regulation the rental for the first year shall be one dollar per acre, and thereafter the sum of twenty-five cents per acre per annum, payable in advance, in respect of the lands or within the territory designated in the first sub-section of section 12 of this Act; and sixty cents per acre the first year, and thereafter fifteen cents per acre per annum, payable in advance, for lands situate elsewhere.

(3) Such lease may at the expiration of the second term, if the covenants and conditions thereof have been performed and fulfilled, be renewed for a term of twenty years on such conditions and at such rent as the regulations shall provide, and so on from time to time the same may be renewed at the expiration of every twenty years.

(4) Every such lease shall be subject to such covenants and conditions on the part of the lessee, his executors, administrators and assigns, to be paid, observed and performed, as shall be provided by regulation.

(5) The said lease may among other things provide for the removal of any mining plant and machinery which the lessee, his executors, heirs and administrators shall have placed or erected upon the said premises, in case of forfeiture or non-renewal of the lease.

(6) There shall be expended in stripping or in opening up mines or in sinking shafts or in other actual mining operations the same sum upon lands leased under the provisions of this Act as it is provided shall be expended in the case of sales or grants by section 13 hereof, and within the same time and in default of such expenditure the lease shall be forfeited and become absolutely void, and the said lands, mines and minerals shall, upon the report of the Director of Mines that such expenditure has not been made, confirmed by an Order of the Lieutenant-Governor-in-Council, revert to and become the property of and be vested in Her Majesty, her successors and assigns,

and shall cease to be the property of any other person or persons whatsoever. 54 V., c. 8, s. 5.

15. The lessee may at any time during the demised term, upon the payment of all rent due and the performance and fulfilment of all other covenants and conditions, become the purchaser of the lands demised to him, and in such case the sum paid for the first year's rental shall be treatad as part of the purchase money. 54 V., c. 8, s. 6.

16. If default is made by the lessee in the payment of rent the lease shall be forfeited and become absolutely void, but the lessee may defeat the forfeiture by payment of the full amount of rent within ninety days from the date hereinbefore appointed for payment thereof; but unless the whole of the rent is paid within ninety days from the appointed day the lease shall be absolutely forfeited and void, any statute, law, usage or custom to the contrary notwithstanding, and all claims of any and every kind of the lessee or his assigns shall from and after such last mentioned period forever cease and determine. 54 V., c. 8, s. 7.

RESERVATION OF TIMBER.

17.—(1) The patents for all Crown lands sold as mining lands shall contain a reservation of all pine trees standing or being on the said lands, which pine trees shall continne to be the property of Her Majesty, and any person now or hereafter holding a license to cut timber or sawlogs on such lands may at all times during the continuance of the license enter upon such lands and cut and remove such trees and make all necessary roads for that purpose.

(2) The patentees or those claiming under them (except patentees of mining rights hereinafter mentioned) may cut and use such trees as may be necessary for the purpose of building, fencing and fuel on the land so patented, or for any other purpose essential to the working of the mines thereon, and may also cut and dispose of all trees required to be removed in actually clearing the land for cultivation.

(3) No pine trees, except for said necessary building, fencing and fuel, or other purpose essential to the working of the mine, shall be cut beyond the limit of such actual clearing; and all pine trees so cut and disposed of, except for the said necessary building, fencing and fuel, or other purpose aforesaid, shall be subject to the payment of the same dues as are at the time payable by the holders of licenses to cut timber or sawlogs. R. S. O. 1887, c. 31, s. 12.

18.—(1) The preceding section shall apply to all leases issued under this Act, other than leases of mining rights hereinafter mentioned, with the following limitations and variations, that is to say:—

(2) No pine tree shall be used for fuel other than dry pine trees, and (except for domestic or household purposes) only after the sanction of the timber licensee or the Department of Crown Lands is obtained.

(3) In case it is intended to clear for cultivation any portion of the lands so leased it shall be the duty of the lessee to give the holder of the timber license three months' notice in writing of his intention to clear, and the area intended to be cleared,

and its position, so that such timber licensee may remove any timber on the area intended to be cleared.

(4.) If at the expiry of the time limited by the notice such timber shall not have been removed from the area intended to be cleared, then the lessee shall be at liberty to cut and dispose of all trees required to be removed in actually clearing for cultivation the area specified in such notice, and all trees so cut and disposed of shall be subject to the payment of the same dues as are at the time payable by the holders of licenses.

(6.) If during the first ten years it is sought to cut timber, other than pine, on the lands so leased, beyond what is required for building, fencing or fuel, or in the course of actual clearing for cultivation, or for any other purposes essential to the working of the mines as hereinbefore provided, application shall first be made to the Commissioner of Crown Lands, who may grant authority to cut such timber and fix the rate of dues to be paid thereon. 54 V., c. 8, s. 8.

SURFACE RIGHTS AND MINING RIGHTS.

19.--(1) Where the mines, minerals and mining rights are reserved to the Crown the owner of any surface rights (if a patent or mining lease of the mining rights thereupon or thereunder has not been previously applied for, and a deposit of at least half the purchase price or rental made) may make application and shall have priority in respect of such application for a mining lease or grant thereof upon payment to the Department of the purchase money or rent within one month from the time of such application, unless in the case of original and *bona fide* discovery by a subsequent applicant of valuable mineral in or upon said premises within one month prior to the application of said owner.

(2) The price per acre of a patent or lease of mining rights shall be fifty per cent. of the rates as fixed by the twelfth and fourteenth sections of this Act respectively for a patent or lease of mining lands.

20.--(1) Where the surface rights have been granted, leased or located, and a patent or lease of mining rights shall theaeafter be granted in respect of the same land, in the event of the parties failing to agree upon compensation for injury or damage to the surface rights either in the form of a specified interest in the mineral rights or ore or mineral, to be secured to the owner of the surface rights, or by payment or agreement to pay in money, or the giving of security, the Director of Mines shall order and prescribe the manner in which compensation for the damage or injury to the surface and surface rights shall be ascertained, paid or secured.

(2) For the purposes aforesaid the Director of Mines is empowered to appoint a valuator or valuators, arbitrator or arbitrators, who shall have all the powers for the purposes for which he or they shall be appointed of an arbitrator or arbitrators under any Act of the Legislature, or he may direct that such compensation shall be ascertained by suit or action in any county or district court.

21. No person shall have the right of entry as prospector or explorer upon the surface rights of that portion of any lot used as a garden, orchard, vineyard, nursery,

plantation or pleasure ground, or upon which crops that may be damaged by such entry are growing, or on which is situated any spring, artificial reservoir, dam or waterworks, or any dwelling-house, out-house, manufactory, public building, church or cemetery, unless with the written consent of the owner, lessee or locatee, or of the person in whom the legal estate therein is vested.

BUREAU OF MINES.

22. There shall be established in connection with the Department of Crown Lands a Bureau of Mines to aid in promoting the mining interests of the Province and the Lieutenant-Governor-in-Council may appoint an officer to be known as Director of the Bureau of Mines, who shall act under the direction of the Commissioner of Crown Lands, unless and till otherwise ordered, and who shall be paid such salary as shall be voted by the Legislature. 54 V., c. 8, s. 9.

23. The Director of the Bureau of Mines shall have all the powers, rights and authority throughout the Province which an Inspector or local agent has or may exercise in any mining division or locality, and such other powers, rights and authority for the carrying out of the provisions of this Act as shall be assigned to him by regulation for that purpose. 54 V. c. 8, s. 10.

24. The Lieutenant-Governor-in-Council may from time to time, by Order-in-Council declare such tract of country as may be described in and by the Order-in-Council a mining division; and by any other subsequent Order or Orders-in-Council may from time to time extend, add to or diminish the limits of the division, or may otherwise amend or may cancel such Order-in-Council, and from and after the publication in the *Ontario Gazette* of such Order-in-Council the mining division therein mentioned and described and all mines on Crown Lands situate in the division shall be subject to the provisions of this Act, and to any regulations to be made under this Act. R. S. O., 1887, c. 31, s. 13.

25. The Lieutenant-Governor may appoint for every mining division or for any part thereof an Inspector, who shall be an officer of the Bureau of Mines, and by Order-in-Council may prescribe the duties and fix the salary of such Inspector. R. S. O., 1887, c. 31, s. 14.

26. (1) Every Inspector shall be *ex officio* a Justice of the Peace of the county or united counties, district or districts, which a mining division comprehends or includes, in whole or in part, or in which or in any portion of which a mining division lies; and it shall not be necessary that he shall possess any property qualification whatever in order to enable him lawfully to act as such Justice of the Peace.

(2) Every Inspector shall have jurisdiction as a Justice of the Peace over all the territory comprised within the division for which he is appointed, and shall have power to settle summarily all disputes between licensees as to the existence or forfeitures of mining claims, and the extent and boundary thereof, and as to the use of water and access thereto, and generally to settle all difficulties, matters or questions between licensees which may arise under this Act; and the decision of such Inspector, in all

cases under this Act, shall be final, except where otherwise provided by this Act, or where another tribunal is appointed under the authority of this Act; and no case under this Act shall be removed into any Court by writ of *certiorari*. R.S.O., 1887, c 31., s. 15.

27. No officer appointed under this Act shall, either directly or indirectly, purchase or be or become proprietor of, or interested in, any Crown lands or mining claim; and any such purchase or interest shall be void; and if an officer offends in the premises he shall forfeit his office and the sum of $500 for every such offence, to be recovered in an action by any person who sues for the same. R.S.O., 1887, c. 31, s. 41.

28—(1) The Lieutenant-Governor may from time to time appoint local officers or agents to receive applications for the sale of mining lands in their respective agencies and to carry out the provisions of any regulations and Orders-in-Council in that behalf, and to supply information to intending purchasers, and they shall be paid in such manner and at such rates as the Lieutenant-Governor-in-Council may direct.

(2) The Lieutenant-Governor-in-Council may from time to time make such regulations as he deems necessary or expedient for the purpose of carrying out this section. 53. V., c. 9, s. 2.

Part III—Mining Claims.

MINER'S LICENSE.

29—(1) The Director of the Bureau of Mines may on payment to the Department of Crown Lands of a fee of $5 and of one year's rent at the rate of one dollar per acre grant to the party applying for the same a license to be called a "miner's license."

(2) Every miner's license shall be in force for one year from the date thereof, and shall not be transferable, except with the consent of the Director of the Bureau of Mines; and only one person shall be named therein, who shall be called the licensee, and who, before the expiration of the license, or within not later than ten clear days thereafter, shall have the right to a renewal of the license by the Director of the Bureau on payment to him of the like fee of $5 or such other sum as may then be the fee fixed by law for miners' licenses, and one dollar per acre per annum rental.

(3) A miner's license may be in the following form:—

PROVINCE OF ONTARIO.

No. (*Name of Division*) Mining Division. $

Bureau of Mines, (*Date.*) 18

Miner's License.

Issued to A. B., in consideration of the payment of a fee of five dollars and of dollars for one year's rent of mining claim under the provisions of *The Mines Act 1892*, to be in force for one year from the date hereof.

C. D., Director.

R.S.O., 1887, c. 31. s. 16

(4) A miner's license shall not be renewed until after the payment of the fee of $5 and the annual rental.

30. A miner's license shall authorize the licensee personally, and not through another, to mine during one year from the date of the license, and from the date of any renewal thereof, on any mining claim marked or staked out by such licensee on Crown lands, as hereinafter provided; but any person or persons not occupying any other mining claim may be employed by the licensee to assist him in working such claim. R. S. O. 1887, c. 31, s. 17.

STAKING OUT AND HOLDING OF CLAIMS.

31. The licensee shall have the right to mark or stake out within the division mentioned in his license, a mining claim on any Crown lands (not for the time being included in a mining claim occupied by another licensee), by planting a wooden or iron picket at each of the four corners thereof, or otherwise marking the same as may be directed by Order-in-Council, and to work the same. R. S. O. 1887, c. 31, s. 18.

32. Each mining claim shall be of the following dimensions, namely:—

1. For one person, 660 feet along a vein or lode by 330 feet on each side thereof, measuring from the centre of the vein or lode, (ten acres more or less.)
2. Companies of two or more persons who each hold a miner's license may stake out and work additional feet along a vein or lode by the above width in the proportion of 132 additional feet in length for every additional miner, not to exceed 1,320 feet in length altogether (twenty acres more or less), and may work the claim jointly. R. S. O. 1887, c. 31, s. 19.

33. Mining claims shall be laid out as far as possible uniformly, and in quadrilateral and rectangular shapes, and the measurements of all such claims shall be horizontal; and the ground included in every claim shall be deemed to be bounded under the surface by lines vertical to the horizon at the ends, except that every mining claim shall include and shall authorize the licensee to work every dip, spur and angle of the vein or lode laterally to the depth to which the same can be worked, with all the earth and minerals therein. R. S. O. 1887, c. 31, s. 20.

34. Every Inspector appointed under this Act shall keep a book for the recording therein of mining claims, which book shall be open to inspection by any person on payment of a fee of twenty cents; and every licensee who has marked or staked out a mining claim under this Act shall within thirty days thereafter give notice thereof in writing to the Inspector of the division, stating the name of the licensee, and indicating by some general statement therein, the locality of the mining claim, and showing how and when the same was marked or staked out; and the Inspector shall thereupon forthwith record the particulars of the notice in the book; and, if the licensee fails to give notice to the Inspector within the time aforesaid, the mining claim so marked or staked out shall be deemed to be forfeited and abandoned, and all right of the licensee therein to cease. R. S. O. 1887, c. 31, s. 21.

35.—(1) A mining claim shall also be deemed to be forfeited and abandoned, and all right of the licensee therein to cease, in case the annual rent thereof at the rate of $1 per acre, has not been prepaid, or if the mining claim remains unworked for the space of three months after the same has been first marked or staked out as afore-

said, or if the same at any time after the expiration of three months, remains unworked for the space of fifteen days: Provided, however, that in case it is shown to the satisfaction of the Inspector of the division, either before the expiration of the respective periods aforesaid, or within fifteen days thereafter, that the non-working of such claim arose from the illness of the licensee, or other reasonable cause satisfactory to the Inspector, he may extend the time during which the mining claim may remain unworked for such further period of time as he thinks reasonable, and may in like manner thereafter, for reasonable cause established to his satisfaction, grant further extensions of the time during which the claim may remain unworked without being liable to forfeiture; and the Inspector shall forthwith enter in the said book all enlargements or extensions of the time granted by him. R.S.O., 1887, c. 31, s. 22.

(2) If default is made by the licensee in payment of rent, the claim and license shall be dealt with as provided in section 16 of this Act in the case of a lease.

36. No mining claim within a division shall be considered unworked, within the meaning of the last section, during the time that an Order-in-Council directs that work on mining claims within such mining division may be suspended. R.S.O. 1877, c. 31, s. 23.

37. No person shall occupy at the same time more than one mining claim on Crown Lands, except in the cases hereinafter provided for of registration of claims rendered temporarily unworkable. R.S.O. 1887, c. 31, s. 24.

38. Every licensee shall be held and required to produce and exhibit his license to the Inspector for the division, and to prove to the satisfaction of the Inspector that the license is in force, whenever required to do so by him. R.S.O. 1887, c. 31, s. 25.

39. The discoverer of a new vein or lode of ore or mineral shall be entitled to two mining claims of the area prescribed by the first sub-section of section 32 of this Act. R.S.O. 1887, c. 31, s. 26.

40. No person shall be considered a discoverer within the terms of the foregoing section unless the place of the alleged discovery is distant, if on a known vein or lode, at least three miles from the nearest known mine or discovery on the same vein or lode. R.S.O. 1887, c. 31, s. 27.

41. A party wall of at least fifteen feet thick shall be left between adjoining claims on Crown lands, which party wall shall be used in common by all parties as a mode of access to the stream, where one exists; and the party wall shall not be obstructed by any person throwing soil, stone or other material thereon; and every person so obstructing the party wall shall be liable to a fine of not more than $5 and costs; and, in default of payment of the fine and costs, to be imprisoned for any period not more than one month. R.S.O. 1887, c. 31, s. 28.

42. If at any time it is found necessary or expedient to remove a party wall as aforesaid, the person so removing it shall, if required so to do, construct a new mode of access to the water in no wise more difficult as an approach than the one destroyed by the removal of the party wall, under a like penalty as provided in the next preceding section; and in case of a removal of a party wall the minerals found therein shall

belong to the owners of the adjoining claims, each of whom shall own the half next to his claim. R. S. O. 1887, c. 31, s. 29.

43. No person mining upon Crown lands shall cause damage or injury to the holder of any other claim than his own, by throwing earth, clay, stones or other material upon such other claim, or by causing or allowing water which may be pumped or baled or may flow from his own claim to flow into or upon such other claim, under a penalty of not more than $5 and costs; and in default of payment of the fine and costs, he may be imprisoned for any period not more than one month. R. S. O. 1887, c. 31, s. 30.

44. In case a mining claim on Crown lands occupied by a licensee cannot be worked in consequence of an excess of water or other unavoidable cause, established to the satisfaction of the Inspector for the division, the inspector shall on the application of the licensee, and on receipt of $1, make an entry in the book to be kept by him as aforesaid, of the cause or reason for the claim not being worked; and thereupon and upon the licensee planting a wooden or iron picket as near the centre of the claim as possible, upon which is cut or painted his name or initial letters of his name, the licensee may occupy and work another mining claim; but, in case the licensee does not return and occupy the first mentioned claim within fifteen days after the adjacent or surrounding claim or claims have been shown to be workable, he shall forfeit all right and title to the said claim. R. S. O. 1887, c. 31, s. 31.

OFFENCES AND PENALTIES.

45. Any person found removing or disturbing, with intent to remove, any stake, picket or other mark placed under the provisions of this Act, shall forfeit and pay a sum not exceeding $20 and costs; and, in default of payment of the fine and costs, may be imprisoned for any period not exceeding one month. R. S. O. 1887, c. 31, s. 32.

46. Every inspector appointed in and for a mining division under this Act may appoint a number of constables not exceeding four; and the persons so from time to time appointed shall be, and they are hereby constituted, respectively, constables and peace officers for the purposes of this Act for and during the terms and within the mining divisions for which they are appointed respectively. R. S. O. 1887, c. 31, s. 33.

47.—(1) The Lieutenant-Governor-in-Council may, as often as occasion requires, declare by proclamation that he deems it necessary that *The Act respecting Riots near Public Works* shall, so far as the provisions therein are applicable, be in force within any mining division or divisions; and upon, from and after the day to be named in any such proclamation, section 1 and sections 3 to 11 inclusive of the said Act shall, so far as the provisions thereof can be applied therein, take effect within the mining division or mining divisions designated in the proclamation; and the provisions of the said Act shall apply to all persons employed in any mine, or in mining within the limits of such mining division or divisions, as fully and effectually to all intents and purposes as if the persons so employed had been specially mentioned and referred to in the said Act.

(2) The Lieutenant-Governor-in-Council may in like manner from time to time declare the said Act to be no longer in force in such mining division or divisions; but this shall not prevent the Lieutenant-Governor-in-Council from again declaring the same to be in force in any such mining division or mining divisions; and no such proclamation shall have effect within the limits of any city. R.S.O., 1887, c. 31, s. 34.

48. Every person contravening this part of this Act or any rule or regulation made under it, in any case where no other penalty or punishment is imposed, shall, for every day on which such contravention occurs, or continues or is repeated, incur a fine of not more than $20 and costs; and, in default of payment of the fine and costs, he may be imprisoned for a term of not more than one month. R.S.O., 1887, c. 31, s. 36.

49. Every inspector for a mining division may convict upon view of any of the offences punishable under the provisions of this Part of this Act or any regulations made under it. R.S.O., 1887, c. 31, s. 37.

50. The contravention on any day of any of the provisions of this Part of this Act, or of any regulation made under it, shall constitute a separate offence and may be punished accordingly. R.S.O., 1887, c. 31, s. 38.

51 Fees, penalties and fines received under this Act, and the costs of all such convictions as take place before any Inspector or Magistrate appointed under this Act, shall form part of the consolidated revenue fund of this Province, and be accounted for and otherwise dealt with accordingly; and the expenses of carrying this Act into effect in any mining division or mining divisions shall be paid by the Lieutenant-Governor out of the said consolidated revenue fund. R.S.O., 1887, c. 31, s. 39.

52. The Inspector of any mining division, or any two Justices of the Peace having jurisdiction in the locality, may try and summarily convict any person guilty of any offence under this Part of this Act, or of any breach of the provisions thereof, to which any fine or penalty or forfeiture of money is attached, and shall have all the powers of Justices of the Peace under *The Act respecting Summary Convictions before Justices of the Peace and Appeals to General Sessions;* but this section shall not be construed to give jurisdiction to try or summarily convict for any breach of the provisions of section 27 of this Act. R.S.O., 1887, c. 31, s. 40.

Part IV.—Mining Regulations.

53. This Part shall not apply to any mine unless more than six persons other than the owner are employed under ground, nor to stone quarries; but nevertheless the owners or agents of such mines shall observe and keep the provisions of sections 54 and 55 of this Act, and in case of non-observance thereof shall incur the penalties provided for by section 69 of this Act. 53 V., c. 10, s. 2.

EMPLOYMENT OF WOMEN AND CHILDREN.

54. No boy under the age of fifteen years shall be employed in or allowed to be for the purpose of employment in any mine to which this Act applies below ground;

and no girl or woman shall be employed at mining work or allowed to be for the purpose of employment at mining work in or about any mine. 53 V., c. 10, s. 4.

55. A boy or male young person of the age of fifteen and under the age of seventeen years shall not be employed in or allowed to be for the purpose of employment in any mine to which this Part applies below ground for more than forty-eight hours in any one week, or more than eight hours in any one day, or otherwise than in accordance with the regulations following, that is to say:

1. The period of such employment shall be deemed to begin at the time of leaving the surface, and to end at the time of returning to the surface.

2. A week shall mean the period between midnight on Sunday night and midnight on the succeeding Saturday night. 53 V., c. 10, s, 5.

56. The owner or agent of every mine to which this Part applies shall keep in the office at the mine, or in the principal office of the mine belonging to the same owner in the district in which the mine is situated, a register, and shall cause to be entered in such register the name, age, residence and date of the first employment of all boys or of all male young persons of the age of fifteen and under the age of seventeen years who are employed in the mine below ground, and shall produce such register to any Inspector at the mine at all reasonable times when required by him, and allow him to inspect and copy the same. The immediate employer of every boy or male young person of the age aforesaid, other than the owner or agent of the mine, before he causes such boy or male young person to be in any mine to which this Part applies below ground, shall report to the owner or agent of such mine, or some person appointed by such owner or agent, that he is about to employ him in such mine. 53 V., c. 10, s. 6.

57. Where there is a shaft, inclined plane or level in any mine to which this Part applies, whether for the purpose of an entrance to such mine or of a communication from one part to another part of such mine, and persons are taken up, down or along such shaft, plane or level by means of any engine, windlass or gin, driven or worked by steam or any mechanical power, or by an animal, or by manual labor, a person shall not be allowed to have charge of such engine, windlass or gin, or of any part of the machinery, ropes, chains or tackle connected therewith, unless he is a male of at least twenty years of age. Where the engine, windlass or gin is worked by an animal, the person under whose direction the driver of the animal acts shall for the purpose of this section be deemed to be the person in charge of the engine, windlass or gin, but such driver shall not be under sixteen years of age. 53 V., c. 10, s. 7.

58.—(1) If any person contravenes or fails to comply with any provision of this Act with respect to the employment of women, girls, young persons or boys, or to the register of or report respecting boys and male young persons, or to the employment of persons about any engine, windlass or gin, he shall be guilty of an offence against this Act, and in case of any such contravention, or non-compliance by any person whomsoever in the case of any mine, the owner and agent of such mine shall each be guilty

of an offence against this Act, unless he proves that he had taken all reasonable means by publishing and to the best of his power enforcing the provisions of this Act to prevent such contravention or non-compliance.

(2) If it appears that a boy or young person or person employed about an engine, windlass or gin was employed on the representation of his parent or guardian that he was of that age at which his employment would not be in contravention of this Act, and under the belief in good faith that he was of that age, the owner or agent of the mine and the immediate employer shall be exempt from any penalty, and the parent or guardian shall for such misrepresentation be deemed guilty of an offence against this Act. 53 V., c. 10, s. 8.

PAYMENT OF WAGES.

59.—(1) No wages shall be paid to any person employed in or about any mine to which this part applies at or within any public house, beer shop or place for the sale of any spirits, wine, beer or other spirituous or fermented liquor, or other house of entertainment, or any office, garden or place belonging or contiguous thereto or occupied therein.

(2) Every person who contravenes, or fails, or permits any person to contravene or fail to comply with this section shall be guilty of an offence against this Act, and in the event of any such contravention or non-compliance in the case of any mine by any person whomsoever the owner and agent of such mine shall each be guilty of an offence against this Act, unless he proves that he had taken all reasonable means by publishing and to the best of his power enforcing the provisions of this section to prevent such contravention or non-compliance. 53 V., c. 10, s. 9.

ANNUAL REPORT OF STATISTICS.

60.—(1) The owner or agent of every mine to which this Part applies shall, on or before the first day of December in every year, send to the Bureau of Mines a correct return for the year ending on the preceding 31st day of October, of the number of persons ordinarily employed in or about such mine below ground and above ground respectively, and distinguishing the different classes and ages of the persons so employed whose hours of labor are regulated by this Act, the average rate of wages of each class and the total amount of wages paid during the year, the quantity in statute weight of the mineral dressed, and of the undressed mineral which has been sold, treated or used during that year, and the value or estimated value thereof.

(2) The return shall be in such form as may be from time to time prescribed by the Director of the Bureau, who shall furnish forms for the purpose of such return.

(3) Every owner or agent of a mine who fails to comply with this section, or makes any return which is to his knowledge false in any particular, shall be guilty of an offence against this Act. 53 V., c. 10, s. 10.

PREVENTION OF ACCIDENTS.

61. Where in or about any mine to which this Act applies, whether above or below ground, either

1. Loss of life or any personal injury to any person employed in or about the mine occurs by reason of any explosion of gas, powder or of any steam boiler; or
2. Loss of life or any serious personal injury to any person employed in or about the mine occurs by reason of any accident whatever, the owner or agent of the mine shall, within twenty-four hours next after the explosion or accident, send notice in writing of the explosion or accident and of the loss of life or personal injury occasioned thereby to the Director of the Bureau of Mines, and shall specify in such notice the character of the explosion or accident and the number of persons killed and injured respectively.

Where any personal injury, of which notice is required to be sent under this section, results in the death of the person injured, notice in writing of the death shall be sent to the Inspector within twenty-four hours after such death comes to the knowledge of the owner or agent. Every owner or agent who fails to act in compliance with this section shall be guilty of an offence against this Act. 53 V., c. 10, s. 11.

62. In any of the following cases, namely:

1. Where any working is commenced for the purpose of opening a new shaft for any mine to which this Part applies;
2. Where a shaft of any mine to which this Part applies is abandoned, or the working thereof discontinued;
3. Where the working of a shaft of any mine to which this Part applies is recommenced after an abandonment or discontinuance for a period exceeding two months; or
4. Where any change occurs in the name of a mine, or in the name of the owner or agent of a mine to which this Part applies, or in the officers of any incorporated company which is the owner of a mine to which this Part applies;

The owner or agent of such mine shall give notice thereof to the Inspector within two months after such commencement, abandonment, discontinuance, recommencement or change, and if such notice is not given the owner or agent shall be guilty of an offence against this Act; provided that this section shall apply only to any working or mine in which more than twelve persons are ordinarily employed below ground. 53 V., c. 10, s. 12.

63.—(1) For the prevention of accidents, where any mine to which this Part applies is abandoned or the working thereof discontinued, at whatever time such abandonment or discontinuance occurred the owner thereof, and every other person interested in the minerals of the mine, shall cause the top of the shaft and any side entrance from the surface to be and to be kept securely fenced; or shall cause a sign-board to be strongly nailed to a post not less than eight feet high at the top of the shaft, and at any side entrance from the surface, on which there shall be painted in conspicuous letters in durable material the words "Abandoned Mining Shaft." Provided that—

1. Subject to any contract to the contrary, the owner of the mine shall, as between him and any other person interested in the minerals of the mine be

liable to carry into effect this section, and to pay any costs incurred by any other person interested in the minerals of the mine in carrying this section into effect.

2. Where such abandonment or discontinuance has occurred in the case of a mine before the 7th day of April, 1890, this section shall apply only to such shaft or side entrance of the mine as is situate within fifty yards of any highway, road, footpath or place of public resort, or in open or unenclosed land; or, not being situate as aforesaid, is required by an Inspector in writing to be fenced on the ground that it is specially dangerous.

(2) If any person fail to act in conformity with this section he shall be guilty of an offence against this Part, and any shaft or side entrance which is not fenced, or in respect of which the said signboard is not nailed up and kept nailed up as aforesaid as required by this section, and is within fifty yards of any highway, road, footpath or place of public resort, or is in open or unenclosed land, or is required by an Inspector as aforesaid to be fenced, shall be deemed to be a nuisance. 53 V., c. 10, s. 13.

POWERS AND DUTIES OF INSPECTORS.

64. No person shall be appointed or authorized to be qualified to act as an Inspector who practices or acts or is a partner of any person who practices or acts as a mining agent, or who is employed by the owners of or is interested in any mine. 53 V., c. 10, s. 14.

65.—(1) An Inspector under this Act shall have power to do all or any of the following things, namely:

1. To make such examination and enquiry as may be necessary to ascertain whether the provisions of this Part relating to matters above ground or below ground are complied with in the case of any mine to which this Part applies.
2. To enter, inspect and examine any mine to which this Part applies, and every portion thereof, at all reasonable times by day and night, but so as not to impede or obstruct the working of the said mine.
3. To examine into and make enquiry respecting the state and condition of any mine to which this Part applies, or any portion thereof, and the ventilation of the mine, and all matters and things connected with or relating to the safety of the persons employed in or about the mine, or any mine contiguous thereto, and to give notice to the owner or agent in writing of any particulars in which he considers such mine or any portion thereof or any matter, thing or practice to be dangerous or defective, and to require the same to be remedied within the period of time named in such notice, and unless the cause of danger be removed or such defect be remedied within the time named, the owner or agent shall be guilty of an offence against this Act. 53 V., c. 10, s. 15.
4. To exercise such other powers as may be necessary for carrying this Part into effect.

(2) Every person who wilfully obstructs any Inspector in the execution of his duty under this Act, and every owner and agent of a mine who refuses or neglects to

furnish to the Inspector the means necessary for making any entry, inspection, examination or enquiry under this Act in relation to such mine, shall be guilty of an offence against this Act. 53 V., c. 10, s. 15.

66. On the occasion of an examination or inspection of a mine the owner shall, if required so to do, produce to the Inspector or any other person duly authorized by the Commissioner of Crown Lands, an accurate plan of the workings thereof; every such plan as aforesaid shall show the workings of the mine up to within six months of the time of the inspection and the owner shall, if required by such Inspector or other authorized person, cause to be marked on such plan the progress of the workings of the mine up to the time of such inspection, and shall also permit the Inspector to take a copy or tracing thereof. 53 V., c. 10, s. 24.

67. Every Inspector under this Act shall make an annual report of his proceedings during the preceding year to the Director of the Bureau of Mines, which report shall be laid before the Legislative Assembly. The Commissioner of Crown Lands may at any time direct an Inspector to make a special report with respect to any accident in a mine to which this Act applies, which accident has caused loss of life or personal injury to any person, and in such case shall cause such report to be made public at such time and in such manner as he thinks expedient. 53 V. c. 10, s. 16.

68. In the event of a vacancy in the office of Mining Inspector any notice by this Act required to be given to such officer shall be given to the Director of the Bureau of Mines. 53 V. c. 10, s. 17.

PENALTIES.

69. Every person employed in or about a mine other than an owner or agent who is guilty of any act or omission which in the case of an owner or agent would be an offence against this Part shall be deemed to be guilty of an offence against this Act, and shall be liable to a penalty not exeeeding, if he is an owner or agent, fifty dollars, and if he is any other person ten dollars for each offence; and if an Inspector has given written notice of any such offence, to a further penalty not exceeding five dollars for every day after such notice that such offence continues to be committed. 53 V. c. 10, s. 18.

70. Any complaint or information made or laid in pursuance of this Act shall be made or laid within three months from the time when the matter of such complaint or information respectively arose, and

1. The description of any offence under this Act in the words of this Act shall be sufficient in law.

2. Any exception, exemption, proviso, excuse or qualification, whether it does or does not accompany the description of the offence in this Act, may be proved by the defendant but need not be specified or negatived in the information, and if so specified or negatived no proof in relation to the matter so specified or negatived shall be required on the part of the informant. 53 V., c. 10, s. 19.

71. No prosecution shall be instituted against the owner or agent of a mine to which this Part applies for any offence under this Act except by an Inspector, the county or district attorney, or with the consent in writing of the Attorney-General; and in the case of any offence of which the owner or agent of a mine is not guilty, if he proves that he had taken all reasonable means to prevent the commission thereof an Inspector shall not institute any prosecution against such owner or agent if satisfied that he had taken such reasonable means as aforesaid. 53. V., c. 10, s. 20.

72—(1) Nothing in this Act shall prevent any person from being indicted or liable under any other Act or otherwise to any other or higher penalty or punishment than is provided for any offence by this Act, so that no person be punished twice for the same offence.

(2) If the Court before whom a person is charged with an offence under this Act thinks that proceedings ought to be taken against such person for such offence under any other Act or otherwise, the Court may adjourn the case to enable such proceedings to be taken. 53 V., c. 10, s. 21.

73. All prosecutions for the punishment of any offence under this Act may take place before any two or more of Her Majesty's Justices of the Peace having jurisdiction in the county or district in which the offence is committed, or before a Police or Stipendiary Magistrate, and the forms appended to an Act of the Parliament of Canada entitled *An Act Respecting Summary Proceedings before a Justice of the Peace*, or forms to the like effect or similar thereto, shall in all cases be sufficient. 53 V., c. 10, s. 22.

GENERAL RULES.

74. The following general rules shall, so far as may be reasonably practicable, be observed in every mine to which this Part applies.

1. An adequate amount of ventilation shall be constantly produced in every mine to such an extent that the shafts, winzes, sumps, levels, underground stables and working places of such mine, and the travelling roads to and from such working places, shall be in a fit state for working and passing therein.

2. Gunpowder, dualine, dynamite or other explosive or inflammable substance shall only be used underground in the mine as follows:

(*a.*) It shall not be stored in the mine in any quantity exceeding what would be required for use during six working days.

(*b.*) It shall not be taken for use into the workings of the mine except in a securely covered case or canister, containing not more than eight pounds.

(*c.*) A workman shall not have in use at one time in any one place more than one of such cases or canisters.

(*d.*) In charging holes for blasting, saving in mines excepted from the operation of this section by the Commissioner of Crown Lands, an iron or steel picker shall not be used, and a person shall not have in his possession in the mine underground any iron or steel picker, and an iron or steel tamping rod or stemmer shall not be used for ramming either the wadding or the first part of the tamping or stemming on the powder.

(*e.*) A charge of powder which has missed fire shall not be unrammed.

(*f.*) A charge which has missed fire may be drawn by a copper picker, but in no case shall any iron or steel tool be used for the purpose of drawing or drilling out such charge.

3. Every underground plane on which persons travel which is self-acting, or worked by an engine, windlass or gin, shall be provided (if exceeding thirty yards in length) with some proper means of signalling between the stopping places and the ends of the plane, and shall be provided in every case at intervals of not more than twenty yards with sufficient manholes for places of refuge.

4. Every road on which persons travel underground where the produce of the mine in transit exceeds ten tons in any one hour over any part thereof, and where the load is drawn by a horse or other animal, shall be provided at intervals of not more than one hundred yards with sufficient spaces for places of refuge, each of which spaces shall be of sufficient length, and of at least three feet in width between the waggons running on the tram road and the side of the road ; and the Commissioner of Crown Lands may, if he see fit, require the Inspector to certify whether the produce of the mine in transit on the road aforesaid does or does not ordinarily exceed the weight as aforesaid.

5. Every man-hole and space for a place of refuge shall be constantly kept clear, and no person shall place anything in a man-hole or such space so as to prevent access thereto.

6. The top of every shaft which was opened before the commencement of the actual working for the time being of the mine and has not been used during such actual working shall, unless the Inspector otherwise permits, be securely fenced, and the top of every other shaft which for the time being is out of use, or used only as an air shaft, shall be securely fenced, or in either case due notice shall be given by nailing up a signboard as in this Act is hereinbefore provided, as the Inspector shall direct.

7. The top and all entrances between the top and bottom of every working or pumping shaft shall be properly fenced, but this shall not be taken to forbid the temporary removal of the fence for the purpose of repairs or other operations, if proper precautions are used.

8. Where the natural strata are not safe, every working or pumping shaft, adit, tunnel, drive, roadway or other workings shall be securely cased, lined or timbered, or otherwise made secure.

9. Every mine shall be provided with proper and sufficient machinery and appliances for keeping such mine free from water, the accumulation or flowing of which might injuriously affect any other mine.

10. Where one portion of the shaft is used for the ascent and descent of persons by ladders or a man engine, and another portion of the same shaft is used for raising the material gotten in the mine, the first mentioned portion shall be cased or otherwise securely fenced off from the last mentioned portion.

11. Every working shaft in which persons are raised shall, if exceeding fifty yards in depth, and not exempted in writing by the Inspector, be provided with guides and some proper means of communicating distinct and definite signals from the bottom of the shaft and from every entrance for the time being in work between the surface and the bottom of the shaft to the surface, and from the surface to the bottom of the shaft and to every entrance for the time being in work between the surface and the bottom of the shaft.

12. A sufficient cover overhead shall be used when lowering or raising persons in every working shaft, except where it is worked by a windlass, or where the person is employed about the pump or some work of repair in the shaft, or where a written exemption is given by the Inspector.

13. A single linked chain shall not be used for lowering or raising persons in any working shaft or plane except for the short coupling chain attached to the cage or load.

14. There shall be on the drum of every machine used for lowering or raising persons such flanges or horns, and also, if the drum is conical, such other appliances as may be sufficient to prevent the rope from slipping.

15. There shall be attached to every machine worked by steam, water or other mechanical power, and used for lowering or raising persons, an adequate brake, and also a proper indicator (in addition to any mark on the rope) which shows to the person who works the machine the position of the cage or load in the shaft.

16. A proper footway or ladder, inclined at the most convenient angle which the space in which the ladder is fixed allows, shall be provided in every working shaft where no machinery is used for raising or lowering persons; and every such ladder shall have substantial platforms at intervals of not more than forty feet, and no such ladder shall be fixed for permanent use in a vertical or overhanging position unless in shafts used exclusively for pumping. In every mine in which vertical or overhanging ladders shall be in use in the shaft at the time when these rules shall be applied to it, they may be retained provided securely fixed platforms be constructed at intervals of not more than thirty feet from each other, and such ladders have sufficient spaces for footholds of not less than six inches.

17. If more than twelve persons are ordinarily employed in the mine below ground, sufficient accommodation shall be provided above ground near the principal entrance of the mine, and not in the engine house or boiler house, for enabling the persons employed in the mine to conveniently dry and change their clothes.

18. Every fly-wheel and all exposed and dangerous parts of the machinery used in or about the mine, shall be and be kept securely fenced.

19. Every steam boiler shall be provided with a proper steam gauge and water gauge, to show respectively the pressure of steam and the height of water in the boiler, and with a proper safety valve.

20. No person shall wilfully damage, or without proper authority remove or render useless, any fencing, casing, lining, guide, means of signalling, signal, cover, chain,

flange, horn, brake, indicator, ladder, platform, steam-gaugs, water-guage, safety-valve or other appliance or thing provided in any mine in compliance with this Act.

21. Every person who contravenes or does not comply with any of the general rules in this section, shall be guilty of an offence against this Act, and in the event of any contravention of or non-compliance with any of the said general rules in the case of any mine to which this Act applies by any person whomsoever being proved, the owner and agent of such mine shall each be guilty of an offence against this Act unless he proves that he had taken all reasonable means by publishing and to the best of his power enforcing the said rules as regulations for the working of the mine to prevent such contravention or non-compliance. 53 V. c. 10, s. 23.

75. Every person who pulls down, injures or defaces any rules, notice or abstract posted up by the owner or agent shall be guilty of an offence against this Act. 53 V. c. 10, s. 25.

76. Chapter 31 of the Revised Statutes of Ontario, 1887, chapters 9 and 10 of the Statutes of 53 Victoria, and chapter 8 of the Statutes of 54 Victoria, are hereby repealed except in so far as may be necessary for the completion of transactions begun thereunder.

DOMINION LANDS.

REGULATIONS for the disposal of Coal Lands, the property of the Dominion Government, in Manitoba, the North-West Territories and British Columbia, as embodied in the Regulations approved by Order-in-Council (No. 2167) of the 17th September, 1889.

Prices of sale of anthracite and other lands, s. 34.
Limitation of area to one applicant, s 34 (*b*),
In cases of more than one applicant, s. 35.
May be sold at upset price on satisfactory exploration, s. 36.
Boundaries beneath the surface, s. 37.
Rights of lessees, s. 38.
Minister of Interior may grant right to prospect, s. 39.
Staking out and application for coal areas, s. 40.
Expenditure by prospectors, s. 41.
Time to explore may be extended, s. 42.
Prospecting to be carried on continuously, s. 43.
Lands patented or entered on which mining rights are reserved, s. 44 to 51.

Sec. 34. (*a*) Lands containing anthracite coal may be sold at an upset price of $20.00 per acre, cash, and coal other than anthracite at an upset price of $10.00 per acre, cash, or may be sold by public competition if the Minister of the Interior shal so decide.

(*b*) Not more than three hundred and twenty acres shall be sold to one applicant.

Sec. 35. When there is more than one applicant for the same coal location, the Minister of the Interior may invite competition between the several applicants, or offer the land for sale at public competition by tender or by auction, as he may think expedient, at the upset price of coal lands.

Sec. 36. In cases where the Minister of the Interior satisfies himself that companies, or persons, have expended considerable sums of money in exploring for coal on lands for which they have applied under the Regulations of the 17th December, 1881, the said lands may be sold to such companies or persons at the upset price fixed for such lands.

Sec. 37. The boundaries beneath the surface of coal mining locations shall be vertical planes or lines in which their surface boundraies lie.

Sec. 38. The rights of lessees, and of persons in favor of whom Orders-in-Council authorizing leases have been passed, shall not be affected by these Regulations.

Sec. 39. The Minister of the Interior may, upon application, grant permission to prospect for coal for a period of sixty days, and such permission may cover any single tract of land not exceeding three hundred and twenty acres in extent.

Sec. 40. If the land sought for be not included in any surveyed township, the applicant shall stake out the same, by placing at each angle or cornor thereof a stake or post at least four inches square, and standing not less than 4 feet above the surface of the ground; and upon each post he shall inscribe his name, and the angle represented thereby, thus: "A. B's N. E. Cornor," (meaning North-East Corner) or as the case may be. Except such posts are so planted before an application for permission to prospect is made, all the proceedings taken by the applicant shall be void; also with his application he shall forward to the Minister of the Interior a map or sketch of the land as staked out, specifying metes and bounds, and showing thereon the best information in his power respecting the same, and all boundaries so staked out shall be due north and south, and east and west lines, and the length thereof shall not exceed twice the breadth; if, however, the land has already been included in any general survey, then the official number of the section or sections, parts or legal sub-divisions of a section, shall be given.

Sec. 41. The party or parties to whom permission to prospect may be given, shall within one month from the date of such permission commence operations and carry on the same continuously throughout the remainder of the period covered thereby; and shall expend in such prospecting a sum at the rate of not less than $2 per day from the time of commencement of the same; and the permission so given shall become void if the said operations cease for one week during the remainder of the period for which such permission is given.

Sec. 42. On application to the Minister of the Interior, the time covered by permission to prospect may be extended, if the applicant has complied with the above requirements, and provided there are not other applicants for the lands comprised therein; should there be others, however, it will be necessary that the right to prospect be acquired by competition amongst the applicants.

Sec. 43. If the time covered by permission to prospect be extended it will be necessary that prospecting operations be carried on continuously from the date of such extension.

LANDS PATENTED OR ENTERED, ON WHICH THE MINING RIGHTS HAVE BEEN RESERVED.

Sec. 44. (*a*) Any person or persons desirous of obtaining permission to prospect for minerals on lands that have been patented or entered and on which the mining rights have been reserved, shall make application therefor to the Minister of the Interior.

(*b*) Such application shall be in writing, defining clearly the area applied for, which area must not exceed 320 acres.

(*c*) If the Minister of the Interior sees no objection to the application being granted, the applicant will be given permission to prospect for a period of sixty days,

upon furnishing the Minister with proof that he has complied with the provisions of the following sub-section.

(*d*) The applicant shall enter into a bond, with two sureties to the satisfaction of the Superintendent of Mines, to recompense the owner or occupant of the soil for damages that may be done to his lands.

(*e*) If the proprietor of lands so entered upon shall seek damages, he shall, before the end of two months after the expiration of the permission given, make his claims in writing against the prospector, detailing the particulars and amount of claim; and if the claim is not adjusted by agreement between the parties within one month after notice thereof as aforesaid, it shall be settled by arbitration in the manner prescribed in sections 50 and 51 of these regulations.

Sec. 45. (*a*) The permission given to prospect shall be subject to the conditions of section 41 of these regulations.

(*b*) A renewal for a further period of sixty days may be granted, provided that the conditions of these regulations have been complied with, but should there be other applicants for the lands over which permission to prospect has been given, competition amongst the same will be invited.

Sec. 46. No permission to prospect shall authorize entry upon any buildings or the curtilage appertaining to any house, store, barn or building, or upon any garden, orchard, or ground reserved for ornament, or under cultivation by growing crops, and enclosed, except with the consent of the occupier or permission from the Minister of the Interior upon special application, setting forth the circumstances under which the same is applied for, and on such terms as the case may require.

Sec. 47. If, at the expiration of the period for which permission has been given to prospect on lands, it be desired to acquire the mining rights thereunder, they will be sold at the rate and on the terms prescribed by the mining regulations, less the price ruling for surface rights in the class in which the lands may be situated.

Sec. 48. Before a patent of the mining rights of any lands can be issued, it will be necessary for the party obtaining the same to furnish proof to the Minister of the Interior that he has acquired the surface rights of the lands from the owner or agent or occupier of such lands.

Sec. 49. If the occupier of the lands has not received a patent therefor, the purchase money of the surface rights must be paid to the Crown, and a patent of the surface rights will issue to the party who acquired the mining rights. The money so collected will either be refunded to the occupier of the land, when he is entitled to a patent therefor, or will be credited to him on account of payment for land.

Sec. 50. When the party obtaining the mining rights to lands cannot make an arrangement with the owner or his agent or the occupant thereof for the acquisition of the surface rights, it shall be lawful for him to give notice to the owner or his agent or the occupant to appoint an arbitrator to act with another arbitrator named by him, in order to award the amount of compensation to which the owner or occupant shall be entitled. The notice mentioned in this Section shall be according to a form to be

obtained upon application from the Agent of Dominion Lands for the District in which the lands in question lie, and shall, when practicable, be personally served on such owner, or his agent if known, or occupant; and after reasonable efforts have been made to effect personal service, without success, then such notice shall be served by leaving it at, or sending by registered letter to the last place of abode of the owner, agent or occupant. Such notice shall be served, if the owner or agent resides in the District in which the land is situated, ten days, if out of the District and within the Province, twenty days, and if out of the Province, thirty days, before the expiration of the time limited in such notice. If the proprietor refuses or declines to appoint an arbitrator, or when, for any other reason, no arbitrator is appointed by the proprietor in the time limited therefor in the notice provided for by this Section, the Agent of Dominion Lands for the District in which the lands in question lie, shall, on being satisfied by affidavit that such notice has come to the knowledge of such owner, agent or occupant, or that such owner, agent or occupant wilfully evades the service of such notice, or cannot be found, and that reasonable efforts have been made to effect such service, and that the notice was left at the last place of abode of such owner, agent or occupant, appoint an arbitrator on his behalf.

Sec. 51. (*a.*) All the arbitrators appointed under the authority of these regulations shall be sworn before a Justice of the Peace to the impartial discharge of the duties assigned to them, and they shall forthwith proceed to estimate the reasonable damages which the owners or occupants of such lands, according to their several interests therein, shall sustain by reason of such prospecting and mining operations. D.M.L., 9th July, 1892.

(*b.*) In estimating such damages, the arbitrators shall determine the value of the land irrespectively of any enhancement thereof from the existence of minerals therein.

(*c.*) In case such arbitrators cannot agree, they may select a third arbitrator, and when the two arbitrators cannot agree upon a third arbitrator the Agent of Dominion Lands for the District in which the lands in question lie shall select such third arbitrator.

(*d.*) The award of any two such arbitrators made in writing shall be final, and shall be filed with the Agent of Dominion Lands for the District in which the lands lie.

MANITOBA AND NORTH-WEST TERRITORIES.

Regulations Governing the Disposal of Mineral Lands other than Coal.

Quartz Mining, ss. 3 to 16.
Placer Mining, s. 17.
Nature and Size of Claims, s. 18.
Rights and Duties of Miners, ss. 19 to 29.
Administration, ss. 30 to 32.
Bed-Rock Flumes, ss. 33 to 39.
Drainage of Mines, ss. 40 to 44.
Ditches, ss. 45 to 63.
General Provisions—Interpretation, s. 64.
Hearing and Decision of Disputes, ss. 65. to 72.
Leave of Absence, ss. 73 to 78.
Miscellaneous, ss. 79 to 85.
Forfeiture, s. 86.

1. These Regulations shall be applicable to all Dominion Lands with the exception of those situated in the Province of British Columbia, containing gold, silver, cinnibar, lead, tin, copper, iron, or other mineral deposit of economic value, with the exception of coal.

2. Any person or persons may explore vacant Dominion Lands not appropriated or reserved by Government for other purposes, and may search therein, either by surface or subterranean prospecting, for mineral deposits, with a view to obtaining under these Regulations a mining location for the same; but no mining location or mining claim shall be granted until actual discovery has been made of the vein, lode or deposit of mineral or metal within the limits of the location or claim.

I.—Quartz Mining.

3. A location for mining, except for iron, on veins, lodes or ledges of quartz or other rock in place, shall not exceed the following dimensions: Its length shall not be more than 1,500 feet, its breadth not more than 600 feet; its surface boundaries shall be four straight lines and the side lines and end lines shall be parallel lines, except where prior locations may prevent, in which case it may be of such shape as may be approved by the Superintendent of Mines. Its length shall not be more than three times its breadth. Its boundaries beneath the surface shall be the vertical planes in which its surface boundaries lie.

4. Any person having discovered a mineral deposit may obtain a mining location therefor, under these Regulations, in the following manner:

(*a*) He shall mark the location on the ground by placing at each of its four corners a wooden post, not less than four inches square, driven not less than eighteen inches into the ground, and showing that length above it. If the ground be too rocky to admit of so driving such posts, he shall build about

each of them, to support it and keep it in place, a cairn or mound of stones, at least three feet in diameter at the base and eighteen inches high. If the location be timbered, a line shall be run and well blazed joining the said posts. If it be not so timbered, and the ground is of such a nature that any one post cannot be seen from the ends of either of the lines which form the angle at which the said post is placed, posts flattened on two sides (such flattened portions facing the directions of the line) shall be planted or mounded along the side lines wherever necessary, so that no difficulty may be experienced by a subsequent prospector or explorer in discovering or following the boundaries of any location. If the location be laid out with its boundaries due north and south and east and west, then he shall mark on the post designating the north-east angle of the location, legibly, with a cutting instrument, or with colored chalk, his name in full, the date of such marking, and the letters M.L., No. 1, to indicate that the post is Mining Location post No. 1. Proceeding next to the south-easterly angle of the location, he shall mark the post planted there with the letters M.L. No. 2, and his initials; next to the south-westerly angle of the location the post planted at which he shall mark with the letters M.L. No. 3, and his initials; and lastly to the north-westerly angle of the location, the post planted at which he shall mark with the letters M.L. No. 4, and his initials. If the location be laid by other than due north and south and east and west lines, the first mentioned post shall be the one at the northerly angle; the second the one at the easterly angle; the third the one at the southerly angle; and the fourth the one at the westerly angle. Furthermore, on the face of each post which face shall in the planting thereof be turned towards the post which next follows it in the order in which they are named and numbered, there shall be marked in figures the number of yards distant to the next following post. If means of measurement are not available the distance to be so marked on each of the posts may be that estimated. If the corner of a location falls in a ravine, bed of a stream, or any other situation where the character of the locality may render the planting of a post impossible, the said corner may be indicated by the erection at the nearest suitable point of a witness post, which in that case shall contain the same marks as those prescribed in this clause in regard to corner posts, together with the letters W.P., and an indication of the bearing and distance of the site of the true corner from such witness post.

(In this manner any subsequent prospector, informed of these Regulations, will, on finding any one of the posts or mounds, be enabled to follow them all round, from one to another, and avoid encroachment, either in search of or in marking out another location in the vicinity for himself.)

(*b*) Having so marked out on the ground the location he desires, the claimant shall, within sixty days thereafter, file with the agent in the Dominion Lands Office for the district in which the location is situate, a declaration under oath, according to form A in the schedule to these Regulations (which may be sworn to before the said Agent, or may have been previously sworn to before a Justice of the Peace or Commissioner), setting forth the circumstances of his discovery, and describing, as nearly as may be, the locality and dimensions of the location marked out by him as

aforesaid; and shall, along with such declaration, pay to the said Agent an entry fee of five dollars.

(*c*) The Agent upon such payment being made shall grant a receipt according to the form B in the schedule to these Regulations. This receipt shall authorize the claimant, his legal representatives or assignees, to enter into possession of the location applied for, and subject to its renewal from year to year as hereinafter provided, during the term of five years from its date, to take therefrom and dispose of any mineral deposit contained within its boundaries, provided that during each of the said five years after the date of such receipt he or they shall expend in actual mining operations on the claim at least one hundred dollars, and furnish to the Agent of Dominion Lands within each and every year a full detailed statement of such expenditure, which evidence shall be in the form of an affidavit corroborated by two reliable and disinterested witnesses; and the Agent shall thereupon, subject to the payment by the claimant of a fee of five dollars, issue a receipt in the form C in the schedule hereto, which shall entitle the claimant to hold the location for another year.

(*d*) Any party of miners, not exceeding four, whose claims are adjoining, and each of which has been entered within a period of three months, may, for the better development of their locations, and upon being authorized to do so by the Agent, make upon any one of such locations, during the first and second years after entry, but not subsequently, the expenditure required by these Regulations to be made upon each of the said locations. The authority herein provided for shall be in the form D in the schedule hereto, and shall be granted by the Agent upon application made in writing to that effect by each of the claimants interested, and payment of a fee of five dollars, upon which payment the Agent shall also grant a receipt in the form E in the schedule hereto; provided, however, that the expenditure made upon any one location shall not be applicable in any manner or for any purpose to any other location.

5. At any time before the expiry of five years from the date of his entry for his mining location, the claimant shall be entitled to purchase the said location upon filing with the Agent proof that he has expended not less than five hundred dollars in actual mining operations on the same, and that he has in every other respect complied with the requirements of these Regulations.

6. The price to be paid for a mining location shall be at the rate of five dollars per acre, cash.

7. On making the application to purchase a mining location, and paying the price therefor, as hereinbefore provided, the claimant shall also deposit with the Agent the sum of fifty dollars, which shall be deemed payment by him to the Government for the survey of his location; and upon the receipt of the plans and field notes, and the approval thereof by the Surveyor-General, a patent shall issue to the claimant in the form F in the schedule hereto. If on account of its remoteness or other cause, a mining location cannot at the time of the deposit of fifty dollars by the applicant for the purpose, be surveyed by the Government for that sum, he shall be subject to the alternative of waiting until the employment of a surveyor by the Government on other work in the vicinity of the claim renders it convenient to have the survey made at a

cost not exceeding fifty dollars, or of sooner procuring, at his own cost, its survey by a duly commissioned surveyor of Dominion Lands, under instructions from the Surveyor-General; in the latter case, on receipt of the plans and field notes of the survey and approval thereof by the Surveyor-General, as hereinbefore provided, the claimant shall be entitled to receive his patent, and to have returned to him the fifty dollars deposited by him to defray the cost of survey.

8. Should the claimant, or his legal representatives as aforesaid, fail to prove within each year the expenditure prescribed, or having proved such expenditure, fail within the prescribed time to pay in full, and in cash, to the Agent, the price hereinbefore fixed for such mining location, and also to pay the sum of fifty dollars hereinbefore prescribed for the survey of his location,—then any right on the part of the claimant or of his legal representatives in the location, or claim on his or their part to acquire it, shall lapse, and the location shall thereupon revert to the Crown, and shall be held along with any immovable improvements thereon, for disposal, under these Regulations, to any other person, or as the Minister of the Interior may direct.

(*a.*) In cases where applications for mining locations are made in respect of lands within surveyed townships, they must conform to the regular system of surveys: that is, the location shall be either legal sub-divisions or regular sub-divisions thereof; and prior to the application being granted it shall be necessary to stake out the location, at least approximately, on the ground, and it shall be surveyed by a Dominion Land Surveyor, acting under instructions from the Surveyor-General, within one year thereafter.

(*b.*) If applications for mining locations are made within a township of which at least one boundary has been surveyed, to protect himself the discoverer may stake out his claim in conformity with these Regulations; but before the issue of the patent, the claim shall, if required by the Minister of the Interior, be described by legal sub-divisions or fractional portions thereof, upon a survey made by a Dominion Land Surveyor, acting under instructions from the Surveyor-General.

9. Where two or more persons lay claim to the same mining location, the right to acquire it shall be in him who can prove he was the first to discover the mineral deposit involved and to take possession by demarcation in the manner prescribed in these Regulations, of the location covering it.

10. Priority of discovery alone shall not give the right to acquire; but a person subsequently and independently discovering, who has complied with the other conditions prescribed in these Regulations, shall take precedence of the first discoverer, if the latter has failed to comply with the said other conditions: Provided, however, that in any case where it is proved that a claimant has, in bad faith, used the prior discovery of another, and fraudulently affirms that he made independent discovery and demarcation, he shall, apart from any other legal consequences, have no claim, and shall forfeit the deposit made with his application, and shall be absolutely debarred from obtaining another mining location.

11. Not more than one mining location shall be granted to any individual claimant upon the same lode or vein.

12. Where land is used or occupied for milling purposes, reduction works, or other purposes incidental to mining operations, either by the proprietor of a mining location or other person, such land may be applied for and patented, either in connection with or separate from a mining location, in the manner hereinbefore provided for the application for and the patenting of mining locations, and may be held in addition to any such mining location; but such additional land shall in no case exceed five acres in extent, and shall be paid for at the same rate as a mining location.

13. The Minister of the Interior may grant a location for the mining of iron not exceeding 160 acres in area, which shall be bounded by due north and south and east and west lines, and its breadth and length shall be equal; Provided, that should any person making an application purporting to be for the purpose of mining either iron, thus obtain, whether in good faith or fraudulently, possession of a valuable mineral deposit other than iron, his right in such deposit shall be restricted to the area hereinbefore prescribed for other minerals, and the rest of the location shall thereupon revert to the Crown for such disposition as the Minister may direct.

14. When there are two or more applicants for any mining location, no one of whom is the original discoverer or his assignee, the Minister of the Interior, if he sees fit to dispose of the location, shall invite their competitive tenders, or shall put it up to public tender or auction as he may deem expedient.

15. An assignment of the right to purchase a mining location shall be endorsed on the back of the receipt or certificate of assignment (Forms B and G, in the schedule hereto), and the execution thereof shall be attested by two disinterested witnesses; upon the deposit of the receipt or certificate with such assignment executed and attested as herein provided, in the office of the agent, accompanied by a registration fee of two dollars, the agent shall give to the assignee a receipt in the form G in the schedule hereto, which certificate shall entitle the assignee to all the rights and privileges of the original discoverer in respect of the claim assigned; and the said assignment shall be forwarded to the Minister of the Interior by the Agent, at the same time and in like manner as his other returns respecting Dominion Lands, and shall be registered in the Department of the Interior; and no assignment of the right to purchase a mining location which is not unconditional and in all respects in accordance with the provisions of this clause, and accompanied by the registration fee herein provided for, shall be recognized by the agent or registered in the Department of the Interior.

16. If application be made under the next preceding clause by the assignee of the right to purchase a mining location, and such claim is duly recognized and registered, as hereinbefore provided, such assignee shall, by complying with these Regulations, become entitled to purchase the location for the price and on the terms prescribed thereby.

II.—Placer Mining.

17. The Regulations hereinbefore laid down in respect to Quartz Mining shall be applicable to Placer Mining so far as they relate to entries, entry fees, assignments,

marking of locations, Agents' receipts, and generally where they can be applied, save and except as otherwise herein provided.

NATURE AND SIZE OF CLAIMS.

18 The size of claims shall be as follows :—

(*a*) For "bar diggings," a strip of land 100 feet wide at high water mark, and thence extending into the river to its lowest water level.

(*b*) For "dry diggings," 100 feet square.

(*c*) "Creek and river claims," shall be 100 feet long, measured in the direction of the general course of the stream, and shall extend in width from base to base of the hill or bench on each side, but when the hills or benches are less than 100 feet apart the claim shall be 100 feet square : Provided, however, that in any case where the distance from base to base of the hill or bench exceeds ten chains, such claims shall be laid out in areas of ten acres each, the boundaries of such areas to be due north and south and east and west lines, and if within surveyed territory the said area of ten acres shall consist of one-fourth of a legal sub-division, and shall be marked on the ground in the manner prescribed by these regulations for marking quartz mining locations : Provided further, that any such claim intersected by a creek or river, shall, in addition to the stakes at the four corners thereof, have the points at which its boundaries may be intersected by the high water mark of the creek or river, on both sides of the creek or river, designated by posts of the same size which shall be driven into the ground the same depth and showing the same length above it as the posts prescribed by these Regulations in respect of quartz mining locations, and the said posts shall have marked upon them legibly, with a cutting instrument or with colored chalk, the name of the claimant in full and the date of such marking.

(*d*) "Bench claims" shall be 100 feet square.

(*e*) Every claim on the face of any hill, and fronting on any natural stream or ravine, shall have a frontage of 100 feet, drawn parallel to the main direction thereof, and shall be laid out, as nearly as possible, in the manner prescribed by section 4 of these Regulations.

(*f*) If any person or persons shall discover a new mine, and such discovery shall be established to the satisfaction of the Agent, claims of the following size, in dry, bar, bench, creek, or hill diggings, shall be allowed :—

To one discoverer	300	feet in length.
" a party of two	600	"
" " three	800	"
" " four	1,000	"

and to each member of a party beyond four in number, a claim of the ordinary size only.

A new stratum of auriferous earth or gravel, situated in a locality where the claims are abandoned shall, for this purpose, be deemed a new mine, although the same locality shall have been previously worked at a different level ; and dry diggings discovered in the vicinity of bar diggings shall be deemed a new mine, and *vice versa*.

RIGHTS AND DUTIES OF MINERS.

19. The forms of application for a grant for placer mining, and the grant of the same, shall be those contained in forms H and I in the schedule hereto.

20. The entry of every holder of a grant for placer mining must be renewed and his receipt relinquished and replaced every year, the entry fee being paid each time.

21. No miner shall receive a grant of more than one mining claim in the same locality, but the same miner may hold any number of claims by purchase, and any number of miners may unite to work their claims in common upon such terms as they may arrange, provided such agreement be registered with the Agent, and a fee of five dollars paid for each registration.

22. Any miner or miners may sell, mortgage, or dispose of his or their claims, provided such disposal be registered with, and a fee of two dollars paid to the Agent who shall thereupon give the assignee a certificate in form J in the schedule hereto.

23. Every miner shall, during the continuance of his grant, have the exclusive right of entry upon his own claim, for the miner-like working thereof, and the construction of a residence thereon, and shall be entitled exclusively to all the proceeds realized therefrom; but he shall have no surface rights therein; and the Superintendent of Mines may grant to the holders of adjacent claims such right of entry thereon as may be absolutely necessary for the working of their claims, upon such terms as may, to him, seem reasonable.

24. Every miner shall be entitled to the use of so much of the water naturally flowing through or past his claim, and not already lawfully appropriated, as shall, in the opinion of the Superintendent of Mines, be necessary for the due working thereof; and shall be entitled to drain his own claim free of charge.

25. A claim shall be deemed to be abandoned and open to occupation and entry by any person when the same shall have remained unworked on working days by the grantee thereof for the space of seventy-two hours, unless sickness or other reasonable cause be shown, or unless the grantee is absent on leave.

26. A claim granted under these Regulations shall be continuously, and in good faith, worked, except as otherwise provided, by the grantee thereof or by some person no his behalf.

27. In tunnelling under hills, on the frontage of which angles occur, or which may be of an oblong or elliptical form, no party shall be allowed to tunnel from any of the said angles, or from either end of such hills, so as to interfere with parties tunnelling from the main frontage.

28. Tunnels and shafts shall be considered as belonging to the claim for the use of which they are constructed, and as abandoned or forfeited by the abandonment or forfeiture of the claim itself.

29. For the more convenient working of back claims on benches or slopes, the Superintendent of Mines may permit the owners thereof to drive a tunnel through the claims fronting on any creek, ravine, or water-course, upon such terms as he may deem expedient.

ADMINISTRATION.

30. In case of the death of any miner while entered as the holder of any mining claim, the provisions as to abandonment shall not apply either during his last illness or after his decease.

31. The Minister of the Interior shall take possession of the mining property of the deceased, and may cause such mining property to be duly worked, or dispense therewith at his option; and he shall sell the property by private sale, or, after ten days' notice thereof, by public auction, upon such terms as he shall deem just, and out of the proceeds, pay all costs and charges incurred thereby, and pay the balance, if any, to the legal representatives of the said deceased miner.

32. The Minister of the Interior, or any person authorized by him, shall take charge of all the property of deceased miners until the issue of letters of administration.

III—Bed-Rock Flumes.

33. It shall be lawful for the Minister of the Interior, upon the application hereinafter mentioned, to grant to any bed-rock flume company, for any term not exceeding five years, exclusive rights of way through and entry upon any mining ground for the purposes of constructing, laying and maintaining bed-rock flumes.

34. Three or more persons may constitute themselves into a bed-rock flume company; and every application by them for such grant shall state the names of the applicants and the nature and extent of the privileges sought to be acquired. Ten full days' notice thereof shall be given between the months of June and November, and between the months of November and June, one month's notice shall be given, by affixing the same to a post planted in some conspicuous part of the ground or to face of the rock, and a copy thereof conspicuously upon the inner walls of the Land Office of the district. Prior to such application, the ground included therein shall be marked out in the manner prescribed in sub-clause (*a*) of clause four of these Regulations. It shall be competent for any person to protest before the Agent within the times hereinbefore prescribed for the notice of such application, but not afterwards, against such application being granted. Every application for a grant shall be accompanied by a deposit of $100, which shall be returned if the application be refused, but not otherwise.

35. Every such grant shall be in writing, in the form K in the schedule hereto.

36. The holders of claims through which the line of the company's flume is to run may put in a bed-rock flume in their claims to connect with the company's flume, upon giving the company ten days' notice in writing to that effect; but they shall maintain the like grade, and build their flume as thoroughly, and of as strong materials, as that built by such company.

37. Every bed-rock flume company shall lay at least fifty feet of flume during the first year and one hundred feet annually thereafter, until completion of the flume.

38. Any miners lawfully working any claims where a bed-rock flume exists, shall be entitled to tail their sluices, hydraulics and ground sluices into such flume, but

so as not to obstruct the free working of such flume, rocks, stones, boulders or otherwise.

39. Upon a grant being made to any bed-rock flume company, the Agent shall register the same, and the company shall pay for such registration a fee of $10. They shall also pay, in advance, an annual rent of $10 for each quarter of a mile of right of way legally held by them.

IV.—Drainage of Mines.

40. The Minister of the Interior may grant to any person or persons permission to run a drain or tunnel for drainage purposes through any occupied mining land, and may give such persons exclusive rights of way through and entry upon any mining ground for any term not exceeding five years, for the purpose of constructing a drain or drains for the drainage thereof.

41. The grantee shall compensate the owners of lands or holders of claims entered upon by him for any damage they may sustain by the construction of such tunnel or drain, and such compensation, if not agreed upon, shall be settled by the Superintendent of Mines, and be paid before such drain or tunnel is constructed.

42. Such drain or tunnel, when constructed, shall be deemed to be the property of the person or persons by whom it shall have been so constructed.

43. Every application for a grant shall state the names of the applicants, the nature and extent of the proposed drain or drains, the amount of toll (if any) to be charged, and the privileges sought to be acquired, and shall, save where the drain is intended only for the drainage of the claim of the person constructing the same, be accompanied by a deposit of $25, which shall be refunded in case the application is refused, but not otherwise. Notice of the application shall be given and protests may be made in the same manner as provided in regard to bed-rock flumes.

44. The grant of the right of way to construct drains and tunnels shall be made in the form L in the schedule hereto. The grant shall be registered by the grantee in the office of the Agent, to whom he shall at the time pay a registration fee of $5, or, if the grant gives power to collect tolls, a fee of $1 . An annual rent of $10 shall be paid, in advance, by the said grantee for each quarter of a mile of right of way legally held by him save where the drain shall be for the purpose of draining only the claim of the person constructing the same.

V.—Ditches.

45. The Minister of the Interior may, upon application hereinafter mentioned, grant to any person or persons, for any term not exceeding five years, or in special cases for such length of time as he may determine, the right to divert and use the water from any stream or lake, at any particular part thereof, and the right of way through and entry upon any mining ground, for the purpose of constructing ditches and flumes to convey such water; provided always, that every such grant shall be deemed as appurtenant to the mining claim in respect of which it has been obtained, or is required in connection with reduction works, sampling works, stamp mills, concentrating works, or other works, connected with mining operations, and whenever

the claim shall have been worked out or abandoned, or whenever the occasion for the use of such water upon the claim or in connection with such works shall have permanently ceased, the grant shall cease and determine.

46. Twenty days' notice of the application shall be given, in accordance with Form M in the schedule to these Regulations, by affixing the same to a post planted in some conspicuous part of the Land Office for the district, and any person may protest within such twenty days, but not afterwards, against such application being wholly or partially granted.

47. Every application for a grant of water exceeding 200 inches shall be accompanied by a deposit of $25, which shall be refunded in case the application is refused, but not otherwise.

48. Every such application shall state the names of the applicants, the name or description of the stream or lake to be diverted, the quantity of water to be taken, the locality for its distribution, the price (if any) to be charged for the use of such water, and the time necessary for the completion of the ditch. The grant shall be in the form N in the schedule hereto.

49. Every grant of a water privilege on occupied creeks shall be subject to the rights of such miners as shall, at the time of such grant, be working on the stream above or below the ditch head, and of any other persons lawfully using such water for any purpose whatsoever.

50. If, after the grant has been made, any miner or miners locate and *bona fide* work any mining claim below the ditch head, on any stream so diverted, he or they collectively shall be entitled to 40 inches of water if 200 inches be diverted, and 60 inches if 300 inches be diverted, and no more, except upon paying to the owner of the ditch, and all other persons interested therein, compensation equal to the amount of damage sustained by the diversion of such extra quantity of water as may be required; and in computing such damage, the loss sustained by any claims using water therefrom, and all other reasonable losses, shall be considered.

51. No person shall be entitled to a grant of the water of any stream for the purpose of selling the water to present or future claim holders on any part of such stream. The Minister of the Interior may, however, grant such privileges as he may deem just, when such ditch is intended to work bench or hill claims fronting on any such stream, provided that the rights of miners then using the water so applied for be protected.

52. The Minister of the Interior may, on the report of the Superintendent of Mines that such action is desirable, order the enlargement or alteration of any ditch, and fix the compensation (if any) to be paid by parties to be benefited thereby.

53. Every owner of a ditch or water privilege shall take all reasonable means for utilizing the water granted to him; and, if he wilfully take and waste any unreasonable quantity of water, the Minister may, if such offence be persisted in, declare all rights to the water forfeited.

54. The owner of any ditch or water privilege may distribute the water to such persons and on such terms as he may deem advisable, within the limits mentioned in this grant; provided always, that such owner shall be bound to supply water to all miners who make application therefor in a fair proportion, and shall not demand more from one person than from another, except where the difficulty of supply is enhanced.

55. Any person desiring to bridge any stream, claim or other place, for any purpose, or to mine under or through any ditch or flume, or to carry water through or over any land already occupied, may, in proper cases, do so with the written sanction of the Superintendent of Mines. In all such cases the right of the party first in possession shall prevail so as to entitle him to compensation if the same be just.

56. In measuring water in any ditch or sluice, the following rules shall be observed: The water taken into a ditch or sluice shall be measured at the ditch or sluice head; no water shall be taken into a ditch or sluice except in a trough placed horizontally at the place at which the water enters it, and which trough shall be extended two feet beyond the orifice for the discharge of the water; one inch of water shall mean the quantity that will pass through a rectangular orifice two inches high by half an inch wide, with a constant head of seven inches above the upper side of the orifice.

57. Whenever it shall be intended, in forming or upholding any ditch, to enter upon and occupy any part of an entered claim, or to dig or loosen any earth or rock, within four feet of any ditch not belonging solely to the registered owner of such claim, three days' notice, in writing, of such intention shall be given, before entering or approaching within four feet of such other property.

58. Any person engaged in the construction of any road or work may, with the sanction of the Minister of the Interior, cross, divert or otherwise interfere with any ditch, water privilege or other mining rights whatsoever, for such period as the Minster shall approve.

59. The Minister shall order what compensation for every such damage or interference shall be paid, and when and to whom, and whether any and what works, damaged or affected by such interference as aforesaid, shall be replaced by flumes or otherwise repaired by the person or persons inflicting any such damage.

60. The owners of any ditch, water privilege or mining right shall, at their own expense, construct, secure and maintain, all culverts necessary for the passage of waste and superfluous water flowing through or over any such ditch, water privilege or right.

61. The owners of any ditch or water privilege shall construct and secure the same in a proper and substantial manner, and maintain the same in good repair to the satisfaction of the Superintendent of Mines, and so that no damage shall occur to any road or work in its vicinity from any part of the works of such ditch, water privilege or right.

62. The owners of any ditch, water privilege or right, shall be liable, and shall make good, in such manner as the Superintendent of Mines shall determine, all damages which may be occasioned by or through any part of the works of such ditch, water privilege or right, breaking or being imperfect.

63. Nothing herein contained shall be construed to limit the right of the Lieutenant-Governor of the North-West Territories in Council, or of the proper authority in any Province containing Dominion Lands, to lay out, from time to time, public roads across, through, along, or under any ditch, water privilege or mining right, without compensation.

VI.—General Provisions.

INTERPRETATION.

64. In these Regulations the following expressions shall have the following meanings respectively, unless inconsistent with the context :—

"Minister" shall mean the Minister of the Interior.

"Agent" or "Local Agent" shall mean the Agent of Dominion Lands for the district, or other officer appointed by the Government for the particular purpose referred to.

"Mineral" shall include all minerals whatsoever other than coal and petroleum.

"Close Season" shall mean the period of the year during which placer mining is generally suspended.

"Miner" shall mean a person holding a mining location or a grant for placer mining,

"Claim" shall mean the personal right of property in a placer mine or diggings during the time for which the grant of such mine or diggings is made.

"Claimant" shall mean a person who has obtained an entry for a mining location with a view to patent.

"Bar Diggings" shall mean any mine over which a river extends when in its flooded state.

"Dry Diggings" shall mean any mine over which a river never extends.

The mines on benches shall be known as "Bench Diggings," and shall, for the purpose of defining the size of such claims, be excepted from "Dry Diggings."

"Streams and Ravines" shall include water-courses, whether usually containing water or not, and all rivers, creeks and gulches.

"Ditch" shall include a flume or race, or other artificial means for conducting water by its own weight, to be used for mining purposes.

"Ditch Head" shall mean the point in a natural water-course or lake where water is first taken into a ditch.

"Placer Mining" shall mean the working of all forms of deposits, excepting veins of quartz or other rock in place.

"Quartz Mining" shall mean the working of veins of quartz or other rock in place.

"Location" shall mean the land entered by, or patented to, any person for the purpose of quartz mining.

HEARING AND DECISION OF DISPUTES.

65, The Superintendent of Mines shall have power to hear and determine all disputes in regard to mining property arising within his district, subject to appeal by eithe of the parties to the Commissioner of Dominion Lands.

66. No particular forms of procedure shall be necessary, but the matter complained of must be properly expressed in writing, and a copy of the complaint shall be served on the opposite party not less than *seven* days before the hearing of the said complaint.

67. The complaint may, by leave of the Superintendent of Mines, be amended at any time before or during the proceedings.

68. The complainant shall, at the time of filing his complaint, deposit therewith a bond-fee of $20, which shall be returned to him if the complaint proves to have been well-founded, and not otherwise, except for special cause, by direction of the Minister of the Interior.

69. In the event of the decision of the Superintendent of Mines being made the subject of an appeal to the Commissioner of Dominion Lands, the appellant shall, at the time of lodging the appeal, deposit with the Agent a bond-fee of $20, which shall be returned to the said appellant if his appeal proves to have been well founded, and not otherwise, except for special cause, by direction of the Minister of the Interior.

70. The appeal must be in writing and must be lodged with the Superintendent of Mines not more than three days after his decision has been communicated in writing to all the parties interested, and must state the grounds upon which the said decision is appealed from.

71. If the Commissioner of Dominion Lands decides that it is necessary to a proper decision of the matter in issue to have an investigation on the ground, or, in cases of disputed boundaries or measurements, to employ a surveyor to measure or survey the land in question, the expense of the inspection or re-measurement or re-survey, as the case may be, shall be borne by the litigants, who shall pay into the hands of the said Commissioner, in equal parts, such sum as he may think sufficient for the same, before it takes place; otherwise, it shall not proceed, and the party who refuses to pay such sum shall be adjudged in default. The said Commissioner shall subsequently decide in what proportion the said expense should be borne by the parties respectively, and the surplusage, if any, shall then be returned to the parties, as he may order.

72. All bond-fees adjudged as forfeited and all payments retained under the last preceding section, shall, as soon as decision has been rendered, and all entry and other fees or moneys shall, as soon as they have been reeceived by him, be paid by the said Agent or Commissioner to the credit of the Receiver-General in the same manner as other moneys received by him on account of Dominion Lands.

LEAVE OF ABSENCE.

73. The Agent in each district shall, under instructions from the Minister of the Interior, declare the close season in his district.

74. Each holder of a mining location or of a grant for placer mining shall be entitled to be absent from his mining location or diggings, and to suspend work thereon during the close season.

75. The Agent shall have power to grant leave of absence to the holder of a mining location or grant for placer mining pending the decision of any dispute in which he is concerned under these Regulations.

76. In cases where water is necessary to the continuance of mining operations, and the supply of water is insufficient, the Superintendent of Mines, shall have power to grant leave of absence to the holder of the grant during such insufficiency, but no longer, except by permission of the Minister of the Interior.

77. Any miner or miners shall be entitled to leave of absence for one year from his or their diggings, upon proving to the satisfaction of the Superintendent of Mines that he or they has or have expended on such diggings, in cash, labor or machinery, an amount of not less than $200 on each of such diggings, without any return of gold or other minerals in reasonable quantities for such expenditure.

78. The time reasonably occupied by the locator of a claim in going to, and returning from, the office of the Agent or Superintendent of Mines to enter his claim, or for other purposes prescribed by these Regulations, shall not be counted against him, but he shall, in all such cases, be deemed to be absent on leave.

MISCELLANEOUS.

79. The Minister of the Interior shall, from time to time, as he may think fit, declare the boundaries of mineral and mining districts, and shall cause a description of the same to be published in the *Canada Gazette*.

80. The Minister of the Interior may direct mineral and mining locations to be laid out within such districts wherever, from report of the Director of the Geological Survey, or from other information, he has reason to believe there are mineral deposits of economic value, and may sell the same to applicants therefor, who, in his opinion, are able and intend in good faith to work the same; or, he may, from time to time, cause the said locations to be sold by public auction or tender. Such sales shall be for cash, and at prices in no case lower than those prescribed for locations sold to original discoverers, and shall otherwise be subject to all the provisions of these Regulations.

81. The Minister of the Interior may grant to any person or persons who have a mining location and are actively developing the same, an additional location adjacent to and not exceeding it in area, provided the person or persons holding such location shall show to the satisfaction of the Minister of the Interior that the vein or lode being developed on the location will probably extend outside of either of the vertical lines forming the side boundaries of the location before it has reached the depth at which it can be profitably mined.

82. Persons desirous of obtaining quarries for stone on vacant Dominion Lands may do so under these Regulations; but the Minister of the Interior may require the payment of a royalty not exceeding five per cent. on account of the sales of the

product of such quarries, or the land may be sold not subject to such royalty at such price as may be determined.

83. Returns shall be made by the grantee, sworn to by him, or by his agent or other employé in charge of the mine, at monthly or other such intervals as may be required by the Minister of the Interior, of all products of his mining location and of the price or amount he received for the same.

84. The Minister of the Interior shall have the power to summarily order any mining works to be so carried on as not to interfere with or endanger the safety of the public, any public work or highway, or any mining property, mineral lands, mining claims, bed-rock drains or flumes; and any abandoned works may, by his order, be either filled up or guarded to his satisfaction, at the cost of the parties who may have constructed the same, or in their absence upon such terms as he shall think fit.

85. The Superintendent of Mines, acting under instructions to be from time to time issued by the Minister of the Interior, shall cause to be laid out, at the expense of the person or persons applying for the same, a space of ground for deposits of leavings and deads from any tunnel, claim or mining ground.

FORFEITURE.

86. In the event of the breach of these Regulations, or any of them by any person holding a grant for Quartz or Placer Mining from the Crown other than Crown Patents, or from the Minister of the Interior, or from any duly authorized officer of Dominion Lands, such right or grant shall be absolutely forfeited *ipso facto*, and the persons so offending shall be incapable thereafter of acquiring any such right or grant, unless for special cause it is otherwise decided by the Minister of the Interior.

BRITISH COLUMBIA.

I.—Placer Mines Act.

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BRITISH COLUMBIA.

I.—Law relating to Placer Mines.

(Passed 20th April, 1891.)

Her Majesty, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia, enacts as follows:

Short Title.

1. This Act may be cited as the "Placer Mining Act, 1891."

Interpretation.

2. In the construction of this Act the following expressions shall have the following meanings respectively, unless inconsistent with the context:—

"Mine," "placer mine," and "diggings" shall be synonymous terms, and shall mean any natural stratum or bed of earth, gravel or cement mined for gold or other precious minerals:

"Placer claim" shall mean the personal right of property or interest in any placer mine; and in the term "mining property" shall be included every placer claim, ditch or water right used for placer mining purposes, and all other things belonging thereto or used in the working thereof. Placer claims shall be divided into creek diggings, bar diggings, dry diggings, bench diggings, and hill diggings:

"Creek diggings" shall mean any mine in the bed of any river, stream or ravine, excepting bar diggings:

"Bar diggings" shall mean any mine over which a river extends when in its flooded state:

"Dry diggings" shall mean any mine over which a river never extends:

"Bench diggings" shall mean any mine on a bench, and shall, for the purpose of defining the size of a claim in bench diggings, be excepted from "dry diggings:"

"Hill diggings" shall mean any mine on the surface of a hill, and fronting on any natural stream or ravine:

"Streams and ravines" shall include all natural water-courses, whether usually containing water or not, and all rivers, creeks, and gulches:

"Ditch" shall include a flume, pipe, race, or other artificial means for conducting water by its own weight, to be used for mining purposes:

"Ditch head" shall mean the point in a natural water-course or lake where water is first taken into a ditch.

"Free miner" shall mean a person, or joint stock company, or foreign company named in, and lawfully possessed of, a valid existing free miner's certificate, and no other:

"Legal post" shall mean a stake standing not less than four feet above the ground, and squared or faced on four sides for at least one foot from the top, and each side so squared or faced shall measure at least four inches on its face so far as squared or faced, or any stump or tree cut off and squared or faced to the above height and size:

"Record," "register," and "registration," shall have the same meaning, and shall mean an entry in some official book kept for that purpose:

"Record," when used without qualifying words showing that a different matter is referred to, shall be taken to refer to the record of the location of a placer claim:

"Full interest" shall mean any placer claim of the full size, or one of several shares into which a mine may be equally divided:

"Close season" shall mean the period of the year during which placer claims in any district are laid over by the Gold Commissioner of that district:

"Cause" shall include any suit or action:

"Judgment" shall include "order" or "decree:"

"Real estate" shall mean any placer mineral land held in fee simple:

"Joint stock company" shall mean any company duly incorporated for mining purposes under the "Companies Act," "Companies Act, 1890," and any company duly incorporated in British Columbia for mining purposes under the "Companies Act, 1862" (Imperial), and shall include all companies falling under the definition of a foreign company in the "Companies Act."

Part I.

Free Miners, and their Privileges.

3. Every person over, but not under, eighteen years of age, and every joint stock company, shall be entitled to all the rights and privileges of a free miner, and shall be considered a free miner, upon taking out a free miner's certificate. A minor who shall become a free miner shall, as regards his mining property and liabilities contracted in connection therewith, be treated as of full age. A free miner's certificate issued to a joint stock company shall be issued in its corporate name. A free miner's certificate shall not be transferable.

4. A free miner's certificate may be granted for one or more years, to run from the date thereof, or from the expiration of the applicant's then existing certificate, upon the payment therefor of the fees set out in the Schedule of Fees to this Act. Only one person or one joint stock company shall be named therein.

5. A free miner's certificate shall be in the following form:—

BRITISH COLUMBIA.

Free Miner's Certificate.

NOT TRANSFERABLE.

Date, No.

Valid for year only.

This is to certify that of has paid me this day the sum of , and is entitled to all the rights and privileges of a free miner, for year from the day of , 18 .

(Signature of Gold Commissioner or Mining Recorder, as the case may be.)

6. If any person or joint stock company shall apply for a free miner's certificate at the Mining Recorder's office during his absence, and shall leave the fee required by this Act with the officer or other person in charge of the said office, he or it shall be entitled to have such certificate from the date of such application; and any free miner shall at any time be entitled to obtain a free miner's certificate commencing to run from the expiration of his then existing free mine's certificate, provided that when he applies for such certificate he shall produce to the Mining Recorder, or in case of his absence shall leave with the officer or other person in charge of the Mining Recorder's office, such existing certificate.

7. If any free miner's certificate be accidentally destroyed or lost, the owner thereof may, on payment of the fees set out in the Schedule to this Act, have a true copy of it, signed by the Mining Recorder, or other person by whom or out of whose office the original was issued. Every such copy shall be marked "substituted certificate;" and unless some material irregularity be shown in respect thereof, every original or substituted free miner's certificate shall be evidence of all matters therein contained.

8. Every person and joint stock company engaged in placer mining shall take out a free miner's certificate, and any person or joint stock company who mines or works as a miner in any placer claim, or on any bed-rock flume, drain or ditch, without having taken out and obtained such certificate, shall, on conviction thereof in a summary way, forfeit and pay a penalty not exceeding twenty-five dollars, besides costs: Provided, always, that nothing herein contained shall prejudice the right to collect wages or payment for work done by any person or company who, through not being a free miner, has rendered himself or itself liable to the above penalty.

9. No person or joint stock company shall be recognized as having any right or interest in or to any placer claim, mining lease, bed-rock flume grant, or any minerals in any ground comprised therein, or in or to any water right, mining ditch, drain, tunnel, or flume, unless he or it shall have a free miner's certificate unexpired. And on the expiration of a free miner's certificate the owner thereof shall absolutely forfeit all his rights and interests in or to any placer claim, mining lease, bed-rock flume grant, and any minerals in any ground comprised therein, and in or to any and every water right, mining ditch, drain, tunnel, or flume, which

may be held or claimed by such owner of such expired free miner's certificate, unless such owner shall, on or before the day following the expiration of such certificate, obtain a new free miner's certificate: Provided, nevertheless, that a shareholder in a joint stock company need not be a free miner, and though not a free miner, shall be entitled to buy, sell, hold, or dispose of any shares therein: And provided, also, that this section shall not apply to placer mines for which a Crown grant has been issued.

10. Every free miner shall, during the continuance of his certificate, but not longer, have the right to enter, locate, prospect, and mine for gold and other precious metals upon any lands in the Province of British Columbia, whether vested in the Crown or otherwise, except upon Government reservations for townsites, land occupied by any building, and any land falling within the curtilage of any dwelling house, and any orchard, and any land lawfully occupied for placer mining purposes, and also Indian reservations.

11. Previous to any entry being made upon lands already lawfully occupied, such free miner shall give adequate security, to the satisfaction of the Gold Commissioner, for any loss or damage which may be caused by such entry; and after such entry he shall make full compensation to the occupant or owner of such lands for any loss or damage which may be caused by reason of such entry; such compensation, in case of dispute, to be determined by a court having jurisdiction in mining disputes, with or without a jury.

12. Any free miner may enter upon any Crown lands, or lands covered by timber leases, or any lands the timber whereon has been reserved by the Crown, to cut timber for mining purposes.

13. Any free miner shall be at liberty at any period of the year, while actually prospecting or engaged in mining, to kill game for his own use.

14. A free miner shall have all the rights and privileges granted to free miners by the "Mineral Act, 1891."

Part II.

Size and Nature of Placer Claims.

Locating, Recording, Re-recording, Working and Lay-overs.

15. Every free miner shall be entitled to locate and record a placer claim on each separate creek, ravine or hill, but not more than two claims in the same locality, only one of which shall be a creek claim. He shall be allowed to hold any number of placer claims by purchase, and every free miner may sell, mortgage or dispose of his claim or any interest therein.

16. The size of placer claims shall be as follows:—

A "creek claim" shall be 100 feet long, measured in the direction of the general course of the stream, and shall extend in width from base to base of the hill or bench on each side, but when the hills or benches are less than 100 feet apart the claim shall be 100 feet square.

In "bar diggings" a claim shall be a strip of land 100 feet long at high water mark, and in width extending from high water mark into the river to its lowest water level:

In "dry diggings" a claim shall be 100 feet square:

In "bench diggings" a claim shall be 100 feet square: Provided that the Gold Commissioner shall have authority, where a bench is narrow, to extend the limits of the claim beyond the limits of the bench, but not to exceed 100 feet square:

In "hill diggings" a claim shall have a base line or frontage of 100 feet, drawn parallel to the main direction of the stream or ravine on which it fronts. Parallel lines drawn from each end of the base line, at right angles thereto, and running to the summit of the hill, shall constitute the side lines thereof. Legal posts shall be placed, 100 feet apart, on both the base line and side lines, and no claim shall extend beyond the posts so placed.

17. If any free miner, or party of free miners, discover a new mine, and such discovery be established to the satisfaction of the Gold Commissioner, placer claims of the following sizes, in dry, bar, bench, creek or hill diggings shall be allowed, viz:—

To one discoverer, one claim..... 300 feet in length;
To a party of two discoverers, two claims, amounting together to..... 600 do
To a party of three discoverers, three claims, amounting together to..... 800 do
To a party of four discoverers, four claims, amounting together to..... 1000 do
And to each member of a party beyond four in number, a claim of the ordinary size only.

A creek discovery claim shall extend on each side of the centre of the creek as far as the summit of the hill, but not exceeding 1000 feet.

18. A new stratum of auriferous earth, gravel or cement, situated in a locality where all placer claims are abandoned, shall be deemed a new mine, although mines in the same locality shall have been previously worked; and dry diggings discovered in the vicinity of bar diggings shall be deemed a new mine, and *vice versa*. A discoverer's claim shall be considered as one ordinary claim, in respect to recording, working, and representing.

19. In defining the size of placer claims they shall be measured horizontally, irrespective of inequalities on the surface of the ground.

Locating, Recording, Re-recording, Working and Lay-overs.

20. Every placer claim shall be as nearly as possible rectangular in form, and marked by four legal posts at the corners thereof, firmly fixed in the ground. One of such posts shall be marked as the "initial post," and on that post shall be placed a

legible notice in writing, stating the name of the claim, its length in feet and general direction, with the date of the notice and name of each locator. If any side line of any claim shall exceed 100 feet in length, legal posts shall be placed along such side line, at distances not exceeding 100 feet.

21. Any location made upon Sunday or any public holiday shall not for that reason be invalid, any law or statute to the contrary notwithstanding.

22 In case of any dispute as to the title to a placer claim, the title to the claim shall be recognized according to the priority of such location, subject to any question as to the validity of the record itself, and subject further to the free miner having complied with all the terms and conditions of this Act.

23. Every free miner locating a placer claim shall record the same with the Mining Recorder of the district or division within which the same is situate, within three days after the location thereof, if located within ten miles of the office of the said Mining Recorder. One additional day shall be allowed for making such record for every additional ten miles or fraction thereof. Such record shall be made in a book to be kept for the purpose in the office of the said Mining Recorder, to be known as the "Record Book," in which shall be inserted the name of the claim, the name of each locator, the number of each locator's free miner's certificate, the locality of the claim, its length in feet, the period for which such record is granted, the date of location and date of the record: Provided that a free miner shall not be entitled to a record of a claim until he shall have furnished the Mining Recorder with a written statement of the above particulars.

24. After the recording of a placer claim, the removal of any post by the holder thereof, or by any person acting in his behalf, made for the purpose of changing the limits of his claim, shall act as a forfeiture of the claim.

25. Upon the establishment of a mining division and the opening of a Mining Recorder's Office therein, under the authority of this Act, such office and none other shall be the proper office for recording all placer claims within such mining division, and making all records in respect thereof.

26. If through ignorance any free miner shall record a placer claim in a different district or mining division to that in which such claim is situate, such error shall not affect his title to such claim, but he shall, within fifteen days from the discovery of his error, record such claim, in the district or mining division in which it is situate, and such new record shall bear the date of the first record, and a note shall be made thereon of the error and of the date of the rectification of the same.

27. A free miner having duly located a placer claim, shall be entitled to record the same for one or more years upon payment of the fees set out in the Schedule to this Act.

28. A free miner shall, at any time during the existence of his record or re-record, be entitled to extend the term of his interest in his placer claim for one or more years, upon payment of the fees set out in the Schedule to this Act, by re-recording such claim. Such re-record shall be made in the Record Book, and shall set out—

(1.) The name of the claim :
(2.) The name of each holder of an interest in such claim :
(3.) The number of each such holder's free miner's certificate :
(4.) The locality of the claim :
(5.) The period for which such re-record is granted :
(6.) The date of the re-record.

29. If a free miner shall apply for a record, and shall make such application at the Mining Recorder's office during office hours, but during his absence, and shall leave the fee required by this Act, and the particulars and information required by section 23, with the officer or other person in charge of the said office, he shall be entitled to have a record dated on the date of such application.

30 If a free miner shall apply for a re-record, and shall make such application at the Mining Recorder's office during office hours, but during his absence, and shall leave the fee required by this Act, and the particulars and information required by section 28, with the officer or other person in charge of the said office, he shall be entitled to have a re-record dated on the date of such application, but commencing to run from the expiration of his existing record or re-record.

31. A free miner, having duly located and recorded a placer claim, shall be entitled to hold the same during the existence of his record or re-record of such claim upon complying with all the terms and conditions of this Act.

32. Every free miner shall have the exclusive right of entry upon his placer claim, for the miner-like working thereof, and the construction of a residence thereon, and shall be entitled exclusively to all the proceeds realized therefrom : Provided, that the Gold Commissioner may, upon application made to him, allow other free miners such rights of entry thereon as may be necessary for the working of their claims, upon such terms as may to him seem reasonable.

33. Upon any dispute as to the title to a placer claim, no irregularity made prior to the date of the then current record or re-record of such claim shall affect the title thereto, and it shall be assumed that up to the date of such record or re-record the title to such claim was perfect : Provided always, that it shall at all times be open to prove that the ground was improperly or insufficiently staked, or that the stakes have been illegally moved.

34. Tunnels, shafts and ditches shall be considered as belonging to the placer claim for the use of which they are constructed, and as abandoned or forfeited by the abandonment or forfeiture of the claim itself.

35. In tunnelling under hills, on the frontage of which angles occur, or which may be of an oblong or elliptical form, no party shall be allowed to tunnel from any of the said angles, nor from either end of such hills, so as to interfere with parties tunnelling from the main frontage.

36. The interest of a free miner in his placer claim shall, save as to placer mines held as real estate, be deemed to be a chattel interest, equivalent to a lease, for such period as the same may have been recorded, renewable at the end thereof by re-recording, and subject to the conditions as to forfeiture, working, representation, re-recording, and otherwise, for the time being in force with respect to placer claims.

37. The holder of a placer claim shall have no right to any vein or lode, as defined by the "Mineral Act, 1891," within the limits of such placer claim, unless he shall have located and recorded the ground as a mineral claim; and until he shall so locate and record such ground, the same shall be open to any free miner to locate and record as a mineral claim.

38. Every placer claim as defined by this Act shall be represented and *bona fide* worked by the holder thereof, or by some person on his behalf, continuously, as nearly as practicable, during working hours, and shall be deemed to be abandoned and absolutely forfeited when the same shall have remained unworked on working days by the holder thereof, or some person on his behalf, for the period of seventy-two hours, except during the close season, some lay-over, or leave of absence, or during sickness, or for some other reasonable cause which shall be shown to the satisfaction of the Gold Commissioner.

39. Every free miner, or company of free miners, shall be entitled to a leave of absence for one year from his or their placer claim or set of claims,—

(*a*) Upon proving to the Gold Commissioner that he or they has or have expended on such claim, or on any portion of the set of claims, in cash, labor, or machinery, an amount equal to one thousand dollars on each full interest, without any return of gold or other minerals in reasonable quantities from such expenditure: and

(*b*) Upon the application for such leave being signed by all the holders of the claim or set of claims.

Such leave of absence shall not be deemed to relieve the holder of such claim or set of claims from carrying out the provisions of this Act respecting free miners' certificates, records and re-records of such claims; nor shall this section affect the discretionary power of the Gold Commissioner with respect to granting a leave of absence under other conditions.

40. Every forfeiture of a placer claim shall be absolute, any rule of law or equity to the contrary notwithstanding.

41. No placer claim located and recorded in any district within fourteen days before, or at any time during the close season, shall be deemed to be laid over, unless so much work shall have been *bona fide* done thereon by the holder thereof as shall, in the opinion of the Gold Commissioner, fairly entitle him to have such claim laid over.

42 Where the supply of water is insufficient to work hydraulic or other placer claims requiring water to enable them to be worked, such claims shall be laid over by virtue of this section during such insufficiency, but no longer, except by leave of the Gold Commissioner; but a notice of such insufficiency of water must be posted on the office of the Mining Recorder within three days from the cessation of work.

43. Every bill of sale, conveyance, or mortgage of a placer claim, or of any fraction thereof, shall be recorded within the time prescribed for recording placer claims.

44. No transfer of any placer claim, or of any interest therein, shall be enforceable unless the same or some memorandum thereof shall be in writing, signed by the transferer, or by his agent authorized in writing, and recorded in the Record of Conveyances.

45. The transfer of any real estate acquired under the provisions of the "Gold Mining Amendment Act, 1873," shall be in writing, signed by the transferer or his agent authorized in writing, and attested by a subscribing witness.

Part III.

Tunnels and Drains.

46. Any free miner requiring to run or construct a tunnel or drain in connection with his claim through any occupied or unoccupied lands, whether mineral or not, shall obtain a license from the Gold Commissioner for that purpose, which license shall be granted or withheld in the absolute discretion of such Gold Commissioner; and shall also give such security to the Gold Commissioner for any damage that may be caused by such tunnel or drain as such Gold Commissioner may require. Such license shall be subject to such terms and conditions as the Gold Commissioner shall think fit, and shall be recorded in the Record Book.

47. A tunnel or drain shall be considered as part of the placer claim, or mine held as real estate, for which the same was constructed.

48. Any free miner may apply to the Gold Commissioner for a grant of right of way and entry through and upon any mining ground in his district, for the purpose of constructing a drain for public drainage of mines.

49. The application for every such grant shall be in writing, and shall set out the name of each applicant, the nature and extent of the proposed drain, the amount of toll to be charged, the term of years for which such grant is to be made, and all other privileges sought to be acquired. The application shall be left at the Mining Recorder's office addressed to the Gold Commissioner. A notice of such application, setting out the above particulars, shall be posted on the office of the Mining Recorder and on the ground for thirty clear days before such grant shall be made.

50. The applicant for every such grant shall deposit with the Mining Recorder at the time of the leaving of his application as aforesaid, twenty-five dollars, which shall be refunded in case the application be refused.

51. Such grant shall be in writing and signed by the Gold Commissioner, and shall not be given for a longer period than twenty years, and shall give such rights of way and entry and such powers to assess, levy, and collect tolls from all persons using such drain, or benefited thereby, as the Gold Commissioner shall think fit, but not in any case to exceed the terms, rights, or powers set out in the application.

52. The following covenants and conditions on the part of the grantee and his assigns shall be deemed to be part of every grant, whether expressed therein or not:—

(*a.*) That he shall construct a drain or drains of sufficient size to meet all requirements within a time therein named:

(*b.*) That he shall keep the same in thorough working order and repair, and free from all obstructions, and in default thereof that the Gold Commissioner may order all necessary alterations or repairs to be made by any free miners, other than the grantee or his assigns, at the cost and expense of the latter; such cost and expense to be levied by sale (subject, however, to the conditions of the grant), of all or any part of the drainage works, materials, and tolls, or any of them:

(*c.*) That he shall, within a reasonable time, construct proper tap-drains from or into any adjacent claims, upon being requested in writing by the holders thereof so to do; and if such grantee shall fail to commence the construction of any such tap-drains for five days after receipt of such request, or after making such commencement shall for three days fail to proceed with such construction, he shall permit such holders to construct such tap-drains, in which case such holders shall only be chargeable with one-half the specified rates of toll, or such other proportion as the Gold Commissioner may direct:

(*d.*) That he will not in the construction and maintenance of such drains and tap-drains in any way injure the property of others, and that he shall make good any damage done by him.

53. Every such grant shall be recorded in the Record Book, and the deposited sum of twenty-five dollars shall be retained as a recording fee. A rent of twenty-five dollars for each quarter of a mile and each fraction thereof shall be paid annually to the Mining Recorder by the grantee, such rent to commence from the date of the grant.

Part IV.

Water Rights.

54. Every free miner shall be entitled to the use of so much of the water naturally flowing through or past his placer claim, and not already lawfully appropriated, as shall, in the opinion of the Gold Commissioner, be necessary for the due working thereof.

55. A free miner may, at the discretion of the Gold Commissioner, obtain a grant to a water right in any unappropriated water, for any placer mining purpose, for any term not exceeding ten years, upon such terms and conditions as such Gold Commissioner shall think fit.

56. Before applying for any such grant, the free miner shall—

(1.) Post a notice in writing on a legal post upon some conspicuous part of the ground on which such water is intended to be used, and a copy of such notice on the office of the Mining Recorder for at least twenty days, which notice shall contain the following particulars:—

(*a.*) The name of each applicant:

(*b.*) The number of each applicant's free miner's certificate:

(*c.*) The name, or if unnamed, a sufficient description of the stream, lake, or other source from which such water is intended to be taken :

(*d.*) The point of diversion or intended ditch-head :

(*e.*) The number of inches of water applied for :

(*f.*) The purpose for which it is required :

(*g.*) The date of the notice.

(2.) If more than three hundred inches are applied for, a deposit shall be made with the Gold Commissioner of twenty-five dollars, to be refunded if the grant is not made.

57. The grant of such water right shall be recorded in the office of the Mining Recorder in the Record of Water Grants, within the time limited for the recording of placer claims, and shall during each year of the continuance of the grant, and whilst it shall be in operation, be re-recorded as in the case of a placer claim.

58. No grant shall take effect until recorded.

59. No free miner shall be entitled to a grant of the water of any stream for the purpose of selling the water to claim-holders on any part of such stream. The Gold Commissioner may, however, grant such privileges as he may deem just, when such water is intended to work bench or hill claims fronting on any such stream ; provided, that the rights of free miners then using the water be protected.

60. The owner of any water right may distribute the water to such free miners and on such terms as he may deem advisable, within the limits mentioned in his grant : Provided, always, that such owner shall be bound to supply water to all applicants, being free miners, in a fair proportion, and shall not demand more from one than another, except where the difficulty of supply is enhanced.

61. If, after the grant has been made, any free miner or free miners locate and *bona fide* work any placer claim below the ditch-head, on any stream so diverted, he or they shall collectively be entitled to forty inches of water if two hundred inches be diverted, and sixty inches if three hundred inches be diverted, and no more, except upon paying to the grantee compensation equal to the amount of damage sustained by the grantee on account of the diversion of such extra quantity of water ; and, in computing such damage, the expense of the construction of the ditch shall be considered.

62. On any dispute between applicants for a grant prior to such grant being made, priority of notice shall constitute priority of right, if any.

63. A grant duly recorded shall speak from the date of the grant, and not from the date of the record.

64. Every such grant shall be subject to the rights of such free miners as shall, at the date of such grant, be working on the stream above or below the ditch-head, and of any other persons lawfully using such water for any purpose whatsoever.

65. A grant of a water right made in respect of any placer claim, or placer mine held as real estate, shall be deemed appurtenant to such claim or mine, and whenever

the claim or mine shall have been worked out, abandoned or forfeited, or whenever the occasion for the use of the water upon the claim or mine shall have permanently ceased, the grant shall be at an end and determined.

66. Within thirty days after the grant is made, the grantee shall commence the excavation or construction of the works in which he intends to divert and convey the water, and shall prosecute the work diligently and uninterruptedly to completion, unless interrupted by the severity of the weather: Provided always that the Gold Commissioner may, in his discretion, allow such work to cease for any time, upon cause being shown. Upon the non-fulfilment of any of the conditions of this section, the grant shall be forfeited.

67. The grantee of any water right may obtain permission from the Gold Commissioner to change the place of diversion, on giving such notices and complying with such terms as the Gold Commissioner may require.

68. Every such grantee shall take all reasonable means for utilizing the water granted to him; and if he wilfully waste any water, or take a quantity of water in excess of his requirements, the Gold Commissioner may declare his grant to be forfeited.

69. Any person desiring to bridge any stream, claim, or other place for any purpose, or to mine under or through any ditch or flume, or to carry water through or over any land already occupied may do so with the written sanction of the Gold Commissioner. In all such cases the right of the party first in possession, whether of the mine or of the water right, is to prevail, so as to entitle him to compensation if the same be just.

70. In measuring water in any ditch or sluice, the following rules shall be observed:—The water taken into a ditch or sluice shall be measured at the ditch or sluice head. No water shall be taken into a ditch or sluice except in a trough placed horizontally at the place at which the water enters it. One inch of water shall mean half the quantity that will pass through an orifice two inches high by one inch wide, with a constant head of seven inches above the upper side of the orifice.

71. Whenever it shall be intended, in forming or upholding any ditch, to enter upon and occupy any part of a placer claim, or placer mine held as real estate, or other land, or to dig or loosen any earth or rock within twenty feet of any ditch thereon, three days' notice in writing of such intention shall be given to the owner of such ditch, before entering or approaching within twenty feet thereof.

72. Any person heretofore or hereafter engaged in the construction of any road or work may, with the sanction of the Gold Commissioner, cross, divert, or otherwise interfere with any ditch, water right, or other mining rights whatsoever, for such period as the said Commissioner shall direct.

73. The owner of any ditch, flume or pipe shall at his own expense, construct, secure and maintain all culverts necessary for the passage of waste and superfluous water flowing through or over any such ditch, flume or pipe.

74. The owner of any ditch, flume or pipe shall construct and secure the same in a proper and substantial manner, and maintain the same in good repair to the

satisfaction of the Gold Commissioner, and so that no damage shall occur to any road or work in its vicinity, from any part of the works of such ditch, flume or pipe.

75. The owner of any ditch, flume or pipe shall be liable and shall make good in such manner as the Gold Commissioner shall determine, all damage which may be occasioned by or through any parts of the works of such ditch, flume, or pipe breaking or being imperfect.

76. If any written notice to the party intended to be affected thereby be posted for ten days on some conspicuous part of any premises referred to in such notice, and also on the office of the Mining Recorder, such notice shall be deemed good and sufficient.

77. When the term for which any water right has been granted shall have expired, the grantee thereof may, at the discretion of the Gold Commissioner, obtain a renewal of the same for a reasonable term, not to exceed ten years, provided the necessity for the use of said water for the purpose for which it was originally granted continues to exist.

78. Nothing herein contained shall be construed to limit the right of the Chief Commissioner of Lands and Works to lay out, from time to time, the public roads of the Province, across, through, along, or under any ditch, water right or mining right, in any Crown land, without compensation, provided that as little damage as possible shall be done.

Part V.

Mining Partnerships.

79. All mining partnerships shall be governed by the provisions hereof, unless they shall have other and written articles of partnership.

80. A mining partnership shall, unless otherwise agreed upon, be deemed to be a yearly partnership, renewable from year to year by tacit consent.

81. The business of such partnership shall be mining, and such other matters as pertain solely thereto.

82. Mining partnerships can locate and record in the partnership name a placer claim for each partner who is a free miner. Such partnership claims may be located and recorded as a set of claims, and each such claim shall be staked as an ordinary placer claim. One stake on each such claim shall be marked as an initial stake, by writing thereon the words "Initial Post." It shall not be requisite to post more than one location notice on each set of claims, which notice shall be on the first initial post.

83. A set of claims may be recorded in one record. The name of every partner, and the number of every partner's free miner's certificate, shall be on the record of every such set of claims. The partnership name shall appear on every such record. and all claims so taken up shall be the property of the partnership.

84. A partner in any mining partnership, or his agent authorized in writing, shall, at any meeting thereof, be entitled to vote upon any interest or fraction of an

interest which he may hold therein; but the result of the votes given shall be determined by the number of the full interests voted upon, and not by the number of partners voting at such meeting.

85. A majority of such votes may decide when, how long, and in what manner to work the partnership claim, or set of claims, the number of men to be employed, which number shall not be less than one man to each claim, and the extent and manner of levying the assessments to defray the expenses incurred by the partnership. Such majority may also choose a foreman or manager, who shall represent the partnership and sue and be sued in the name of the partnership for assessments and otherwise; and he shall have power to bind them by his contracts. Every partner, or his duly authorized agent, shall be entitled to represent his interest in the partnership property by work and labour, so long as such work and labour be satisfactory to the foreman or manager. In the event of such partner or agent being discharged by the foreman or manager, the Court having jurisdiction in mining disputes may, if requested, summon the foreman or manager before it, and upon hearing the facts make such order as it shall deem just.

86. All assessments shall be payable within five days after being made.

87. Any partner making default in payment, after receiving a notice specifying the amount due by him, shall, if such amount be correct, be personally liable therefor to the partnership, and his interest in the partnership property may be sold by the partnership for the payment of the debt, and any further assessment which may have accrued thereon up to the day of sale, together with all costs and charges occasioned by such default; and if the proceeds of the sale be insufficient to pay off the several sums mentioned, the Court having jurisdiction in mining disputes, upon being applied to, shall issue an order directed to the sheriff to seize and sell any other personal property of the debtor. Notices of sale shall, in either of the above cases, be conspicuously posted ten clear days prior to the day of sale, in the vicinity of such mining or other property, and on the Court House or Mining Recorder's office nearest thereto. But if such partner be absent from the district, such notices shall be posted as aforesaid thirty clear days before the day of sale, and a copy of such notice shall be published in some newspaper circulating in the district wherein such mining or other property is situate for the same period. Such sale shall be by public auction to the highest bidder. The purchaser shall be entitled to possession of the property sold, and to a bill of sale therefor signed by the auctioneer; such bill of sale shall confer such title upon the purchaser as the owner had.

88. After a notice of abandonment, in writing, shall have been served on the foreman or manager of a partnership by any member thereof, and duly recorded, such member shall not be liable for any debts or other liabilities of the partnership incurred after service and record of such notice, and no member shall be deemed to have abandoned an interest until service and record of such notice.

89. Any partner shall be entitled to sell, or contract for the sale of, his interest in the partnership property, but such interest shall continue liable for all the debts of the partnership.

90. No partner shall, after a bill of sale conveying his interest has been recorded, be liable for any indebtedness of the partnership incurred thereafter.

Limited Liability.

91. Any mining partnership, composed of two or more free miners, and being free from all debts in respect of the partnership property, may limit the liability of its members, upon complying with the requirements following, that is to say:—

Upon filing with the Mining Recorder a declaratory statement, containing the name of the partnership, the location and size of every partnership claim, and the particular interest of each partner, and also placing upon a conspicuous part of every such claim, or set of claims, in large letters, the name of the partnership, followed by the words "Limited Liability."

92. The words "Limited Liability" shall thereupon become part of the partnership name.

93. After such conditions shall have been complied with, no member of such partnership shall be liable for any indebtedness incurred thereafter, beyond an amount proportioned to his interest in the partnership.

94. Every such partnership shall keep a correct account of its assets and liabilities, together with the names of the partners, and the interest held by each, and shall make out a monthly balance sheet showing the names of the creditors, and the amounts due to each, and file the same among the papers of the partnership; and such balance sheet and all the books of the partnership shall be open to the inspection of creditors at all reasonable hours.

95. Every partner in such partnership shall be at liberty to sell or dispose of his interest therein, or of any part thereof, to any other free miner; but such partner shall be liable for the indebtenness on the said interest in proportion to his interest in the partnership.

96. No member of such partnership, after a bill of sale conveying his interest has been duly recorded, or after he has served a notice of abandonment of his interest on the foreman, and left a copy thereof with the Mining Recorder, shall be liable for any indebtedness of the partnership incurred thereafter.

97. No such partnership shall declare any dividend until all its liabilities have been paid.

98. Every such partnership shall appoint a foreman or manager, who shall represent the partnership, and who shall sue and be sued in the name of the partnership; and his contracts in relation to the business of the partnership shall be deemed to be the contracts of the partnership.

99. No such partnership shall be liable for any other indebtedness than that contracted by its foreman or manager, or by its agent duly authorized in writing.

Part VI.

Bed-rock Flumes.

100. One or more free miners may apply to the Gold Commissioner for a grant of exclusive rights of way through and entry upon any mining ground in this district, for the purpose of constructing, laying and maintaining a bed-rock flume.

101. Every such application shall be in writing, and shall be left at the Mining Recorder's office, addressed to the Gold Commissioner, and shall state the name of the applicant and the nature and extent of the privileges sought to be acquired. Thirty days' notice of such application shall be given, by affixing the same to some conspicuous part of the ground through which the rights of way are asked, and a copy thereof upon the walls of the Court House or of the office of the Mining Recorder of the district. Prior to such application, such ground shall be marked out by legal posts, placed at intervals of one hundred and fifty feet along the proposed main line or course of the flume, with a notice of such application affixed to one of such posts. And it shall be competent for any free miner to protest before the Gold Commissioner within such thirty days against such application being granted, but not afterwards. Every application for a grant shall be accompanied by a deposit of one hundred and twenty-five dollars, to be left with the Mining Recorder, which shall be refunded if the application be refused, but not otherwise.

102. Every such grant shall be in writing, signed by the Gold Commissioner, and shall be for a term not exceeding five years.

103. The grantee shall be entitled to the following rights and privileges, that is to say :—

(*a.*) The right of way through and entry upon any new and unworked river, creek, gulch, or ravine, and the exclusive right to locate and work a strip of ground one hundred feet wide and two hundred feet long in the bed thereof to each grantee named in such grant :

(*b.*) The right of way through and entry upon any river, creek, gulch, or ravine, worked by miners for any period longer than two years prior to such entry, and already wholly or partially abandoned, and the exclusive right to stake out and work both the unworked and abandoned portions thereof, one hundred feet in width, and one-quarter mile in length, for each grantee named in such grant :

(*c.*) Such right of way through and entry upon any river, creek, or ravine discovered within two years next preceding the date of his application before mentioned, and upon any portions of which any free miner is legally holding and *bona fide* working a claim, as to the Gold Commissioner may seem advisable ;

(*d.*) The right of way through and entry upon all placer claims which are at the time of the notice of application before mentioned *bona fide* being worked by any free miner, for the purpose of cutting a channel and laying his flume therein, with such reasonable space for constructing, maintaining and re-

pairing the flume as may be necessary: Provided, that the owner of such last-mentioned placer claim shall be entitled to take and receive the gold or other minerals found in the cut so made:

(*e.*) The use of so much of the unappropriated water of the stream on which the flumes may be located, and of other adjacent streams, as may be necessary for the use of the grantee's flumes, hydraulic power, and machinery to carry on his mining operations, and the right of way for ditches and flumes to convey the necessary water to his works, subject to the payment of any damage which may be done to other parties by running such ditches or flumes through or over their ground:

(*f.*) The right to all the gold or other minerals in his flumes:

(*g.*) No person locating new and unworked or abandoned ground within the limits of such grant, after the notice above mentioned has been given, shall have any right or title as against such grantee to the ground so located:

104. A holder of a placer claim through which the line of the grantee's flume is to run may put in a bed-rock flume in his claim to connect with the grantee's flume, upon giving the grantee ten days' notice in writing to that effect; but he shall maintain the like grade and build his flume as thoroughly and of as strong materials as are used by such grantee.

105. A claim-holder constructing such flume through his claim shall keep his flume free from obstruction, and he shall be entitled to all the gold or other minerals found therein, but he shall be subject to the same regulations with regard to cleaning up the flume, repairs, and other matters in which both parties are interested, as may be adopted by such grantee; and such claim-holder shall have the right at any time before the abandonment of his claim to become a partner of the grantee, by uniting his claim and flume with the ground and flume of the grantee, and taking an interest proportionate to that which he shall cede to the grantee; or he may abandon his claim and flume, and such abandonment shall enure to the use and benefit of the grantee.

106. The grantee shall lay at least one hundred feet of flume during the first year of such grant, and three hundred feet annually thereafter, until completion of the flume; but the amount of flume to be laid may be reduced at the discretion of the Gold Commissioner.

107. Any free miner lawfully working any claim where a bed-rock flume exists shall be entitled to tail his sluices, hydraulics, and ground-sluices into such flume, but so as not to obstruct the free working of such flume by rocks, stones, boulders, or otherwise.

108. The grantee shall record his grant with the Mining Recorder within three days after obtaining the same, and pay for such record the fee provided in the Schedule to this Act; and he shall also pay to the Mining Recorder annually a rent of twelve dollars and fifty cents for each quarter of a mile of right of way legally held under such grant.

109. The interest of the grantee in his grant, and in all flumes and fixtures connected therewith, shall be deemed to be a chattel interest equivalent to a lease for the term of such grant.

110. Upon the expiration of the grant for a bed-rock flume, it may be extended for any further term not exceeding five years for any one extension, at the discretion of the Gold Commissioner.

111. Any grant of a bed-rock flume shall be forfeited whenever the grantee shall fail to comply with the conditions thereof, or of this Act.

Part VII.

Leases.

112. A free miner desiring to obtain a lease of any placer mining ground shall mark out such ground by placing a legal post at each corner, and shall post a notice on the post nearest to the placer mining claims then being worked in the immediate locality, and also on the office of the Mining Recorder, which notice shall set out—

(1.) The name of each applicant:

(2.) The locality of the ground to be acquired:

(3.) The quantity of ground:

(4.) The term for which such lease is to be applied for:

113. The free miner, after staking the ground and posting the notices as aforesaid, shall make an application in writing addressed to the Gold Commissioner, and leave the same at the office of the Mining Recorder, which application shall set out—

(1.) The name of each applicant:

(2.) The number of each applicant's free miner's certificate:

(3.) The locality of the ground:

(4.) The quantity of ground:

(5.) The term of the lease desired:

(6.) The rent proposed to be paid:

114. On making such application the free miner shall deposit with the Mining Recorder for the use of the Gold Commissioner a plan of the ground in duplicate.

115. Applications shall not be made for a longer term than ten years, excepting for bench lands adjoining unworked or abandoned rivers, for hydraulic workings, application for which bench lands may be made for any term not exceeding twenty years.

116. Application shall not be for greater than the following areas or distances:

In dry diggings, ten acres:

In bar diggings unworked, half a mile in length along the high water mark:

In bar diggings which have been worked and abandoned, one mile and a half in length along the high water mark:

In creek diggings on abandoned creeks, one mile and a half in length:

In bench lands adjoining unworked or abandoned rivers, for hydraulic workings, one hundred and sixty acres; but in such lands the length shall in no case exceed half a mile.

117. No such application shall be made for any mining ground which is immediately available for mining by individual free miners, or any portion of which is actually occupied by free miners, unless with the consent of such occupiers.

118. The lease may be granted or refused in the discretion of the Gold Commissioner, who may modify the terms and conditions of any application, as he shall think fit.

119. Every application for a lease for a term exceeding five years, together with a plan of the ground and the Gold Commissioner's report, shall be forwarded to the Lieutenant-Governor, and no lease shall be granted on any such application without his sanction.

120. Every lease of mining ground shall be in writing, signed by the Gold Commissioner and the lessee.

121. Every lease sball provide for securing to the public reasonable rights of way and water, and shall contain a covenant by the lessee to mine the ground in a miner-like manner, and shall contain such covenants for the continuous working of such ground as the Gold Commissioner shall think reasonable, and shall reserve the right to free miners to enter on such ground and mine for veins or lodes, as defined by the "Mineral Act, 1891."

122. On the non-performance or non-observance of any covenant or condition in any lease, such lease shall be declared forfeited by the Gold Commissioner, and become absolutely void, and the ground included in such lease shall thereupon be open for location by any free miner.

123. Leases shall be granted for placer mining only, and shall not be assigned or sub-let without the written consent of the Gold Commissioner.

124. When any bench lands adjoining unworked or abandoned rivers are held under lease for hydraulic working, the lessee of such lands shall be entitled to a grant from the Gold Commissioner of such quantity of unappropriated water, from any stream or lake, as may, in the opinion of the Gold Commissioner, be necessary to work the said bench land efficiently, and shall have the right of way through any mining ground for the purpose of constructing ditches and flumes to convey such water to the bench lands so held for hydraulic working, which grant shall be for the same term for which the bench land is leased. Whenever such bench lands shall have been efficiently worked as required by the conditions of the lease, to the satisfaction of the Gold Commissioner, and if at the expiration of the lease a portion of said lands remain still to be worked, the lessee shall be entitled to an extension of the lease and grant, upon the same conditions as the original lease and grant, for such reasonable time as will enable him to work out such portion of said lands as still remains unworked, and the Gold Commissioner may grant such extension by memorandum endorsed on the lease: Provided that whenever the bench lands so held under lease

have been forfeited, abandoned, or worked out, or the occasion for the use of the water upon such bench lands shall have permanently ceased, the grant of such water shall terminate. But in any case where the ditch or flume constructed for conveying such water shall have a carrying capacity of not less than five hundred inches, and shall have cost not less than five thousand dollars, such ditch or flume shall remain the property of the owner thereof.

125. Every grant, and every extension of a grant, of a water right for bench lands leased for hydraulic working shall be recorded in the "Record of Water Grants," but it shall not be necessary to re-record such grants or extension annually.

126. It shall be lawful for the Gold Commissioner, with the sanction of the Lieutenant-Governor-in-Council, to grant a lease for any term not exceeding twenty years, of the bed of any river, below low water mark for dredging purposes, for a distance not exceeding ten miles, upon such terms as he shall think fit: Provided always, that every such lease shall reserve the right to every free miner to run his tailings into such river at any point thereon, and whether such free miner shall locate before or after the date of such lease.

Part VIII.

Mining Recorders—Appointment, Duties, Powers.

127. The Lieutenant-Governor-in-Council may appoint any person to be a Mining Recorder in and for any part of the Province.

128. Where mineral land is discovered in a part of the Province so situate that the provisions of this Act as to free miner's certificates and records of mining property cannot be justly applied or enforced, by reason of there being no Gold Commissioner or Mining Recorder in the locality, it shall be lawful for the miners of such locality to hold meetings at such times and places as may be agreed upon, and at such meetings, by a two-thirds vote, to appoint one of their number to issue free miners' certificates and to enter records of mining property; and such certificates and records shall be valid, notwithstanding any informality therein: Provided that all records so made, and all fees for the same in accordance with the Schedule to this Act, and a list of all free miners' certificates issued, and the date and term thereof, and the fees for the same, be forwarded to the nearest Gold Commissioner or Mining Recorder as soon thereafter as practicable.

129. Every Mining Recorder shall issue free miner's certificates and "substituted certificates" to all persons and companies entitled thereto.

130. Such free miner's certificates shall be taken from a printed book of forms, with duplicate counterfoils, one of which counterfoils shall be filed in the office of the Mining Recorder.

131. Every Mining Recorder shall keep the following books, to be used for placer mining entries:—

(*a.*) A book to be known as the "Record Book."

(*b.*) A book to be known as the "Record of Abandonments."

(*c.*) A book to be known as the "Record of Affidavits."

(*d.*) A book to be known as the "Record of Conveyances."

(*e.*) A book to be known as the "Record of Water Grants."

132. Upon the application of or on behalf of any free miner, and upon receipt of all the particulars required by section 23 of this Act, the Mining Recorder shall record any placer claim, by entering all the particulars required by said section in the Record Book, which entry shall be, as near as convenient, in the Form B in the Schedule to this Act. Upon the application of or on behalf of any free miner, and upon receipt of all the particulars required by section 28 of this Act, the Mining Recorder shall re-record any placer claim, by entering all the particulars required by said section in the Record Book, which entry shall be as near as convenient, in the Form C in the Schedule to this Act. The Mining Recorder shall not make any such record until he has received all the particulars required by section 23, and any record made in violation of this section shall be absolutely void.

133. The Mining Recorder shall record every lay-over, leave of absence, license, permit, and other privilege granted and forfeiture declared by the Gold Commissioner, in the Record Book.

134. The Mining Recorder shall record all water grants and extensions thereof in the Record of Water Grants.

135. Upon the receipt of a notice of abandonment, the Mining Recorder shall record the same in the Record of Abandonments, and file such notice, and write across the record of the claim affected by such notice, in the Record Book, the word "Abandoned," and the date of the receipt by him of the notice. If only an interest in a placer claim is abandoned, and not the entire claim, the memorandum in the record shall show which interest is abandoned.

136. The Mining Recorder shall record, by copying out verbatim, all affidavits and declaratory statements brought to him in connection with his office, in the Record of Affidavits.

137. The Mining Recorder shall record, by copying out verbatim, in the Record of Conveyances, all conveyances, mortgages, bills of sale, contracts for sale, and other documents of title, including powers of attorney, or other authorities, to execute all or any of the above description of documents when brought to him for that purpose.

138. The Mining Recorder shall record all other documents relating to mining property which may be brought to him for record, and shall file all such documents which may be brought to him to be filed.

139. Every entry made in any of the Mining Recorder's books shall show the date on which such entry was made.

140. All books of record shall, during office hours, be open to public inspection free of charge, and documents filed shall be open to public inspection upon payment of the fee set out in the Schedule to this Act.

141. Every copy of, or extract from, any entry in any of the said books, or of any document filed in the Mining Recorder's office, certified to be a true copy or ex-

tract by the Mining Recorder, shall be received in any Court as evidence of the matters therein contained.

142. Before issuing any free miner's certificate, or substituted certificate, or making any entry in any book of record, or filing any document, or making any copy or extract therefrom, the Mining Recorder shall collect the fees payable in respect thereof, as set out in the Schedule to this Act.

143. The Mining Recorder shall receive all applications and other documents addressed to or intended for the Gold Commissioner, and forward the same to the Gold Commissioner.

144. The Mining Recorder shall receive all deposits of money directed to be made by this Act, and apply the same as directed by this Act.

145. The Mining Recorder shall collect all rents collectable under the conditions of any lease or other documents granted under the provisions of this Act.

146. The Mining Recorder shall forward to the Provincial Treasury all fees, rents, fines, penalties, and other moneys collected or obtained by him in accordance with the provisions of this Act.

147. It shall be lawful for the Lieutenant-Governor-in-Council to divide and subdivide any district into mining divisions, and to establish in each or either mining division a Mining Recorder's office.

148. Upon the establishment of a mining division, and the opening of a Mining Recorder's office therein, under the authority of the last preceding section—

(*a.*) Such office, and none other, shall be the proper office for recording all placer claims, records, certificates, documents, or other instruments affecting claims, placer mines held as real estate, or placer mining property situate within such mining division, and whenever by this Act, or any Act amending the same, any thing is required to be done at or in the office of the Gold Commissioner or Mining Recorder of the District, it shall, if the same affects or concerns any claim, placer mine held as real estate, or placer mining property situate within a mining division, be done at or in the office of the Mining Recorder of the mining division wherein such claim or mine, or other mining property, is situate :

(*b.*) Upon the district or division of any Mining Recorder being divided or subdivided into mining divisions, it shall be the duty of such Mining Recorder to make, or cause to be made, a transcript of all the entries in all the books mentioned in section 131 of this Act, affecting claims, placer mines held as real estate, or placer mining property, situate in each newely created mining division, and to forward the same to the Mining Recorder of such mining division, and such transcript shall be kept in such office as part of the records of such office, and all transcripts of such records, certificates, documents, or other instruments, shall *prima facie* be deemed to be true copies of the several records, certificates, documents, or other instruments of which

they purport to be transcripts ; and such transcripts or copies thereof, when certified by the Mining Recorder of the mining division in whose office they are kept, shall be admissible in evidence in all Courts of Judicature in the Province.

149. When there shall be no Mining Recorder for a district or division, the duties of the Mining Recorder shall devolve upon the Gold Commissioner, and it shall at all times be lawful for the Gold Commissioner to perform the duties of the Mining Recorder, and the Gold Commissioner shall have all the powers of a Mining Recorder.

150. The Mining Recorder's office shall be open upon all days, excepting public holidays, from 10 a.m. to 4 p.m., and such times shall be deemed the office hours of such office.

Part IX.

Gold Commissioner's Powers.

151. It shall be lawful for the Gold Commissioner to perform the following acts in accordance with the provisions of this Act :—

(*a.*) He may lay over any or all claims, and may grant to any holder of a claim leave of absence for such period and reasons as he may think proper :

(*b.*) He may prescribe the number of miners who shall be required to work in prospecting a set of claims until gold in paying quantities is found :

(*c.*) For the more convenient working of back claims on benches or slopes, the Gold Commissioner may permit the owners thereof to drive a tunnel through the claims fronting on any creek, ravine or water course, upon such terms as shall seem expedient : Provided, that in tunnelling under hills, on the frontage of which angles occur, or which may be of an oblong or elliptical form, no party shall be allowed to tunnel from any of the said angles, nor from either end of such hills, so as to interfere with parties tunnelling from the main frontage :

(*d.*) He may mark out a space of ground for deposits of leavings and deads from any tunnel, claim or mining ground, upon such terms as he may think just :

(*e.*) He may extend the limits of a claim in "bench diggings" beyond the limits of the bench, but not to exceed 100 feet square :

(*f.*) He may, in cases of disputed boundaries or measurements, employ a surveyor to mark and define the same, and cause the reasonable expense thereof to be paid by either or both of the parties interested therein :

(*g.*) He may permit or order mining posts to be moved :

(*h.*) He may summarily order any mining works to be so carried on as not to interfere with or endanger the safety of the public, any public work or highway, or any mining property, mineral claim, placer claim, bed-rock drain, or bed-rock flume ; and any abandoned works may by his order be either filled up or guarded to his satisfaction, at the cost of the party who may have constructed the same, or, in his absence, upon such terms as he shall think fit :

(*i.*) He may, upon application made to him, allow a free miner such right of entry upon any adjacent claim as may be necessary for the working of his claim, and upon such terms as may to him seem reasonable :

(*j.*) He may grant licenses and rights of way for the purpose of constructing drains or tunnels, and may exercise such powers as are specified in Part III. of this Act :

(*k.*) He may grant water rights and renew the same, and declare the same forfeited, and grant all such privileges, and exercise such powers as are specified in Part IV. of this Act :

(*l.*) He may grant rights of way for the purpose of constructing a bed-rock flume, and may extend the grant at its expiration, in accordance with Part VI. of this Act :

(*m.*) He may grant leases of placer mining ground, and of unappropriated water to work the same, and may grant renewals of such leases, and grant such privileges and exercise all such powers as are specified in Part VII. of this Act.

152. Notwithstanding anything contained in the "Gold Mining Amendment Act, 1873," or in any Crown grant issued under the said Act, or under this or any other Act, it shall be lawful for the Gold Commissioner, in his discretion, and with or without any terms or conditions, to allow to the owners of placer claims all such rights or privileges in and over mineral or other claims held as real estate as may be allowed in and over claims not so held ; and owners of claims held as real estate shall be entitled to the same rights and privileges as owners of claims not so held.

153. The Gold Commissioner shall have power to do all things necessary or expedient for the carrying out of the provisions of this Act.

Administration.

154. The Gold Commissioner shall take possession of the mining property of any deceased free miner, and may cause such mining property to be duly worked, or dispense therewith at his option.

155. The Gold Commissioner, or any person authorized by him, shall take charge of all the property of any deceased free miner until the issue of letters of administration or probate of the will, if any : Provided, however, that where any free miner shall die intestate, and the value of the personal estate of such deceased free miner is less than three hundred dollars, it shall not be necessary for the Gold Commissioner to obtain from any Court letters of administration, but in such case the Gold Commissioner may administer and wind up the personal estate of the deceased, and do all things necessary and proper therefor, and act in all respects as if letters of administration to the personal estate of such deceased free miner had been granted to such Gold Commissioner, and the Gold Commissioner shall produce and pass his accounts, in each estate of which he shall undertake the administration, before a Judge of the County Court of the district.

Part X.

COUNTY COURTS.

Jurisdiction, Procedure, Forms and Costs.

156. In addition to the jurisdiction and powers given to County Courts by the "County Courts Jurisdiction Act," and other Acts, every County Court shall have and exercise, within the limits of its district, all the jurisdiction and powers of a Court of Law and Equity—

(1.) In all personal actions, where the debt or damages claimed arise directly out of the business of mining (other than coal mining), or from the exercise of or interference with any right, power or privilege given, or claimed to be given, by this Act or any other Act relating to mining (other than coal mining):

(2.) In all actions between employers and employés, where the employment is directly connected with the business of mining (other than coal mining):

(3.) In all actions for supplies to persons engaged in mining, where such supplies were bought, contracted for, or supplied, or were alleged to have been bought, contracted for, or supplied, for mining purposes, or for consumption by persons engaged in mining or prospecting:

(4.) In all actions of trespass on or in respect of mineral claims or other mining property, or upon or in respect of lands entered or trespassed on, or claimed to have been entered or trespassed on, in searching for, mining, or working minerals (other than coal), or for any other purpose directly connected with the business of mining (other than coal mining), or in the exercise of any power or privilege given, or claimed to be given, by this Act, or any other Act relating to mining (other than coal mining):

(5.) In all actions of ejectment for mineral claims or other mining property, or from lands entered, or claimed to have been entered, in searching for, mining, or working minerals (other than coal), or for any purpose directly connected with the business of mining, or entered, or claimed to have been entered, under some power, right or authority given or obtained under the provisions of this Act, or any other Act relating to mining (other than coal mining):

(6.) In all suits for foreclosure or redemption, or for enforcing any change or lien, where the mortgage, charge or lien shall be on mineral claims, mines, or other mining property:

(7.) In all suits for specific performance of, or for re-forming, or delivering up, or cancelling, any agreement for sale, purchase, or lease of any mineral claim, mine, or other mining property:

(8.) In all suits for the dissolution or winding up of any mining partnership, whether registered or not, under the provisions of this Act:

(9.) In all suits relative to water rights claimed under this Act or any other Act relating to mining (other than coal mining):

(10.) In all proceedings for orders in the nature of injunctions, where the same are requisite for the granting of relief in any manner in which jurisdiction is given to the County Court, by this Act.

157. The jurisdiction given to County Courts by this Act shall be known as the "mining jurisdiction" of the County Court, and the words "mining jurisdiction" shall be written or printed on all summonses, writs, and other processes, and all other documents in every action or cause brought under the mining jurisdiction of the County Court.

158. County Courts and County Court Judges, Registrars, Sheriffs, and other officers, shall have the same duties, powers, privileges, and authorities in all actions and suits, and other proceedings brought under the mining jurisdiction of the County Court, as they now have, or at any time hereafter may have, in actions and suits and other proceedings brought under the ordinary jurisdiction of the County Court, and the provisions of all Acts for the time being in force regulating the duties and powers of County Courts and County Court Judges, Registrars, Sheriffs, and other officers, and regulating the practice and procedure in County Courts, and all Rules and Orders for the time being applicable to the ordinary jurisdiction of the County Court, shall, so far as practicable and not inconsistent with this Act, apply to the mining jurisdiction of the County Court.

159. Where disputes arise concerning mining property, portions whereof are situated in adjoining or different districts, the County Court of either of such districts before which the dispute is first brought shall determine it.

160. The hearing of any summons, plaint, or other process in any County Court shall not be deferred beyond the shortest reasonable time necessary in the interests of all parties concerned, and it shall be lawful for the Registrar to make summonses or other proceedings returnable forthwith, or at any other time.

161. In all mining actions or suits the Court may decide the question at issue upon the ground in dispute, and such decision shall be entered as in ordinary cases, and have the same virtue and effect as if rendered in Court.

162. In any mining cause or suit, either party may require that the issues of fact shall be tried by a jury, and the Judge may, before delivering judgment in any action, suit, or other proceeding, direct all or any issues of fact to be found by a jury.

163. In all actions, suits and other proceedings, within the mining jurisdiction of the County Court, the Judge may order that costs be taxed on the higher or lower scale allowed by the County Court Rules; or if he shall consider the case of sufficient importance, he may order that costs be taxed as in the Supreme Court, and the costs so ordered shall be the costs recoverable in such action, suit or other proceeding.

164. Every County Court having jurisdiction in mining disputes shall, with reference to real estate held under the "Gold Mining Amendment Act, 1873," or under this Act, and notwithstanding any law to the contrary, have the same powers

and authorities to decide all matters or disputes arising between the owners thereof, or between the owners thereof and any third person, or between mining joint-stock companies, or between shareholders therein, or between them and the company, in the same way and as fully as it might do concerning claims not being real estate; and actions, suits, and other proceedings relating to such matters or disputes shall be brought and had in the same manner as actions, suits, or proceedings relating to mining claims not being real estate.

165. Any County Court Judge having jurisdiction in mining causes may direct the issuing of writs of capias ad respondendum, ne exeat regno, and capias ad satisfaciendum in all cases in which by law he has jurisdiction over the subject matter of the suit, but under and subject to such conditions as a Judge of the Supreme Court might usually require in applications of a similar nature.

166. The jurisdiction given to the County Court by this Act shall not in any manner interfere with or lessen the jurisdiction of the Supreme Court.

Part XI.

Penal and Miscellaneous.

167. Any person wilfully acting in contravention of this Act, or refusing to obey any lawful order of the Gold Commissioner or of any Judge presiding in a Court having jurisdiction in mining disputes, shall on conviction thereof in a summary way before any two Justices of the Peace or a Stipendiary Magistrate, or before any Judge of a Court having jurisdiction in mining disputes, be liable to a fine not exceeding two hundred and fifty dollars, or to imprisonment, with or without hard labor, for any term not exceeding three months.

168. All fines and penalties imposed or payable under this Act may be recovered by distress and sale of any mining or other personal property of the offender, and in default by imprisonment with or without hard labour for any term not exceeding three months.

169. All fees, rents, fines, penalties and other moneys collected under this Act shall be paid into the Provincial Treasury.

170. Nothing herein contained shall, save where such intention is expressly stated, be so construed as to affect prejudicially any mining rights and interests acquired prior to the passing of this Act; and all mining rights and privileges heretofore and hereunder acquired shall, without the same being expressly stated, be deemed to be taken and held subject to the rights of Her Majesty, her heirs and successors, and to the public rights of way and water.

171. Every free miner, on application to the Mining Recorder, shall be entitled to a printed copy of this Act.

172. Affidavits and declarations made under the provisions of this Act shall be made before some Judge or Registrar of a Court of Record, or before some Gold Commissioner, Mining Recorder, Stipendiary Magistrate, Justice of the Peace, Notary Public, or Commissioner for taking affidavits.

Scale of Fees to be Charged.

For every free miner's certificate (for each year)	$5 00
Every substituted certificate	1 00
Recording any claim (for each year)	2 50
Re-recording any claim (for each year)	2 50
Recording any "lay-over," or every other record required to be made in the "Record Book"	2 50
Recording every abandonment, including the memorandum to be written on the record	2 50
For any other record made in the "Record of Abandonments"	2 50
For recording every affidavit, where the same does not exceed three folios of 100 words	2 50
For every folio over three, 30 cents per folio.	
The above rate shall be charged for all records made in the "Record of Affidavits."	
For all records made in the "Record of Conv ances," where the same do not exceed three folios	2 50
For every folio over three, a further charge of 30 cents per folio.	
For all copies or extracts from any record in any of the above named books, where such copy or extract shall not exceed three folios, per copy	2 50
Where such copies or extracts exceed three folios, 30 cents per folio for every folio over three.	
For filing any document	1 00
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Penal and Miscellaneous.

159 Penalty for Contravention of Act.
160 Recovery of Penalties.
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163 Copies of Act.
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PART VIII.

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165 Repealing clause.

BRITISH COLUMBIA.

II.—An Act relating to Gold and other Minerals excepting Coal (as amended in 1892).

(See also Amendments dated 12th April, 1893, appended.)

HER MAJESTY, by and with the advice and consent of the Legislative Assembly of the the Province of British Columbia, enacts as follows:—

Short Title.

1. This Act may be cited as the "Mineral Act, 1891." 1891, c. 25, s. 1.

Interpretation.

2. In the construction of this Act the following expressions shall have the following meanings respectively, unless inconsistent with the context:—

"Mine" shall mean any land in which any vein or lode, or rock in place, shall be mined for gold or other minerals, precious or base, except coal.

"Rock in place" shall mean all rock in place bearing valuable deposits of gold, silver, cinnabar, lead, copper, iron, or other minerals usually mined, except coal:

"Vein" or "lode," whenever either of these terms is used in this Act "rock in place" shall be deemed to be included:

"Mineral claim" shall mean the personal right of property or interest in any mine:

"Mining property shall include every mineral claim, ditch, millsite, or water-right used for mining purposes, and all other things belonging to a mine or used in the working thereof:

"Legal posts" shall mean a stake standing not less than four feet above the ground, and squared or faced on four sides for at least one foot from the top, and each side so squared or faced shall measure at least four inches on its face, so far as squared or faced, and any stump or tree cut off and squared or faced to the above height and size:

"Mill-site" shall mean a plot of ground located, as defined by this Act, for the purpose of erecting thereon any machinery or other works for transporting, crushing, reducing, or sampling ores, or for the transmission of power for working mines:

"Streams" shall include all natural water courses, whether usually containing water or not, and all rivers, creeks, and gulches:

"Ditch" shall include a flume, pipe, or race, or other artificial means for conducting water by its own weight, to be used for mining purposes:

"Ditch head" shall mean the point in a naturel water-course, or lake, or other source, where water is first taken into a ditch:

"Free miner" shall mean a person, or joint stock company, or foreign company named in, and lawfully possessed of, a valid existing free miner's certificate, and no other:

"Record," "register," and "registration" shall have the same meaning, and shall mean an entry in some official book kept for that purpose:

"Full interest" shall mean any mineral claim of the full size, or one of several shares into which a mineral claim shall be equally divided:

"Cause" shall include any suit or action:

"Judgment" shall include "order" or "decree:"

"Mineral" shall include all minerals, precious or base (other than coal), found in veins, lodes, or rock in place, and whether such minerals are found separately or in combination with each other:

"Real Estate" shall mean any mineral land held in fee simple under this or any Act relating to gold mines, or to minerals other than coal:

"Joint stock company" shall mean any company duly incorporated for mining purposes under the "Companies Act," "Companies Act, 1890," and any company duly incorporated in British Columbia for mining purposes under the "Companies Act, 1862," (Imperial), and shall include all companies falling under the definition of a foreign company in the "Companies Act, 1891." c. 25, s. 2.

Part I.

Free Miners and their Privileges.

3. Every person over, but not under, eighteen years of age, and every joint stock company, shall be entitled to all the rights and privileges of a free miner, and shall be considered a free miner, upon taking out a free miner's certificate. A minor who shall become a free miner shall, as regards his mining property and liabilities contracted in connection therewith, be treated as of full age. A free miner's certificate issued to a joint stock company shall be issued in its corporate name. A free miner's certificate shall not be transferable. 1891, c. 25, s. 3.

4. A free miner's certificate may be granted for one or more years, to run from the date thereof, or from the expiration of the applicant's then existing certificate, upon the payment therefor of the fees set out in the Schedule of fees to this Act. Only one person or one joint stock company shall be named therein. 1891, c. 25, s. 4.

5. A free miner's certificate shall be in the following form:

BRITISH COLUMBIA.

Free Miner's Certificate.

NOT TRANSFERABLE.

Date, No.

Valid for year only.

This is to certify that of has paid me

this day the sum of and is entitled to all the rights and privileges of a free miner for year from the day of 18

(Signature of the Gold Commissioner or Mining Recorder, as the case may be.)

1891, c. 25, s. 5.

6. If any person or joint stock company shall apply for free miner's certificate at the Mining Recorder's office during his absence, and shall leave the fee required by this Act with the officer or other person in charge of the said office, he or it shall be entiled to have such certificate from the date of such application; and any free miner shall at any time be entitled to obtain a free miner's certificate commencing to run at the expiration of his then existing free miner's certificate, provided that when he applies for such certificate he shall produce to the Mining Recorder, or in case of his absence shall leave with the officer or other person in charge of the Mining Recorder's office, such existing certificate. 1891, c. 25, s. 6.

7. If any free miner's certificate be accidentally destroyed or lost, the owner thereof, may, on payment of the fees set out in the Schedule to this Act, have a true copy of it, signed by the Mining Recorder, or other person by whom or out of whose office the original was issued. Every such copy shall be marked "substituted certificate;" and unless some material irregularity be shown in respect thereof, every original or substituted free miner's certificate shall be evidence of all matters therein contained. 1891, c. 25, s. 7.

8. Every person and joint stock company engaged in mining for minerals (other than coal) shall take out a free miner's certificate, and every person or joint stock company who mines or works as a miner in any mineral claim, mine held as real estate, or tunnel, or on any flume, drain or ditch, without having taken out and obtained such certificate, shall, on conviction thereof in a summary way, forfeit and pay a penalty not exceeding twenty-five dollars, besides costs: Provided always, that nothing herein contained shall prejudice the right to collect wages or payment for work done by any person who, though not being a free miner, has rendered himself liable to the above penalty. 1891, c. 25, s. 8.

9. No person or joint stock company shall be recognized as having any right or interest in or to any mineral claim, or any minerals therein, or in or to any water right, mining ditch, drain, tunnel, or flume, unless he or it shall have a free miner's certificate unexpired. And on the expiration of a free miner's certificate the owner thereof shall absolutely forfeit all his rights and interests, in or to any mineral claim, and all or any minerals therein, and in or to any and every water right, mining ditch, drain, tunnel, or flume, which may be held or claimed by such owner of such expired free miner's certificate, unless such owner shall, on or before the day following the expiration of such certificate, obtain a new free miner's certificate: Provided, nevertheless, that a shareholder in a joint stock company need not be a free miner, and though not a free miner, shall be entitled to buy, sell, hold, or dispose of any shares therein: And provided, also, that this section shall not apply to mineral

claims for which a certificate of improvement or Crown grant has been issued. 1891, c. 25, s. 9.

10. Every free miner shall, during the continuance of his certificate but not longer, have the right to enter, locate, prospect, and mine upon any waste lands of the Crown for all minerals other than coal, and upon all lands the right whereon to so enter upon, prospect, and mine all minerals other than coal shall have been, or hereafter shall be, reserved to the Crown and its licensees, and also to enter, locate, prospect, and mine for gold and silver upon any lands the right whereon to so enter and mine such gold and silver shall have been, or shall be, reserved to the Crown and its licensees. Excepting out of all the above description of lands any land occupied by any building, and any land falling within the curtilage of any dwelling house, and any orchard, and any land for the time being actually under cultivation, and any land lawfully occupied for mining purposes other than placer mining, and also Indian reservations: Provided that where any hydraulic mining works, established in accordance with the "Placer Mining Act, 1891," have been in operation, the land which may have been uncovered by the operation of such works shall not be located or mined upon by any free miner other than the person or persons carrying on such hydraulic works for a space of six months next after the same shall have been so uncovered: Provided that in the event of such entry being made upon lands already lawfully occupied for other than mining purposes, such free miner, previously to such entry, shall give adequate security to the satisfaction of the Gold Commissioner for any loss or damages which may be caused by such entry; and provided that after such entry he shall make full compensation to the occupant or owner of such lands for any loss or damages which may be caused by reason of such entry; such compensation, in case of dispute, to be determined by the Court having jurisdiction in mining disputes, with or without a jury. 1891, c. 25, s. 10; 1892, c. 32, s. 3.

11. Any free miner may enter upon any Crown Lands or lands covered by timber leases, or any lands the timber whereon has been reserved by the Crown, to cut such timber as may be required for the purposes of the claim or claims worked by him alone, or by him in partnership with another or others. 1891, c. 25, s. 11; 1892, c. 32, s. 4.

12. Any free miner shall be at liberty at any period of the year, while actually prospecting or engaged in mining, to kill game for his own use. 1891, c. 25, s. 12.

13. A free miner shall have all the rights and privileges granted to free miners by the "Placer Mining Act." 1891, c. 25, s. 13.

Part II.

MINERAL CLAIMS AND MINES.

Locating, Recording, Working and Crown Grants.

14. Any free miner desiring to locate a mineral claim shall, subject to the provisions of this Act with respect to land which may be used for mining, enter upon the same and locate a plot of ground, where possible, not exceeding 1,500 feet in length by 1,500 feet in breadth in a rectangular form, that is to say, all the angles shall be right angles, but the lines need not necessarily be meridianal. In defining the size of

a mineral claim it shall be measured horizontally, irrespective of inequalities on the surface of the ground. 1892, c. 32, s. 5.

15. A mineral claim shall be marked by two posts, each post being at least four inches square and four feet above the surface of the ground. The posts shall be numbered 1 and 2, and upon each post shall be written the name given to the mineral claim, the date of the location, and the name of the locator. Upon No. 1 post there shall be written, in addition to the foregoing, "Initial Post," the approximate compass bearing of No. 2 post, and a statement as to whether the claim lies to the *right* or *left* of the line from No. 1 to No. 2. Thus:—"(Name of claim)," "(date)" "A. B.'s claim," "Initial post," "Direction of No. 2 north-east," claim lies to right (*or* left) of line from No. 1 to No. 2 post.

It shall not be lawful to move No. 1 post, neither shall it be lawful to move No. 2 post, except for the correction of distance by the Provincial Government Surveyor. Nos. 1 and 2 posts shall govern the direction of one side of the claim.

(*a.*) The owner of a mineral claim shall be entitled to all minerals which may lie within his claim, but he shall not be entitled to mine outside the boundary lines of his claim continued vertically downwards:

(*b.*) This Act shall not prejudice the rights of claim-owners who have located their claims under former Acts. 1892, c. 32, s. 5.

16. Any location made upon Sunday or any public holiday shall not for that reason be invalid, any law or statute to the contrary notwithstanding. 1891, c. 25., s. 16.

17. In cases where, from the nature or shape of the ground, it is impossible to mark the side line of the claim, as provided by this Act, then the claim may be marked by placing posts as nearly as possible to the side line, and noting the distance and direction such posts may be from such side line, which distance and direction shall be set out in the record of the claim. 1891, c. 25, s. 17; 1892, c. 32, s. 6.

18. [*Repealed by 1892, c. 32, s. 2.*]

19. Every free miner locating a mineral claim shall record the same with th Mining Recorder of the district within which the same is situate, within fifteen days after the location thereof, if located within ten miles of the office of the said Mining Recorder. One additional day shall be allowed for such record for every additional ten miles, or fraction thereof. Such record shall be made in a book to be kept for the purpose in the office of the said Mining Recorder, in which shall be inserted the name of the claim, the name of each locator, the number of each locator's free miner's certificate, the locality of the mine, the direction of the side line, the length in feet, the date of location, and the date of the record. Such record shall be, as near as may be possible, in the Form B in the Schedule to this Act, and a certified copy thereof shall be given by the Mining Recorder to the free miner or his agent. A claim which shall not have been recorded within the prescribed period shall be deemed to have been abandoned. 1891, c. 25, s. 19; 1892, c. 32, s. 7.

20. A free miner shall not be entitled to a record of a mineral claim until he shall have furnished the said Mining Recorder with all the above particulars. 1891, c. 25, s. 20.

21. Upon the establishment of a mining division and the opening of a Mining Recorder's Office therein, under the Authority of this Act, such Office and none other shall be the proper office for recording all mineral claims within such mining division, and making all records in respect thereof. 1891, c. 25, s. 21.

22. If through ignorance any free miner shall record a mineral claim in a different district or mining division to that in which such claim is situate, such error shall not affect his title to such claim, but he shall, within fifteen days from the discovery of his error, record such claim in the district or mining division in which it is situate, and such new record shall bear the date of the first record, and a note shall be made thereon of the first error and of the date of the rectification of the same. 1891, c. 25, s. 22.

23. If a free miner applies at the Mining Recorder's Office during his absence to record a mineral claim, or any document or other matter required by this Act to be recorded, and leaves the fee required by this Act, and the particulars and information required to enable the Mining Recorder to make such record with the officer or other person in charge of said office, he shall be entitled to have such record dated on the date of such application. 1891, c. 25, s. 23.

24. Any free miner having duly located and recorded a mineral claim shall be entitled to hold the same for the period of one year from the recording of the same, and thence from year to year, without the necessity of re-recording: Provided, however, that during each year and each succeeding year, such free miner shall do or cause to be done, work on the claim itself to the value of one hundred dollars, and shall satisfy the Gold Commissioner or Mining Recorder that such work has been done, by an affidavit of the free miner or his agent, setting out a detailed statement of such work, and shall obtain from such Gold Commissioner or Mining Recorder, and shall record a certificate of such work having been done: Provided, also, that all work done outside of a mineral claim with intent to work the same, shall, if such work have direct relation and be in direct proximity to the claim, be deemed, if to the satisfaction of the Gold Commissioner or Mining Recorder, for the purposes of this section, to be work done on the claim: Provided, further, that any free miner, being the holder of adjoining mineral claims, or any two or more free miners who locate and record adjoining mineral claims, to be worked by them in partnership under the provisions of any Act for the time being in force, shall, subject to filing a notice of their intention with the Gold Commissioner or Mining Recorder, be allowed to perform on any one or more of such claims all the work required to entitle him or them to a certificate for work for each claim so held by him or them. If such work shall not be done, or if such certificate shall not be so obtained and recorded, in each and every year, the claim shall be deemed vacant and abandoned, any rule of law or equity to the contrary notwithstanding. 1891, c. 25, s. 24; 1892, c. 32, s. 8.

25. In case of any dispute as to the title to a mineral claim, priority of record will determine the right, subject to any question as to the validity of the record, and subject also to a compliance by the free miner with the provisions of this Act. 1892, c. 32, s. 9.

26. No free miner shall be entitled to hold in his own name or in the name of any other person, more than one mineral claim on the same vein or lode, except by purchase, but a free miner shall be entitled to locate and record on separate veins or lodes, additional claims, not exceeding two in each mining division; provided that not more than one claim is located on each separate vein or lode, to the number of two in all, as aforesaid. 1891, c. 25, s. 26; 1892, c. 32, s. 10.

27. A free miner may at any time abandon any mineral claim, by giving notice in writing of such intention to abandon to the Mining Recorder, and from the date of such notice all interest of such free miner in such claim shall cease. 1891, c. 25, c. 27.

28. When a free miner abandons a mineral claim he shall have the right to take from the same any machinery and any personal property which he may have placed on the claim, and any ore which he may have extracted therefrom, within such time as shall be fixed by the Gold Commissioner or Mining Recorder. 1891, c. 25, s. 28.

29. No free miner shall be entitled to re-locate any mineral claim, or any portion thereof, which he shall have failed to record within the prescribed period, or which he shall have abandoned or forfeited, unless he shall have obtained the written permission of the Gold Commissioner to make such re-location; and he shall hold no interest in any portion of such mineral claim, by location, without such permission. 1891, c. 25, s. 29; 1892, c. 32, s. 11.

30. [*Repealed by 1892, c. 32, s. 2.*]

31. [*Repealed by 1892, c. 32, s. 2.*]

32. [*Repealed by 1892, c. 32, s. 2.*]

33. Where a tunnel is run for the development of a vein or lode the owner of such tunnel shall, in addition to any mineral claim legally held by him, have the right to all veins or lodes discovered in such tunnel: Provided that the ground containing such veins or lodes be marked out by him as a mineral claim, and be duly recorded within fifteen days after such discovery; and provided further, that such veins or lodes are not included in any existing mineral claim. Any money or labor expended in constructing a tunnel to develop a vein or lode shall be deemed to have been expended on such vein or lode. 1891, c. 25, s. 33.

34. The interest of a free miner in his mineral claim shall, save as to claims held as real estate, be deemed to be a chattel interest, equivalent to a lease, for one year, and thence from year to year, subject to the performance and observance of all the terms and conditions of this Act. 1891, c. 25, s. 34.

35. Any lawful holder of a mineral claim shall be entitled to a Crown grant thereof on payment to the Government of British Columbia of the sum of five hundred dollars in lieu of expenditure on the claim. The intending purchaser shall comply with all the provisions of section 36 of this Act, except such as have respect solely to the work required to be done on claims. 1891, c. 25, s. 35; 1892, c. 32, s. 12.

36. Whenever the lawful holder of a mineral claim shall have complied with the following requirements, to the satisfaction of the Gold Commissioner, he shall be entitled to receive from the Gold Commissioner, a certificate of improvements in

respect of such claim, unless an adverse claim shall have been filed in the office of the Mining Recorder :—

(*a.*) Done or caused to be done work on the claim itself in developing a mine to the value of five hundred dollars, exclusive of all houses, buildings, and other like improvements. For the purpose of this section, work done on the claim by a predecessor or predecessors in title shall be deemed to have been done by the applicant :

(*b.*) Found a vein or lode within the limits of such claim :

(*c.*) Had the claim surveyed by an authorized Provincial Land Surveyor, who shall have made three plats of the claim, and placed one such plat on the initial post of the claim, or on a post as near thereto as possible, and who shall have accurately defined the boundaries of such claim by placing monuments or legal posts at the angles or corners of such claim, and who shall have also examined the work done on the mine itself for the development thereof, and made an affidavit setting out fully the particulars of such work, exclusive of houses, buildings, and other like improvements, and to the best of his belief the value of such work, and that a vein or lode has been found to exist on the claim :

(*d.*) Shall have posted on the same post as the said plat, and also on the outside of the office of the Mining Recorder, a legible notice in writing of his intention to apply for a certificate of improvements, and such notice shall contain—

1. The name of the claim :
2. The name of the lawful holder thereof :
3. The number of such holder's existing Free Miner's Certificate :
4. His intention to apply for certificate of improvements at the end of sixty days, for the purpose of obtaining a Crown grant :
5. The date of the notice :

(*e.*) Inserted a copy of such notice in the British Columbia Gazette, and in one newspaper circulating in the district in which the claim is situate, for at least sixty days prior to such application, which insertions can be made at any time after the posting of the notice on the claim :

(*f.*) Filed with the Mining Recorder—

1. Affidavit of the holder of the claim, or his agent, in form "H" in Schedule of this Act :
2. Affidavit of the said surveyor in form "G" in Schedule of this Act :
3. Two copies of the plat of such claim :
4. The surveyor's original field-notes.

Provided that in the case of such applicant for a certificate not being a resident of the district in which such claim is situate, the application and the affidavit required by this section may be made by his or its authorized agent, where such agent shall be able of his own knowledge to depose to the facts sought to be established by such affidavit. 1891, c. 25, s. 36 ; 1892, c. 32, s. 13.

37. (1) No adverse claim shall be filed by the Mining Recorder after the expiration of the period of publication in the next preceding section mentioned; and in default of such filing no objection to the issue of a certificate of improvements shall be permitted to be heard in any Court, nor shall the validity of such certificate when issued be impeached on any ground except that of fraud.

(2) Any adverse claim to be filed shall be on the oath of the person or persons making the same, and shall show, with reasonable particularity, the nature, boundaries and extent of such adverse claim; and all proceedings, except the publication of notice and making and filing the affidavit thereof, shall be stayed until the controversy shall have been decided by a Court of competent jurisdiction or the adverse claim shall have been withdrawn or waived. An adverse claimant shall, within thirty days after filing his claim (unless such time shall be extended by special order of the Court upon cause being shown), commence proceedings in a Court of competent jurisdiction to determine the question of the right of possession and shall prosecute the same with reasonable diligence to final judgment; and a failure so to commence or so to prosecute proceedings shall be deemed to be a waiver of his adverse claim. After such judgment shall have been rendered, the person or any one of the persons entitled to the possession of the claim, or any part thereof, may file a certified copy of the same in the office of the Mining Recorder. After the filing of such judgment and upon compliance with all the requirements of the next preceding section, such person or persons shall be entitled to the issue to him or to them of a certificate of improvements in respect of the claim, or the portion thereof, which he or they shall appear, from the decision of the Court, to rightly possess. 1892, c. 32, s. 14.

38. After the issuing and recording of such certificate of improvements, and while such certificate shall be in force, it shall not be necessary to do any work on such claim. 1891, c. 25, s. 38; 1892, c. 32, s. 15.

On the granting and recording of such certificate of improvements in respect of a mineral claim situate outside of the Railway Belt, the holder thereof shall be entitled to a Crown grant of such claim without the payment of the five hundred dollars required by section 35. And on the granting and recording of such certificate of improvements in respect of a mineral claim situate inside the Railway Belt, the holder thereof shall be entitled to a Crown grant of such claim on the payment of five dollars per acre to the Mining Recorder. 1891, c. 25, s. 39; 1892, c. 32, s. 16.

40. The holder of a mineral claim for which a certificate of improvements has been granted and recorded shall make application for a Crown grant to the Mining Recorder, in Form J of the Schedule to this Act, within three months from the date of such certificate of improvements, and in default of such application having been made within such time, such certificate of improvements shall lapse and become absolutely void. 1891, c. 25, s. 40.

41. If the holder of a mineral claim, after applying for a certificate of improvements, shall sell and transfer such claim to another free miner, upon satisfactory proof of such sale and transfer being made to the Gold Commissioner, the new holder of the claim shall be entitled to certificate of improvements in his own name. And if a

sale and transfer shall be made to any person or com an after a certificate of improvements shall have been issued, upon proper proof of such sale and transfer being made to the satisfaction of the Chief Commissioner of Lands and Works, the Crown grant shall issue to the new holder of the claim. 1891, c. 95, s. 41.

42. The issuance of a Crown grant shall not invalidate any lien which may have attached to any mineral claim previous to the issuance of such Crown grant. 1891, c. 25, s. 42.

43. A Crown grant of a mineral claim located on any waste lands of the Crown shall be deemed to transfer and pass the right to all minerals, precious or base (excepting coal), found in veins, lodes, or rock in place, and whether such minerals are found separately or in combination with each other, in, upon, or under the land in the said Crown grant mentioned, including the rights set forth in section 31 of this Act, and may be in the following form :—

(*Royal Arms.*)

"MINERAL ACT."

PROVINCE OF BRITISH COLUMBIA.

No.

VICTORIA, by the Grace of God, of the United Kingdom of Great Britain and Ireland, QUEEN, Defender of the Faith. To all to whom these present shall come, GREETING :

KNOW YE, that We do by these presents, for Us, Our heirs and successors, in consideration of (the fulfilment of the conditions of the laws providing for the acquisition of minerals other than coal), give and grant unto h heirs and assigns, All that parcel or lot of land situated and numbered on the official plan or survey of the said To have and to hold the said parcel of land, and all minerals, precious and base (save coal), which may be found therein in veins, lodes, or rock in place, and whether such minerals are found separately or in combination with each other, unto the said h heirs and assigns forever :

Provided that it shall at all times be lawful for Us, Our heirs and successors, or for any person by Our authority, to resume any portion (not exceeding one-twentieth part) of the said lands for making roads, canals, bridges, towing-paths, or other works of public utility or convenience, but no such resumption shall be made of land on which any permanent buildings may have been erected :

Provided also, that the grant hereby made of the said lands shall be subject to the laws for the time being in force respecting mineral lands held in fee simple :

Provided further, that it shall be lawful for any person duly authorized by Us, our heirs and successors, to take and occupy such water privileges, and to have and enjoy such rights of carrying water over, through or under any parts of the hereditaments hereby granted, as may be reasonably required for agricultural or other purposes

in the vicinity of the said land, upon paying therefor a reasonable compensation to the aforesaid h heirs and assigns.

IN TESTIMONY whereof We have caused these Our Letters to be made Patent, and the Great Seal of Our Province of British Columbia to be hereunto affixed: WITNESS His Honour , Lieutenant-Governor of Our said Province, at Our Government House, in Our City of Victoria, this day of , in the year of Our Lord One thousand eight hundred and , and in the year of Our Reign.

By Command. 1891, c. 25, s. 43.

44. Crown grants of mineral claims located on lawfully occupied lands, the right whereon to enter, prospect, and mine all minerals (other than coal) has been reserved to the Crown and its licensees, shall pass to the grantee all minerals, precious or base (other than coal), found in veins or lodes, or rock in place, and whether such minerals are found separately or in combination with each other, which may be in, upon, or under the land in the said Crown grant mentioned, and including all the rights given to mineral claim holders of mineral claims so located in section 31 of this Act, but such Crown grant shall expressly reserve the rights of such prior occupant, and may be in the following form:—

(Royal Arms.)

"MINERAL ACT."

PROVINCE OF BRITISH COLUMBIA.

No.

VICTORIA, by the Grace of God, of the United Kingdom of Great Britain and Ireland, QUEEN, Defender of the Faith. To all to whom these presents shall come, GREETING:

KNOW YE, that We do by these presents, for Us, Our heirs and successors, in consideration of (the fulfilment of the conditions of the laws providing for the acquisition of minerals other than coal), give and grant unto h heirs and assigns, all minerals, precious and base (save coal), which may be found in veins, lodes, or rock in place, and whether such minerals are found separately or in combination with each other, under all that parcel or lot of land situated and numbered on the official plan or survey of the said To have and to hold the said minerals unto the said h heirs and assigns forever, excepting nevertheless [*set out any exceptions*].

Provided also, that the grant hereby made of the said minerals shall be subject to the laws for the time being in force respecting mineral lands held in fee simple:

Provided further, that it shall be lawful for any person duly authorized by Us, Our heirs and successors, to take and occupy such water privileges, and to have and enjoy such right of carrying water over, through, or under any parts of the said land

as may be reasonably required for agricultural or other purposes in the vicinity of the said land, upon paying therefor a reasonable compensation to the aforesaid

h heirs and assigns.

IN TESTIMONY whereof We have caused these Our Letters to be made Patent, and the Great Seal of Our Province of British Columbia to be hereunto affixed: WITNESS His Honour , Lieutenant-Governor of Our said Province, at Our Government House, in Our City of Victoria, this day of in the year of Our Lord One thousand eight hundred and , and in the year of Our Reign.

By Command.

(Where the mineral claim is located on land lawfully occupied under a timber lease, the Crown grant shall convey the surface and minerals, precious and base (save coal), found in veins, or lodes, or rock in place, but shall reserve the timber). 1891, c. 25, s. 44.

45. Crown grants of mineral claims located on lawfully occupied lands, the right whereon to enter and mine gold and silver has been reserved to the Crown and its licensees, shall pass to the grantee all the gold and silver found in veins, or lodes, or rock in place, which may be in, upon, or under the land in the said Crown grant mentioned, and including all the rights given to mineral claim holders of mineral claims so located in section 31 of this Act; but such Crown grant shall expressly reserve the rights of such prior occupant, and may be in the following form:—

(Royal Arms.)

"MINERAL ACT."

PROVINCE OF BRITISH COLUMBIA. }

No.

VICTORIA, by the Grace of God, of the United Kingdom of Great Britain and Ireland, QUEEN, Defender of the Faith. To all to whom these presents shall come, GREETING:

KNOW YE, that We do by these presents, for Us, Our heirs and successors, in consideration of (the fulfilment of the conditions of the laws providing for the acquisition of minerals other than coal), give and grant unto h heirs and assigns, all gold and silver which may be found in veins, or lodes, or rock in place, under all that parcel or lot of land situated and numbered on the official plan or survey of the said To have and to hold the said minerals unto the said h heirs and assigns forever, excepting nevertheless [*set out any exceptions*].

Provided also, that the grant hereby made of the said minerals shall be subject to the laws for the time being in force respecting mineral lands held in fee simple:

Provided further, that it shall be lawful for any person duly authorized by Us, Our heirs and successors, to take and occupy such water privileges, and to have and

enjoy such right of carrying water over, through, or under any parts of the said land as may be reasonably required for agricultural or other purposes in the vicinity of the said land, upon paying therefor a reasonable compensation to the aforesaid

h heirs and assigns.

IN TESTIMONY whereof We have caused these Our Letters to be made Patent, and the Great Seal of Our Province of British Columbia to be hereunto affixed: WITNESS His Honour Lieutenant-Governor of Our said Province, at Our Government House, in Our City of Victoria, this day of , in the year of Our Lord One thousand eight hundred and , and in the year of Our Reign.

By Command. 1891, c. 25, s. 45.

46. [*Repealed by 1892, c. 32, s. 2.*]

47. [*Repealed by 1892, c. 32, s. 2.*]

48. If an adverse claim shall only affect a portion of the ground for which a certificate of improvements is applied, the boundaries of such portion shall be shown by a plat of the entire adverse claim, and the applicant may relinquish the portion covered by the adverse claim, and still be entitled to a certificate of improvements for the undisputed remainder of his claim, upon complying with the requirements of this Act. 1891, c. 25, s. 48.

49. When judgment in such case is rendered by the Court, a memorandum of such judgment shall be entered in the "Record Book;" and if by any judgment the original boundaries of any claim shall be changed, a plat made by a Provincial land surveyor, and signed by the Judge by whom the judgment has been given, shall be filed in the office of the Mining Recorder. 1891, c. 25, s. 49.

50. Every conveyance, bill of sale, mortgage, or other document of title relating to any mineral claim, mine held as real estate, or mining interest, shall be recorded within the time prescribed for recording mineral claims: Provided, always, that the failure to so record any such document shall not invalidate the same as between the parties thereto, but such documents as to third parties shall take effect from the date of record, and not from the date of such document. 1891, c. 25, s. 50.

51. No transfer of any mineral claim, or of any interest therein, shall be enforceble unless the same shall be in writing, signed by the transferrer or by his agent, authorized in writing, and recorded by the Mining Recorder; and if signed by an agent, the authority of such agent shall be recorded before the record of such transfer. 1891, c. 25, s. 51.

52. The transfer of any real estate acquired under the provisions of the "Gold Mining Amendment Act, 1873," or under this or any Act relating to minerals other than coal, shall be in writing, signed by the transferrer or his agent authorized in writing, and need not be by deed or under seal. 1892, c. 32, s. 17.

53. No mineral claim shall be open to location by any other person during the last illness, nor, unless with the permission in writing of the Gold Commissioner, for twelve months after the death of the lawful holder. 1892, c. 32, s. 18.

54. No free miner shall suffer from any acts of omission or commission, or delays on the part of any government official, if such can be proven. 1891, c. 25, s. 54.

Mill Sites.

55. A free miner may locate any unoccupied and unreserved Crown land not known to contain mineral, and not exceeding five acres, as a mill site. No free miner shall be entitled to obtain and hold under this section more than one mill site for each mineral claim lawfully held by him. Such mill site shall be as nearly as possible in the form of a square. On locating a mill site, the free miner shall comply with the following requirements :—

(*a.*) Mark out the land by placing a legal post at each corner :

(*b.*) Post a notice on each post, stating—

1. The name of such free miner :
2. The number of his Free Miner's Certificate :
3. His intention, at the expiration of sixty days from the date of the notice, to apply for the land as a mill site :
4. The date of the notice :

(*c.*) Post a copy of such notice on the office of the Mining Recorder. 1891, c. 25, s. 55 ; 1892, c. 32, s. 19.

56. On the expiration of sixty days after the fulfilment of the above requirements the free miner shall deposit, in duplicate, in the office of the Mining Recorder, a plat of the said land made by an authorized Provincial land surveyor, and prove by affidavit that he has complied with the above requirements, and that the said land is not known to contain minerals, and shall furnish such other proof of the non-mineral character of the land as the Gold Commissioner may require ; the free miner shall then be entitled to a lease, for one year, of the said land, which lease shall be executed by the Gold Commissioner. If, during the continuance of such lease, such free miner shall prove to the satisfaction of the Gold Commissioner that he has put or constructed works, or machinery for mining or milling purposes, on the said mill site, of a value of at least five hundred dollars, he shall be entitled to a Crown grant of such mill site upon payment of five dollars per acre for such land. Any free miner now having a lease of a piece of land for a mill site, upon proving to the satisfaction of the Gold Commissioner that he has put or constructed works, or machinery for mining or milling purposes, on the said mill site of the value of at least five hundred dollars, shall, on payment of five dollars per acre, be entitled to a Crown grant of such mill site. 1891, c. 25, s. 56 ; 1892, c. 32, s. 20.

57. On applying for a Crown grant of a mill site the free miner shall—

(1.) Pay the sum of five dollars per acre to the Mining Recorder :

(2.) Deposit with the Mining Recorder the following documents :—

(*a.*) Lease of the mill site :

(*b.*) Plat of the mill site :

(*c.*) Surveyor's original field notes :

(*d.*) A certificate from the Gold Commissioner that works or machinery for mining or milling purposes have been put or constructed on the mill site to the value of at least five hundred dollars :

(*e.*) Application for the Crown grant. 1891, c. 25, s. 57 ; 1892, c. 32, s. 21.

58. Crown grants of mill sites shall pass to the grantee all the surface of the land in the said Crown grant mentioned, but all such Crown grants shall expressly reserve all minerals under the said land, and the right to the Crown and its licensees to enter and mine the said minerals, and may be in the following form :—

{ L. S. } (Royal Arms.)

PROVINCE OF BRITISH COLUMBIA. }

No.

VICTORIA, by the Grace of God, of the United Kingdom of Great Britain and Ireland, QUEEN, Defender of the Faith, and so forth. To all to whom these presents shall come, GREETING :

KNOW YE that We do by these presents, for Us, Our heirs and successors, in consideration of the sum of to Us paid, give and grant unto h heirs and assigns, All that parcel or lot of land situate and numbered on the official plan or survey of the said in the Province of British Columbia, To have and to hold the said parcel or lot of land, and all and singular the premises hereby granted, with their appurtenances, unto the said h heirs and assigns for ever.

Provided, nevertheless, that it shall at all times be lawful for Us, Our heirs and successors, or for any person or persons acting in that behalf by Our or their authority, to resume any part of the said lands which it may be deemed necessary to resume for making roads, canals, bridges, towing paths, or other works of public utility or convenience, so nevertheless, that the lands so to be resumed shall not exceed one twentieth part of the whole of the lands aforesaid, and that no such resumption shall be made of any lands o which any buildings may have been erected, or which may be in use for the more convenient occupation of any such buildings.

Provided, also, that it shall at all times be lawful for Us, Our heirs and successors, or for any person or persons acting under Our or their authority, to enter into and upon any part of the said lands, and to raise and get thereout any minerals, precious or base, which may be thereupon or thereunder situate, and to use and enjoy any and every part of the same land, and of the easements and privileges thereto belonging, for the purpose of such raising and getting, and every other purpose connected therewith, paying in respect of such raising, getting, and use, reasonable compensation.

Provided, also, that it shall be lawful for any person duly authorized in that behalf by Us, Our heirs and successors, to take and occupy such water privileges, and

to have and enjoy such rights of carrying water over, through, or under any parts of the hereditaments hereby granted, as may be reasonably required for mining or agricultural purposes in the vicinity of the said hereditaments, paying therefor a reasonable compensation to the aforesaid h heirs and assigns.

Provided, also, that it shall be at all times lawful for any person duly authorized in that behalf by Us, Our heirs and successors, to take from or upon any part of the hereditaments hereby granted, without compensation, any gravel, sand, stone, lime, timber, or other material which may be required in the construction, maintenance, or repair of any roads, ferries, bridges, or other public works.

IN TESTIMONY WHEREOF We have caused these our letters to be made Patent, and the Great Seal of Our Province of British Columbia to be hereunto affixed: WITNESS His Honour , Lieutenant-Governor of Our Province of British Columbia, at Our Government House, in Our City of Victoria, this day of , in the year of Our Lord one thousand eight hundred and , and in the year of Our Reign.

By Command.

1891, c. 25, s. 58.

Tunnels and Drains.

59. Any free miner, being the holder of a mineral claim or mine held as real estate, may, at the discretion of the Gold Commissioner, obtain a license to run a drain or tunnel, for drainage or any other purpose connected with the development or working of such claim or mine, through any occupied or unoccupied lands, whether mineral or otherwise, upon security being first deposited or given to such Gold Commissioner, to his satisfaction, for any damage that may be done thereby, and upon such other terms as he shall think expedient. 1891, c. 25, s. 59.

Water Rights.

60. A free miner who is the holder of a mineral claim or mine held as real estate, or of any mill site, may, at the discretion of the Gold Commissioner, obtain a grant to a water right in any unappropriated water, for any mining or milling purpose, for any term not exceeding twenty years, upon such terms and conditions as such Gold Commissioner shall think fit. 1891, c. 25, s. 60.

61. Before applying for any such grant, the free miner shall—

(1.) Post a notice in writing on a legal post upon some conspicuous part of the ground on which such water is intended to be used, and a copy of such notice on the office of the Mining Recorder, for at least sixty days, which notice shall contain the following particulars :—

(*a.*) The name of each applicant :

(*b.*) The number of each applicant's free miner's certificate :

(*c.*) The name, or if unnamed, a sufficient description of the stream, lake or other source from which such water is intended to be taken ;

(*d.*) The point of diversion or intended ditch-land :

(*e.*) The number of inches of water applied for :

(*f.*) The purpose for which it is required :

(*g.*) The date of the notice.

(2.) If more than three hundred inches are applied for, a deposit shall be made with the Gold Commissioner of twenty-five dollars, to be refunded if the grant is not made. 1891, c. 25, s. 61.

62. The grant of such water right shall be recorded in the office of the Mining Recorder within the time limited for the recording of mineral claims, which time can be extended by the Gold Commissioner in his discretion. 1891, c. 25, s. 62.

63. No grant shall take effect until recorded. 1891, c. 25, s. 62.

64. On any dispute prior to such grant, priority of notice shall constitute priority of right. 1891 c. 25, s. 64.

65. A grant duly recorded shall speak from the date of the grant, and not from the date of the record. 1891, c 25, s. 65.

66. Every such grant shall be subject to the rights of such free miners as shall, at the date of such grant, be working on the stream above or below the ditch head, and of any other persons lawfully using such water for any purpose whatsoever ; and such grant shall be deemed as appurtenant to the mineral claim, mine held as real estate, or mill site in respect of which it has been obtained, and whenever the claim or mine shall have been worked out or abandoned, or whenever the occasion for the use of the water upon the claim, mine or mill site shall have permanently ceased, the grant shall be at an end and determined. 1891, c. 26, s. 66.

67. No person shall be entitled to any such grant of water for the purpose of selling such water, or of using the same otherwise than for the purpose for which the water was recorded. 1891, c. 25, s. 67.

68. Within six months after the grant is made, the grantee shall commence the construction of the ditch or other works through which he intends to convey the water, and shall prosecute the same diligently and uninterruptedly to completion, unless interrupted by the severity of the weather : Provided, always, that the Gold Commissioner may, in his discretion, allow such work to cease for any time, upon cause being shown. Upon the non-fulfilment of any of the conditions of this section the grant shall be forfeited. 1891, c. 25, s. 68.

69. The Gold Commissioner shall, in his discretion, have power to allow a grantee of any water right to change the place of diversion, on giving such notices and complying with such terms as the Gold Commissioner may require. 1891, c. 25, s. 69.

70. Every such grantee shall take all reasonable means for utilizing the water granted to him ; and if he wilfully waste any water, or take a quantity of water in excess of his requirements, the Gold Commissioner may declare his grant to be forfeited. 1891, c. 25, s. 70.

71. Any person desiring to bridge any stream, claim, or other place, for any purpose, or to mine under or through any ditch or flume, or to carry water through or over any land already occupied, may do so with the written sanction of the Gold Commissioner. In all such cases, the right of the party first in possession, whether of the mine or of the water right, is to prevail, so as to entitle him to compensation if the same be just. 1891, c. 25, s. 71.

72. In measuring water in any ditch or sluice, the following rules shall be observed :—The water taken into a ditch or sluice shall be measured at the ditch or sluice head. No water shall be taken into a ditch or sluice except in a trough placed horizontally at the place at which the water enters it. One inch of water shall mean half the quantity that will pass through an orifice two inches high by one inch wide, with a constant head of seven inches above the upper side of the orifice. 1891, c. 25, s. 72.

73. Whenever it shall be intended, in forming or upholding any ditch, to enter upon and occupy any part of a registered claim, or mine held as real estate, or to dig or loosen any earth or rock within four feet of any ditch not belonging solely to the registered owner of such claim or mine, three days' notice in writing of such intention shall be given before entering or approaching within twenty feet of such other property. 1891, c. 25, s. 73.

74. Any person heretofore or hereafter engaged in the construction of any road or work may, with the sanction of the Gold Commissioner, cross, divert, or otherwise interfere with any ditch, water right, or other mining rights whatsoever, for such period as the said Commissioner shall direct. 1891, c. 25, s. 74.

75. The owner of any ditch, flume or pipe shall, at his own expense, construct, secure, and maintain all culverts necessary for the passage of waste and superfluous water flowing through or over any such ditch, flume, or pipe. 1891, c. 25, s. 75.

76. The owner of any ditch, flume or pipe shall construct and secure the same in a proper and substantial manner, and maintain the same in good repair to the satisfaction of the Gold Commissioner, so that no damage shall occur to any road or work in its vicinity, from any part of the works of such ditch, flume or pipe. 1891, c. 25, s. 76.

77. The owner of any ditch, flume or pipe shall be liable and shall make good, in such manner as the Gold Commissioner shall determine, all damages which may be occasioned by or through any parts of the works of such ditch, flume or pipe breaking or being imperfect. 1891, c. 25, s. 77.

78. If any written notice to the party intended to be affected thereby be posted for ten days on some conspicuous part of any premises referred to in such notice, and also in the office of the Mining Recorder, such notice shall be deemed good and sufficient. 1891, c. 25, s. 78.

79. When the term for which any water right has been granted shall have expired, the grantee thereof may, at the discretion of the Gold Commissioner, obtain a renewal of the same for a reasonable term, not to exceed ten years, provided the necessity for the use of said water for the purpose for which it was originally granted continues to exist. 1891, c. 25, s. 79.

80. Nothing herein contained shall be construed to limit the right of the Chief Commissioner of Lands and Works to lay out, from time to time, the public roads of the Province, across, through, along, or under any ditch, water right, or mining right, in any Crown land, without compensation, provided that as little damage as possible shall be done in so doing. 1891, c. 25, s. 80.

Part III.

Mining Partnerships.

81. All mining partnerships shall be governed by the provisions hereof, unless they shall have other and written articles of partnership. 1891, c. 25, s. 81.

82. A mining partnership shall, unless otherwise agreed upon, be deemed to be a yearly partnership, renewable from year to year by tacit consent. 1891, c. 25, s. 82.

83. The business of the partnership shall be mining and such other matters as pertain solely thereto. 1891, c. 25, s. 83.

84. Mining partnerships can locate and record in the partnership name a mineral claim for each partner, but the name of every partner, and the number of every partner's free miner's certificate, shall be on the record of every such claim. The partnership name must appear on every such record, and all the claims so taken up shall be the property of the partnership: Provided, always, that no free miner who is the member of a mining partnership, holding by right of location a mineral claim, shall be entitled to hold by right of location in his own name, or in the name of any other partnership, any interest in any other mineral claim on the same vein or lode on which the partnership claim is situate. 1891, c. 25, s. 84.

85. Should any partner fail to keep up his free miner's certificate, such failure shall not cause a forfeiture, or act as an abandonment of the partnership claim, but the share of the partner who shall so fail to keep up his free miner's certificate shall become vested in his partners, pro rata, according to their former interests. 1891, c. 25, s. 85.

86. A partner in any mining partnership, or his agent authorized in writing, shall, at any meeting thereof, be entitled to vote upon any interest or fraction of an interest which he may hold therein; but the result of the votes given shall be determined by the number of the full interests voted upon, and not by the number of partners voting at such meeting. 1891, c. 25, s. 86.

87. A majority of such votes may decide when, how long, and in what manner to work the partnership claim, the number of men to be employed, and the extent and manner of levying the assessments to defray the expenses incurred by the partnership: Such majority may also choose a foreman or manager, who shall represent the partnership, and sue and be sued in the name of the partnership for the assessments and otherwise; and he shall have power to bind them by his contracts: Every partner, or his duly authorized agent, shall be entitled to represent his interest in the partnership property by work and labor, so long as such work and labor be satisfactory to the foreman or manager. In the event of such workman being discharged by the foreman or manager, the Court having jurisdiction in mining disputes may, if requested, summon the

foreman or manager before it, and upon hearing the facts make such order as it shall deem just. 1891, c. 25, s. 87.

88. All assessments shall be payable within thirty days after being made. 1891, c. 25, s. 88.

89. Any partner making default in payment after receiving a notice specifying the amount due by him, shall, if such amount be correct, be personally liable therefor to the partnership, and his interest in the partnership property may be sold by the partnership for the payment of the debt, and any further assessment which may have accrued thereon up to the day of sale, together with all costs and charges occasioned by such default; and if the proceeds of the sale be insufficient to pay off the several sums mentioned, the Court having jurisdiction in mining disputes upon being applied to shall issue an order directed to the Sheriff to seize and sell any other personal property of the debtor. Notices of sale shall, in either of the above cases, be conspicuously posted thirty clear days prior to the day of sale, in the vicinity of such mining or other such property, and on the Court House or Mining Recorder's office nearest thereto. But if such partner be absent from the district such notices shall be posted as aforesaid sixty clear days before the day of sale, and a copy of such notice shall be published in some newspaper circulated in the district wherein such mining or other property is situate. Such sale shall be by public auction to the highest bidder. The purchaser shall be entitled to the possession of the property sold, and to a bill of sale therefor signed by the auctioneer; such bill of sale shall confer such title upon the purchaser as the owner had. 1891, c. 25, s. 89.

90. After a notice of abandonment in writing shall have been served on the foreman or manager of a partnership by any member thereof, and duly recorded, such member shall not be liable for any debts or other liabilities of the partnership incurred after service and record of such notice, and no member shall be deemed to have abandoned an interest until service and record of such notice. 1891, c. 25, s. 90.

91. Upon the abandonment of any share in a mining partnership, the title to the abandoned share shall be in the continuing partners pro rata according to their former interests. 1891, c. 25, s. 91.

92. Any partner shall be entitled to sell, or contract for the sale of, his interest in the partnership property, but such interest shall continue liable for all the debts of the partnership. 1891, c. 25, s. 92.

93. No partner shall after a bill of sale conveying his interest has been recorded be liable for any indebtedness of the partnership incurred thereafter. 1891, c. 25, s. 93.

Limited Liability.

94. Any mining partnership composed of two or more free miners may limit the liability of its members, upon complying with the requirements following, that is to say:—

Upon filing with the Mining Recorder a declaratory statement, containing the name of the partnership, the location and size of every partnership claim, and the particular interest of each partner; and also placing upon a conspicuous part of every such

claim, in large letters, the name of the partnership, followed by the words "Limited Liability." 1891, c. 25, s. 94.

95. The words "Limited Liability" shall thereupon become part of the partnership name. 1891, c. 25, s. 95.

96. After such conditions shall have been complied with, no member of such partnership shall be liable for any indebtedness incurred thereafter, beyond an amount proportioned to his interest in the partnership. 1891, c. 25, s. 96.

97. Every such partnership shall keep a correct account of its assets and liabilities, together with the names of the partners, and the interest held by each, and shall make out a monthly balance sheet showing the names of the creditors, and the amounts due to each, and file the same among the papers of the partnership; and such balance sheet and all the books of the partnership shall be open to the inspection of creditors at all reasonable hours. 1891, c. 25, s. 97.

98. Every partner in such partnership shall be at liberty to sell or dispose of his interest therein, or of any part thereof, to any other free miner. 1891, c. 25, s. 98.

99. No member of such partnership, after a bill of sale conveying his interest has been duly recorded, or after he has served a notice of abandonment of his interest on the foreman, and left a copy thereof with the Mining Recorder, shall be liable for any indebtedness of the partnership incurred thereafter. 1891, c. 25, s. 99.

100. No such partnership shall declare any dividend until its liabilities have been paid. 1891, c. 25, s. 100.

101. Every such partnership shall appoint a foreman or manager, who shal represent the partnership, who shall sue and be sued in the name of the partnership, and his contracts in relation to the business of the partnership shall be deemed to be the contracts of the partnership. 1891, c. 25, s. 101.

102. No such partnership shall be liable for any other indebtedness than that contracted by its foreman or manager, or by its agent duly authorized in writing. 1891, c. 25, s. 102.

103. Should any such partnership fail to comply with any of the provisions of this Act relating exclusively to "limited liability" partnerships, such partnerships shall, from the date of such failure, cease to be a "limited liability" partnership. 1891, c. 25, s. 103.

Part IV.

Mining Recorders—Appointment, Duties, Powers.

104. The Lieutenant-Governor-in-Council may appoint any person to be a Mining Recorder in and for any part of the Province. 1891, c. 25, s. 104.

105. Where mineral land is discovered in a part of the Province so situate that the provisions of this Act as to free miner's certificates and records of mining property cannot be justly applied or enforced by reason of there being no Gold Commissioner or Mining Recorder in the locality, it shall be lawful for the miners of such locality to hold meetings at such times and places as may be agreed upon, and at such meetings,

by a two-thirds vote, to appoint one of their number to issue free miner's certificates and to enter records of mining property; and such certificates and records shall be valid, notwithstanding any informality therein: Provided, that all records so made, and all fees for the same in accordance with the Schedule to this Act, and a list of all free miner's certificates issued, and the date and term thereof, and the fees for the same, be forwarded to the nearest Gold Commissioner or Mining Recorder as soon thereafter as practicable. 1891, c. 25, s. 105.

106. Every Mining Recorder shall issue free miner's certificates and "substituted certificates" to all persons and companies entitled thereto. 1891, c. 25, s. 106.

107. Such free miner's certificate shall be taken from a printed book of forms, with duplicate counterfoils, one of which counterfoils shall be filed in the office of the Mining Recorder. 1891, c. 25, s. 107.

108. Every Mining Recorder shall keep the following books:—

(a.) A book to be known as the "Record Book:"

(b.) A book to be known as the "Record of Abandonments:"

(c.) A book to be known as the "Record of Affidavits:"

(d.) A book to be known as the "Record of Conveyances." 1891, c. 25, s. 108.

109. [*Repealed by 1892, c. 30, s. 2.*]

110. Upon receipt of an affidavit setting forth a detailed statement of work, as required by section 24, the Mining Recorder shall issue a certificate of work in the Form E in the Schedule to this Act. 1891, c. 25, s. 110.

111. Upon issuing such certificates of work, the Mining Recorder shall file such affidavit in the Record of Affidavits, and also record such certificate of work in the Record Book. 1891, c. 25, s. 111; 1892, c. 32, s. 22.

112. Upon receiving a certificate of improvements, the Mining Recorder shall record the same verbatim in the Record Book. 1891, c. 25, s. 112.

113. The Mining Recorder shall record all extensions of time, licenses, permits, grants of water rights, and other privileges granted by the Gold Commissioner or Mining Recorder, and all forfeitures declared by the Gold Commissioner, and a memorandum of every judgment affecting a mineral claim or other mining property, in the Record Book. 1891, c. 25, s. 113.

114. Upon the receipt of a notice of abandonment, the Mining Recorder shall record the same in the Record of Abandonments, and file such notice, and write across the record of the claim affected by such notice, in the Record Book, the word "Abandoned," and the date of the receipt by him of the notice. If only an interest in a mineral claim is abandoned, and not the entire claim, the memorandum in the record shall show which interest is abandoned. 1891, c. 25, s. 114.

115. The Mining Recorder shall record, by copying out verbatim all affidavits and declaratory statements required to be recorded in connection with his office, in the Record of Affidavits. 1891, c. 25, s. 115; 1892, c. 32, s. 23.

116. The Mining Recorder shall record, by copying out verbatim, in the Record of Conveyances, all conveyances, mortgages, bills of sale, contracts for sale, and other documents of title, including powers of attorney, or other authorities to execute all or any of the above description of documents when brought to him for that purpose. 1891, c. 25, s. 116.

117. The Mining Recorder shall record in the Record Book all other documents relating to mining property which may be brought to him for record, and shall file all such documents which may be brought to him to be filed. 1891, c. 25, s. 117.

118. Every entry made in any of the above books shall show the date on which such entry was made. 1891, c. 25, s. 118.

119. All books of record and documents filed shall, during office hours, be open to public inspection free of charge. 1891, c. 25, s. 119.

120. Every copy of, or extract from, any entry in any of the said books, or of any document filed in the Mining Recorder's Office, certified to be a true copy or extract by the Mining Recorder, shall be received in any Court as evidence of the matters therein contained. 1891, c. 25 s. 120.

121. Upon receipt from the holder of a certificate of improvements of an application for a crown grant, in the proper form, and all moneys payable in respect of the claim for which a Crown grant is applied, the Mining Recorder shall send such moneys, together with the undermentioned papers, to the Gold Commissioner :—

(1.) The certificate of improvements :
(2.) Affidavit of the holder of the mineral claim or his agent :
(3.) Affidavit of the Provincial Land Surveyor :
(4.) A copy of the plat of the mineral claim :
(5.) The surveyor's original field-notes :
(6.) An application for the Crown grant. 1891, c. 25, s. 121.

122. Upon receipt from the lessee of a mill site of all the moneys and documents mentioned in section 57, the Mining Recorder shall send the same to the Gold Commissioner. 1891, c. 25, s. 122.

123. Before issuing any free miner's certificate or substituted certificate, or certificate of work, or making any entry in any book of record or filing any document, or making any copy or extract therefrom, the Mining Recorder shall collect the fees payable in respect thereof. 1891, c. 25, s. 123.

124. [*Repealed by 1892, c, 32, s. 2.*]

125. It shall be lawful for the Lieutenant-Governor-in-Council to divide and subdivide any district into mining divisions, and to establish in each mining division a Mining Recorder's office. 1891, c. 25, s. 125.

126. Upon the establishment of a mining division, and the opening of a Mining Recorder's office therein, under the authority of the last preceding section—

(*a.*) Such office, and none other, shall be the proper office for recording all claims, records, certificates, documents, or other instruments affecting

claims, mines held as real estate, or mining property situate within such mining division; and whenever by this Act, or any Act amending the same anything is required to be done at or in the office of the Gold Commissioner or Mining Recorder of the District, it shall, if the same affects or concerns any claim, mine held as real estate, or mining property situate within a mining division, be done at or in the office of the Mining Recorder of the mining division wherein such claim or mine, or other mining property, is situate:

(*b.*) Upon the district or division of any Mining Recorder being divided or sub-divided into mining divisions, it shall be the duty of such Mining Recorder to make or cause to be made, a transcript of all the entries in all the books mentioned in section 108, affecting claims, mines held as real estate, or mining property, situated in each newly created mining division, and to forward the same to the Mining Recorder of such mining division, and such transcript shall be kept in such office as part of the records of such office, and all transcripts of such records, certificates, documents, or other instruments, shall primâ facie be deemed to be true copies of the several records, certificates, documents, or other instruments of which they purport to be transcripts; and such transcripts or copies thereof, when certified by the Mining Recorder of the mining division in whose office they are kept, shall be admissible in evidence in all Courts of Judicature in this Province. 1891, c. 25, s. 126.

127. When there shall be no Mining Recorder for a district or division, the duties of the Mining Recorder shall devolve upon the Gold Commissioner, and it shall at all times be lawful for the Gold Commissioner to perform the duties of the Mining Recorder, and the Gold Commissioner shall have all the powers of a Mining Recorder. 1891, c. 25, s. 127.

128. The Mining Recorder's office shall be open upon such days and hours as the Lieutenant-Governor-in-Council may from time to time appoint, and failing any particular appointment shall be kept open upon all days, excepting public holidays, from 10 a.m. to 4 p.m., and such times shall be deemed the office hours of such office. 1891, c. 25, s. 128.

Part V.

Gold Commissioner's Ministerial Powers.

Tunnels and Drains.

129. It shall be lawful for, but not incumbent upon, the Gold Commissioner to grant a license to any free miner, being the lawful holder of a mineral claim or mine held as real estate, to run a drain or tunnel for any purpose connected with the development or working of such claim or mine through any occupied or unoccupied lands, whether mineral or otherwise, upon security being deposited or given to him to his satisfaction for any damage that may be done thereby, and upon such other terms as he shall think fit. 1891, c. 25, s. 129.

Water.

130. It shall be lawful for, but not incumbent upon, the Gold Commissioner to grant a water right to any free miner who is the lawful holder of a mineral claim, mine held as real estate, or mill site, in any unappropriated water, for any mining or milling purpose, for any term not exceeding twenty years, and upon such terms and conditions as the Gold Commissioner shall think fit, upon being satisfied that all the conditions of section 61 have been complied with. And in all cases where he shall think fit to extend the time for the recording of the grant of such water right. 1891, c. 25, s. 130.

131. On the expiration of the grant to any such water right, it shall be lawful for, but not incumbent upon, the Gold Commissioner to renew such grant for a further period not exceeding ten years, on being satisfied that the necessity for the use of the water for the purpose for which it was originally granted continues to exist. 1891, c. 25, s. 131.

132. Upon proof that any grantee has not complied with all or any of the conditions upon which grants of water rights are held, the Gold Commissioner may declare the grant to be forfeited. 1891, c. 25, s. 132.

133. When such grant shall have been declared forfeited, the Gold Commissioner shall cause such forfeiture to be recorded by the Mining Recorder in the Record Book. 1891, c. 25, s. 133.

134. The Gold Commissioner may permit the grantee of any water right to change the place of diversion, on being satisfied that others are not injured by such change. 1891, c. 25, s. 134.

135. The Gold Commissioner may, in all proper cases, grant an authority in writing to any person desiring to bridge any stream, claim, or other place, for any purpose, or to mine under or through any ditch or flume, or to carry water through or over any land already occupied, and to any person heretofore or hereafter engaged in the construction of any road or work, to cross, divert or otherwise interfere with any ditch, water privilege, or other mining rights whatsoever, for such period as the said Commissioner shall think fit. 1891, c. 25, s. 135.

136. The Gold Commissioner may order the owner of any ditch, flume or pipe to make good, in such manner as such Gold Commissioner shall think fit, all damages which may be occasioned by or through any parts of the works of such ditch, flume or pipe breaking or being imperfect. 1891, c. 25, s. 136.

Working of Mines or Claims, and other Powers.

137. [*Repealed by 1892, c. 32, s. 2.*]

138. [*Repealed by 1892, c. 32, s. 2.*]

139. The Gold Commissioner may, in his discretion, permit a free miner to re-locate a mineral claim, or any part thereof, which may have been abandoned or forfeited by such free miner: Provided that such re-locations shall not prejudice or interfere with the rights or interests of others. 1891, c. 25, s. 139.

140. The Gold Commissioner may mark out a space of ground for deposits of leavings and deads from any tunnel, claim, or mining ground, upon such terms as he may think just. 1891, c. 25, s. 140.

141. The Gold Commissioner shall have the power to summarily order any mining works to be so carried on as not to interfere with or endanger the safety of the public, any public work or highway, or any mining property, mineral claims, mining claims, bed-rock drains, or bed-rock flumes; and any abandoned works may by his order be either filled up or guarded to his satisfaction, at the cost of the parties who may have constructed the same, or, in their absence, upon such terms as he shall think fit. 1891, c. 25, s. 141.

142. Notwithstanding anything contained in the "Gold Mining Amendment Act, 1873," or in any Crown grant issued under the said Act, or under this or any other Act, it shall be lawful for the Gold Commissioner, in his discretion, and with or without any terms or conditions, to allow to the owners of mineral claims all such rights or privileges in and over mineral or other claims held as real estate as may be allowed in and over claims not so held; and owners of claims held as real estate shall be entitled to the same rights and privileges as owners of claims not so held. 1891, c. 25, s. 142.

143. Upon receiving an application for a mill site from any free miner, and upon proof being furnished to his satisfaction of the non-mineral character of the land applied for, and the deposit in duplicate of a plat of said land, and upon proof by affidavit that the applicant has complied with the requirements of section 55 of this Act, the Gold Commissioner shall issue to the applicant a lease of such land for one year, in the form in the Schedule to this Act. 1891, c. 25, s. 143.

144. Upon being satisfied that the lessee of a mill site has put or constructed thereon works or machinery for mining or milling purposes to an amount of not less than five hundred dollars, the Gold Commissioner shall issue his certificate to that effect. 1891, c. 25, s. 144.

145. Upon receipt from the Mining Recorder of the moneys and documents mentioned or referred to in section 121 or 122, the Gold Commissioner shall satisfy himself that the same are in order, and then forward the same to the Chief Commissioner of Lands and Works. 1891, c. 25, s. 145.

146. The Gold Commissioner shall have power to do all things necessary or expedient for the carrying out of the provisions of this Act. 1891, c. 25, s. 146.

Administration.

147. [*Repealed by 1892, c. 32, s. 2.*]

148. The Gold Commissioner, or any person authorized by him, shall take charge of all property within the district of such Commissioner of any deceased free miner, until the issue of letters of administration or probate of the will, if any. Provided, however, that where any free miner shall die intestate, and the value of the personal estate of such deceased free miner is less than three hundred dollars, it shall not be necessary for the Gold Commissioner to obtain from any Court letters of

administration, but in such case the Gold Commissioner may administer and wind up the personal estate of the deceased, and do all things necessary and proper therefor, and act in all respects as if letters of administration to the personal estate of such deceased free miner had been granted to such Gold Commissioner, and the Gold Commissioner shall produce and pass his accounts, in each estate of which he shall undertake the administration, before a Judge of the County Court of the district. 1891, c. 25, s. 148; 1892, c. 32, s. 24.

Part VI.

COUNTY COURTS.

Jurisdiction, Procedure, Forms and Costs.

149. In addition to the jurisdiction and powers given to County Courts by the "County Courts Jurisdiction Act," and other Acts, every County Court shall have and exercise, within the limits of its district, all the jurisdiction and powers of a Court of Law and Equity—

(1.) In all personal actions, where the debt or damages claimed arise directly out of the business of mining (other than coal mining), or from the exercise of or interference with any right, power, or privilege given, or claimed to be given, by this Act or any other Act relating to mining (other than coal mining):

(2.) In all actions between employers and employés, where the employment is directly connected with the business of mining (other than coal mining):

(3.) In all actions for supplies to persons engaged in mining, where such supplies were bought, contracted for, or supplied, or were alleged to have been bought, contracted for, or supplied for mining purposes, or for consumption by persons engaged in mining or prospecting:

(4.) In all actions of trespass on or in respect of mineral claims or other mining property, or upon or in respect of lands entered or trespassed on, or claimed to have been entered or trespassed on, in searching for, mining, or working minerals (other than coal), or for any other purpose directly connected with the business of mining (other than coal mining), or in the exercise of any power or privilege given, or claimed to be given, by this Act, or any other Act relating to mining (other than coal mining):

(5.) In all actions of ejectment for mineral claims or other mining property, or from lands entered, or claimed to have been entered, in searching for, mining, or working minerals (other than coal), or for any purpose directly connected with the business of mining, or entered, or claimed to have been entered, under some power, right or authority given or obtained under the provisions of this Act, or any other Act relating to mining (other than coal mining):

(6.) In all suits for foreclosure or redemption, or for enforcing any charge or lien, where the mortgage, charge or lien shall be on mineral claims, mines, or other mining property:

(7.) In all suits for specific performance of, or for reforming, or delivering up, or cancelling any agreement for sale, purchase, or lease of any mineral claim, mine, or other mining property:

(8.) In all suits for the dissolution or winding up of any mining partnership, whether registered or not, under the provisions of this Act:

(9.) In all suits relative to water rights claimed under this Act, or any other Act relating to mining (other than coal mining):

(10.) In all proceedings for orders in the nature of injunctions, where the same are requisite for the granting of relief in any matter in which jurisdiction is given to the County Court by this Act. 1891, c. 25, s. 149.

150. The jurisdiction given to County Courts by this Act shall be known as the "mining jurisdiction" of the County Court, and the words "mining jurisdiction" shall be written or printed on all summonses, writs and other process, and all the documents in every action or cause brought under the mining jurisdiction of the County Court. 1891, c. 25, s. 150.

151. County Courts and County Court Judges, Registrars, Sheriffs, and other officers, shall have the same duties, powers, privileges, and authorities in all actions and suits, and other proceedings brought under the mining jurisdiction of the County Court, as they now have, or at any time hereafter may have, in actions and suits and other proceedings brought under the ordinary jurisdiction of the County Court, and the provisions of all Acts for the time being in force regulating the duties and powers of County Courts and County Court Judges, Registrars, Sheriffs, and other officers, and regulating the practice and procedure in County Courts, and all Rules and Orders for the time being applicable to the ordinary jurisdiction of the County Court, shall, so far as practicable and not inconsistent with this Act, apply to the mining jurisdiction of the County Court. 1891, c. 25, s. 151.

152. Where disputes arise concerning mining property, portions whereof are situated in adjoining or different districts, the County Court of either of such districts before which the dispute is first brought shall determine it. 1891, c. 25, s. 152.

153. The hearing of any summons, plaint, or other process in any County Court shall not be deferred beyond the shortest reasonable time necessary in the interests of all parties concerned, and it shall be lawful for the Registrar to make summonses or other proceedings returnable forthwith, or at any other time. 1891, c. 25, s. 153.

154. In all mining actions or suits the Court may decide the question at issue upon the ground in dispute, and such decision shall be entered as in ordinary cases, and have the same virtue and effect as if rendered in Court. 1891, c. 25, s. 154.

155. In any mining cause or suit, either party may require that the issues of fact shall be tried by a jury, and the Judge may, before delivering judgment in any action, suit, or other proceeding, direct all or any issues of fact to be found by a jury. 1891, c. 25, s. 155.

156. In all actions, suits, and other proceedings within the mining jurisdiction of the County Court, the Judge may order that costs be taxed on the higher or lower scale allowed by the County Court Rules; or if he shall consider the case of sufficient importance he may order that costs be taxed as in the Supreme Court, and the costs so ordered shall be the costs recoverable in such action, suit or other proceeding. 1891, c. 25, s. 156.

157. Every County Court having jurisdiction in mining disputes shall, with reference to real estate held under the "Gold Mining Amendment Act, 1873," or under this Act, and notwithstanding any law to the contrary, have the same powers and authorities to decide all matters or disputes arising between the owners thereof, or between the owners thereof and any third person, or between mining joint stock companies, or between shareholders therein, or between them and the company, in the same way and as fully as it might do concerning claims not being real estate; and actions, suits, and other proceedings relating to such matters or disputes shall be brought and had in the same manner as actions, suits, or proceedings relating to mining claims not being real estate. 1891, c. 25, s. 157.

158. Any County Court Judge having jurisdiction in mining causes may direct the issuing of writs of capias ad respondendum, ne exeat regno, and capias ad satisfaciendum in all cases in which by law he has jurisdiction over the subject-matter of the suit, but under and subject to such conditions as a Judge of the Supreme Court might usually require in applications of a similar nature. 1891, c. 25, s. 158.

Part VII.

Penal and Miscellaneous.

159. Any person wilfully acting in contravention of this Act, or refusing to obey any lawful order of the Gold Commissioner or of any Judge presiding in a Court shall, on conviction thereof in a summary way before any two Justices of the Peace or a Stipendiary Magistrate, or before any Judge of a Court having jurisdiction in mining disputes, be liable to a fine not exceeding two hundred and fifty dollars, or to imprisonment, with or without hard labour, for any term not exceeding three months. 1891, c. 25, s. 159.

160. All fines and penalties imposed or payable under this Act may be recovered by distress and sale of any mining or other personal property of the offender; and in default of sufficient distress, by imprisonment, with or without hard labour, not exceeding three months. 1891, c. 25, s. 160.

161. All fines, fees and penalties collected under this Act shall be paid into the Consolidated Revenue Fund of British Columbia. 1891, c. 25, s. 161.

162. Nothing herein contained shall, save where such intention is expressly stated, be so construed as to affect prejudicially any mining rights and interests acquired prior to the passing of this Act; and all mining rights and privileges heretofore and hereunder acquired shall, without the same being expressly stated, be deemed to be taken and held subject to the rights of Her Majesty, her heirs and successors, and to the public rights of way and water. 1891, c. 25, s. 162.

163. Every free miner, on application to the Mining Recorder of the district shall be entitled to a printed copy of this Act, on payment of the sum of twenty-five cents. 1891, c. 25, s. 163; 1892, c. 32, s. 25.

164. Affidavits and declarations made under the provisions of this Act, shall be made before some Judge or Registrar of a Court of Record, or before some Gold Commissioner, Mining Recorder, Stipendiary Magistrate, Justice of the Peace, Notary Public, or Commissioner for taking affidavits. 1891, c. 25, s. 164.

Part VIII.

Repealing Clause.

165. The Acts and parts of Acts mentioned in this section shall stand repealed and be repealed; but such repeal shall not be deemed to imply that any of the said Acts or parts of Acts which have been repealed at any time prior to the passing of this Act, have been in force since such repeal: Provided further, that such repeal shall not affect any rights acquired, or any liabilities or penalties incurred, or any act or thing done, under any of the said Acts or parts of Acts:—

The "Mineral Act," save and except sections 4, 5, 6, 13, 19, 20, 22, 27, 28, and 29.

"An Act to amend the 'Mineral Act, 1889.'"

The "Mineral Amendment Act, 1890."

Paragraph (*i*) in Schedule A of the "Licenses Act."

Section 79 of the "Companies Act." 1891, c. 25, s. 165.

SCALE OF FEES TO BE CHARGED.

For every free miner's certificate (for each year)	$5 00
Every substituted certificate	1 00
Recording any claim	2 50
Recording every certificate of work	2 50
Recording any "lay over," or every other record required to be made in the "Record Book."	2 50
Recording every abandonment, including the memorandom to be written on the record	2 50
For any other record made in the "Record of Abandonments"	2 50
For recording every affidavit, where the same does not exceed three folios of 100 words	2 50
For every folio over three, 30 cents per folio.	
The above rate shall be charged for all records made in the "Record of Affidavits."	
For all records made in the "Record of Conveyances," where the same do not exceed three folios	2 50
For every folio over three, a further charge of 30 cents per folio.	
For all copies or extracts from any record in any of the above named books, where such copy or extract shall not exceed three folios, per copy	2 50
Where such copies or extracts exceed three folios, 30 cents per folio for every folio over three.	
For filing any document	25
For a Crown grant	5 00

1891, c. 25, Sch.; 1892, c. 32, s. 31.

BRITISH COLUMBIA.

III.—Minerals other than Coal—An Act to amend the "Mineral Act, 1891."

(Passed 12th April, 1893.)

Her Majesty, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia, enacts as follows :--

1. This Act may be cited as the "Mineral Act (1891) Amendment Act, 1893."

2. Section 2 of the "Mineral Act, 1891," is hereby amended by striking out all the words in lines 45, 46, and 47, and inserting in lieu thereof the following :—

"'Mineral' shall include all metalliferous ores, precious or base, found in veins, lodes, or rock in place, and whether such metalliferous ores are found separately or in combination with each other ; but shall not include coal."

(*a.*) The said section is also amended by striking out the words "falling under the definition of a foreign company in," in lines 55 and 56, and inserting in lieu thereof the words "whether foreign or local, registered or incorporated under."

3. The sections substituted by the "Mineral Act (1891) Amendment Act, 1892," for sections 14 and 15 of the "Mineral Act, 1891" are hereby repealed, and in lieu thereof be it enacted :—

"14. Any free miner desiring to locate a mineral claim shall, subject to the provisions of this Act with respect to land which may be used for mining, enter upon the same and locate a plot of ground measuring, where possible, but not exceeding, 1,500 feet in length by 1,500 feet in breadth, in as nearly as possible a rectangular form, that is to say : all angles shall be right angles, except in cases where a boundary line of a previously surveyed claim is adopted as common to both claims, but the lines need not necessarily be meridianal. In defining the size of a mineral claim, it shall be measured horizontally, irrespective of inequalities on the surface of the ground.

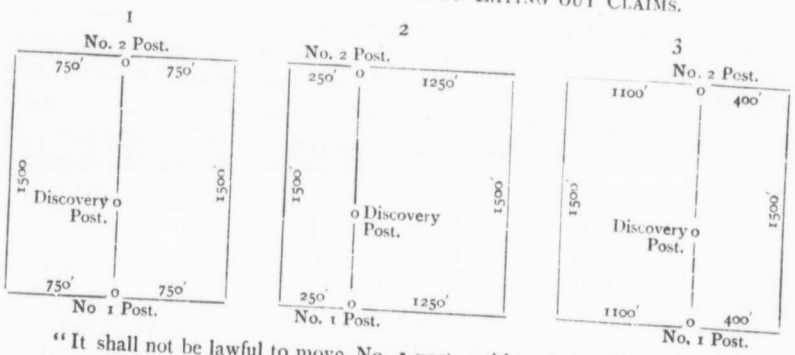
"15. A mineral claim shall be marked by two legal posts, placed as near as possible on the line of the ledge or vein, and the posts shall be numbered 1 and 2, and the distance between posts 1 and 2 shall not exceed fifteen hundred feet, the line between posts Nos. 1 and 2 to be known as the location line, and upon posts Nos. 1 and 2 shall be written the name given to the mineral claim, the name of the locator, and the date of the location. Upon No. 1 post there shall be written, in addition to the foregoing, 'Initial Post,' the approximate compass bearing of No. 2 post, and a statement of the number of feet lying to right and to the left of the line from No. 1 to No. 2 post, thus :—'Initial Post. Direction of post No. 2. feet of this claim lie on the right, and feet on the left of the line from No. 1 to No. 2 post.'

"All the particulars required to be put on No. 1 post shall be furnished by the locator to the Mining Recorder at the time the claim is recorded, and shall form a part of the record of such claim.

"When a claim has been located, the holder shall immediately mark the line between posts Nos. 1 and 2 so that it can be distinctly seen; in a timbered locality, by blazing trees and cutting underbrush, and in a locality where there is neither timber nor underbrush he shall set legal posts so that such line can be distinctly seen.

"The locator shall also place a legal post at the point where he has discovered rock in place, on which shall be written 'Discovery Post'; he shall also set a legal post as near as possible at each corner of his claim, on which shall be written 'A.B.'s claim, N.E.C.' (meaning north-east corner), 'A. B.'s claim, N.W.C.' (meaning north-west corner), as the case may be: Provided that when the claim is surveyed, the surveyor shall be guided entirely by posts 1 and 2 and the notice on No. 1, the initial post, and the records of the claim.

EXAMPLES OF VARIOUS MODES OF LAYING OUT CLAIMS.



"It shall not be lawful to move No. 1 post, neither shall it be lawful to move No. 2 post, except for the correction of distance by the Provincial Government Surveyor. Nos. 1 and 2 posts shall govern the direction of one side of the claim.

"(*a.*) The holder of a mineral claim shall be entitled to all minerals which may lie within his claim, but he shall not be entitled to mine outside the boundary lines of his claim continued vertically downwards:

"(*b.*) This Act shall not prejudice the rights of claim owners nor claim holders whose claims have been located under former Acts:

"(*c.*) No mineral claim shall be recorded without the application being accompanied by an affidavit or solemn declaration made by the applicant, or some person on his behalf cognizant of the facts, that mineral has been found in place on the claim proposed to be recorded."

4. Section 17 of the "Mineral Act, 1891," is hereby amended by striking out, in lines two, four, and five, the word "side," substituted for the word "centre" by section 6 of the "Mineral Act (1891) Amendment Act, 1892," and inserting in each line in lieu thereof the word "location."

5. Section 19 of the "Mineral Act, 1891," is amended by striking out, in line ten, the word "side," substituted for the word "centre" by section 7 of the "Mineral Act (1891) Amendment Act, 1892," and inserting in lieu thereof the word "location."

6. Section 10 of the "Mineral Act (1891) Amendment Act, 1892," is hereby repealed.

7. Section 26 of the "Mineral Act, 1891," is hereby amended by inserting after the word "lode" in line three thereof, the words "nor more than two mineral claims in the same mining division."

8. In case of any dispute as to the location of a mineral claim, the title to the claim shall be recognized according to the priority of such location, subject to any question as to the validity of the record itself, and subject further to the free miner having complied with all the terms and conditions of this Act.

9. Sub-sections (*c*), (*d*), (*e*), and (*f*), of section 36 of the "Mineral Act, 1891," are hereby repealed, and in lieu thereof the following are inserted :—

"(*c.*) Had the claim surveyed by an authorized Provincial Land Surveyor, who shall have made three plats of the claim, and who shall have accurately defined and marked the boundaries of such claim upon the ground, and indicated the corners by placing monuments or legal posts at the angles thereof, and upon such monuments or posts shall be inscribed by him the name and the official designation of the claim, and the corner represented thereby, and who shall have, on completion of survey, forwarded at once the original field-notes and plan direct to the Lands and Works Department.

"(*d.*) Shall have posted on some conspicuous part of the land embraced in the survey a copy of the plat of the claim, and a legible notice in writing, in Form F of the Schedule to this Act, of his intention to apply for a certificate of improvements, and shall have also posted a similar notice in the Mining Recorder's office, and such notice shall contain —

"(1.) The name of the claim :
"(2.) The name of the lawful holder thereof :
"(3.) The number of such holder's existing free miner's certificate :
"(4.) His intention to apply for certificate of improvements at the end of sixty days, for the purpose of obtaining a Crown grant :
"(5.) The date of the notice :

"(*e.*) Shall have filed with the Mining Recorder a copy of the surveyor's original field-notes and plat :

"(*f.*) Inserted a copy of such notice in the British Columbia Gazette and in any newspaper published in the Province, and circulating in the district in which the claim is situate, for at least sixty days prior to such application, which insertion can be made at any time after the posting of the notice on the claim :

"(*g.*) Filed with the Mining Recorder—

"(1.) Affidavit of the holder of the claim, or his agent, in the Form H in Schedule of this Act:

"(*h.*) At the expiration of the term of the said publication, provided no adverse claim shall have been filed with the Mining Recorder, he shall forward to the Gold Commissioner, under Form J of the Schedule to this Act, the documents referred to above."

10. Section 14 of the "Mineral Act (1891) Amendment Act, 1892," is hereby amended by inserting between the words "particularity" and "the," on the eleventh line, the following words:—"having regard to all the circumstances of the case," and by adding at the end of the section the words:—"Provided, however, that if an adverse claim has, in the opinion of the presiding Judge, been *bona fide* made, notwithstanding that the same may have been imperfectly made, the same shall nevertheless have legal recognition, and effect shall be given thereto according to the intent thereof."

11. Section 40 of the "Mineral Act, 1891," is hereby amended by striking out the words "Mining Recorder, in Form J of the Schedule to this Act," in the third line, and inserting in lieu thereof the words "Gold Commissioner," and by inserting after the word "Act," in the third line, the words, "enclosing his certificate of improvements, and the Crown grant fee of five dollars."

12. Section 121 of the said Act is hereby repealed and the following inserted in lieu thereof:—

"121. Upon receipt from the holder of a certificate of improvements, of an application for a Crown grant in the proper form, and all moneys payable in respect of the claim for which a Crown grant is applied, the Gold Commissioner shall send such moneys, together with the undermentioned papers, to the Chief Commissioner of Lands and Works:—

"(1.) The certificate of improvements:
"(2.) Affidavit of the holder of the mineral claim, or his agent—Form H:
"(3.) A copy of the plat of the mineral claim:
"(4.) The copy of the surveyor's original field-notes:
"(5.) Mining Recorder's certificate—Form J."

13. Section 145 of the said Act is hereby amended by striking out the figures and word "121 or," in line two.

14. Schedule A to the said Act is hereby repealed, and the following inserted in lieu thereof:—

"FORM A.

"*Location Notice.*

"

"I, , have this day located this ground as a mineral claim, Mineral Claim.
to be known as the Mineral Claim, feet in length

by feet in breadth. The direction of the location line is , and feet of this claim lie to the right and feet to the left of the location line.

"Dated this day of , 189 .

"Take care to number the posts 1, 2, } making the initial post 1." }

15. Schedule B to the said Act is hereby amended by striking out, wherever the same appears, the word "side," substituted for the word "centre" by the "Mineral Act (1891) Amendment Act, 1892," and inserting in lieu thereof the word "location."

16. Schedule C to the said Act is hereby amended by striking out the word "centre," wherever the same appears, and inserting in lieu thereof the word "location."

17. Schedule F to the said Act is hereby repealed, and the following inserted in lieu thereof:—

"FORM F.

"*Notice of Application for Certificate of Improvements.*

" Mineral Claim.

"Take notice that I, , free miner's certificate No. , intend, sixty days from the date hereof, to apply to the Gold Commissioner for a certificate of improvements for the purpose of obtaining a Crown grant of the above claim.

"And further take notice that adverse claims must be sent to the Mining Recorder, and action commenced before the issuance of such certificate of improvements.

"Dated this day of 189 ."

18. Schedule G of the said Act is hereby repealed.

19. Schedule H of the said Act is hereby repealed, and in lieu thereof the following substituted:

"FORM H.

"*Application for Certificate of Improvements.*

"APPLICANT'S AFFIDAVIT.

"I, , of , in the District of free miner, make oath and say:—

"(1.) I am the recorded holder, and am in undisputed possession of the Mineral claim, situate at , in the District (*or* Division) of

"(2.) I have done, or caused to be done, work on the said claim in developing a mine to the value of at least five hundred dollars, full particulars whereof are hereunto annexed and marked "A."

"[*Particulars must be exclusive of all houses and other like improvements.*]

"(3.) I have found a vein or lode within the limits of the said claim.

"(4.) I have had the claim surveyed by , who has made three plats of the said claim.

"(5.) I have placed one such plat on a conspicuous part of the land embraced in such plat.

"(6.) I have posted a copy of the notice hereunto annexed and marked "B," at the same place as said plat is posted, and another copy on the Mining Recorder's office at , which said notice and plat have been posted, and have remained posted, for at least sixty days prior to the date of this affidavit.

"(7.) I have inserted a copy of the said notice in the British Columbia Gazette, and in the , a newspaper published in the Province and circulating in the district in which the said claim is situated, for at least sixty days prior to the date of this affidavit.

"Sworn, etc.

"[*This affidavit may be made by an agent, and can be altered to suit circumstances.*]"

20. Schedule J to the said Act is hereby repealed, and the following inserted in lieu thereof:—

"FORM J.

"*Mining Recorder's Certificate.*

" Mineral Claim.

"Date located, Date recorded,

"*To the Gold Commissioner of*

"SIR,—I herewith enclose the sum of dollars, and the following documents relating to an application for a certificate of improvements to the above claim:—

"Affidavit of , applicant (Form H, ;

"Copy of plat of claim;

"Copy of surveyor's field-notes.

"And I hereby certify that has published a notice of his intention to apply for a certificate of improvements for sixty days in the Government Gazette and newspaper, and that no adverse claim has been filed in this office up to this date.

"Dated, 189 .

" , *Mining Recorder.*"

21. Schedule L to the said Act is hereby amended by striking out section 4 thereto.

22. There shall be levied and collected from the owner or occupier of every mineral or placer claim of which a Crown grant has issued, including Crown grants

issued under authority of an Act made and passed in the 36th year of Her Majesty's reign, intituled "An Act to amend the 'Gold Mining Ordinance, 1867,' and the 'Gold Mining Amendment Act, 1872,'" an annual tax of twenty-five cents for every acre and fractional part of an acre of land conveyed by the grant, payable on the thirtieth day of June in each year. Such tax shall form a charge upon the claim. The Assessor appointed under or by virtue of any existing Assessment Act, or any Collector appointed under the "Provincial Revenue Tax Act," is hereby authorized, as to the mineral or placer claims situate within the district for which he is appointed, to collect and receive the tax. In the event of the tax not being paid to the Assessor or Collector, the Gold Commissioner may in his discretion cause the claim upon which the tax is charged to be offered for sale by public auction, of which sixty days' notice shall be posted upon the principal Court House of the district in which the claim is situate, and in one newspaper, if any, published in such district, and may sell such claim, receive the purchase money, and execute a conveyance thereof to the purchaser. The purchase money shall be applied in payment of the expenses of advertising and the payment of the tax, and any surplus shall be paid into the Treasury in trust for the owner of the claim. In the event of there being no purchaser, or if the price offered shall not be sufficient to pay the tax and expenses of advertising, the land shall absolutely revert to the Province, and the Crown grant thereof shall be deemed void. The Assessor or Collector may, before offering the claim for sale, sue the owner or occupier for the tax, in a summary manner, before any Justice of the Peace who may adjudge the same to be paid; and in default of payment the amount due, together with costs, may be recovered by distress of the goods and chattels of the person against whom the tax may be recovered: Provided, that if the owner of any such mineral or placer claim shall establish, to the satisfaction of the Gold Commissioner, Mining Recorder, or Assessor and Collector of the district in which the claim lies, that the sum of two hundred dollars has been expended thereon in labour or improvements in any one year, then the tax shall not be levied in respect of such claim for such year.

23. Notwithstanding anything to the contrary contained in any Act, every Crown grant hereafter issued of a mineral claim shall convey and be deemed to convey only the right to the use and possession of the surface of such claim for the purpose of winning and getting from and out of the claim the minerals contained therein, including all operations connected therewith, or with the business of mining, and the lawful holder by record of a claim shall, during the continuance of his record, be entitled to the same surface rights, and no others; and all remaining surface rights shall be deemed to be vested in the Crown, and may be granted and disposed of as is provided by the land laws for the time being in force, but subject, always, to the rights of free miners as aforesaid. 1893, c. 29, s. 23.

24. This Act, except the preceding section thereof, shall not come into force until 15th day of May, 1893.

NEWFOUNDLAND.

Excerpted from the Acts Relating to Crown Lands Consolidated and Revised to 1st July, 1891.

SUMMARY.

Sec.

68. Any person may search for minerals on any lands without license but may not remove mineral.
69. Search not to constitute exclusive right.
70. (*a.*) On discovery of mineral applicant may secure a mining location in a certain way.
    (*b.*) Mode of obtaining mining license.
    (*c.*) Mode of obtaining lease of mining location.
71. Provision in case of simultaneous search by several persons.
72. (1.) Governor-in-Council to issue licenses for gold.
    (2.) Governor-in-Council to issue licenses for mining gold.
    (3.) Conditions of lease for mining gold.
    (4.) Books of Account.
    (5.) Reference to Section III.
73. (*a.*) Term of mining lease 5 years.
    (*b.*) To include 50 acres surface land.
    (*c.*) Lessee to expend a certain sum each year.
    (*d.*) Other conditions.
74. Mining lease not to interfere with grant of surface except as to fifty acres.
75. Right of way.
    (1.) Arbitration.
    (2.) Mode of estimating value.
76. Compensation for damage to private property.
77. Grants in fee.
78. Applications to be by petition.
    (1.) Affidavit of performance of conditions.
    (2.) To be fyled and recorded.
    (3.) Duplicate of licenses to be kept.
79. Fees.
80. Agents of Government to have access to mines.
    (1.) Books of Account.
81. Rules, etc., as to forms.
82. Application without fee invalid.
83. Returns.
84. The Act not to affect existing rights.

NEWFOUNDLAND.

Law Relating to Mineral Lands and Mines.

68. It shall be lawful for all persons whomsoever, to search and prospect for minerals in and upon all lands in this colony and its dependencies, without first obtaining a license to search therein, and to explore the same by all such means as may be necessary to prove the existence, value and extent of minerals therein or thereunder, whether by surface or subterranean prospecting or excavation: Provided that such search and prospecting shall be *bona fide* with a view to obtain a mining location and lease thereof, under the provisions of this Act, and that no person so searching or prospecting shall remove and take away from any of the said lands any greater quantity of ore, mineral or metal than shall be necessary to be used as samples; and further, that this section shall not apply to any land appropriated or reserved by the Crown for any purpose.

69. No such search, prospecting, exploration or excavation, shall be deemed to give any person an exclusive right to search, prospect, explore in, or excavate, any of the said lands, unless a party so searching shall comply in all respects with the provisions of the next following section.

70. In case any person after such search, prospecting or exploration mentioned in the sixty-eighth section of this Act, shall discover any vein, lode or deposit of mineral in or upon any of the said lands, and shall desire to obtain a lease thereof from the Crown, he shall proceed as follows:—He shall forthwith, after such discovery, mark the location, in placing thereon at each of four corners (which corners shall represent a square, or as near thereto as may be) a wooden post not less than four inches square, driven not less than eighteen inches into the ground, and showing the length of eighteen inches above ground, and in case of the ground being too rocky to admit of so driving the posts into it, he shall build about each of the said posts, to support and keep it in place, a cairn or mound of stones, three feet in diameter at the base and eighteen inches high. The land contained between such four corner posts shall be called a "Mining Location," and the extent thereof shall be not more than one square mile; but in case of the vein, lode or deposit of mineral so discovered shall be situate on land which shall not admit of being located within or bounded by four straight lines, then the said posts shall be so placed as to show the extreme boundaries, as nearly as may be of the mining location, of which a lease is to be applied for. As soon as circumstances permit, after placing such posts, such person shall give notice in writing to the Surveyor-General, in such form as may be prescribed by him, of his having so staked such land, with as full and correct description as possible of the same, together with a diagram of the same, showing as nearly as possible its position on a chart or map, and of his intention of applying for a lease

thereof, and shall deposit a fee of twenty dollars therewith; the first notice filed in the Surveyor-General's office shall be considered as giving the person filing such notice a priority of claim over any other applicant for same land. The payment of the aforesaid fee of twenty dollars shall entitle the person filing such notice to a license from the Surveyor-General of all minerals in the said mining location, for a period of twelve months from the day of the date of the staking the same: Provided there is no previous claim in the same or any part thereof. At the end of the aforesaid period of twelve months, the licensee must notify the Surveyor-General of his intention to hold the said land, and, with his notification to the Surveyor-General must deposit the sum of thirty dollars (30), which shall entitle him to a renewal of the license for the further period of twelve months, during which time the licensee must expend the sum of two hundred dollars, or equivalent in labor, in exploring for and developing the minerals in the said mining location. At the end of the aforesaid second period of twelve months, the licensee must notify the Surveyor-General of his intention to hold the said land or mining location for a further period, and with this notice he shall deposit the sum of fifty dollars, together with an affidavit of his having fulfilled the conditions of expenditure required by the next preceding sub-section, and he shall then be entitled to a renewal of the license for a further period of twelve months, during which time he shall expend in further explorations and development the sum of four hundred dollars, or its equivalent in labor. At any time during the duration of the said license, or renewals thereof, the licensee may apply for a lease of the mining location therein described, in writing, to the Surveyor-General, and with the application he shall deposit the sum of twenty-five dollars. Thereupon, as soon as convenient, the Surveyor-General shall provide the services of a surveyor, free of expense to the applicant, to make a survey of the said mining location; the applicant shall, however, provide all labor required in cutting lines, or other charges in connection with making said survey.

71. In cases where more persons than one shall be engaged in searching any one part of the said lands at the same time, the person who, after discovering a vein, lode or deposit of mineral thereon, shall first erect boundary posts, as provided by the seventieth section of this Act, shall be entitled to the absolute and exclusive right of the mining location thereby created for the period, and to all the rights and privileges mentioned in the last preceding section of this Act, notwithstanding any other person may have previously discovered mineral in or upon the same location.

72. Sub-section 1. The Governor-in-Council may issue licenses to search for gold over an area not exceeding one-half square mile for a period of one year from the date of such application, on payment of a fee of twenty-five dollars, which license may be renewable for a further term of one year on payment of a fee of fifty dollars.

Sub-section 2. The Governor-in-Council may issue leases to mine and work gold over an area not exceeding one-quarter of a square mile to the holder of a license to search, for a period of twenty-one years, if applied for before the expiration of the said license, on payment of a fee of fifty dollars at the time of application, subject to

the payment of a Royalty of three per cent. per annum on the gross amount of gold mined.

Sub-section 3. Every such lease shall be subject to the condition that, if the lessee do not in each and every year during the said term of twenty-one years, *bona fide* lay out and expend in and about the working of mines and minerals in such land, the sum of five hundred dollars, then the said lease shall be forfeited, and the land by such lease granted, with all the gold and other minerals therein, shall revert to the Crown.

Sub-section 4. The lessee or his assigns shall keep true books of account of the working of such mines, and shall render to the Surveyor-General, for the time being, a correct account of the money expended thereon, and of all gold mined or raised from the area included in the said lease, on the 31st day of December in each and every year of the said term; and such a statement shall be attested before a Stipendiary Magistrate or Justice of the Peace. Should any wilful mistake or misstatement be made as regards the value of gold raised or the amount of money expended by the lessee or his assigns, the said lease shall be forfeited, and the land thereby leased with all the gold and minerals therein, and all improvements made by the said lessee or his assigns shall revert to the Crown.

Sub-section 5. The regulations and provisions contained in the third sub-section of this Act, as far as the same may be applicable, shall be construed to apply to all grants of licenses to search, or leases under the foregoing section or sub-section.

73. The Governor-in-Council may issue a mining lease of the mines and minerals contained in any such mining location to any person who shall apply for the same in manner above provided, and who shall have in all respects conformed to the requirements of this Act, and a lease of fifty acres of unoccupied surface land, within such mining location, for the time of five years from the date of application therefor, but every such lease shall be subject to the conditions, that if the lessee or his assigns do not *bona fide* lay out and expend in and about the working of such mines and minerals, during each of the first four years from the date of the lease, the sum of eight hundred dollars, and during the fifth year the sum of two thousand eight hundred dollars, then the said lease shall be forfeited, and the land, by such lease granted, shall revert to the Crown, and every such lease shall contain such other conditions and reservations as the Governor-in-Council deem just, and shall be subject to the like forfeiture if such conditions and reservations are not complied with.

74. No such lease of mines or minerals shall in any way interfere with the granting of the surface land for agricultural, lumbering or other purposes, except to the extent of fifty acres as aforesaid.

75. The Governor-in-Council, may upon application, grant to the holder of a mining lease a free right of way for tramways and roads, and an increased quantity of surface land if the wants of the lessee's mines in actual operation require it, at the price of thirty cents per acre. If such application should comprise any land under lease, grant or license, for lumbering or agricultural purposes, the holder of the mining

lease shall have a right of pre-emption of such portion as may be necessary for the efficient working of his mine, and of such rights of way for construction of such tramways or roads; and the compensation to be awarded, as well as the question whether or not the land is *bona fide* required for the purpose aforesaid shall, in case of disagreement, be settled by arbitration.

(1.) The arbitration shall be conducted as follows: The arbitrators shall be three, one person appointed by each of the contestant parties; the third arbitrator shall be the Surveyor-General or some person appointed by writing under his hand, and the award of any two of the said arbitrators shall be final: Provided that either of the said parties may appeal therefrom to the Supreme Court within one month from the publication of the award, upon giving, within that time, due notice to the opposite party.

(2.) In estimating the amount of such compensation, only the actual intrinsic value of the surface lands, as lumbering or agricultural or other land, as the case may be, and not the additional value thereof to the miner, by reason of its being required for such mining purposes, shall be taken into consideration; but if by reason of the loss of such surface land under this Act, difficulty or delay be occasioned to the grantee, lessee or licensee in obtaining an equivalent quantity elsewhere, due weight may be given to that circumstance in estimating the said compensation.

76. When any person shall be desirous of searching and prospecting for minerals, as provided by the sixty-eighth section, on private property, and shall be unable to make an agreement with the owner of such property for leave to enter, and for easements and damage to such lands, the question in difference shall be decided in the manner prescribed in the last preceding section.

77. On compliance with the terms and conditions contained in any such lease of mineral lands and with the requirements of this Act, upon proof to the satisfaction of the Governor-in-Council of the expenditure of the sum of six thousand dollars upon the working of mines and minerals at any time within the period of five years, as provided by the next preceding section, every lessee of such mineral lands shall be entitled to a grant in fee thereof.

78. All applications, whether for licenses of occupation, or for lease or grants, shall be by petition to the Governor-in-Council.

(1.) All petitions for grants under this Act, issuable upon the performance of any condition, shall be accompanied by an affidavit showing how such conditions have been performed, which affidavit shall be made before a Justice of the Peace.

(2.) All applications for licenses of occupation and for leases and grants under this Act shall be filed, with all accompanying papers, in the Surveyor-General's Office. A proper record shall be kept of such applications and of the date of their being received at the Department.

(3.) Duplicates of all licenses of occupation and of all leases and grants shall be kept and recorded in the Surveyor-General's office, and all such records shall be open to the inspection of the public, at reasonable hours, on payment of a fee of twenty cents for every search.

79. The following fees shall be payable in respect of all land granted or leased, or for which licenses of occupation may issue under this Act :—

(1.) For mining licenses for one year, twenty dollars ; on renewal for second year, thirty dollars ; on renewal for third year, fifty dollars.

(2.) For mining leases, twenty-five dollars, and for subsequent grants in fee, twenty-five dollars.

(3.) No grant or license, whether styled in this Act a free grant or license, or otherwise, shall issue but on payment of a fee of not less than one dollar.

(4.) No grant, lease, or license shall issue to any person, in respect of which any price or fee is payable under this Act, until such price or fee be paid in full.

(5.) On location ticket for homestead, ten dollars.

80. The agent of the Government shall have free access to, and be at liberty at all reasonable times, to inspect the works being carried on upon the land given or let by any mining lease or grant under this Act, issuable upon the performance of any conditions.

(1.) True books of account of the working of such mines and minerals shall be kept by the lessee or his assignee, and shall be open at all reasonable times to the inspection of the Surveyor-General, or such agents as the Governor in-Council may appoint, for the purpose of ascertaining whether the conditions of the lease have been complied with.

81. The Governor-in-Council shall prescribe rules and regulations as to the forms and modes of application for licenses, leases and grants, and generally for the purpose of carrying out this Act, and for the management and conduct of business in the Surveyor-General's department and may, from time to time, repeal, amend, or alter such rules and regulations, and the same shall come into operation after one month's previous publication in the *Royal Gazette* and two other newspapers in this colony, and shall be as binding after such publication as if herein enacted.

82. No application for a mining lease or grant shall be valid, unless the fee payable thereon shall be deposited with the application.

83. The Surveyor-General shall, every year, furnish to the Governor, for the purpose of being laid before the Legislature, a detailed return of licenses, leases and grants, of all mineral, agricultural, timber, and other lands, and of all water rights, issued within the year ending the last day of December then last past, of all the moneys received for the same, the names of the licensees, lessees and grantees, with the date of and expenses incurred in and about the same.

84. Nothing in this Act contained shall be construed to affect the rights of persons holding grants, leases or licenses to seach for minerals, issued before the passing of this Act, which licenses and rights thereunder shall continue in full force and effect as if this Act had not been passed.

PART II.

THE

MINERAL RESOURCES

AND

MINING INDUSTRIES

OF THE

DOMINION OF CANADA

Being a series of articles specially contributed and revised to date.

THE EARLY HISTORY AND PROGRESS OF COAL MINING IN NOVA SCOTIA.

IT is always interesting to note the rise and progress of any industry the development of which is attended with an extension of commerce and a large employment of labor. The profitable investment of capital, the centralization of a large part of the population, and the consequent extension of the means of supply of its requirement, are such important elements in the growth of any country, that a record of the stages by which any branch of industry has advanced must be of general interest.

It is proposed to present in this article a sketch of the progress of one of the most important industries in Nova Scotia, viz: Coal Mining.

The period to be examined will cover a quarter of a century, but as this term is apt to give the impression of longevity, it will, perhaps, be better to call the retrospect one of twenty-five years' limitation. This length of time should surely be sufficient to place on a firm foundation an industry that possesses ordinary vitality. Let us see how the coal trade of Nova Scotia will bear this test. The initial point, however, in this inquiry may be placed a little further back, in order that the position of the coal mining operations, prior to the period embraced in the inquiry, may afford a more striking contrast with their present development.

Judge Haliburton—Sam Slick—in his History of Nova Scotia, published in 1829, says: "A colliery has recently been opened in the Pictou district by Messrs. Rundell, Bridge & Co., of London, called the Albion colliery;" and the late Mr. Brown, of the Sydney mines, in his excellent work on the Coal Fields and Coal Trade of Cape Breton, states that coal was worked on the north side of Spanish River, the locality of the present Sydney mines, by the Government of Cape Breton in 1784.

These seem to be the earliest dates of any moment in connection with any regular mining operations. The conduction of these appears to have been steadily pursued in the case of the Albion mines by Messrs. Rundell & Bridge, or rather by the General Mining Association, organized by them in 1825; and a like result followed the possession of the Sydney mines by the same company in 1827.

Coal mining remained in this, as it may be termed, limited form, until 1858, when an agitation, begun in 1845, against what was considered a monopoly of the mineral rights by the General Mining Association, resulted in an agreement between the Nova Scotia Government and the G. M. A., and, with certain reservations to the latter, the various coal fields in the Province of Nova Scotia and Cape Breton were free for exploration by other parties. Then was aroused the spirit of private enterprise; the explorer, in most cases a practical miner, shouldered his pick and began a search on the range at the outcrops of the seams of coal, or in localities which might be reasonably conjectured to contain the mineral sought for.

A rapid development of extended coal-bearing area ensued, and an evidence of this progress is afforded in the report of the Chief Commissioner of Mines for the year 1864. According to that report, coal mining operations were being carried on at the "Albion" and "Fraser" mines in Pictou County, at four localities in Cumberland County, and at 16 mines in Cape Breton.

The production, however, was then of very limited extent in the aggregate. The Sydney, Lingan and Albion mines, the oldest mining establishments in the Province, contributing 314,355 tons of a total production of 429,351 tons in the nine months ending September the 30th, 1864—the then termination of the fiscal year. This is due to the fact of some of the mines being but partially opened, the operations in many cases consisting chiefly of the preliminary arrangements incidental to the laying out of the working places.

It is indicative, however, of the alacrity with which the search for coal was pursued after the limits of the area selected by the General Mining Association were defined; and in this connection it may not be out of place to suggest the question whether, as regards the expenditure of capital in starting new mines, the result has been of advantage or prejudicial to the interests of the Province. But apart from this question, there can be no doubt that the stimulus to exploration, under the circumstances referred to, has been of very great service in proving the extension of the various coal fields of the Province, and the existence of seams which, if inferred by geological deduction, were either ignored as unimportant, or, they had no place in the conceived ideas of the contents of the coal fields.

The freedom of search for coal in the unappropriated carboniferous regions was not allowed to remain in abeyance. The practical miner, as well as the speculative investor, was speedily at work; and it is of interest in this respect to note the indications of this flow of enterprise as shown by the records of the Department of Mines.

The report of the Chief Commissioner of Mines in 1863 is confined entirely to the more attractive metal—gold—and it was only in the following year that a statement is given which enables a comparison to be made in relation to the interest in exploration above referred to. The amount received by the Department during the nine months ending September 30, 1864, for licenses to search for minerals "other than gold," was $2,420, and for licenses to work $300, making a total of $2,720.

It may here be explained that the legislative enactment with respect to mineral explorations was that a license to search for minerals other than gold could be obtained on payment of twenty dollars: this gave a right to search over five square miles, and was in force for one year. The holder of the license was entitled to a license to work one square mile if he applied for it and defined its bounds; but he was not restricted to the one square mile, but could cover the entire ground by consecutive rights on payment of the specified fees. The license to work was of two years' duration, and under certain regulations the areas could then be held under lease.

While on this part of the subject it may be stated that the same arrangement as regards the respective rights of search and to work and obtain a lease is in force at present, with the additional privilege that the holder of a license to work may have the time extended to three years on payment of one half of the amount originally paid for such license.

In this connection it is interesting to note the indications of the spirit of research and the variableness that prevailed in subsequent years. As stated above, the amount paid for licenses to search for and work minerals "other than Gold" in the year 1864, was $2,720. The following statement shows the amount received by the Department of Mines for licenses from 1865 to 1886 inclusive:—

	Licenses to search.	Licenses to work.
Twelve months ending September 30, 1865.....	$10,400	$1,650
" " " " 30, 1866.....	7,520	3,450
" " " " 30, 1867.....	2,980	2,450
Three " " December 31, 1867.....	760	300
Twelve " " " 31, 1868.....	2,880	950
" " " " 31, 1869.....	3,160	1,200
" " " " 31, 1870.....	2,680	650
" " " " 31, 1871.....	2,647	852
" " " " 31, 1872.....	6,179	2,626
" " " " 31, 1873.....	6,840	2,850
" " " " 31, 1874.....	4,880	2,825
" " " " 31, 1875.....	3,480	2,025
" " " " 31, 1876.....	3,280	1,250
" " " " 31, 1877.....	1,800	775
" " " " 31, 1878.....	1,420	625
" " " " 31, 1879.....	1,240	325
" " " " 31, 1880.....	3,360	550
" " " " 31, 1881.....	4,560	800
" " " " 31, 1882.....	5,180	1,925
" " " " 31, 1883.....	3,180	1,150
" " " " 31, 1884.....	1,940	1,050
" " " " 31, 1885.....	1,820	750
" " " " 31, 1886.....	980	500

These figures exhibit a fairly steady continuance of the energy with which explorations were pursued. Of course the licenses include other minerals than coal, but those for coal constitute very much the larger proportion of the different quests. It will be observed that the largest payments were in the year 1865-6. The discovery of new seams and their partial opening in the different localities, stirred up the desire for the discovery of others, and explorations were actively carried on in these years. In the following years, up to the end of 1871, the stimulus seems to have abated, but in 1872-3—years in which the coal trade generally experienced an extraordinary period of prosperity—a rush is again evident in the ranks of the explorers, and the licenses approach in the amount of payments to those in the year 1866. Let us now see what was the result of these explorations in the different coal fields.

Beginning with the Pictou coal field—In 1864 the Albion mines was the only mining establishment in that County, and some idea of the extent of the operations may be gathered from the statement that in the year 1863 the shipments were 198,313 tons. In the following year, 1865, other five mining localities are named in the Com-

missioner's report, at which coal was being mined. The position of these openings in relation to the Albion mines area is indicative of the shrewdness with which the explorations were made. In an east and west direction—the range of the outcrop of the seams from these respective boundaries of the Albion mines area, as well as in the direction of tho outcrop to the south thereof—seams of coal were traced and opened on, and the expansion of the coal field was thus developed to an extent which might have been surmised, but had not received the definiteness thus given to it.

A like result attended the search for coal in Cape Breton. In that coal field the outcrops of the seams are in many cases in the cliffs bordering the sea shore, and they were, to a certain extent, a guide of the probable shape of their deposition ; yet here, as in other localities, it would seem that the expansion of the coal bearing strata has been on a much larger scale than the geological knowledge of the period we are dealing with appears to have suggested.

In Cumberland County the operations were confined to the Joggins shore on an area held by the General Mining Association, and, as at the Albion and Sydney mines, the locality was one of the earliest worked in the Province, though on a small scale, the sales of coal in 1851 being only 2,400 chaldrons, or 3,600 tons. In 1864 the sales were 6,053 tons, and in 1866, 8,478.

We may now consider what the position of the coal mines was, in a general point of view, at the commencement of the period under review.

The report of the Commissioner of Mines for the year 1865 shows that there were in that year six mines, or openings on seams of coal, in Cumberland County, six in Pictou County, and eighteen in Cape Breton.

The output at some of these openings was on a very small scale ; they were in many cases but the exploratory operations, and were not then fitted with the necessary means of production.

The fiscal year at that time terminated on September 30th of each year ; but, as the statement gives a years's production, it will not affect the comparison with subsequent years.

In the year ending September 30, 1865, then, these thirty mines, so-called, gave a production of 712,574 tons of coal. Taking a decennial period for comparison, there were in the year 1875 the same number of mines in operation in each county as in 1865, but the the production was only increased 68,591 tons. In the year 1885, twenty-seven places of production are named : nine in Cumberland, five in Pictou, and thirteen in Cape Breton, and the total output was 1,352,203 tons ; an increase of 571,038 tons, or 73% on the production of 1875. In the next five years the increase at the end of that period, viz., December, 1890, is 631,798 tons, the total production being 1,984,000 tons, and for the year 1891, a production of 2,044,784 tons, while the number of mines in Cumberland County is reduced to three, in Pictou to four, and in Cape Breton to ten.

The fluctuation in the number of the mines is due to various causes. In some cases a misapplication of capital in the equipment of the mines under adverse circumstances, or position of the openings ; in others the too rapid development o

the different seams of coal as regards the requirements of the coal trade; a lack of railway accommodation and convenient and safe shipping places; these led to the abandonment entirely of some of the operations and to a suspension of some others.

It may now be interesting to note the progress and the direction of the expansion of the coal trade over the period under review. A like decennial comparison as in the case of the production will perhaps be sufficient for this purpose.

The classification of the sales of coal is not given in the early reports of the Chief Commissioner of Mines with the same detail as at present, and the comparison for the ten years, 1865-1875, cannot therefore be given with the same minuteness with respect to the localities as in the subsequent periods.

In the year ending September 30, 1865, the sales are summarized under the heads of "Home Consumption," "Neighbouring Colonies," and "Other Countries," and they are in this rotation as follows: "Home Consumption," 59,536 tons; exported to "Neighbouring Colonies," 52,561 tons; and exported to "Other Countries," 338,756 tons. Generalizing in the same way, the respective sales in 1875 stand, as in the above order, 212,630, 381,711, and 112,454 tons. In the year 1885 the sales are 444,652, 769,643, and 40,215 tons; the comparison standing thus:—

	Home Consumption.	Neighbouring Colonies.	Other Countries.
	Tons.	Tons.	Tons.
1865.....	59,536	52,561	338,756
1875.....	212,630	381,711	112,454
1885.....	444,652	769,643	40,215

These are remarkable figures, and are worthy of comment on their indication of the expansion of the trade. In 1865 the general position was this: Both the local or home consumption and the sales to neighbouring colonies were but of small extent—a little over 112,000 tons. The sales to other countries may be said to have consisted almost entirely of those to the United States—the reciprocity treaty being then in force. The entire trade may be said to have been done by shipping. The Intercolonial railway, or as it was then termed, the Nova Scotia railway, had its inland terminus at Truro; and had thus no connection with any mining locality. The provinces were not then federated, and Quebec and Montreal drew their principal supply of coal from the United States.

In 1875 all this was changed. The abrogation of the reciprocity treaty by the United States Government, and the imposition of a prohibitory duty of $1.25 per ton, seriously affected the coal trade with that country. The construction of the Intercolonial railway opened a connection with the growing towns on its route and developed an increasing demand for coal as well as for its own requirements; and a trade by water with the Province of Quebec sprung up and has steadily grown.

It is interesting in this connection to note the direction of the radii of increase, but, for the reason already given, the examination can only be made in the second term of the period, viz.: from 1875 to 1885. Their relationship stands thus:—

Sales to	1875.	1885.	1890.	and in 1891.
	Tons.	Tons.	Tons.	Tons.
Nova Scotia	212,630	444,652	601,946	639,737
Quebec	189,754	493,917	751,931	775,286
New Brunswick	85,968	48,634	224,786	229,315
Newfoundland	62,348	74,322	96,133	108,617
Prince Edward Island	43,641	52,770	55,843	67,473
United States	89,746	34,483	50,754	25,431
Other countries	22,708	5,732	4,718	—

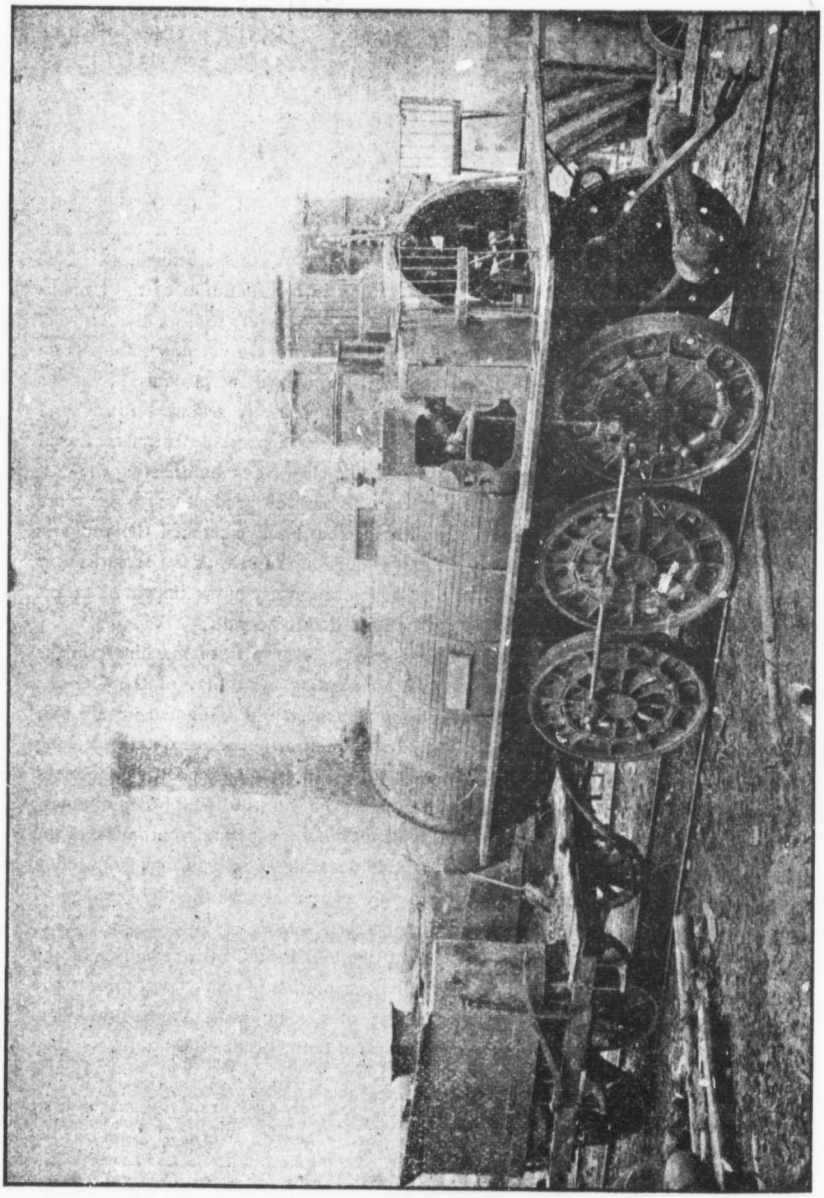
What is to be gathered from these highly interesting figures? The very gratifying fact that the home or local trade, generally the best, has grown largely and is still healthily progressing, as the figures for 1890 and 1891 satisfactorily show. The expression "a gratifying fact" may be fairly used in consideration of the circumstances whence it has its origination. In the first place it augurs well for the future of coal mining in Nova Scotia that the use of coal is displacing the use of wood for fuel; and that railway communication is being extended throughout the province in various localities and affording the means of access to comparatively secluded towns and villages. Then, this expansion of the sources of demand necessitates an increased output or production of coal, one of, and, indeed, the chief elements affecting the cost of production. A good home trade enables the surplus production to be more advantageously placed in other markets. Having thus briefly sketched the progress of the coal trade of Nova Scotia, as regards the production and sales, a few remarks may not be out of place on the adoption that has become necessary of the improved means of output whereby this extension of the demand has had to be met.

The crude application, for such indeed it may be termed, of machinery in the early stages of Nova Scotia coal mining—not excepting even that of the General Mining Association, for their appliances were somewhat old fashioned—could not, under the changing circumstances of the trade in the direction above described, long remain unaltered. The adoption of more powerful hoisting engines, a better equipment of the means of preparing the coal for market and the substitution of steam power in the place of horses in the underground haulage, the drainage and ventilation of the mines—all forced themselves on the managerial consideration and have educed a position in these respects that may be favorably compared with the higher stage of mining appliances in older coal producing localities.

A brief description of the appliances at the Albion and Sydney mines of the General Mining Association will best illustrate the condition in this respect prior to the period under review, and the present means of dealing with the requirements of the trade. It is unnecessary to describe those of both because they were, as they still are, alike in most respects.

The hoisting engines were of the class more generally used for driving machinery; beam, fly-wheel, etc., being the characteristic feature, or with overhead drum or rope roll of Crowther's engine, a form of application which possesses considerable merit inasmuch as the lead of the rope is in a higher position and lessens the bend thereof. The drainage or pumping was effected by lifting pumps worked by the same engine by

lever or V bob application; and the ventilation was accomplished by the aid of a furnace underground.



OLD HACKWORTH LOCOMOTIVE AT ALBION COLLIERY.

On the surface the screens were short and adapted rather to enable any impurity in the coal to be picked out than to abstract the smaller portion of the coal. The

steam was raised in the old-fashioned egg-ended boilers with flash flues, and a considerable number were required with a corresponding large consumption of coal; and the transference of the loaded waggons, into which the coal was put at the screens, was effected by the use of locomotives of what may now be not unfairly termed an antique type. The subjoined illustration is from a photo of one of these engines, and it is especially interesting, not only on account of its peculiar construction, but also from the fact of its builder, Timothy Hackworth, having been one of the competitors in the celebrated trial of locomotive power on the Manchester and Liverpool Railway in 1829, on which occasion his engine—the Sans Pareil—was admitted to possess features of construction of considerable merit.

The locomotive was built by Mr. Hackworth in 1838, and has been in use at the Albion mines up to so late a period as the year 1885.

In addition to the interest in this locomotive arising from the preceding statement is the fact of its being the oldest, but one, in America. It was exhibited at the Chicago exhibition and was then awarded this position as regards seniority. One of its peculiarities deserves special mention. The wheels are of cast iron and composed of two parts, a centre or axle piece and an outer portion to which the tyre is attached; the connection between the two pieces of the wheel being made and held tight by wooden pins, driven into the circular holes formed by the junction of the inner and outer pieces.

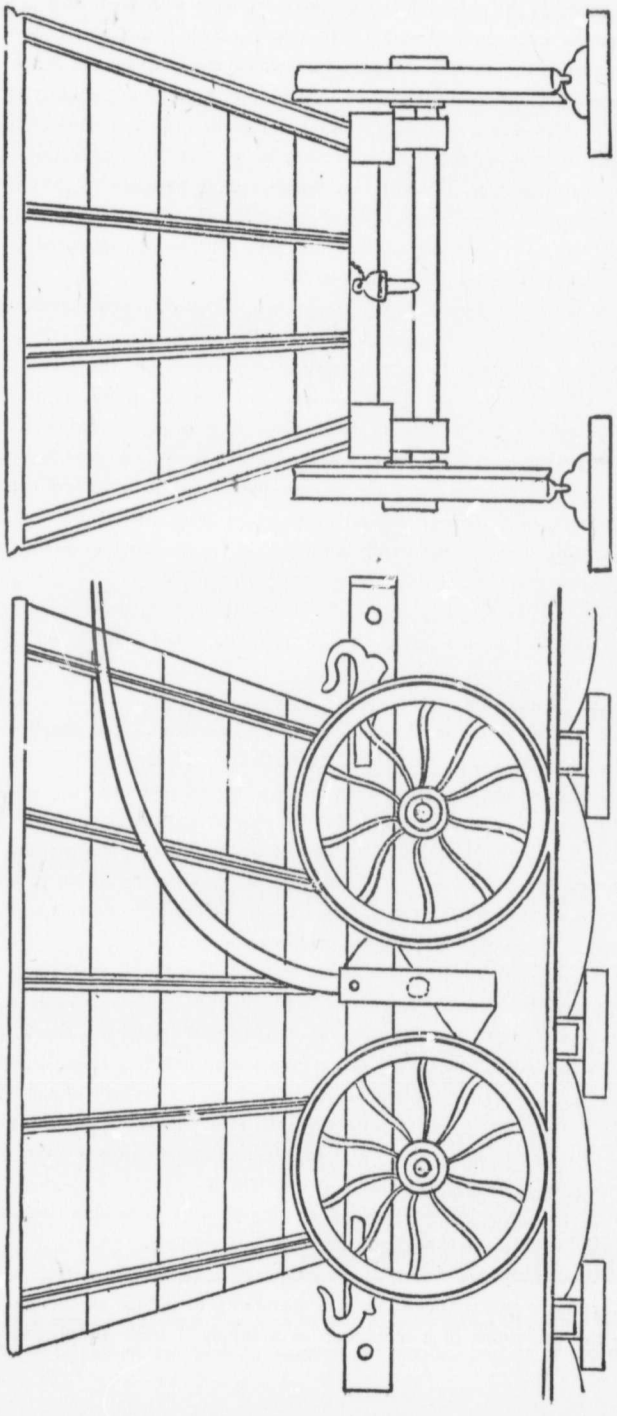
Another old fashioned adoption in use at these mines, is the vehicle of transportation of the coal from the mine to the shipping wharf; this is the Newcastle chaldron waggon, a sketch of which is given.

Its capacity was ordinarily recokned 53 cwt., but by the addition of a narrow board on the top of the sides and ends, it will hold three tons. The shape is assumed to give freedom of discharge, but the mechanical structure cannot be considered of the best form. It, however, as well as the fish-bellied rail of cast iron, the stone blocks on which the metal chairs were placed, and the wooden keys to hold the rail in place, all have had their day; and as in the case of the hoisting, pumping and traction engines, a new type has displaced them, and, as regards the mines to which the preceding description refers, an application of the modern and very superior form of engine power for each of these purposes has been adopted.

One of the usual results of the extension of the workings in the mine has had development in these localities in which a large output of coal has become necessary: that is, the application of steam power for underground haulage. The writer is not aware of any special peculiarity in Nova Scotia mines in this respect, but it is an evidence of the growth of mining appliances and the importance of mining officials of all grades watching keenly the scientific adaptations of older mining localities. The keen competition in the trade demands a managerial watchfulness of every appliance of whatever object it may be in connection with mining.

Having thus sketched the productive progress let us now note that which is of especial importance in connection with the mining operations.

A comparatively small space of workings and a freedom from the coal miner's *bete noir*, explosive gas, is apt in the first operations, to induce an indifference with respect to the provisions of a ventilation or a supply of fresh air necessary for the



NEWCASTLE CHALDRON WAGGON.

miners' health irrespective of that required when gas is exuded in a quantity sufficient to render the working place unsafe.

A consideration of the circumstances in which many of the mines, opened on the outcrop of the seams, were situated in the first openings is to some extent an excuse for this indifference. The absence of gas of any importance—in some cases the entire freedom from it—and the natural tendeney of the air to pass into the workings where the temperature was higher than that outside, together with, in some cases, the means of exit in a favorable position, seemed to beget the idea that little more was required than to allow the air to take its own course through the mine and leave when it liked. An illustration of this idea may be mentioned, which was by no means a single instance of this belief in natural ventilation, so called. The writer on one occasion put some questions to the person who superintended the underground operations relative to the ventilation, and sought to ascertain whether any idea existed with respect to an organized arrangement of the conduction of the air through the working places. After passing through these, and when scarcely a movement of the air was perceptible, the question was put: "Which way does it go now?" "Oh, it goes out!" was the reply. "Where?" was asked, "let us follow it." This was done so far as the assumed route was followed, but not the slightest bend of the flame of the light carried could be observed. "Why there is none here; what has become of it?" was asked. "No, it has gone out," was the inferred reply from the confused statement of opinion on this all-important point.

It will not be a matter of surprise, in view of the preceding, that in many cases the opening of a coal mine was undertaken by persons who had little knowledge of mining beyond the cutting of the coal and such general ideas as an observing and reflective disposition might suggest with respect to the means of ventilation.

As the operations extended and the workings began to approach a gas-yielding position, the adoption of artificial means of ventilation became necessary, and the liability to trouble from its neglect became evident. The position of the Inspector of Mines at the period now referred to was not that of the official of the present day. He was not armed with any power to compel the adoption of what he might consider necessary in order to a safe carrying on of the operations; nor indeed could it be considered an absolute necessity in the early stages of the opening of the mines. Under the circumstances, with respect to freedom from gas and the very limited extent of the operations, it was not considered necessary to impose what might be thought to be a restrictive measure at that time; the Inspector suggested and recommended improvements, and in most cases they were received in a satisfactory manner. The time came, however, when an enforced system was necessary, and it is to the credit of Mr. H. S. Poole, the then inspector, that he was instrumental in inducing the Government to pass a Mines Regulation Act, the terms of which are based on those of the English Act for a like purpose.

The system of mining which has been generally adopted is that known as the bord and pillar. Take as an illustration the starting point of the commencement of a slope driven from the crop. It is driven in the direction of the full dip of the seam far enongh to allow a goodly strip of solid coal between the levels—to be driven on level

course from the slope—and the crop. At regular distances in the level, places are worked to the rise out of which bords are turned and driven, in the level direction, at such distances apart from each other as circumstances may render it expedient to adopt. Communication is made between the bords for ventilation and other purposes, and thus detached blocks of coal are formed which are termed pillars—their object in the first working, as it is called, being indicated by the name.

They are after a time removed and the roof or superincumbent strata falls into the excavated space and forms the goaf. Of course this description applies to seams whose deposition is comparatively flat, as well as to those at various angles of dip. Sundry attempts at long-wall working have been made, and it is not improbable that this system will come into greater use than has hitherto prevailed. There are so many circumstances that have to be taken into account before it can be beneficially adopted, that those who have had practical experience of the system are best able to decide on the fitness of its application.

Since the preceding was written a very great and important change in the future prospects of the coal trade of Nova Scotia has taken place, and although in its immediate effect it is confined to the Cape Breton coal field, it may be reasonably inferred that a general benefit will ensue to the entire coal mining industry of Nova Scotia.

In the early part of the past year (1893), a syndicate of Canadian and American capitalists purchased very extensive coal properties in Cape Breton. The purchase included not only mines in active operation, but also others adjoining coal areas. The following mines have, it is said, passed into the possession of the Dominion Coal Co., viz.: the Gowrie, Caledonia, Glace Bay, International, Bridgeport, Ontario, Reserve, Victoria, Sydney and Gardner mines, the aggregate area of which is about 76 square miles. The conditions under which this large property is held are, speaking generally, a 99 years' lease, a royalty of 12½ cents per ton on all coal sold, and a limitation, as regards an extension of the mining area, to the county of Cape Breton. It is also stipulated that royalty shall be paid yearly on the basis of the output in 1891 of the Cape Breton mines, whether a like quantity of coal as was mined in that year be raised or not. It is gratifying to note that during the nine months ending September 30th, 1893—the fiscal year terminating at that date—there is an increase of production over the like period in 1892 of 227,304 tons; and that in Cape Breton alone the increase in the same time is 111,165 tons.

Of the advantage to be gained by a concentration of managerial control, and the selection of these mining establishments for active operation which are most suitable in nearly all respects there can be no doubt. Moreover, the avoidance to a very large extent of unreasonable competition as regards selling prices, is also a very important gain in an arrangement of this kind.

A powerful corporation such as the Dominion Coal Co., will no doubt be able to effect changes in the general operations that will largely contribute to their success. The application of coal cutting machines and of improved machinery generally will aid in the cost of production, and the work of transportation by sea, which has already been brought into operation, together with the greatly increased facility for unloading the vessel at the port of discharge, cannot fail to materially

assist in the realization of a profitable investment. In view of the probability of coal being placed on the free list in the revised United States tariff a resumption of the trade with the New England and adjoining parts of the United States will doubtless ensue. Virginia coal will continue to be in strong competition with Nova Scotia coal, but under the altered circumstances referred to in connection with the production and handling of Nova Scotia coal, there would seem to be little fear that the latter will gain a very substantial hold of a largely extended market.

In this connection the prospect may be said to be very encouraging to the other mining localities in Nova Scotia, and more especially as regards the Cumberland coal field. This district is so favorably situated, with respect to both railway and water communication, that a considerable extension of its coal production may be anticipated. It is much nearer than Cape Breton, by sea, to Boston and neighboring ports, and must always have the advantage of railway connection for the inland trade, northward.

The extensive operations of the Springhill mines and the recent increased development of the capabilities of the Joggins mines, have established the reputation of the coal produced in these localities; and as there is a large tract of excellent coal still inoperative, it may be fairly assumed that the attention of capitalists will ere long be given to this valuable coal field.

Having taken this brief retrospect of the coal trade of Nova Scotia, embracing the mode of conducting the operations, and the extension of the trade in a general point of view, it may not be out of place to glance prospectively at its future. Not possessing the dangerous gift of prophecy, the writer is sensible he is approaching a delicate part of the subject, and holding in respect as he does the old saying that "discretion is the better part of valor," he will not venture further than to express a firm belief in the future as regards the mineral wealth of this wonderfully enriched province in this respect.

The schemes of speculators may subserve their immediate interest, although lacking the essentials of success; but even they tend to develop resources which might otherwise remain dormant.

It may be more within his ken to strongly urge the adoption of assured improvements in mining machinery and economical and safe appliances; the extension of the scientific knowledge that must be the foundation of that grade aimed at by those workmen who possess the praiseworthy ambition to fill a higher position and to contribute by the application of practical skill, conjointly with that knowledge, to the healthy and wealthy advancement of one of the most important branches of industry.

STELLARTON, N. S. JOHN RUTHERFORD.

GOLD MINING AS AN INDUSTRY IN NOVA SCOTIA.

THE first discovery of gold in Nova Scotia was made at Tangier in 1860; but as an industry gold mining may be said to date from 1862, when most of the older districts were proclaimed by the Government, a "Chief Gold Commissioner" was appointed, and laws were framed governing the acquisition and working of gold-bearing lands.

During that year several quartz-crushing mills (some thirty in number) were built, of types varying from the arrastra, and its offspring, the Chilian mill, to the stamp batteries of that date. No royalties, however, were collected by the Government until the year following.

From the year 1862 dates also the wild excitement consequent upon the inception of mining work in many and distant sections of the Province; an excitement which was in part due to the richness of the gold streaks which were found cropping to the surface; in part due to the schemes of both English and American speculators, and also in part due to the greatly exaggerated idea of the value of the fields thus discovered.

This excitement culminated in 1867 and 1868, when the inevitable leaner or poorer portions of the lodes began to predominate, and when shareholders began to realize that their extravagant expectations of dividends were doomed to disappointment.

The reaction was natural and inevitable when the mines were managed by men not trained to mining, and entirely unfamiliar with the business. Large losses occurred in milling, and the peculations of the workmen at that time were not inconsiderable. Thus, when these lower grade spots were encountered, profits temporarily ceased, there being no development of the veins ahead, and consequently no body of reserves to fall back upon, and but too often no treasury fund to pay for development work. Of course, primarily the cause of all this was the incapacity and inexperience of the then managing men, but another reason contributed largely to the same effect, and that was the idea (promulgated, it is said, by a Mr. Thomas Belt) that no lode would be found to be auriferous below depths varying from 100 to 200 feet. This notion seems to have been borrowed or transplanted from Australia, where the same idea was prevalent from 1865 to 1875. The notion is so absurd as to need no refutation.

There followed a period of general depression, and amongst capitalists, a great distrust of Nova Scotia gold properties. From 1871 to 1882 the production and the number of men employed fell off greatly, in some years to the extent of more than one-half. During this period of ten years the production was maintained chiefly by the discovery of new districts and the finding of one or two rich veins in some of the older districts. Unfortunately, however, experience had not taught wisdom, and these later discoveries were worked in the same systemless manner that the earlier mines had been, and of course with the same results. No mine being opened in a

systematic manner, so soon as its rich quartz was all extracted from the surface workings it was declared "worked out" and was abandoned.

In 1883 and 1884, however, several attempts were made by men of experience and training in other countries to re-open and work some mines which had been idle and filled with water for ten or fifteen years. These attempts were successful, and from the year 1885 dates a new era or epoch in the gold mining industry of Nova Scotia. In that year the annual production exceeded the average annual production by 7,000 ounces, and in 1889 the production was nearly 10,000 ounces in excess of the average annual production to that date. In 1890 the production was about 8,000 ounces in excess of the average, and the number of tons of stone crushed was the highest in the history of the industry.

In the following table is given the production of gold for each year from 1862 to 1892 inclusive, also the number of tons of stone crushed and the average yield per ton for each year:—

Year.	Total Ounces of Gold.			Stone Crushed.	Yield per Ton of 2,000 lbs.		
	Oz.	Dwt.	Grs.	Tons.	Oz.	Dwt.	Grs.
1862	7,275	0	0	6,473	1	2	11
1863	14,001	14	17	17,002	..	16	11
1864	20,022	18	13	21,434	..	18	16
1865	25,454	4	8	24,423	1	0	20
1866	25,204	13	2	32,162	..	15	2
1867	27,314	11	11	31,386	..	17	9
1868	20,541	6	10	32,262	..	12	17
1869	17,868	0	19	35,147	..	10	4
1870	19,866	5	5	30,829	..	12	21
1871	19,227	7	4	30,791	..	12	11
1872	13,094	17	6	17,093	..	15	7
1873	11,852	7	19	17,708	..	13	9
1874	9,140	13	9	13,844	..	13	5
1875	11,208	14	19	14,810	..	15	4
1876	12,038	13	18	15,490	..	15	13
1877	16,882	6	1	17,369	..	19	10
1878	12,577	1	22	17,990	..	13	23
1879	13,801	8	10	15,936	..	17	8
1880	13,234	0	4	14,037	..	18	20
1881	10,756	13	2	15,556	..	12	20
1882	14,107	3	20	22,081	..	12	18
1883	15,446	9	23	25,954	..	10	21
1884	16,059	18	17	25,147	..	12	18
1885	22,203	12	20	28,890	..	15	4
1886	23,362	5	13	29,010	..	16	2
1887	21,211	17	18	22,280	..	19	11
1888	22,407	3	10	36,178	..	15	21
1889	26,155	6	13	39,160	..	17	22
1890	24,358	9	9	42,749	..	11	9
1891	23,391	..	..	36,543	..	13	7
1892	19,998	3	18	32,552	..	12	7
Total	550,064	10	..	762,286	..	14	10

The years since 1885 have been marked by the successful opening of old and previously abandoned mines in nearly all the older districts in the Province; by the introduction of modern mining and milling machinery, and by greatly improved systematic and scientific methods of mining and exploitation. To develop your mine is now considered the "correct" and necessary thing, but the writer well remembers being laughed at in 1884 by one of the "old timers" when he intimated his intention of opening up a mine by sinking, driving levels and opening up for backs and reserves. And last, though by no means least, this period has been marked by the disappearance of distrust amongst capitalists, and by the attraction of foreign capital to our gold fields as being ventures in which money can be profitably invested.

In most cases this investment has proved profitable, but in one or two cases, which derive prominence from their rarity, money has been paid for properties which were valueless from the start, or a management has been appointed whose incompetency doomed the enterprise to failure from the beginning, or the money for development has been squandered in huge surface plants and high salaried officials.

In almost every case where ordinary business prudence has been exercised in the selection of a property, or in the choice of a manager, success has been the result, and not failure.

The gold bearing quartz lodes of Nova Scotia occur in the Cambrian or Cambro-Silurian measures, and belong chiefly to the class of "bedded" lodes, or perhaps are "ore deposits along bedding planes," being conformable throughout with the beds of quartzite and slate with which they are interstratified, but not contemporaneous. As to whether these deposits are segregations from the enclosing silicious rocks, having formed in these openings between successive strata which have accompanied the lines of least resistence in folding, is a question better left to professional geologists. Two other classes of auriferous deposits are more seldom met with: (1) "Fissure" veins, so called, being in some cases true fault fissures subsequently filled in, but more frequently being filled crevices which were occasioned by secondary disturbances; (2) intercalated or "gash" veins of local origin and extent.

By far the greater bulk of the gold produced has hitherto come from the regular or "bedded" lodes. Sometimes these bedded deposits take the form of large interstratified belts of bluish fissile slate in which occur intercalated veins of quartz, thus forming large bodies of low-grade ore upon which, in the opinion of the writer, the future of the industry will largely depend. The districts of Goldenville, Beaver Dam and Mount Uniacke afford the best examples of this class of deposits.

The regular lodes vary, as a rule, from two inches to thirty inches in width, instances occurring where the lodes thin down to a fraction of an inch, or swell to twenty-six feet wide, as notably in the Dufferin lode on Salmon River. The average width of the quartz may be taken as from six to twelve inches.

The richness of these lodes varies as much as their width does, running from $3 to $16 per ton.* The general average of each year is shown in the table on page 227; the average for the twenty-nine years is about $14.50 per ton.

* The year 1891 was remarkable for high yields. South Uniacke returned many lots of 10 ounces to 20 ounces to the ton, and Oldham surpassed its previous records with a yield of 643 ounces from eight tons of quartz.

Upon lodes of such variable width and nature the cost of production will, of course, also vary widely; but as a general guide it may be stated that a lode twelve inches wide, yielding $10 to the ton, will pay well to work.

There are at the present time over thirty-five localities in the Province in which workable deposits of gold have been found, and from three thousand to four thousand persons are dependent to a great extent, or entirely, upon the industry. The area of the gold measures in Nova Scotia has been estimated by various authorities to be from five thousand to seven thousand square miles, or from one-fifth to one-third the area of the Province, yet the actual area from which the gold thus far obtained has been won is less than forty square miles. Taking the total value of the whole gold product to the first of the present year as $10,000,000 in round numbers, it will be seen that each square mile of surface upon which paying gold lodes have been found has yielded over $8,000 per year for each year since discovery.

The mining laws of Nova Scotia are, in the main, good, and are yearly being amended for the better. Their essential features are:—

1. All mines of gold and silver are the property of the Crown, from which titles or leases are obtained for working the same; all gold obtained is subject to a royalty of two per centum, or thirty-eight cents for each ounce of smelted gold.

2. Lands containing gold or silver are laid off in areas measuring 150 feet by 250 feet, the lesser length being along the course of the lodes, and a lease can be obtained for any number of areas in any such one lease up to one hundred.

3. Such a lease runs for forty years, and costs the applicant two dollars for each and every area contained therein. Upon each such lease in each year there must be performed a certain number of days' work, or as an equivalent, the lessee is given the option of paying annually fifty cents for each area therein contained: such labor being performed or such annual payment being made, the lease is non-forfeitable. At any time prior to the expiration of said forty years the holder of the lease can surrender it and obtain a new lease for a second period of forty years. Such a lease is deemed personal property and is transferable.

4. Where such areas are situate upon private lands the law requires that an agreement must be made with the owner of the soil for leave to enter, and if such agreement cannot be made, a method of arbitration is provided whereby damages may be assessed, paid in, and leave to enter given to the owner of the lease.

Examination into the history of any mineral industry will show that such industry has only reached its full development and highest point through a complete knowledge of the methods and processes peculiar to that industry, and applying this standard to the gold mining industry of Nova Scotia, one is warranted in saying that its outlook was never more promising. There is to-day a greater amount of professional knowledge and technical skill engaged in gold mining here than ever before. The lodes are being worked with ability, with that wise economy which avails itself of every known device to save labor and cost, and also with the introduction into every-day matters of true business methods. It must not be forgotten that a gold mine is a manufactory of gold which must be conducted, even to its minutest details, with the most jealous regard to economy in all departments.

The easy means of access to the Province, and consequent convenience of personal examination, the low cost of working, the cheapness of labor, fuel and supplies, the probable permanent nature of the bedded lodes, as inferred from their geological structure, are all good and sufficient reasons why capital should seek investment in the gold mines of this Province.

With experienced and honest management, suitable and economic plant and a working capital sufficient to open and exploit a property which has been carefully examined and selected, such an investment should prove a safe, lucrative and reasonably permanent one.

JOHN E. HARDMAN, S.B.

OLDHAM, N.S.

THE IRON, GYPSUM, AND OTHER MINERAL INDUSTRIES OF NOVA SCOTIA.

IRON MINING.—During the year 1893, this industry has progressed steadily. In Pictou county, the New Glasgow Iron, Coal & Railway Company has completed its establishment and has every thing running smoothly. The steel works take a large proportion of the output of the furnace and the balance is absorbed by the foundries, etc.

The Pictou Charcoal Iron Company which was idle during great part of the summer is preparing to resume work. The Holmes and Bartlett areas have been prospected and the results are confirmatory of the high opinion always expressed of their value. The field holding iron ore in Pictou county is very large and the many excellent unworked deposits are worth attention as investments.

Matters have been running as usual at Londonderry. Explorations at the different mines seem to show that there is no fear of exhaustion of ore The ore at Londonderry is a brown hematite, which is mixed with a red hematite from the Torbrook mine.

The production of pig iron in Nova Scotia up to the end of the third quarter was about 45,000 tons.

Two localities have had attention directed to them this year, Arisaig and Nictaux. At the former place several beds of red hematite of excellent quality were discovered and some cargoes shipped to Ferrona, where it was pronounced well suited for blast furnace purposes. There are numerous beds of ore known in this district, and it is favourably situated for shipment by water.

At Nictaux there are numerous beds of magnetite and red hematite mining well in metallic iron, but in many cases too low for Bessemer purposes. The better ores of this district could be drawn upon for shipment via Annapolis and Lunenburg. The Torbrook mine is in this district, and produces annually about 30,000 tons of excellent red hematite, running about 55 per cent. of iron.

There are valuable deposits of iron ore at Brookfield, Selma, Middle Stewiacke, New Annan and Pugwash. In Guysboro' and Antigonish counties are the extensive red hematites of Arisaig, Doctors Brook, South River Lake, Salmon River Lakes and Guysboro' Harbor.

Passing to Cape Breton, it may be said that signs and traces of iron ore everywhere abound. Little attention has however been paid to them, except in the case of the deposits most striking and most favourably situated. The ores are usually red hematites, and occur at Whyhogomah, East Bay, Gillis Lake, Georges River and Big Pond. As limestone is abundant and excellent coke can be made from the Cape Breton coals, it is hoped that before long iron smelting will be commenced in this island. Many of the ores are adapted for Bessemer purposes, and others for ordinary

foundry work, or for the basic process. If, as is anticipated at the date of writing, the duty be removed from iron ore entering the United States, there should be a good market for the product of many of our iron mines. There is no doubt that in Nova Scotia pig iron should be made equal to that from any iron producing district, and lower in cost. The adaptability of the Ferrona pig for steel making settles the question of quality, the quantity is assured.

Gypsum.—The deposits of gypsum in Nova Scotia are of unusual magnitude and purity. They occur in the immense beds in the lower carboniferous limestones in the form of compact, grannular or crystallised hard and soft gypsum. To the presence of this mineral is due the fertility of many of the best farming districts. It occurs in abundance in the Island of Cape Breton and in Antigonish, Pictou, Hants, Kings, Colchester and Cumberland counties. In Cape Breton it is so abundant as to form an interesting landscape feature in many localities.

It is the basis of quite an extensive quarrying business, and is shipped as rough or lump gypsum to the United States where it is used as a fertilizer, or prepared for stucco or other structural purposes. Windsor, in Hants county, and its outports are the principal seats of the industry. The mineral is quarried, trammed to the vessels, and dispatched to various points along the coast. Grandique, in Richmond county, Baddick and St. Annes, in Victoria county, Port Hood and Mabou, in Inverness county, also ship considerable amounts of very high grade rock.

At Mabou the Mabou Gypsum Company carry on an extensive business in grinding gypsum as the basis of a valuable fertilizer which is becoming locally popular. The gypsum deposits of this province have never been explored in depth. From the association with them of brinesprings salt is probably present in beds below water level. Sulphur, magnesian salts, borates, etc., have also been found in small quantities.

Limestones.—The limestones of Nova Scotia have been drawn upon principally as fluxes for iron smelting, and for lime burning. The Londonderry Iron Company draw their flux from a quarry near Brookfield, yielding a shelly stone of great purity. The Pictou furnaces have large limestone quarries at various points in the East River valley. Local wants are supplied by small kilns in Hants, Colchester, Pictou and other counties. These limestones are all of lower carboniferous age. The Bras D'Or Lime Company have a large deposit of marble, belonging to the Laurentian series, on the Bras D'Or Lake, Cape Breton, which is largely exported as lime and as stone. The marble is well adapted for structural and decorative purposes, but the local demand is of course limited. Hydraulic limestones are reported to exist in several localities, and a good field should be open for the manufacture of cements, as there is a large and growing importation of cements.

Manganese.—The manganese ores of Nova Scotia so far worked are the rich crystalline pyrolusite. This is found in veins and pockets at Tenny Cape and Walton in Hants county, near Truro, and at Lochlomond, in Cape Breton county. The ores, although not available in large amounts, are unusually pure and bring a price per ton sometimes as high as $125. No deposits suitable for ferro-manganese

have yet been found, but as the traces of the ore are wide-spread many new deposits will probably be soon worked.

Building Stones.—The quarries of Nova Scotia are as yet confined to the softer materials, consequently we find the principal quarries along the northern shores of Pictou, Colchester and Cumberland counties, at Pictou, River John, Tatamagouche, Wallace, Pugwash, etc. The stones are gray, red and brown sandstones from the upper carboniferous, and of excellent quality. Limestones are quarried for building purposes in some localities. The granites, syenites, porphyries, felsites, etc., of the Cobequids and many parts of Cape Breton furnish beautiful stone for building and decorative purposes, but the local demand is almost *nil*. The granites of the gold-bearing rocks are quarried to a limited extent at a few places along the cost, as at Halifax, Shelburne, St. Margaret's Bay, etc., to meet the requirements of the builders in Halifax.

In the Rawdon district, in Hants county, traces of antimony ore are abundant, and for several years a small deposit of this mineral was worked with some success. An improvement in the price of the metal would probably stimulate the mining of the ore, which is decidedly auriferous.

Copper.—For a similar reason there is little new to be recorded about copper. The traces of this ore are abundant in Pictou County; at Lochaber, Ohio, Polson's Lake, and other points in Antigonish County; and at several localities in Guysboro' County. It is in Cape Breton, however, that the evidence of the presence of the ores of this metal are most marked. It occurs at many places in the felsites, etc., of Laurentian age, as purple and yellow pyrites. The Eastern Development Company has opened several large veins at Coxheath, near Sydney, and developed a mine carrying many thousands of tons of ore admirably adapted for smelting. Preparations are being made for erecting smelting works, and for building a branch line to the Cape Breton Railway. As soon as this enterprise is fairly under way there is no doubt that copper ores will be searched for vigorously in Cape Breton, and the most accessible will be developed as feeders to the Coxheath furnaces. With abundant fluxes, and cheap fuel close at hand, it is hoped that a short time will see Sydney Harbor an important copper-producing district.

The total value of the mineral production of Nova Scotia for the nine months ended September 30th, 1893, may be estimated at $3,500,000.

From these brief notes, it will be seen that some progress has been made during the past year, and that the promise for next year is quite encouraging. The anticipated reduction of duties by the United States on coal and ores will, if carried out, materially help our exports of coal, iron, copper and other ores, and by this means indirectly increase the cheapness of any manufacture of pig iron or copper that may be carried on here.

HALIFAX, N.S. E. GILPIN, JR.

THE MINERAL RESOURCES OF NEW BRUNSWICK.

NEW BRUNSWICK has, as yet, certainly established no claim to prominence as a mineral producing country. This is the more remarkable as within her borders are not only to be found those geological formations which elsewhere are usually the seat of valuable ore deposits, but these occupy extensive areas, and present features in the way of plication, metamorphism, granitic and igneous intrusions, which would greatly enhance the probability of the occurrence of such deposits. It is, however, to be remembered that very large portions of the Province, and particularly those which might be expected to be metalliferous, are still densely forest-clad, and that while the limits and age of the different rock formations have been worked out and mapped with a considerable degree of accuracy by the officers of the Geological Survey, but little has yet been done in the way of intelligent and systematic prospecting.

It is proposed to give here a brief summary of what is known as to the distribution of useful minerals in New Brunswick, of such attempts as have been made to develop them, and of the directions in which further effort may be reasonably made.

Coal.—In no instance has the contrast between confident and even extravagant expectation and actual results been more forcibly illustrated, so far as New Brunswick is concerned, than in the case of this mineral. First recognized as occurring here at a very early period in the settlement of the Province, the reports of the earliest Geological Survey, under Dr. Gesner, led to the most exaggerated statements as to its amount and value. A very large area, comprising fully one-third of the entire area of the Province, was indeed correctly shown to be occupied by carboniferous strata, but the fact that these lie nearly horizontally, and may therefore possess a great superficies with but little thickness, if recognized, was not taken sufficiently into account, and for many years no attempts were made to ascertain the real depth of the formation, or the number and character of its seams of coal. In the meantime a greater or less amount of coal continued to be obtained from the locality in which it was first discovered near the head of Grand Lake in Queen's County, the seam at this point being about 22 inches in thickness, and spreading horizontally over a considerable area, at a distance of only a few feet from the surface. At the same time a confident expectation was entertained by the residents of that vicinity that other and thicker seams might be found at greater depths below the surface, this belief being largely based on the alleged results of certain borings in which a record was made, at a certain depth, of *eight feet of coal and shale*, the relative amount of each not being stated. In consequence of this belief and prevailing uncertainty, a more careful examination of the region was undertaken in 1872 by the Geological Survey, and supplemented by numerous borings, with the result of showing conclusively that the total thickness of the Grand Lake or Newcastle basin could not exceed six hundred

feet, and that the 22 inch seam already referred to was the only workable one in the region. At the same time the total amount of coal, supposing the seam to be continuous over the entire basin as indicated by various outcrops, would be large, amounting to not less than 154,000,000 tons, while its general proximity to the surface would greatly reduce the cost of its removal.

The Grand Lake product is a bituminous coal, of the coking variety, igniting readily, but requiring frequent stirring for a complete combustion, and yielding a rather large percentage of ash. It is capable of yielding about 8,500 cubic feet of gas per ton, but of inferior quality, and is not used for this purpose. It has been principally employed as a house coal and for manufacturing, and is especially adapted for blacksmiths' use. The annual product amounts to about 6,000 chaldrons, and its market value from $5.00 to $7.00 per chaldron.

As regards other portions of the extensive carboniferous area of the Province, the facts so far ascertained are unfavorable to the belief that important coal deposits are likely to be found. Small seams do indeed occur at many localities, but the general character, relations and fossils of the accompanying strata indicate that these belong generally, if not wholly, to the lower or Mill-stone Grit division of the series, and are too thin to warrant working.

Albertite.—Though at present apparently exhausted, no mineral found in New Brunswick has awakened greater interest or has possessed a higher pecuniary value than this. First discovered in the year 1850, as occurring a few miles distant from the town of Hillsboro, in Albert county, its development was for some time retarded by litigation, arising out of the disputed ownership of the mine—a dispute involving the consideration of the nature of the mineral itself, whether this was coal or asphalt—but immediately after the settlement of this difficulty, its prosecution was so rapid and its value found to be so great, that in the course of the years 1863-65, the annual export amounted to from 18,000 to 20,000 tons, worth at Hillsboro from $20 to $22 per ton. This very high spot value, as compared with ordinary bituminous coal, finds its explanation in the nature of the mineral, and the consequent uses to which it was found to be applicable. Though pronounced, at the time of the litigation referred to, to be a true coal, and since generally so called, the facts as to its mode of occurrence, its physical and chemical characteristics and its associations, all indicate that although not identical with asphalt (differing in solubility and some other respects), it is more nearly related to this than to coal, and is of the nature of an oxygenated hydro-carbon, derived probably originally from veins of fluid petroleum. Its mode of occurrence is quite like that of ordinary veins, being sometimes co-incident with the bedding, but as often oblique or at right angles to the latter, besides varying greatly in thickness in different parts, and sending off innumerable smaller veins or veinlets, sometimes forming a complete network of the latter. The principal deposits, those of the Albert mines, occur in highly bituminous and petrolem-bearing shales, situated at or near the base of the lower carboniferous formation, and these are undoubtedly the original source of the mineral, but smaller veins are occasionally found penetrating both underlying and overlying strata.

The maximum thickness of the vein at Hillsboro, as found near the surface, was 22 feet, and was found to occupy a nearly vertical fissure, which was mined to a depth of over 1,400 feet. The mineral is jet black in color, highly lustrous, breaking much like asphalt, and entirely destitute of stratification, being also destitute of microscopic structure, and of uniform quality throughout. It softens under the influence of heat, and ignites readily, burning with a sooty flame. Subjected to distillation it yields 100 gallons of oil per ton, and of gas about 14,500 cubic feet, the latter being of superior illuminating power. From it a burning oil, known as Albertine, was for a time manufactured, but its principal use was as an enricher in gas manufacture, for which it was highly esteemed.

The decline of the Albert mine was as remarkable as its development. As early as 1870 indications of diminished supply began to be observed, and though every effort was made to ascertain the possible existence of other deposits of similar character in the immediate vicinity, these were found unavailing, and the mine having been practically exhausted, was, in 1879, finally abandoned. In the meantime, however, similar explorations were carried on at more remote points, chiefly by boring, while a careful survey of the area was undertaken by direction of the Dominion Government, and all available informaton bearing upon its further occurrence obtained and published. These surveys resulted in demonstrating the existence of Albertine veins at widely separated points, in connection with the enclosing Albert shales; but these were in all cases very small, and though considerable sums have in some instances been expended in proving them, they have in no instance proved remunerative.

Anthracite.—This mineral is found to a limited extent in the Devonian rocks of St. John County. In many instances it is evidently the result of the alteration, wholly or in part, of the individual trunks of fossil trees (*Dadoxylon*) scattered through the sandstones of the Devonian formation; but in a few cases the vegetable accumulations would seem to have been such as to give rise to actual beds of coal, though of no great thickness. The best known locality for these beds is that of Lepreau Basin, near the western border of St. John County, and not far from the mouth of the Lepreau River. A seam of mixed coal and shale is here met with, having a total thickness of fifteen feet; but the shale is irregularly distributed through the coal, and the latter, where purest, does not exceed a thickness of four feet, while it also contains much earthy matter. Analyses of samples from the outcrop, made by Dr. Harrington, gave 36·88 per cent. of ash. The beds at this locality are all highly disturbed, and the area over which they are distributed but small.

Bituminous Shales.—The bituminous shales or pyroschists, which have been referred to as holding the Mineral Albertite, constitute in themselves also, to some extent, a source of combustible material.

These shales are found at or near the base of the lower carboniferous formation in Kings, Albert and Westmoreland Counties, where they form two or more belts, with a total length of fifty miles, and with a surface breadth rarely exceeding half a mile. They are remarkably fine-grained, dense and tough, varying in color from dark gray to jet black, susceptible of polish though possessing little lustre, and emitting, especially when rubbed, a decidedly bituminous odor. At times they approach the

character of a true cannelite, while at others they are saturated with petroleum. They contain also a considerable amount of calcareous matter, and in certain layers abound in the remains of fossil fishes. In attitude they are usually much disturbed, their inclinations at most points being high or even vertical, with numerous and abrupt plications.

Some twenty years ago an attempt was made to employ these shales in the distillation of oil, and works for the purpose were erected at Caledonia, in Albert County, about three miles distant from the Albert mines; but the product being unable to compete successfully with the enormous yield of natural oils then first brought to notice in Pennsylvania and elsewhere, these were soon abandoned. The yield of the richest bed at this point, known as the Black Band, and having a thickness of about seven feet, was 63 gallons per ton, while of somewhat similar beds on the Memramcook River, in Westmoreland, the yield was 37 gallons per ton. From the latter locality about 2,000 tons were removed in the year 1865, and are said to have sold, in the United States market, at the rate of $6.00 per ton. The gas producing capacity of the Black Band shales was 7,500 cubic feet per ton.

Petroleum.—The Albert shales have been described as not only yielding oil upon distillation, but as containing a certain proportion of such material, naturally produced. The amount of petroleum thus contained varies considerably, and only rarely is in sufficient quantity to become visible. During the course of the operations at the Albert mines, drops of oil were sometimes seen oozing from the walls of the galleries, more particularly from the sandy beds, associated with the shales, and it has also been observed at Upper Hillsboro, Belveau, Memramcook and Dover. At some of these points attempts have been made to collect the oil, but so far the flow of the latter has in each instance proved too slow to allow of profitable collection. In the case of the locality at Dover, the oil in coming to the surface in connection with a spring of water becomes slowly oxydized and hardened into a pasty semi-fluid and elastic mass, resembling pitch, and known as maltha. The oil-bearing strata frequently emit jets of inflammable gas.

Gypsum.—Gypsum is one of the most abundant of the economic minerals of New Brunswick, occurring in beds of great extent and thickness near the top of the lower carboniferous formation, especially in Albert, King's and Victoria Counties.

The deposits which have been longest known and most extensively worked are those near Hillsboro, in Albert County, being the property of the Albert Manufacturing Company. The total area occupied by the plaster beds in this vicinity is not accurately known, but from the position and relation of several quarries it seems certain that this is quite large, while the exposed thickness of the bed varies from seventy to one hundred feet. Of this, however, a portion is anhydrite or hard plaster, the associated gypsum being mostly a pure white or slightly clouded alabaster, which is occasionally translucent, but more generally opaque. Small crystals of selenite occur in some portions of the mass, but are comparatively rare. The rock is distinctly stratified, and usually accompanied by limestones.

For some years the Hillsboro plaster was employed only for exportation in the raw state, but in 1861 works were erected for its calcination, and since that time have been kept pretty steadily in operation, supplying both the burned and unburnt product. The productive capacity of these works (in 1876) was 600 lbs. per day, giving employment to about 100 hands.

Of other localities containing workable beds of gypsum, one occurs upon the North River, a few miles from Petitcodiac Station on the Intercolonial Railway. It is remarkable, in contrast with that of Hillsboro, in being highly crystalline, nearly the whole mass, about 40 rods in breadth, being granular or fibrous, while a vein of coarsely crystallized selenite, from six to eight feet in diameter, is traceable through the mass for a distance of a mile or more. A large quantity of gypsum has been removed from this locality, but has not been subjected to calcination. Large and valuable beds of gypsum also occur upon the Tobique River, in Victoria County, but are less pure than those of Albert County.

Antimony—Ores of this metal have been observed in several localities in New Brunswick, but the only one in which it is known to occur in quantity is that of Prince William, about twenty-four miles from Fredericton, and about four miles distant from the St. John River. It is here found in connection with a series of slates and sandstones believed to be of Cambro-Silurian age, and which, within a mile of the mines, are invaded by a great mass of intruded granite, by which they have been made to assume more or less of a crystalline character. Numerous quartz veins, from one-eighth of an inch to six feet, intersect these slates and sandstones, and most of them carry more or less of the metal. This is chiefly in the form of the sulphuret or *Stibnite*, but in the course of the workings, native antimony was also met with to some extent.

The Prince William locality first came into notice about the year 1862, soon after which several companies were formed for its development. The first of these to undertake active operations was the Lake George Mining Company, by which a considerable quantity of ore was raised, while at the same time somewhat expensive works were erected, embracing crushers, rollers, jiggers, etc., as well as furnaces for desulphurization and smelting. When in full operation, these works yielded fifteen tons of metal every six weeks, the charges (of 500 cwt.) affording from 45 to 55 per cent. of regulus. The product was partly exported in cakes or ingots to the United States, and was partly employed on the ground in the manufacture of Babbit metal by admixture, in the proportion of twenty per cent., with lead, copper and tin. The value of the regulus was quoted on the ground at 12 to 14 cents per pound; that of the Babbit metal, according to quality, from 20 to 50 cents per pound.

The above works were somewhat interruptedly carried on for several years, but it was finally found or thought to be unprofitable to continue the manufacture, and they have since been idle. In the meantime several other companies have purchased leases in the vicinity, and through the rivalry of these, together with frequent changes of ownership and consequent litigation, the development of the whole locality has been greatly retarded. In October, 1883, about eighty men were employed in the Brunswick mines (at wages varying from $1.30 to $1.50 per day), and during five

months of that year about 29 tons of ore were sent off, chiefly to Medford, Mass., where it was largely employed in the vulcanization of rubber. Soon after this, however, the works were suspended and have not since been resumed. It is said that not less than $400,000 have been expended at this locality since the first commencement of mining operations.

Native Antimony.—This mineral accompanies the sulphide of antimony or stibnite at the Prince William or Lake George mines in York County, described above, but is relatively rare. It is found both massive and crystalline, and some of the specimens obtained here are very fine.

In addition to the locality in Prince William, gray antimony ore has been observed at several other points, as in Canterbury, York County, and Springfield, King's County, but only in small quantities.

Manganese.—The principal deposits of manganese are those of Markhamville, King's County, being about twelve miles south of Sussex Station, on the Intercolonial Railway. As is usually the case, they here occur in connection with limestones lying at or near the base of the lower carboniferous formation, though also sparingly found in the underlying Huronian rocks. Their distribution is characterized by great irregularity, the ore being distributed through the limestone chiefly in the form of pockets, some of which are small, but others remarkable for their large size and purity. The ore itself embraces many varieties, though chiefly consisting of pyrolusite, both massive and crystalline, and is not infrequently associated with limonite and barite. The mines at this locality were first opened in 1863, since which time about 20,000 tons of ore have been removed, the annual production varying from 500 to 1,500 tons. The price, delivered at Sussex Station, varies, according to quality, from $15 to $50 per ton.

A second locality in which manganese ores have been found in sufficient quantity to warrant their removal, is that of Shepody Mountain, in Albert County. From this place considerable quantities of ore have been removed at different times, and preparations are now in progress for a renewal of operations in that vicinity.

A deposit of manganese also exists upon the coast, not far from the Quaco Light, but so far as known to the writer, is of but small extent and value.

Molybdenite.—Molybdenum sulphide, or molybdenite, has been observed in New Brunswick at several localities, but chiefly in connection with the gneissic and micaceous strata, which border the great central granitic axis of the Province, or in the granite itself. It has been thus found near St. Stephen in Charlotte County, near the granite belt in York County, and below the Pabneau Falls on the Nepisiquit River in Gloucester County. At the second of these localities it appears to be quite abundant.

Lead and Silver.—Sulphurets of lead, carrying more or less of silver, have been observed at a number of localities in New Brunswick, and in some instances have been mined to a limited extent, but as yet without profitable returns. The most promising of these localities appear to be in Gloucester County, and not far from the line of the Intercolonial Railway. On Rocky Brook, a branch of the Nepisiquit Millstream, in this County, a vein of quartz has been recently observed, which, according to Mr. Edward Jack, is about 20 feet wide and carries from wall to wall more or less galenite

and pyrite, an assay of which, made by Prof. H. O. Hoffman, of the Massachusetts Institute of Technology, yielded, of silver, 11 oz., and of gold 0.24 oz. to the ton of 2,000 lbs. avoirdupois. An analysis of other samples from the same vein, made by Prof. Ricketts, of New York, yielded 14.20 oz. troy, per 2,000 lbs. of the ore as submitted.

Graphite.—Graphite or plumbago, in a finely divided state, is not unfrequently disseminated through the altered rocks of the older formations to which it imparts a dark color and more or less glossy aspect. It is most abundant in connection with the pre-Cambrian rocks which are believed to represent the Laurentian system in St. John County. Much of the limestone of this formation is dark gray or even black from this cause, while in places the graphite assumes the form of veins, pockets, or well defined beds. A band of this character crosses the mouth of the St. John River at the Falls, and is traceable both east and west for several miles. Mining operations for its removal have been frequently undertaken, and at one time (1868-1870), about 6,000 barrels per year, averaging when crushed and screened about 4 cwt. to the barrel, were removed. The beds vary in thickness from one to four feet. The mineral itself is somewhat impure and incapable of being directly applied to the uses for which the finer qualities of graphite are employed, but has been found to answer well for foundry facings, stove polishes and the like, and by appropriate treatment can be rendered available for other purposes as well. Quite recently these mines have been re-opened.

Of other formations containing considerable quantities of graphite may be mentioned the Cambro-Silurian and the Devonian. The slates and schists of the former, as found near St. Stephen and elsewhere in Charlotte County, and in the parish of Canterbury, York County, are often highly plumbaginous, but neither in these nor in the Devonian are there any known deposits of economic value.

Gold.—The amount of positive information regarding the presence of this metal in New Brunswick at present possessed is very small. Reports of its discovery have indeed been frequent, but in the very few instances in which these appear to have emanated from reliable sources the amount of gold observed has been so small as to discourage further efforts to obtain it. While, however, the amount of the metal actually obtained is thus insignificant, it is worth while to notice that rocks very nearly resembling those of the auriferous belt of Nova Scotia, and believed to be of the same age, are largely developed here, and further, that it is in connection with these same rocks that very many of the reported discoveries of gold have been made. The rocks referred to are those composing the slate and quartzite belts which border the great central granite axis of York and Northumberland Counties, and which with the latter traverse the entire breadth of the Province. Much of this region is still densely forest-clad and difficult of access, but should any portion of it prove to be auriferous the discovery would be of inestimable value to the Province, as helping to open up an extensive region otherwise likely to remain permanently in a wilderness condition. Among the points at which gold has been reported in small quantities may be mentioned the vicinity of the St. Croix River, in Charlotte County, the Nashwaak River

above Stanley, in York County, the Muniac River in Carleton County and the Serpentine River in Victoria County.

Copper.—The ores of copper found in New Brunswick include native copper, copper glance, chalcopyrite or copper pyrites, bornite or erubescite, cuprite and malachite.

Native Copper.—Has been reported as occurring sparingly in connection with the triassic traps which form the northern half of the island of Grand Manan. It has also been observed at Clark's Point on the Mascarene shore of Passamaquody Bay. and it is stated to have been found in small quantities along the coast, near the head of the Bay of Fundy. Little that is definite, however, is known of either locality.

Copper Glance—Accompanies the native copper in the traps of Grand Manan, where it has been described by Prof. E. J. Chapman as being sufficiently abundant to give promise of profitable extraction. Little effort, however, has as yet been made in this direction. The same mineral, and in larger quantities, has been found associated with other copper ores at different localities along the coast of Charlotte County, and on the adjacent islands, among which may be mentioned Crow Harbor Island, Simpson's and Adams' Islands. It is, however, a less abundant mineral than the species next described.

Copper Pyrites or Chalcopyrite—Is the most widely distributed as well as the most abundant of the copper ores of New Brunswick, and has been observed at many localities. The larger number of these occur along the southern sea-board, where a band of copper-bearing rocks, believed to be of pre-Cambrian age, is found to extend, with some interruptions, along the greater part of its length. Others are found in the interior, more particularly in connection with the older schistose rocks or the intrusive masses by which these have been invaded. A detailed list of these localities, so far as they occur in the southern part of the Province, will be found in the Report of Progress of the Geological Survey for 1870-71. In the northern part of the Province, the most noticeable localities are Bull's Creek, in the vicinity of Woodstock and the Tattagouche River, near Bathurst. In Westmoreland County, ores consisting in part of this species occur in connection with rocks of the carboniferous age, near the town of Dorchester.

Bornite or Erubescite—Sometimes known as Peacock ore, accompanies the other ores of copper, more particularly about Passamaquody Bay and the head of the Bay of Fundy, sometimes occurring to the exclusion of other varieties. Where abundant it constitutes a very valuable source of the metal, and the ore of some of the most promising mines yet opened has been chiefly of this species.

Nickel.—Considerable deposits of pyrrhotite have for many years been known to occur in different portions of Charlotte County, usually in connection with copper pyrites, but until recently have been considered to be without value. Attention, however, having been re-directed to them in consequence of the developments of Sudbury, in Ontario, these also have been found to be nickeliferous, and attempts are now being made to test their value. The deposits appear to be large, but, as at Sudbury, the nickel contents vary considerably. A fair average sample of 72 lbs., analyzed under

the direction of Dr. Hoffman, of the Dominion Geological Survey, yielded nickel 1·718 per cent., the material very closely resembling, according to Dr. Hoffman, a large proportion of the ore found at Sudbury, Ontario.

Building Stones.—Very extensive and valuable beds of granite, freestone, slate, marble, etc., exist in the Province, and in the case of the first two have been largely quarried for exportation, but have not been thought to require extended notice in the present connection. The same is true of a number of other rocks or minerals, including limestone, clays, infusorial earths, bog ores, salt, etc. These may be made the subject of a sbsequent contribution.

Iron.—All the usual ores of iron occur to some extent in New Brunswick, including hematite, limonite, siderite or spathic iron, and magnetite, though none are now employed as a source of the metal. By far the largest deposits are those of hematite or mixed hematite and limonite, which form extensive beds near Jacksontown, north of Woodstock, in Carleton County. They may be traced across the greater part of this county in parallel and closely associated bands, and vary from 2 or 3 to 15 feet in thickness. Somewhat extensive operations were at one time (1848-1865) carried on near Woodstock, in the smelting of the ore, and a charcoal iron manufactured, which, for certain purposes, was highly esteemed. This was no doubt due to the fact of the ore naturally containing a considerable percentage (1.6 per cent.) of manganese, thereby adding materially to its tensile strength. It was, however, on the other hand, also contaminated with a considerable amount of phosphorus (one analysis yielding 1·298 per cent. of phosphoric acid) and therefore apt to be cold short in a high degree. According to the report of Dr. Ells, of the Geological Survey, there were ten charcoal kilns, with an average capacity of 75 cords of wood, and a production of 2,800 to 3,200 bushels of coal. The quantity of ore used was, on an average, 3 tons to the ton of pig, and the cost at the furnace $1.20 per ton; 126 bushels of charcoal were required per ton, at a cost of 7 cents per bushel, and the cost of pig produced was $20 to $22 per ton.

The history of the Woodstock mines was a somewhat checkered, one but too lengthy to be produced here. It is sufficient to say that after several stoppages and resumption of operations under the different parties, the works were closed down several years ago and have not since been resumed.

Limonite.—In addition to the limonite referred to above, as associated with the hematites of Carleton County, this same mineral is found at various localities in the form of bog-ore. The largest deposits are upon the banks of the St. John River, at Burton, in Sunbury County, and considerable quantities of the ore were removed during the continuance of operations at Woodstock, for admixture with the hematites of that locality.

Spathic iron is only known to occur in the form of small veins in certain portions of Queen's and Charlotte Counties.

At West Beach, twelve miles east of the city of St. John, upon the shore of the Bay of Fundy, are beds consisting of red hematite, mingled with specular iron ore,

while at Black River, two or three miles east of West Beach, are beds of the last named mineral, some of them with a thickness of 20 feet. They have not, however, as yet attracted the favorable notice of such iron experts as have visited them.

Magnetite is not uncommon in the form of scattered grains in the crystalline rocks of the southern counties, and small veins are sometimes met with, but none has as yet been observed sufficiently large to warrant any attempt to remove them.

FREDERICTON, N.B. L. J. BAILEY.

THE ASBESTOS INDUSTRY OF THE PROVINCE OF QUEBEC.

THERE is probably no mining interest in Canada that has shown such marked progress, or that gives such promise of profitable and constant returns, as that of the peculiar mineral asbestos. Although of comparatively recent date, the many uses to which its manufacture has been applied have increased so rapidly that it is with difficulty that the production can keep pace with the present demand, although the output from the Canadian mines has increased one hundredfold in the last ten years. The word is derived from the Greek, and signifies inconsumable or unquenchable, and this property was known to the ancients many hundred years ago. The term asbestos is at the present day applied to minerals which differ very considerably in their mode of occurrence and composition. That which was first known as the asbestos of the ancients is a variety of the hornblende family, and allied to tremolite, actinolite, etc. It consists of fine, somewhat elastic fibres, varying in color from almost pure white to greyish and greenish tints, and in length at times nearly or quite two feet, with a soft silky aspect, looking very much, in fine specimens, like floss silk itself. In the flame of the blow-pipe, the mineral is but little acted upon, although after being exposed for some time to long continued heat the fibre loses tenacity, and becomes brittle, or even sandy to the touch. It can be spun like cotton and woven into cloth, and can be manufactured into a great variety of substances, such as fireproof curtains, wall-paper, suits of clothing, millboard, rope and steam packing of various kinds. It is of special value for the last purpose, owining to its entire non-conductivity of heat and indestructibility when in the case of the severe work it has to stand in connection with marine and other engines it is exposed to long and constant wear; in this respect far exceeding any material heretofore employed for this purpose. It has, however, been found of almost too slight consistency to possess great value for textile purposes by itself, but this has been overcome by combining the spun fibres of the mineral with threads of cotton and flax, and in the museum of the *Canadian Mining Review* at Ottawa, can now be seen a complete suit of clothing, from helmit to shoes, such as is supplied to the firemen of Paris and other cities on the continent, dressed with which a man can walk with almost absolute impunity into the hottest flames. The face in this case is protected by a very fine wire gauze which enables the wearer to see dimly, and to respire as well as the dense atmosphere which he has to penetrate will permit. Besides the true asbestos of commerce, other varieties—known as mountain cork, mountain leather and mountain wood—are met with, but these have not yet been found adapted for use in the arts or manufactures, or at least not to any very great extent.

The mineral which is produced in Canada at the present day under the head of asbestos, is in reality not asbestos proper, but a form of serpentine called chrysotile.

This occurs in veins in certain portions of the great belt of serpentine rocks of the Eastern Townships of Quebec, though in the serpentines of the Laurentian also this mineral is found in small veins, but not as yet in a quantity to be economically available, though subsequent exploration in this direction may disclose workable deposits there as well. In the Laurentian rocks of certain areas, however, the variety actinolite sometimes forms hilly masses of considerable size, which has been mined for several years, and while not as yet found to be suited for the manufacture of millboard and the finer qualitles of steam packing, answers admirably for cements, paints, etc., in the same way as the tremolite of the State of New York ; these deposits of actinolite are therefore highly important, and will without doubt increase rapidly in value.

Although of such recent date, the Eastern Townships asbestos, for the name may as well be retained, has now a world-wide reputation, and is shipped in large quantities to the various countries in Europe, England, Italy, Germany and Belgium, and to the United States also, and of the many firms now engaged in its manufacture, the greater portion draw the bulk of their raw material from a small area in Eastern Quebec ; the Italian mines, from which the asbestos was formerly obtained, being worked with far greater difficulty than those in Canada, while the supply of the mineral is much more uncertain, and although for certain special lines the Italian may be more valuable than the Canadian, the latter has been found of sufficient value for most purposes, so as to almost entirely supplant the former, even with those firms who control the output of the Italian mineral, a fact evidenced by the purchase of a Canadian property by the United Asbestos Company of London, England.

Although asbestos was known at many points in Eastern Quebec more than thirty years ago, and was exhibited at the International Exhibition in London in 1862, no attempt was made to work the mineral for some years. The credit of the discovery of the Thetford area is probably due to a French-Canadian named Fecteau, and following up his discovery certain areas were secured from the Government by private parties. The true value of the mineral was not at first recognized, and in the first year of mining operations (1878) only 50 tons were taken out, for which a ready sale was not at first obtained. The importance of the discovery was, however, speedily ascertained, and new companies obtained tracts of rocky land in the townships of Thetford and Coleraine, and began the work of exploration and mining. Had the Government of Quebec at that day been in possession of the requisite information regarding its mineral lands, it is very probable that the thousands of acres which rapidly changed hands in that section of the Province would have brought in much greater returns than the usual Government rate. Curiously enough, however, though the areas of the serpentine in the townships of Thetford, Coleraine, Ireland and Wolfestown are very extensive, the portions in which the mineral asbestos is found are comparatively rare, and the mining though now prosecuted for nearly a dozen years, is practically confined to two small sections about four miles apart. The first, and as yet the most important of these, is a small mound near the Thetford station on the Quebec Central railway, which rises about 80 to 90 feet above the track ; the other, the bold ridge of brownish-looking rock to the south-east of Black Lake station, which assumes much greater prominence, and probably has an elevation of 650 to 700 feet

above the railway at this point. It must, however, be said in regard to some of the areas of serpentine that lack of sufficient exposures, owing to soil and forest growth, prevents in many cases a careful search, but in other portions where the bare rock is well exposed, as on the great ridge of Ireland and Wolfestown, as well as much of that towards Lake Caribou and Little St. Francis, much of the rock has a hard reddish-brown weathered surface which does not promise favorable results to the prospector, who from a comparatively brief experience can very generally decide, with a fair amount of assurance, whether certain areas are likely to prove of value or not as a source of supply for asbestos.

The status of the asbestos industry may be gathered from the following excerpts from an excellent review by Mr. L. A. Klein, M.E., of the American Asbestos Co. :

Thirteen incorporated companies, with an authorized capital of about three and one-half millions of dollars, of which a portion, however, is employed in the manufacturing business in England, with a number of very prominent private concerns, occupy themselves to-day with the production of asbestos and asbestos mining, and I believe that my estimate that about two and one-quarter millions of dollars are invested in the industry in Canada comes very close to the reality.

While until about four or five years ago, with one single exception, hand work, occasionally connected with horse-power hoisting, was exclusively used in asbestos mining, the leading mines are now equipped with more or less extensive plants of machinery to carry on the work.

This work consists: Firstly—Of the proper mining operations, such as the drilling, blasting, removing of the broken rock out of the pits to the dumps, hand in hand with the gathering up of the asbestos veins and transport of same to the dressing establishment or cobbing sheds.

Secondly.—The dressing or cobbing, that is, the separating of the asbestos fibre from the adhering rock and the grading of the former in different qualities, followed by packing, transport to railroad, loading, shipping and marketing. It may not be unwise to review these different operations briefly, as the circumstances under which asbestos is produced are entirely different from nearly any other mineral or ore, and we find nearly every item which we were used to consider as a thoroughly established rule greatly changed by these circumstances.

This may be more readily understood when we consider the large amount of rock which has to be handled in comparison to the mineral, the peculiar nature of this rock, the character of the mineral, which is a fine silky fibre, and must be carefully protected from injury, and so on.

As to the drilling, hand drilling is still in existence in all the newly opened mines for prospecting work, and even in one or the other of these mines which have already reached considerable prominence. It is further nearly exclusively used for block-holing—only very recently one of the mines has introduced a small sized machine drill for the purpose. It is done by three men with 1 inch octagon steel, and 6 to 7 lb. hammers. The average capacity is about 15 to 16 ft. a day of 10 hours, and the cost about 20c. per foot. The depth of the holes seldom exceeds 4 feet. Some of the mines have lately adopted a plan of block-holing with one man only, using ¾

inch steel, and 3 to 4 lbs. short-handled hammer. The capacity is thus about 8 feet for 10 hours' work and the cost only about 14 cents.

Most of the mines do their drilling, however, with steam or compressed air, 45 feet per day of 10 hours in the former case, and from 50 to 55 feet in the latter being considered a fair day's work. The expense per foot may be set, considering the present prices for fuel, at from 7 to 8 cents per foot, not including wear and tear on machinery and interest for capital involved in the buying of the necessary machinery. There are in all 7 compressors with a total of 44 drill capacity in use, 4 of them being built by the Rand Drill Company, 2 by the Ingersoll Rock Drill Company, and 1 by the Norwalk people. At present also, 44 steam drills are employed in the industry, of which, however, 11 are run by steam. About one-half of all drills used are Rand's Little Giant No. 3, 3 Rand sluggers, 5 Ingersoll 3 inch, and 12 Sergeant's—a couple or so being of other manufacture. The steel in use is 1¼ octagon and costs in the neighborhood of 10c. a pound. As a rule the drills are worked under 80 lbs. pressure to square inch. We may consider an expense of 3½ cents to the ton of broken rock as the average cost at present.

The blasting is now generally done with dualine, which contains about 35 % of nitro-glycerine, of which the cost is at present 20c. per lb., but which may be further reduced through the competition of a newly erected powder factory in the district. With all of the larger mines the blasting is done by electricity ; still there are some which hold to the system of one-hole blasts, claiming that by this system less of the asbestos veins are smashed to small particles and scattered all over the place, therefore involving more expense to pick them up. The expense for explosives is about 3 cents to the ton of rock broken.

The next operation is the removing of the broken rock from the pits to the dumps with which the picking up of all the asbestos veins goes hand in hand. If the bottom of the pits are on the same level with the top of the dumps, the operation is simply to load the refuse rock on trucks, stone-boards, wheelbarrows, etc., and bring it by one or the other of these means to the dumps ; where this is not the case, as in most of the more extensively worked mines, where pits vary in depth from about 30 to 150 feet, the rock has to be hoisted up by means of derricks. At the disposal of this industry there are at this time about 75 derricks, of which, in two cases hand, and in twelve or thirteen cases horse power is applied as a motor, the rest being steam derricks. Hand and horse derricks have of course only a right to exist where there is a comparatively small amount of rock to be handled and where the works are of a more or less exploring character only, and the first expense of putting in steam plant seems inadvisable. The steam derricks are to be distinguished in two classes, boom and cable derricks ; of the latter class only two being so far in use. Boom derricks consist of a mast held by means of guys in a vertical position and turnable on its own axis, while to the foot of the mast a boom or arm is attached and suspended in a more or less horizontal position by means of ropes stretching from end of mast to end of boom. The length of the latter is generally from 40 to 50 feet, and it is clear that the working space of such a boom is limited by its length and can, economically, hardly be extended to more than say 50 feet.

The cable derricks have a mast somewhat similar to the former, but instead of a boom, a cable with a traveller on it, which cable is stretched from top of mast to some point across the pit, allowing by means of the traveller, to hoist from any point of the cable. As this may be stretched to a length of 400 and more feet the enormous advantage over boom derricks seems clear, and I have no doubt that its general introduction is only a question of time. The ropes used for hoisting are ⅝ to ¾ in. crucible cast steel, the guy ropes generally ⅞ of an inch; the cables 1½ or 2 in. steel ropes.

There are eighteen double and twenty-four single drum hoisting and winding engines employed in the industry, or a total of sixty drums. The hoisted refuse rock is placed on lorries and wheeled out on the dumps either by hand, or, where the dumps are somewhat long, by horses, and there discharged. In some of the mines, to a great advantage, self-dumping cars of a very simple construction are being used. While now nearly all the larger mines use iron or steel rails, and lately, specially of the lighter sort (19 lbs. Canadian make, at a price of $40 per ton delivered), there are still some wooden rails with band iron top in use, which, however, with the growth of the industry, will have to be soon abandoned.

The transport of the crude asbestos to the dressing or cobbing sheds is in most cases done by the simple means of a cart and a horse, or where sheds of a more or less provisional character are placed right on the edge of the pits, carried in by hand. Where the cobbing is more concentrated in a special and permanent establishment we find rail connection for the purpose. Two of the mines, however, have a more or less systematic handling of the stuff in this state—consisting of iron self-dumping skips, which are loaded directly from the pits, whence they proceed down an inclined railroad and discharge their loads directly in the cobbing establishment. The skips are brought back by means of winding engines. The cost of the above-described operations, viz: removing of refuse rock, hoisting, picking of asbestos and its transport to sheds, are of course somewhat influenced by the size of the veins in the respective bed rock, the heights and accessibility of the pit's face, length of dumps, and so on, but may with fair certainty be set at 22 cents per ton of rock handled in summer time, which figures unfortunately increase in winter time, in some cases to 35 cents, and may be accepted at 25 cents for all year round work.

The second part of the operation at the asbestos mine is the dressing, or commonly called cobbing, which comprises the freeing of the asbestos veins from rock as much as possible (the crude asbestos in the market still contains from 15% to 40% of rock, some manufacturers even claim more than that while they are negotiating new contracts), and the grading in two, three or four different grades. This operation is as a rule done by hand by little boys, with the aid of a hammer weighing about 1½ lbs. Some of the mines, however, have partially or entirely adopted the aid of machinery, and this more particularly for the transformation of the so-called cobbing stones—*i.e.*, larger pieces of rock with a more or less valuable asbestos vein in it, a vein, however, which did not give away from the blast, and which requires the breaking away of the adhering rock by means of powerful blows (sledge hammers), or compression (crushers). The first to try and solve the problem was the Scottish-Canadian Asbestos

Co. Unfortunately the development of the process sustained a sudden interruption by the closing of the mines in the autumn of 1888. Their plant here consists of a 50 h. p. engine, Blake rock breaker, travelling picking tables, set of Cornish rolls, revolving screens, elevators, shakers, two large blowers, and so forth. Next the American Asbestos Co. started in to experiment in the winter of 1890-91. The main object then was to do away with the somewhat indistinguishable grade of No. 2, an object, however, which was difficult to reach, unless the fibre could have been thoroughly loosened and freed from stone. The plant consisted in the main of a Blake crusher, to which the crude asbestos is conveyed by an inclined railway, and automatically dumped in front of the crusher. The jaws of the crusher are set at 1½ inches, the crushed stuff drops on an inclined sieve in shaking motion, which separates all the loose fibre and the dust from the larger pieces of rock and asbestos veins, the former going directly to the cleaning or grading machines, the latter dropping on a revolving picking table, where the barren rock is removed by hand to one side of the table, the asbestos veins being left on the other. At the end of the table is a receiving chute which is divided into two compartments, and into which rock and asbestos are discharged respectively. The rock drops from the chute directly into a lorry and is wheeled to the dumps, while the asbestos is conveyed either to the dry kilns, as necessary in winter time or rainy weather, or to the fine crushers for further manipulation. These latter are of unique construction, of which the object is to allow particles of a certain size and loosened fibre to go through, without being further crushed, as thereby the asbestos fibre is likely to be injured. This so reduced stuff is brought to the cleaning and grading machines, consisting mainly of a set of inclined sieves in rapid shaking motion in connection with blowers, fans, etc.—remaining unbroken stone and unloosened fibre going back to a set of still finer crushers to undergo the process again. The plant at King Bros' mines in Thetford, which was principally erected for the extraction of asbestos out of large pieces of rock on the old dumps—works which some years ago did not warrant the expenses of block-holing and further handling—consists of a Blake crusher, from which the stuff is conveyed on a set of Cornish rolls with the intention of having all stone reduced to powder—from there to a revolving screen of which the object was to screen out all the dust and leave the clean fibre. This object, however, has not been fully realized, owing to the failure of the rolls to break up the rock entirely, and an additional blowing and screening plant has been put in, which produces now a very clean product of one grade. The Anglo-Canadian also runs a crusher and a set of sieves, and the Johnston's Co. has recently put in a couple of crushers to overwork the old dumps. None of the processes at their present state, however, may as yet be considered complete, the main difficulties being two:—

1. That if asbestos is crushed with a considerable amount of stone together until the latter is reduced to powder—the long and most valuable asbestos fibre is partially destroyed.

2. If the stone is not entirely reduced before grading it is nearly impossible to free the fibre from the stone, and a large amount of waste is the result.

Besides, development of this part of the industry has to stand other very trying circumstances such as the objection a good many of the manufacturers have to buy

prepared fibre; the trouble with the Customs, which is rather inclined to classify the so prepared asbestos as manufactured,and to levy a duty of 25% of value on same, and the considerable amount of low grade waste which is found very hard to dispose of.

The cost of cobbing varies, of course, considerably, according to the quality of material. While some stuff will break from the stone very easily, other requires considerable labor; then larger veins will sooner be gathered than small ones, and while some stuff occasionally may be contracted at $3 per ton, (this, however, never includes the manipulation of cobbing stones), others may cost as high as $15 or $18 and more per ton. I believe that, including the breaking of the cobbing stones, $7 is the average cost of cobbing asbestos for a ton at the leading mines of this section.

The stuff after being graded, which is, however, in the entire discretion of every particular mine, (prices of some number 2 and number 3 last year differed about 400%), is put in bags of 100 lbs. each. Cost of bags is from 5 to 6 cents each, cost of bagging, 20 to 25 cents per ton. The cost for transport to cars and loading on this section varies from 10 to 60 cents a ton, according to distance from railroad.

To complete this part of my statement I may add that in this industry there are 40 boilers with a capacity of 1,825 horse power, and about 2,000 men employed. The value of plant, that is, machinery, buildings for stores and dwelling purposes, water reservoirs, roads, etc., is estimated at $355,000.

It may be interesting to see what the average value per ton for these last ten years has been, as this is the only measure by which we can judge the industry from a national and economic as well as a business point of view. The years 1880, 1881 and 1882 brought to the asbestos miners a price of $65 in average, while the price per ton in 1883 reached $72. From here we find the average price steadily decreasing, owing to the large proportions of No. 3 asbestos, until it reached the lowest point in 1887 of $49. The respective figures are a trifle over $65 for 1884, $58 for 1885, $59.75 for 1886, and, as stated before, $49 for 1887: 1888 yielded an average of $60; 1889, $69.75, until 1890 brought the large figure of over $127 as an average price for every ton of asbestos, if the statements made by the Geological Survey are correct. This enormous increase in prices was due to several circumstances, chiefly relating to the state of the European market, and in particular that at the time a number of speculators had bought and kept from the market considerable amounts of stock in expectation of a further rise, while manufacturers as well were anxious to lay in as much stock as possible, under the impression that the mines had nearly reached the limit of their capacity, and that prices would be driven to the utmost if stocks should run short. The real state of affairs transpired only when speculators tried to unload. Here a reaction set in, and while manufacturers before were very anxious to buy, they then decided to first await a settlement of the affairs. This was promptly answered by slacking down in the working of the mines.

It is clear that a mineral which has been successfully exposed to a heat of 4,500 to 5,000 degrees F., which is a non-conductor of electricity and which may be spun like cotton and flax, has merits in itself and will stand on those merits. The uses of asbestos are steadily increasing. One thing though I would like to mention with

regard to the market for crude asbestos, and that is that it seems as if the American market is now rather inclined to buy as good grades as the European, while *vice versa*, manufacturers on the other side of the water are taking up lower grades along with first qualities—circumstances which never prevailed before. So it seems that those two main buyers of our products—America and Europe—are coming on more even terms than ever before.

There is no doubt that the industry is still on a steady and very healthy increase, and while we may have temporarily to stand a slight reaction, things will brighten up before long. The sound judgment of those men interested in our industry will soon restore the balance between demand and production and will continue to develop the asbestos industry as wonderfully as they have done so far.

CANADIAN PHOSPHATE.

APATITE (phosphate of lime) is found in many parts of the world, but no where equal in richness or purity to that variety discovered more than thirty years ago and worked up to the present day in Canada.

Its chief economic value is for the phosphoric acid contained in it, and its chief use is in the manufacture of superphosphate fertilizers or plant food used in agriculture to restore to exhausted soils those elements of fertility taken from it by continual croppings.

As might be expected from the high character of apatite it is found, says an eminent authority* to be a most excellent material for a conversion into superphosphate. When treated with acid it yields a higher percentage of phosphoric acid, soluble in water, than any other raw phosphatic material with, perhaps, the exception of Curaçoa phosphate. The first quality dissolved in acid of 140 deg. gives a superphosphate with 18 to 20 per cent. of phosphoric acid, equal to 40 to 45 per cent. soluble phosphate of lime. The condition although dampish at first becomes in a month's time very friable, and every thing that could be desired.

In 1890, the world's production of phosphates† aggregated as follows: England (coprolites), 20,000 tons; France (Somme deposits), 170,000 tons; other deposits, 200,000 tons; Belgium (Mons district), 150,000 tons; (Liege district), 50,000 tons; Germany, 30,000 tons; Norway, 10,000 tons; Canada, 26,000 tons; South Carolina (land deposits), 300,000 tons; South Carolina (river deposits), 237,000 tons; Florida, 40,000 tons; West Indian Islands, 50,000 tons; other sources, 20,000 tons; in all about 1,303,000 tons.

The occurrence of workable areas of apatite is known to cover a very extensive area in the Laurentian system of the Provinces of Quebec and Ontario, but those which have been worked to date are confined to Ottawa County, in the Province of Quebec, and in Ontario to the counties of Lanark, Leeds, Frontenac and Renfrew.

The first mining was done in the township of North Burgess, Lanark County, and about the year 1863 extensive investments were made in lands in that township, near the Rideau Canal, as high as $300 per acre having in some cases been paid. In 1872 mining was begun on the Lievres River (Ottawa County, Que.) and gradually increased until 1880, when English and American capitalists embarked in the industry and prosecuted work on a large scale. Several of these companies sustained annual outputs of from three to eight thousand tons each, and the total yearly production rose until 1889 when it realized nearly thirty thousand tons. Transportation from the mines to the river bank was performed by means of tramways, and barges and steamboats were placed upon the Lievres River. A branch line was

* Mr. W. H. Hutchinson in a paper read before the Chemical Manure Manufacturers' Association, London, 1890.

† C. C. Hoyer Miller's Florida, South Carolina, and Canadian Phosphates, 1892.

built by the Canadian Pacific Railway to the landing stage at Buckingham, and by these means cheap transit was afforded to the ship at Montreal.

The large profits, as in most mining industries, have fallen rather to the land speculator than to the mine operator. One block of about 1,600 acres purchased from the Government for less than $5,000 was sold for $16,000, then re-sold in two portions for $160,000, one of which was afterwards "capitalized" in a stock company at $450,000. Another property of 100 acres, bought at sheriff's sale for $15, was finally sold for $125,000 in cash.

In the years 1883, 1884 and 1885 the mines were as a whole doing remarkably well and earning large profits. In 1888 there arose a feeling among British and European chemical manufacturers that the prospects of their future supplies of raw phosphatic material were not so reassuring as could be wished and this feeling found expression in a paper by Mr. Hermann Voss, President of the British Chemical Manure Manufacturers' Association. This paper attracted considerable attention and served to stimulate enquiries and search after phosphate throughout the world. Canada participated strongly in this awakened feeling. Phosphate lands came rapidly into active demand, and passing from hand to hand rushed up in value. New enterprises were started, new mines were opened up and interest was awakened in such kindred Canadian interests, as the mining of pyrites, the local manufacture of sulphuric acid and the utilization of low grade or waste phosphates by transforming them into manufactured fertilizers. The excitement culminated in the formation in London of the General Phosphate Corporation (Ltd.), with an authorized capital of £1,000,000 sterling. Several thousands of acres of virgin lands were acquired by the syndicate at the enormous cost of £98,863. High salaried and inexperienced officials were appointed, and money spent lavishly in London and at the mines. The bubble soon burst. Discoveries in Florida of large areas of high grade phosphates, capable of being easily and cheaply mined, and the heavy shipments which came from that State into the European market resulted in a drop in the price of Canadian mines. The mines were compelled either to suspend operations or materially reduce the number of employees and the shipments in 1891 showed a decrease of 33 per cent. and there has been no material improvement up to the end of last year.

But the enormous increase in the consumption of fertilizers clearly shows a great future for the phosphate mining industry. Agriculture and the demand for phosphoric acid are indissolubly connected and with the gradual though certain exhaustion of the earlier soil there must be an ever increasing demand for phosphoric acid to be replaced therein. It has been stated on good authority that the United States are only using one quarter of the quantity of fertilizers which should be employed to keep pace with the annual extraction of the fertilizing elements from the soil. In Europe the manufacture and use of fertilisers in countries, which a few years ago were content to do without them, is making rapid strides. Canada, an immense wheat growing country, uses only a few hundred tons of fertilizers per annum, but as the farming community becomes more educated they will awaken to the means of wealth that they now heedlessly allow to pass their very doors, going to countries across the sea, while their own impoverished lands are crying out for the sustenance that phosphate would impart.

An important duty rests upon the various agricultural departments of our Governments and our agricultural societies to spread this information. The older portions of Canada, which formerly raised vast quantities of grain, have been allowed literally "to go to grass," but the knowledge of the use of mineral manures rightly applied will redeem the land from barrenness. To secure this result by mining apatite, preparing the phosphate of lime for use, educating the farmer to a sense of its value, and stimulating him to the enterprise of applying the knowledge practically for the benefit of his lands, is a mission that will not only prove profitable as a business undertaking, but is one that would fully satisfy the moral and benevolent feelings of the philanthropist; for, as Dean Swift has said: "That whoever could make two ears of corn or two blades of grass to grow upon a spot of ground where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together."

Cost of Production—(Lievres District).

The cost of production has nearly always been stated in the various reports to be $5 per ton of apatite cobbed and ready for transport, and no doubt this figure was correct some years ago, but we have now to consider what is to-day's cost, and our estimate is as follows:—

Cost of producing one ton of phosphate at pit's mouth, in labour only	$5 00
Cost of explosives employed for same	1 00
Cost of wear and tear to plant	1 00
Cost of hand-picking, cobbing, etc.	1 00
Cost of management and sundry expenses	1 00
Total cost at mines (exclusive of transport)	$9 00

Cost of Transport—(Lievres District).

Cost of transport at mines, and thence to riverside wharves	$1 50
Loading from wharves into scows	10
Towage to Buckingham Village	20
Unloading scows and loading on to railroad cars	15
Railroad freight to Montreal	1 25
Cartage from cars to ship's side	25
Harbour dues	11
Shipping agents' commission	25
Total cost of transport from pit's mouth to f. o. b. Montreal	$3 81

In the Templeton and Gatineau districts the minimum haulage from mines to railroad is ten miles, and in some instances the distance is considerably greater. The average cost of this transport is $2 per ton; railroad freight and Montreal expenses add about $1.75 to this figure.

In the Ontario mining districts, those mines which are near the Rideau Canal, transport their ore to the banks of the canal, whence it is conveyed by water to Montreal.

Other mines load their ore on to the line of railroad between Sharbot Lake and Kingston, in which case the phosphate is put into barges at the latter point.

The average cost of transport from all the mines in this district to Montreal varies between $2.50 and $3 per ton.

Prices Realised for the Various Grades.

Year.	80 per cent.	75 per cent.	70 per cent.	60 per cent.
1882.....	16d. with $\frac{1}{6}$ rise	15d.	14½d.	—
1883.....	15d. "	13d.	12d.	—
1884.....	14d. "	12d.	10d.	9d.
1885.....	14d. "	11½d.	10d.	8d.
1886.....	11d.	10¼d.	9½d.	9d.
1887.....	11¼d.	10d.	8½d.	—
1888.....	11½d.	9½d.	8½d.	—
1889.....	12½d.	11d.	10¼d.	8¾d.
1890.....	16½d.	13d.	12d.	9½d.
1891.....	14d.	10d.	9d.	8d.

THE PEAT RESOURCES OF CANADA.*

THE importance of the peat deposits which are found in all the provinces of Canada has long been recognized, and a number of attempts have been made from time to time to turn them to profitable account. Some of these have for a brief period given fairly satisfactory results, but all have, owing to various causes, gradually been abandoned. At present, however, there appears to be a growing interest in the question of their utilization, and it is to be hoped that, profiting by the mistakes and experience of the pioneers in the industry, some more practical scheme than has yet been in operation may be devised, so that the manufacture of peat, either for fuel or other purposes, may be placed on a paying basis.

This industry has a more important bearing upon the provinces of Ontario and Quebec from the fact that, while the inhabitants are there largely engaged in manufacturing pursuits, requiring a large supply of fuel, it has long been a settled question that in neither of these provinces can any natural supply of coal be expected. In Ontario this lack of coal for fuel may be, to a certain extent, met by the use of crude petroleum, burned in properly constructed grates, and the experiments already instituted in that direction have shown that, for heating and the generation of steam, this substance possesses very many admirable qualities. In Quebec, however, this source of supply appears to be unavailable, in so far at least as the researches in the Gaspe district, which may be regarded as our only oil field, have proceeded. Natural gas has also of late years entered the field as a possible competitor in the matter of fuel, more particularly in the Province of Ontario, though wells giving a limited flow of gas have also been bored at different points in the St. Lawrence area east and north of Montreal. This source of supply, however, does not meet the requirements of the case as satisfactorily as could be desired, owing doubtless, to some extent, to uncertainty as to its persistence, and also to the fact that it is unsuited to many purposes requiring a solid fuel. The fact also that the nearest available sources of coal fuel in eastern Canada are situated in the province of Nova Scotia, the nearest of which to Montreal is about 700 miles by rail, while the great areas of Pictou and Cape Breton are still more remote, must also be carefully considered in the discussion of such a question as the utilization of the peat deposits near home. True it is that the adjacent Province of New Brunswick has a very considerable development of carboniferous rocks, and has by many been quoted as a great source of future supply of mineral fuel, but from a careful examination of that country it must be remarked that, owing to the thinness of the coal seams, rarely more than twenty to twenty-two inches, and the peculiar soft character of the coal itself, which unfits it for much handling, as also for other purposes for which a good coal is now required, the utilization of this fuel must be, to a

* Dr. R. W. Ells, in a paper read before the General Mining Association of the Province of Quebec.

very large extent, merely local. The other remaining sources of supply, more especially for Quebec, are the distant coal-fields of the British Islands, from which, during a certain portion of the year, fuel can be cheaply brought owing to a low rate of freight, so cheaply, in fact, as to enter into close competition with the output from the Nova Scotia mines, and the deposits in the United States from which, owing also to canal transportation, fuel can be laid down at certain seasons almost as cheaply as from the lower provinces. Still the fact remains that freight rates both from Nova Scotia and the Pennsylvania fields are such as to make the price of coal fuel laid down in the manufacturing centres of Ontario and Quebec so high that many of the manufacturing and mining industries in both these provinces are seriously hampered, through the comparatively great expense involved in keeping our steam engines in motion and thus providing the power necessary to successfully carry on the various industries of our country.

The value of the peat deposits must, however, after all be merely a comparative one. If it can be conclusively shown that a peat fuel can be produced, possessing let us say 100 heat units, and placed in the markets of Ontario and Quebec, at a well defined less rate as regards cost than 100 heat units of coal, taking the coals of Nova Scotia and the United States in ordinary use as the standard, then it should be apparent that our peat deposits are worthy of attention as an important factor among the manufacturing or power producing agents of the day. To do this, however, we must first of all consider several important features of the industry, such as the extent of our peat deposits, the calorific power of well prepared peat fuel, the convenience of handling and the advantages it possesses, if any, over the fuel at present at our disposal, and in addition to this, and this is an especially important item, the cost of its manufacture.

In the utilization of our peat bogs we must, however, bear in mind that other phases of the question possess an equal if not even a greater present economical value than that of fuel supply. For instance the question of the application of peat to sanitary purposes, for the reception and economic disposition of the sewage of large cities, is now being considered, and it has been ascertained that in this respect no substance yet known possesses presumably greater or more valuable properties in this direction than this product of our peat bogs, so long regarded as practically valueless. Further, a comparatively new industry has come into prominence in connection with these deposits which, in Holland and elsewhere, has already reached a very extensive development and which should also furnish handsome returns on capital in this country, viz., the manufacture of moss litter. This material from its great absorbent properties has been found to surpass all other substances in the utilization of stable waste, and for promoting the comfort and cleanliness, and as a consequence the health of all animals there kept. So great is the importance of this industry, as yet comparatively unknown in Canada, that the peat bogs of Holland are now supplying the markets of London and New York, with this prepared moss litter, with a demand apparently unlimited, and at a price quoted on the London market of 21 to 26 shillings per ton, according to quality, which should furnish highly remunerative results.

In the report of the Geological Survey for 1845-46, attention was directed to the Canadian peat deposits, and the results of the investigations on this subject by Dr. T. Sterry Hunt appeared in subsequent reports. Among those of special importance are the articles in the Geology of Canada, 1863, and in the report for 1866. In the pamphlet prepared for the Paris Exhibition, 1878, further information is presented more particularly relating to the trials carried on in the deposits east of St. John's in connection with the Hodge process, and at St. Hubert, in the County of Chambly, at which places very extensive bogs of excellent peat occur. A very considerable quantity of prepared fuel was produced at these places aggregating in 1875 about 13,000 tons in all, a small amount being used for domestic purposes, while the rest was employed by the Grand Trunk Railway for their locomotives. Changes in the company, however, appear to have acted unfavorably as to the continuance of the industry, and since that date but little has been done in this direction. A small quantity of prepared peat was also produced about the same time near Port Lewis, in the county of Huntingdon, as well as Newtonville, near Port Hope, in Ontario. Unfortunately no reliable data as to the cost of manufacture at either of these places is at hand and no subsequent developments appear to have taken place.

While the peat deposits of Quebec and Ontario are known to be very extensive, the greater part of these have hitherto remained untried. Among the best known may be mentioned, for the latter province, the vicinity of the Caledonia Springs, lying to the south of the Ottawa, in the township of Caledonia, county of Prescott, and certain bogs in Clarence, Cumberland and Gloucester, the latter in the county of Carleton. Of these, that nearest the city of Ottawa is the Mer Bleue, which consists of two long peat bogs, separated by a narrow ridge of higher land, and comprising in the two an area of not far from 5,000 acres. These bogs were sounded by Mr. James Richardson of the Geological Survey staff, and shown to have a depth in places of over twenty feet, the depth elsewhere ranging from five to fifteen feet. Three other large areas from 1,000 to 3,000 acres each occur in the townships of Nepean and Goulbourn adjoining, while other large extensive bogs occur in Huntley and Westmeath. The depth of peat in these deposits varies from eight to over fifteen feet. Farther south in the direction of Cornwall, bogs are found in Osnabruck, Roxburgh and Finch, so that it is easily seen that a practically inexhaustible supply of the material is found in the almost immediate vicinity of the Ottawa and St. Lawrence, and in close proximity to the leading manufacturing centres. In Western Ontario also peat bogs have been noted at many points, as in the vicinity of the Welland Canal and in the western portion near to the St. Clair river, as also in the counties of Simcoe and York, and further west along the line of the Canadian Pacific Railway, north of Lake Superior, as well as on the route between that lake and Winnipeg.

Inexhaustible supplies also occur in the province of Quebec, as in Chambly, at St. Hubert and at St. Brigide, where works have already been in operation. On the line of railway from Arthabaska to the St. Lawrence opposite Three Rivers, at Bulstrode, a bog was also formerly worked quite extensively, the product as air-dried peat being used on the Grand Trunk Railway; as also in Huntingdon, Champlain, Lacolle and Sherrington, where a very thick deposit of excellent peat, particularly

worthy of notice is found. East of Valleyfield also and in St. Dominique extensive deposits occur; while on the north side of the St. Lawrence they are known in the townships of Grenville, Harrington, Mille Isles, Ste. Anne des Plaines, St. Sulpice and Lavaltrie and St. Maurice. On the lower St. Lawrence peat bogs are found at River Ouelle, Isle Verte, Daquam, Matane, Macnider and other places, while on the Island of Anticosti an immense bog, estimated at nearly 200 square miles in extent, occurs on the south-west coast, much of which is reported of excellent quality. From this brief enumeration of a few localities it is easily seen that the quantity of this possible fuel in Quebec is also practically unlimited.

Peat bogs are all of vegetable growth, consisting for the most part of the decomposed remains of plants and mosses, chiefly of genus sphagnum, which has apparently filled up the basins of shallow lakes. The deposits are frequently underlaid by a layer of shell marl which has constituted the original lake bottom. The peat bog frequently carries a growth of trees, often of tamarac in a stunted condition, with various heath plants, which by the decay, both of their stems and rootlets, help to swell the organic constituents of the mass. In bogs of a good depth the peat may be divided into three classes, viz.: 1st, the green living and growing surface; 2nd, the intermediate zone in which the remains of the plants are well defined but which is capable of furnishing an excellent peat for certain purposes; and 3rd, the lower and fully digested material in which traces of organic life are comparatively rare, which possesses a rich black or brown color, and when free from inorganic matter, furnishes a fuel of very excellent quality.

In character also peat varies somewhat owing to the nature of the underlying rocks. Thus moss peats are generally found on rocks nearly free from lime, such as granite or other strata rich in silica, while grassy or sedgy peats are more frequently found in calcareous districts. In the ripest or most thoroughly formed peat, the decomposition of the organic matter has reached the last stage, the result being a dark brown or black homogeneous mass, comparatively heavy and dense. This when moist is firm, sticky and coherent like clay, and can be readily cut and molded into any shape, and when dried it is hard, having on cut or burnished surfaces a lustre like pitch or wax.

In the development or exploitation of a peat bog for fuel it would apparently be advisable to make use of that portion which is freest from organic remains, viz., that which occupies the lowest of the third strata just described; and in former experiments upon the large scale possibly it may be found that some of the lack of success that attended these efforts was due to the attempt to utilize an inferior portion rather than that most adapted to the manufacture of the best fuel. In this connection it may be wise to consider also that it is possible now to utilize the upper portion of the bog as well, in the preparation of moss litter, though the only attempt to develop this industry in Canada, in so far as I can yet learn, has been in New Brunswick where several years ago operations were begun in a peat bog about fifteen miles west of St. John at a place named Musquash. The promoters were capitalists from St. John and and St. Stephen, and a brief account of their operations will be found in the Report of the Geological Survey, 1889, by Mr. R. Chalmers. No attempt, however, was

made to manufacture a peat fuel, owing presumably to the facilities possessed at this place for obtaining bituminous coal from the adjoining province of Nova Scotia, the freight from the mines of Cumberland county being low. In order to show, however, what has been attempted in this direction, I may here quote a brief extract from the report just referred to. "This article, 'moss litter,' is used in stables as bedding for horses, &c., and owners of studs in the principal cities of the United States have been looking for a material of this kind prepared from the peat found on this side of the Atlantic. What they require is a spongy moss, sufficiently light and porous to be an absorbent of the liquids and ammonia which collect in stables, and which after being used in this way would make a fertilizer for gardens, &c. The company having purchased the bog at Musquash, are now, 1889, erecting buildings and machinery there for the preparation of the article. They claim that the peat moss found in this locality is well adapted for the purpose intended, and is equally as good as the German moss litter. Hitherto a large amount of time and capital has been spent by the Musquash Company in experimenting and testing the suitability of the different grades of peat or boggy material obtained here for the purpose in view, and it has been found that what is about half decayed, *i.e.*, sufficiently so to be changed to a dark color and rendered somewhat short in fibre, without being absolutely brittle, is the best. This kind of peat is not found in the upper or living part, nor yet in the deep lying rotted material, but between the two, where the mosses and rootlets are partially decomposed and the fibres strong enough to prevent the moss from crumbling to pieces. The chief process in its preparation is that of depriving it of the water, of which it contains from ninety to ninety-five per cent. This is effected partially in the pit by a machine called a plunger. The moss is then brought by tramways into a building and subjected to great pressure by passing between heavy rollers, and lastly the residual moisture is driven off by evaporation, after which it is packed into bales for shipment."

In the attempt to manufacture a compressed peat fuel of the first quality, or even an air-dried product, it would be well therefore to take into careful consideration the question of utilizing this second layer of say four to five feet for the purpose just mentioned, since it should, if properly managed, prove equally a source of profit as the manufacture of the fuel itself, while it would enable that portion of the bog best adapted for the latter purpose to be more readily and economically operated.

Two great drawbacks have hitherto been found in regard to the utilization of peat as fuel on the commercial scale, viz., the great bulk of the air-dried variety, thus requiring great storage facilities, as well as excessive charges for transport, and the contained water, which even in the best air-dried qualities reaches 18 to 20 per cent. This contained water must of course greatly diminish the calorific value of the fuel, and it is the practical impossibility hitherto experienced of reducing this great percentage of contained moisture without very considerable expense which has apparently interfered with the successful economic use of the fuel in our manufactories and locomotives.

In the matter of contained water, air-dried peat ranks on a par with the best qualittes of air-dried wood, but possesses this disadvantage that it contains a much

greater quantity of ash, and also has a marked tendency to absorb moisture very readily, a feature which is apparently very difficult to guard against. In the digging of peat also the precaution must be taken to provide against the action of frost, since if frozen when wet its coherence is destroyed and it becomes useless as an air-dried fuel.

It is evident from a careful examination of the tests already made of our peat deposits that the objections already mentioned in regard to the air-dried product practically exclude it from the market unless for purely local consumption, and the future course of the industry as regards the fuel question must be along the lines of producing cheaply a thoroughly good compressed article. In this connection, due care must first of all, as already suggested, be paid to the quality of the raw material used. For while simple pressure will reduce the peat to a much smaller bulk, if the material is originally light and porous, its natural elasticity will tend when once the pressure is removed to restore it to its normal condition. It has also been found in practice hitherto that the machines employed, no doubt in some cases owing to a lack of proper preparation of the raw material before subjecting it to pressure, have failed to thoroughly remove the contained water; and this has, of necessity, if a drier article is required, to be removed by the application of artificial heat at a considerably increased expense, the value of the fuel, however, being found to be greatly increased by this action. As regards the specific gravity of the peat, this depends principally upon its position in the bog, and when uncompressed ranges from ·25 to ·9. In deep bogs a first-class peat of dark blackish or brown color and earthy fractures should have a gravity of ·6 to ·65. In carbon contents it ranges from 51 to 63 per cent. of the organic matter, its quality being due to its density or ripeness. From a series of experiments conducted by Prof. Johnson of the Yale Scientific School, it would appear that, weight for weight, the ordinary qualities of peat do not differ very greatly from wood for heating purposes. By compression its heating properties are very greatly increased. Thus it was found that while a good peat, cut and air-dried, had a heating value of ·80, the same condensed and containing ten per cent. of water had a value of 1·48, and made into peat charcoal the value was increased to 1·73. Compared with wood this value was found to range from ·50 for poplar to 1·18 for summer oak.

As compared with anthracite, tests made by the Water Department of Brooklyn showed the ratio of peat to this fuel to be as 1 to 2.25 and a table prepared by Prof. Johnson, showing the comparative composition and quality of peat, wood and anthracite is as follows:—

	Carbon.	hyd.	ox. and nit.	Ash.	water.	sp. grav.
Wood	39·6	4·8	34·8	0·8	20	·75
C. peat	47·2	4·9	22·9	5·	20	1·20
Anth	91·3	2·9	2·8	3.	..	1·40

In regard to the manufacture of coke from peat it may be remarked that its value has been known for many years. Thus we learn that as early as 1727, patents were issued in England for the smelting and manufacture of iron with this fuel, and in the Hartz Mountains in Germany peat charcoal was used in metallurgical operations on a large scale in 1735, but it is stated that owing to the novelty of the process and

through the agency of certain parties interested in keeping up the price of wood, its use for this purpose was discouraged. Coke from simply air-dried peat is found to be too tender for use in the blast furnace, but that from compressed peat was regarded as equally as good for this purpose as that from bituminous coal. The results of its use in the blast furnace are, however, conflicting as regards its value, this probably being due to differences in the quality of the coke employed. From a number of trials made in Ireland it was held that the quality of peat coke was equal to that of gas coke while the total cost according to Vignole's process, in which the carbonization was effected by means of super-heated steam, was about two dollars per ton (8s. 4d.) with the price of raw peat at four shillings. Three tons of peat were required to produce a ton of coke, the expense being reduced very considerably by the utilization of the by-products such as wax, tar, gas, &c.

Probably in no country has the manufacture of peat fuel and charcoal been more successfully carried on than in France, and in the earlier reports of the Survey some valuable information will be found as the result of the study of the industry by Dr. T. Sterry Hunt at the time of the French Exhibition in 1855. Among those who have brought the industry to a high pitch of perfection may be mentioned Mons. Brughat, and a few extracts from a short pamphlet of his on the subject may here be given. After summing up the various analyses of peat, wood, coal and charcoal, he says that the calorific power of compressed peat made according to the Challeton process as compared with wood and coal is in round numbers as follows:

Compressed peat varying in value according to the process of manufacture and containing 10 per cent. of water from	3 to 4
Peat charcoal	4½ to 5
Bituminous coal, 1st quality	5
Anthracite	9½
Wood charcoal	1 to 1¾
Wood, containing 25 per cent. water	¾ to 1½

In a special report by Dr. Harrington, of McGill University, prepared in 1871 in connection with the peat deposits of the province of Prince Edward Island, assays were made of several of the peat fuels obtained from the bogs east of Montreal. The samples are from air dried material and the assays are as follows:

	1.	2.	Mean.
Water (hygroscopic)	14·82	15·10	14·96
Volatile combustion matter	60·10	59·10	59·60
Fixed carbon	21·80	22·60	22·20
Ash	3·28	3·20	3·24

The assay of two samples of Hodges peat which had been kept within doors for a year, are also given:

	1.	2.	Mean.
Hygroscopic water	16·80	17·32	17·06
Volatile combustible matter	49·80	51·65	50·725
Fixed carbon	26·90	25·00	25·95
Ash	6·50	6·03	6·265

The excellent paper published in the last bulletin of the Bureau of Mines, Ontario, on the subject of peat, sums up very concisely most of the information contained in the several government reports, and supplements this with a great variety of facts bearing on the general aspect of the question. From this it would appear that the recent tests with locomotives and stationary boilers did not give as good results as were anticipated, the percentage of power to cost being very considerably lower than that obtained either from the use of bituminous coal or even wood. This would show conclusively that the quality of the peat employed was far from being what it should be, judging from the table just quoted, containing presumably an excess of water, greater even than should be found in a first-class air-dried peat. It is possible this peat was obtained from a portion of the bog not representing the best quality for fuel purposes, and thus shows that in the attempt to place this industry on a thoroughly satisfactory commercial basis great care must be exercised in the selection of the raw material. As Brughat has pointed out, repeated failures attended the attempts in this direction for some years both in France and Germany, and it has been only by a careful study of all the conditions, not only as regards the material itself, but the methods of manufacture, that he claims the success which he has at last attained. It seems difficult to realize the statements as to profit given by Brughat as stated in the bulletin of the Ontario Bureau. But the claim he makes that one and a quarter tons of peat coal are equal to one ton of the best English coal for ordinary steam purposes, and for domestic purposes under proper conditions of draft and grate construction the value is equal, ton for ton, deserves a careful consideration of the methods of which these results may be attained by those interested in the furtherance of this industry in Canada. With coal selling at $3.50 to $6.00 per ton, which may fairly be assumed as the price paid in Quebec and Ontario, in many places for even Nova Scotia slack for boiler use, a compressed peat capable of production at half that price should be profitably employed; while for house purposes where the price of bituminous coal reaches $6.00 and even in Ottawa $8.00 per ton, a first-class peat fuel should return very handsome profit to the producer. The great extent and apparent value of the peat deposits in this country, together with the very large present consumption of coal and the high price paid therefor, would appear to warrant the most exhaustive series of experiments tending to solve satisfactorily the economic aspect of the question, not only in the production of a fuel suitable in every way for domestic and steam purposes, but for employment also in the reduction of our iron ores and for the various other processes concerned in the manufacture of iron and steel. In this connection we may be permitted to quote again from Brughat: "It is especially in metallurgical works that very great economy results from the use of our peat. We will attain among other things, both iron and steel of better quality, than by the employment of either coal or coke, since the coke therefrom contains no sulphur, as has been proved by numerous analyses made with the greatest care, as well as by practical tests conducted in our forges and blast furnaces, both in the manufacture of cast steel, cutlery, gun-barrels and in the casting of the metals.

In a paper by Prof. N. S. Shaler, of Harvard University, published in the tenth annual report of the U. S. Geological Survey, on certain fresh water deposits in that

country, he remarks on the subject of peat, that in his opinion a good peat fuel could be produced at a cost of $5 per ton with labor at $1.50 per day. In view of the results already obtained in the attempts to work the Canadian deposits, as quoted in the Geology of Canada, 1863, and from statements as to cost contained in Brughat's treatise, as well as those obtained from the manufacturers of this fuel in Ireland, we believe that a first-class article can be produced in Canada at a much less figure than he states. Such results, however, will only be obtained by avoiding the mistakes already so often made by those who have attempted the solution of the problem, and by paying due attention to the quality of material employed as well as to the use of the best appliances for compressing and preparing for market a fuel containing the least possible percentage of ash and moisture, and in this way obtaining results which will place this material more nearly on a par as regards effectiveness with our best quality of bituminous coals.

THE MANUFACTURE OF CHARCOAL IRON FROM THE BOG AND LAKE ORES OF THREE RIVERS DISTRICT, QUE.*

THE manufacture of iron in the Province of Quebec forms one of the most interesting subjects in the development of this great industry in America. Its inception followed in a comparatively short period after the first steps taken in the New England colonies, where iron was first practically made in America. In both cases the ores smelted were what are known as "Bog Ores." In Quebec the first work was done in and about the town of Three Rivers, and many interesting facts in connection with the development of this industry may be found in the paper read by Mr. James Herbert Bartlett, of Montreal, before the Halifax meeting of this institution in September, 1885. In that paper Mr. Bartlett traces the industry from its first inception, about the year 1730, down to the condition in which it existed in the year 1883, at which time he stated that the St. Maurice forge was the oldest active furnace on the American continent.

A few years after the date last named we became interested in the matter, and have carried it forward on more extended lines than any before attempted, and in fact, so far as the manufacture of this particular class of iron is concerned, it has never been attempted on the scale we are carrying on to-day. This work is not being done on any experimental basis, but so far has been carried on for the purpose of supplying a grade of iron hitherto procurable only at heavy cost for Canadian consumption from the United States, and for English consumption from Sweden.

The manufacture of iron in the Province of Quebec was carried on entirely with the use of bog ores during the period referred to, and as the supply of iron made elsewhere from cheaper ores became more abundant, the local manufacture, handicapped by want of shipping facilities, lack of capital, and other such natural causes, was gradually discontinued. It was always admitted that, for certain purposes, the iron made in the province possessed special value, but the demand for articles requiring such special virtue was limited, and cheaper grades were gradually substituted for general manufactures. That iron of the special character of that produced from the bog ores of the Three Rivers district has been for many years the most important industry in Sweden will be referred to later on in this paper, as well as the present condition of its manufacture in that country, and the uses to which it is now put.

Some years ago we were induced to test in our car wheel shops at Lachine and St. Thomas a quantity of Canadian charcoal iron, the product of an antiquated stone stack situated at the Village of Fermont, or Radnor Forges, Champlain, Co., Que.

* P. H. Griffin, M.E., Buffalo, N.Y., in a paper read before the General Mining Association of the Province of Quebec.

We were told that this iron was made from the bog and lake ores of the Three Rivers district, celebrated in the history of the Canadian iron industry, and that it had peculiar merits in strengthening mixtures for car wheels and other high class castings. At that time we were using largely "Selected Salisbury" charcoal iron imported at a very heavy cost from the United States. We were loath to make any change in our mixtures, as we had always pursued a most conservative course in the selection of iron entering into our wheels, but we finally decided to enter upon a series of careful tests with Three Rivers Canadian iron. Several trials proved that it was an iron of undoubted merit, which if the ore and wood supplies of the district warranted, could and should be made in large quantities, not alone to the advantage of the parties operating the furnace, but to the advantage of every consumer of iron in Canada, who required castings of special quality, and certainly to the great gain of the Province and Dominion. We found the iron soft, tough, clean, close in texture and with fine chilling qualities—the higher grades admirably adapted for the manufacture of chilled car wheels, the medium grades for castings requiring great strength, and the lower grades soft enough for the finest stove work. To give some idea of the strength shown in these tests we give the following result of the experiments made by us:

The basis of strength on first-class standard car wheel mixtures is expressed by a strength of 50,000 pounds per square inch transverse strength, obtained from a bar 1 in. x 12 in., the bar being supported on the extreme ends. By the introduction of 33 per cent. of Three Rivers iron into our car wheel mixtures we were able to secure a strength of 65,000 pounds without difficulty. It was impossible, however, to procure any considerable or regular supply of the iron, the capacity of the old Radnor furnace being very limited and its operation irregular.

We did not at that time think it possible to develop the manufacture of any great quantity of this special kind of iron, but we did prove to our satisfaction that with proper arrangements a considerable quantity, say 3,000 to 5,000 tons, could be made annually with every prospect of the maintenance of this product for many years. Later work has developed the fact that this particular iron can be made in very much larger quantities, probably sufficient for any demand that may be made. The reason for this will be stated later on.

The results obtained from the tests referred to led us to make a thorough investigation with the view of determining the extent of the ore deposits in the Three Rivers district and vicinity, and to find just what dependence could be placed upon the supply of wood for charcoal making. Our investigations were satisfactory and in August, 1889, we purchased the entire plant and lands of the company, including the village of Fermont or Radnor Forges, situated on the Piles Branch of the C. P. Railway, a village of some sixty houses, with a population of 350 to 400 people. Also a large property at the town of Grandes Piles, with lands on both sides of the St. Maurice River, giving us control of the great water power of the Grandes Piles Falls. The river St. Maurice is navigable for 70 miles above Grandes Piles and drains, with its branches, a country some 200,000 square miles in extent. This country is covered with the finest timber for charcoal making and with invaluable beds of bog and natural ores. The purchase also included the Three Rivers property, situated on the

St. Lawrence River, with railroad and dockage facilities for further use. There was also purchased and leased a large amount of other property for use in obtaining ores and other supplies needed for the manufacture of pig iron. Further investigations were at once commenced in all directions looking to the supply of ore to be depended on, and about one year was spent in prosecuting this work, making leases and purchases to secure the company in its further development. During this period the old furnace was operated with such improvements as could be made upon it, for the purpose of ascertaining further by our own practice the possibilities of the metal. In the meantime arrangements for the supply of ore, wood, etc., had progressed to the point where the erection of a new furnace of large capacity and improved construction could be undertaken. In the early stages of the work it was contemplated to erect a furnace of twenty to twenty-five tons capacity at Radnor Forges for the manufacture of this special iron, but the possible supply of raw materials proved to be so much larger than anticipated that a larger furnace was decided upon and plans were made for one of fifty tons daily capacity. A furnace giving this product is quite a small affair compared with the great furnaces running on common ores throughout the world, but it must be remembered that the product is of a special class and the development of this particular work was of necessity conducted on moderate lines. As it is, a charcoal furnace running exclusively on bog ores, turning out fifty tons of metal per day, is a thing not to be found elsewhere in the world, if my information on these matters is correct. As the operation of such a furnace on the particular kind of ores referred to is a novelty in this day, some facts on the bog ore supply, its distribution and characteristics, and of the metal made from them, will be of interest.

The manufacture of iron from bog ores has been carried on for many years in Sweden, and the bar iron and steel made from it needs no comment or praise. Swedish bar iron is known the world over, and Swedish pig is the base of nearly all the famous steels made in England and other countries. Of late years there has been a falling off in the quality of Swedish pig iron, and English makers have in vain offered higher prices for the quality furnished them in the past. Reliable authorities ascribe this deterioration to the gradual increase in the output of Swedish furnaces and to the introduction of common ores to that end. Whether it is possible to found in Canada an industry that will produce an iron equal to the old Swedish or not, is the question, and to this end a consideration of the supply of bog ores is most pertinent.

Bog ores are found in nearly all countries to a greater or less extent, but they do not often exist in quantities sufficient to make their working practical. As stated, Swedish iron has been largely made from them for many years, and no doubt the supply of the ores is growing limited in that country. The quantity of bog ores that exists in Quebec is difficult to even estimate in definite figures, but the investigations that have been made, and the very thorough ones that we have made, prove its existence in immense quantities. All the bog ore used up to our working was taken from the country immediately surrounding the furnaces, not exceeding a range of three or four miles from the centre. We find it entirely practical to take ore over a range of 75 to 100 miles by establishing depots for the accumulation of stocks from which shipments can be made by rail in large quantities. In treating of the source,

growth and quantity of bog ore in Quebec, it may be stated that the district to which allusion will be made may roughly be said to extend from north-east of Quebec city to west of Ottawa, a distance of, say, 400 miles long by 40 to 60 miles deep. Bog ore is found throughout a much wider range, however. The northern limit of this district is the Laurentide Range of Mountains and throughout the whole of this range iron ore seems to exist, generally mixed with the rock. The general formation is such that it favours strongly the natural forces, weather, etc., in the disintegration, and its reduction by attrition. The latter produces principally the fine iron sand found not only along all the river beds, but in fact throughout the entire formation, sand or clay, of this and adjacent counties, and to this attrition, without doubt, the immense iron sand deposits of Moisic and the lower St. Lawrence are due. Owing to the presence of titanium—which exists more or less in all Laurentian ore—this sand seems to possess the peculiar properties of resisting disintegration by natural decay, to which many other ores seem liable.

Beds of hard bog ore are invariably found on hill sides above which swamps or marshes exist, or in runs which lead to or from these swamps. Wherever this dark swamp water flows sluggishly, and especially where swamp moss, fine grass or decayed vegetable matter exist, it will gradually form a light film with every appearance of that caused by oil, which gradually becomes thicker and sinks to the bottom in some quiet spot, where it takes a yellowish and slightly rusty tinge. This gradually becomes thicker and when the water becomes lower in the dry summer, it becomes denser and either sinks lower to the firmer beds below the grass, or hardens and becomes bog ore. One very large deposit of soft ore entirely filled a deep ravine leading from an immense swamp. This ravine was being drained with a view of removing the ore for the purpose of making metallic paint. To all appearance it was simply a dark muck, yet contained, on analysis, over 45 per cent. of oxide of iron. As the top became dry it caked and broke, the top crust showing as clean, black and brilliant a fracture as the best hard bog ore. This proved that the immense beds of soft ore—known as paint ore—known to exist throughout our swamps, will, when drained from natural or artificial causes, become more perfect, dry up and take the form of hard bog ore beds. Some beds of ore when the top layer was removed exposed a heavy bed of soft ore beneath. This being uncovered and exposed to the action of the sun for a time, became so hard that it required heavy work with a pick to remove it. In the particular section alluded to many of the beds are soft on top and harder beneath, while others are the reverse. This would plainly indicate that in midsummer the water in the small swamps becomes so low that the ore deposited in the runways and during high water when the swamps overflow, had time to harden. In some, apparently, the water when again high, overflowed the old hard ore and deposited more ore on top, while in others it found an exit by oozing out beneath and leaving an additional deposit below.

The ground on which bog ore will, or has been formed, applies to all marshes or hill sides between the mountain ranges and the river bottoms into which the water finally finds its way. Much land on which ore is found is to-day comparatively dry, owing to the drainage from natural or artificial causes, but a glance at the surrounding

country will show that the ground was once the natural drain-way from higher lands. On such places as these the ore is, as a rule, massive and hard.

Once the foundation of a bed of ore is formed it seems to grow more rapidly, partly on account of its affinity or power to draw the iron which is suspended in the water, as the following facts will demonstrate: The Riviere au Lard, from which we obtain our water power, as well as water supply for the furnace and boiler, etc., takes its rise in "Grand Ple," or swamp, in the midst of which lies Lac-a-la-Tortue. This water at all times is dark and rusty in appearance, and a piece of iron suspended or allowed to lie in its bottom rapidly becomes heavily beaded to the depth of an eighth to a quarter of an inch with a pure deposit of iron ore, and this without corroding the iron. Besides, ore in this shape will accumulate in all our supply pipes in the same manner, no matter how rapid the flow may be. This at one time was a source of considerable anxiety, but latterly, as the pipes remained longer in use these deposits appear to attain a certain size and lose their power af adhesion. A blow from the hammer will liberate the heavier and clean the pipe fairly well.

Bog ore, as a rule, is found twelve to eighteen inches below the surface. This season, however, we are getting ore at a depth of four feet six inches, and the beds are heavy, thick and good, apparently of old formation. Ore has been raised from a depth of eight feet in the "Grand Ple," and although this immense swamp is covered with a soft floating top, pockets of small-sized ore have been found in paying quantities on the surface. These facts, taken in connection with the deposits of so-called paint ore in this swamp, lead us to anticipate the discovery of large bodies of ore in the bottom, explorations for which we intend to push during the coming season. Excavations to a depth of ten, twelve and fifteen feet, in the immediate vicinity of Radnor, show as strong indications of ore at the bottom as at the top.

Lac-a-la-Tortue.—This lies in the midst of an immense swamp, "Grand Ple," and to all appearance it is the last remnant of what, at one time, was a lake which included the entire surrounding swamp, but one that probably never was very deep, hence its gradual filling in from natural causes. Besides three small creeks flowing into the lake—very sluggishly—the water oozes in around the shores, which are very low. Soft ore is found throughout the surrounding swamp, and in small patches, on the top of what is apparently a floating beaver meadow, hard ore is found. The entire bottom of the lake is more or less covered with ore, but the richest deposits are immediately opposite, or around the mouths of the various creeks. In some places the ore is too heavy for our dredge, and an attack on it generally results in broken chains and buckets. The only portion of the lake thoroughly worked in the past is Sturgeon Bay; the principal creek enters this bay. Its extent at the widest part is not over 2,000 yards and length about the same. For thirty years this bay has been worked by hand and dredge, and time and again declared to be worked out, and yet this season our dredge hardly stirred from it, and made more than double the ore ever taken from it in one season before. This will give some idea of the extreme richness and rapidity with which the ore is formed. It is hardly possible to estimate the quantity of the ore in existence in this lake, as without doubt it is growing steadily. An experiment was made one year ago (1891) in Sturgeon Bay. The dredge frame

was allowed to work down into the mud for six feet, at which depth it brought up a fine dark ore, not quite so hard as the surface, and instead of flat cakes, like the latter, it was small and round, similar to gravel in size, but softer, yet as fine an ore in every way. In other parts of the lake heavy massive veins exist several feet thick, and this is the portion which our dredge finds it difficult to work. If necessary, dynamite will have to be used on this. Explorations for ore on the lake shore, where nothing but sand showed on the surface, found heavy cakes over twelve inches below, showing that the old deposits may gradually become covered up.

When we commenced operations we found that, according to popular opinion, even among our best ore makers, and those most conversant with the business generally, there was not sufficient bog ore left in the country to give a constant supply to a ten-ton furnace. Investigations developed the facts that although furnaces have been working at Batiscan, St. Maurice and L'Islet, etc., since 1737, they had drawn almost their entire supply of ore from the immediate vicinity. In no case did they entirely exhaust the supply, except perhaps, within a radius of three or four miles around the furnaces. Then again these furnaces have not been worked steadily, hence steady employment—which alone would produce good explorers—could not be given, and, as a matter of fact, when we commenced operations we did not find a single employee or man who could give us good and reliable information regarding ore fields generally, their knowledge being only of local beds and very surperficial.

With regard to the wood supply, there is not a location on the American continent that offers greater inducements for the establishment of a large charcoal iron industry than does the district of Three Rivers. It is not too much to say that the supply of wood suitable for charcoal making, to be had from the banks of the river St. Maurice, and the great territory to the north of that river, is sufficient to keep a number of charcoal iron furnaces in fuel for the next century to come. The St. Maurice is one of the largest tributaries of the St. Lawrence. It takes its rise on the borders of the north-west territories, about 250 miles north-west of the city of Three Rivers, and from thence flows through the Province of Quebec to the outlet at Three Rivers. The tributaries of the St. Maurice are: Shawinigan, Mattawan, Rat, Vermillion, Flammond, Ribbon and Manoran from the west, and Mekinak, Petite and Grand Bostonnais, Croche, Grande Pierriche, Tranche and Wyndigo from the east, these rivers culminating in the St. Maurice, the whole draining a territory of upwards of 200,000 square miles. Throughout its entire course the banks of the St. Maurice river are quite thickly wooded with just the class of wood necessary for the manufacture of the highest class of charcoal, viz., hard maple, beach, birch, ironwood and oak. This wood has been left practically untouched by the lumbermen, who have been working on the river for years past, taking out pine and spruce. The vast territory stretching to the north of the St. Maurice river offers a wide field for the future supplying of wood, and the same applies to the country which the Lower Laurentian railway traverses. Other new railway lines are projected from Three Rivers north, which will open up a new district rich in timber. Altogether the fuel supply is beyond question.

Apart from the bog and lake ore deposits, vast mines of Titanic iron are known to exist in the Laurentian range of mountains, and elsewhere in the province of Quebec. At the present time these ores cannot be utilized profitably, but science will sooner or later find a means of using these titaniferous ores, not alone with economy, but also I believe with great benefit to the metal into which they enter. The able article of Mr. Auguste J. Rossi, of New York city, read at this meeting, deals exhaustively with the possibilities for the use of these ores, and the data secured by his investigations should prove of the greatest interest to metallurgists.

THE HISTORY OF MINING IN ONTARIO.

IT is often said that Canada is a country without a history, and there is a sense in which this is true, however unpleasant it may be to have it told us by old-world men whose countries have a history which dates back to the early centuries of the Christian era. The sister Province of Quebec can boast of annals which begin to show the rime of age, for some of them relate to stirring events which happened three and a half centuries ago. From the days of Cartier down to the days of Montcalm there is an historic period of great interest, as the pages of Parkman show. But the Province of Ontario is for the most part less than half a century out of the woods, and its first century under constitutional government is just completed. Almost the only struggle in which its people have engaged has been with Nature, but in subduing the forest and changing the face of the country into cultivated fields they have shown the possession of British pluck and intelligence no less unmistakably than their forefathers have done in enterprises which have won renown in every region of the earth. The first object of the immigrant was to provide shelter, food and clothing for himself and his family, and to this end he began with felling the forest, burning off the timber and getting the land into shape to grow cereals, roots and grasses. The country was well suited to this kind of enterprise, and the settler has been well repaid for his labors. It did not for many years occur to him that any other industry was deserving of his attention, with perhaps the single exception of utilizing the trees upon his land by converting them into lumber or timber instead of burning them into ashes. But as the area of farm land was extended, as settlement increased and population grew, the need of diversity in pursuits became more obvious; one new industry after another was started, and the foundations of towns and cities were laid; exchange of production was seen to be profitable, and with success in trade the natural resources of the country made fresh calls upon intelligence and capital. Its stores of minerals were hardly suspected in the early days, chiefly no doubt because the parts first settled were almost exclusively agricultural, and partly also because the settlers had little or no knowledge of minerals. The frontier counties of the River St. Lawrence, as well as those bordering upon Lake Ontario and Lake Erie, showed barely a sign of any kind of ore, except at two or three places a deposit of bog iron. It was not until settlement began to push backward towards the head waters of the rivers, and lumbermen began to explore for timber in the highlands forming the divide between Georgian Bay and the St. Lawrence and Ottawa rivers, that a knowledge was gained of the existence of minerals in the Province. The labors of Logan, begun fifty years ago, put the seal of scientific certainty upon the discoveries of the pioneers, and from his time down to the present the staff of the Geological Survey has been employed in an examination of our rock formations and in mapping them out for the guidance of all whose employment it is to search for the precious and economic minerals. The

work of the Survey is far from being completed in Ontario, and many years must elapse before we can hope to have all the data gathered for a complete geological map. The area to be gone over is very extensive, little of it has been thoroughly surveyed, and there are vast tracts in which no work whatever has been done. Even in Great Britain, where eminent geologists have been employed for many years, important discoveries of coal, iron and other minerals are being made at frequent intervals in regions where their presence was never indicated by surface appearance; and if surprises of this sort occur in so small a region comparatively as Great Britain, we should not be impatient at the slow progress that is being made in Ontario. It should teach us rather the need of increased effort to cover the field; and in view of the territory which the Geological Survey is expected to cover, embracing the whole of the Dominion, it would appear to be the plain duty of the Government of Ontario to provide for a careful and detailed survey of the Province upon its own account. There is little doubt that such enterprise would be speedily rewarded by new discoveries, for it is abundantly evident that in even the best settled portions there may be treasures of great value hidden away in the bowels of the earth. Less than five years ago no one believed that there was in Ontario any clay for the making of pressed brick, and the brick used in one of the largest bank buildings in the city of Toronto was imported from Ohio at a cost of $40 per thousand. It is now well known that clay of the most suitable quality exists in great abundance within the bounds of that city, as well as in the counties around the head of Lake Ontario, and pressed brick from works near Beamsville and Port Credit on the Grand Trunk Railway, and near Milton and Campbellville on the Canadian Pacific Railway, as well as in the city of Toronto, is manufactured at a cost of only $18 per thousand. Pressed brick of excellent quality has also begun to be made at Brockville, where it is used in the construction of the new buildings for the insane. Another product, which until very recently was unknown in Ontario, is natural gas; but during recent years borings in the counties of Essex and Welland have demonstrated that we can procure it at a moderate depth over areas many square miles in extent. These instances illustrate what has been said of the possibilities of discovery when the geological features of the Province have been accurately determined in detail, and it needs no argument to show the economic value of a proper survey in relation to the mining industry. That industry, it must be confessed, has as little claim to a place in the history of Ontario as the Province itself has to rank in history—using that term in its largest sense. It is almost certain that the first attempt at mining was made in the year 1800, when a small blast furnace was erected at the falls of the Gananoque river, in the county of Leeds, for the smelting of iron ore. The supply of ore for this furnace was procured at a point several miles distant, in the township of Bastard; but the quantity was not sufficient to give a profitable result, and being of inferior quality also, the enterprise ended in a complete failure. A second attempt was made at the close of the American war, on the shore of Lake Erie, in the county of Norfolk—commenced by John Mason in 1815 and brought into successful operation by Joseph Van Norman in 1822. A furnace of small capacity was erected for the smelting of bog iron ore, found in the locality, with charcoal fuel.

The ore was drawn to the furnace in waggons, and for eight or nine months in the year the daily make of pig-iron was about three tons, three tons of ore producing one ton of pig. There was, however, no sale for the pig-iron, and the whole of it was made into various kinds of castings, shipped to ports along the lake shore, and taken into the interior by teams to find a retail market. In this way the new settler was furnished with sugar kettles and potash kettles, the latter for manufacturing the only article of export for which payment was received in cash. There was little money in the country in those days, and business was carried on by the exchange of commodities. Mr. Van Norman himself is authority for the statement that what the farmers of the district had to sell was brought to the furnace and exchanged for the wares or due bills of the firm ; and when the home market became overstocked the wares were shipped to Buffalo and other United States ports. But owing to the scarcity of ore and fuel the furnace was blown out in 1847, after having been in successful operation for a quarter of a century. A subsequent venture to make charcoal pig-iron with bog iron ore was undertaken by Mr. Van Norman at a point farther west in the same county, in the township of Houghton, under a contract to supply pig-iron for the manufacture of car-wheels ; but it was found to lack the chilling quality of good malleable iron, and the furnace was abandoned. Another furnace for smelting bog ores was erected in the county of Essex, at the hamlet of Olinda, about the year 1831, and operations were conducted upon a small scale for six or seven years. Several efforts have been made to smelt the magnetic ores of the Hastings district, and all have failed. The first of these was begun at Marmora about 1823, where the ore smelted was obtained from the Blairton mine. This furnace was worked at intervals by various owners, among whom was Mr. Van Norman, but the business was never successfully managed, and all the capital invested in it was sunk. Another blast-furnace was erected about the year 1836 at Madoc, to smelt ore taken from the Seymour mine. It was attended by misfortune from the beginning, due in part to the want of means and in part to a lack of knowledge of the proper way to treat hard magnetic ores. For some time a supply of charcoal could not be procured, and cordwood was used in the furnace instead. The daily product of pig-iron was, however, too small for profit with this kind of fuel, and smelting with charcoal was again resumed ; but the death of one of the partners, caused by an explosion in the mine, resulted in the closing of the works. With small capital and primitive methods it was not to be expected that smelting works could be managed successfully in regions so inaccessible as Marmora and Madoc were in those days, and added to these drawbacks was the lack of experience and skill in preparing magnetic ores for the furnace. With modern plant, a practical and scientific knowledge of how to treat and mix these ores, adequate capital, facilities for cheap transportation and good business management, there is no reason to doubt that the manufacture of charcoal iron might be as successfully carried on in Ontario as in New York, Michigan or Wisconsin. Nor is it unlikely that coke iron might also be produced economically, for coke could doubtless be laid down as cheaply on Lake Ontario ports as in Chicago or Duluth, especially if it could be imported free from a Custom's duty. A number of mines have been opened and worked to some extent along the lines of the Central Ontario and

the Kingston and Pembroke railways, as well as at several points in the County of Lanark ; and there is reason to believe that were furnaces erected at convenient points in those districts, or a good market obtained elsewhere, they might prove to be valuable properties. Recent discoveries of large ore bodies have also been made in the country west of Port Arthur, and the ore is reported to be not only very rich but of excellent quality. Last year a company was organized to erect blast furnaces and steel works in Hamilton, for which the city has voted a liberal bonus, and this enterprise bids fair to get into active operation during 1894. Lead mines have been worked in the counties of Frontenac and Lanark and in the district of Algoma, and smelting furnaces have been erected at Kingston and near Carleton Place ; but none of these undertakings have been fortunate, and mines and furnaces have been closed down. Better success has attended phosphate mining in the eastern parts of the Province, chiefly in Lanark and Frontenac. Numerous veins or segregations have been worked in these counties during the past twenty years, and phosphate of rich quality has been raised and shipped to the English markets. Discoveries of an important character have recently been made in the counties of Renfrew and Haliburton, and although phosphate has nowhere in Ontario been found in such large bodies as in Quebec it is certain that we posses it in paying quantities throughout an extensive region. Works for the manufacture of superphosphate have been established at Brockville and Smith's Falls, and at the latter town the annual product of fertilizers is now about 500 tons. Several mica mines have been worked during recent years in the eastern part of the Province, the most important of which are in Lanark and Frontenac. The Smith & Lacey mine near Sydenham, in the latter county, has yielded a large quantity of amber-colored mica, some crystals of which are seven feet square. The market for it is found in Canada, the United States, England, France and Germany. Actinolite has been found in large quantities in the county of Hastings, and a mill for preparing it has been in operation at Bridgewater for a number of years. In its crushed state, when mixed with coal tar and pitch, or asphalt, it makes an excellent material for fire-proof roofing. In New York State, near Gouverneur, a profitable industry has grown up during the past ten years in grinding talc for various uses in the arts, but chiefly as a filling and weighting for paper pulp. The total quantity now used for this purpose by paper mills in the United States is said to be about 50,000 tons. Large veins of this material have been discovered recently in Hastings and Addington, as well as fibrous actinolite of superior quality, and from the developments made in 1893 it is probable that a rival of the Gouverneur industry will soon be established in the Hastings district. For many purposes the fibrous actinolite is a much more valuable article than the talc of the Gouverneur mines. The gypsum quarries of the Grand River valley, in the counties of Brant and Haldimand, have been worked for more than forty years. Mills for grinding the rock have been erected at different points and about 6,000 tons of land plaster are manufactured annually. Within the last three or four years calcining works have been established at Paris and near Cayuga, where the manufacture of calcined plaster and alabastine is carried on. In Toronto it is manufactured into material for plastering the walls of houses, for which there is a growing demand.

Reference has already been made to the existence of natural gas in the counties of Essex and Welland, and to beds of clay for the manufacture of pressed brick in the district around the western end of Lake Ontario. It is not thought that the natural gas is to be found in very great quantity. Certainly none of the wells yet put down have proved to be "gushers" like some of those which have been bored in Pennsylvania and Ohio. But the supply appears to be ample to encourage its utilization for illuminating purposes in the towns within easy reach of it, and the opinion is confidently entertained by many that it is likely to prove as lasting as even the great wells on the other side of Lake Erie. Gas for lighting the entire length of the Welland canal might be cheaply furnished from wells bored in the vicinity of Port Colborne; and there is no reason why it should not also be utilized for factories or smelting works on this canal. Two pipe lines have been laid down by rival companies to convey the gas to Buffalo, but the wisdom of this use of it may well be questioned. A well bored for petroleum at Port Colborne in 1867 has been yielding a small supply of gas ever since, and it was the knowledge of this fact which led to the sinking of other wells in that district for gas in 1889. In Essex it was a knowledge of the fact that the Cincinnati anticlinal crosses that country which induced parties to bore for gas there, as on that anticlinal are located some of the most productive wells in Ohio. The material for pressed brick is found in great abundance below the outcrop of Medina sandstones, along the base of the escarpment which stretches eastward and northward from Hamilton, and also in the upper beds of the Hudson River shales in the valleys of the Don and Humber Rivers. The brick is of excellent quality and color, and promises to come into extensive use for buildings of the better class. The salt beds of western Ontario cover an area of perhaps 2,000 square miles, embracing the counties of Lambton and Huron, and portions of Bruce, Middlesex and Kent and perhaps the whole of Essex. They were first discovered in 1865, at Goderich, in boring for petroleum, and since that time wells have been sunk at Clinton, Seaforth, Brussels, Blyth, Wingham, Kincardine, Port Franks, Exeter, Courtright, Parkhill, Windsor, and other places. In Kincardine the upper bed is reached at about 900 feet from the surface; in Goderich at 1,000 feet; in Courtright at 1,600 feet; and in Marine City, on the Michigan side of the St. Clair River, at 1,675 feet, thus showing a regular dip of the formation southward. But a well drilled at Windsor in November, 1892, struck salt at a little over 1,100 feet, thus showing that apparently the deepest portion of the ancient sea-bed has been crossed. The thickness of the bed there is 40 feet. The beds are usually three in number, with an aggregate thickness of about 100 feet, and the salt is of the best quality. The annual product is about 60,000 tons, but the wells in operation have a capacity for at least five times that amount. Their market is limited to Ontario and the Northwest, as owing to the free entry of salt they are unable to compete in the Lower Provinces with English salt brought over at a nominal charge for freight. There are three areas in Ontario from which petroleum has been obtained, Petrolia and Oil Springs in the County of Lambton, and Bothwell in the County of Kent. The two former only are being worked; the latter was abandoned nearly thirty years ago, having been operated from 1860 to 1865. The existence of

petroleum was known in those districts at an early period of their settlement, from its oozing out in springs, or along the banks of streams; but it was not until 1859 or 1860 that attempts to utilise it were made by sinking surface wells to a depth of 50 or 60 feet, and allowing the petroleum to collect therein. It was not until 1861 that wells were bored into the rock at Oil Springs, and then some extraordinary results were obtained. In the winter of 1861-62 flowing wells were struck which produced in some cases thousands of barrels daily. At one time there were about twenty of these flowing wells, and hardly a pump was operated. But in the course of two years they ceased to flow, and thereafter the petroleum produced at Oil Springs was raised with pumps. In 1865 the Petrolia region was opened, and in one locality flowing wells were struck which yielded for several months at the rate of 400 barrels per day. But gradually the flow subsided, and since 1867 almost the whole of the petroleum at Oil Springs and Petrolia has been lifted with pumps, the yield gradually diminishing until at present it does not average more than half a barrel per day for each of the 4,000 wells in operation. The total yearly output of the Petrolia and Oil Springs territories is about 1,000,000 barrels of crude, almost all of which is now distilled at Petrolia. Formerly London was the centre of the oil-refining industry in Ontario, but experience has shown that the business can be more successfully managed where the crude oil is produced. Gold has been found in a number of localities in Ontario, but chiefly in the county of Hastings, in East Algoma and on Lake of the Woods. Numerous gold-bearing veins were discovered in Hastings more than a quarter of a century ago, and they were worked after a fashion for several years; but although the gold is believed to exist in paying quantities the methods of extracting it from the ore heretofore only resulted in loss and failure. A large amount of capital has been sunk at the Deloro gold mine, near Marmora, where the chlorination process has been tried. During 1892 two or three companies were organized and operations have been begun which appear to promise success. The Carter-Walker process has been put into operation at the village of Marmora during the past year (1893). The plant is small, being only sufficient for treating five or six tons per day; but it was erected largely as an experiment, and as such it appears to have satisfied the expectations of all the parties interested in it. The ore is crushed to a fineness of 60-mesh and is then roasted in a muffle furnace to drive off the sulphur and arsenic, after which it is conveyed to the amalgamator. The original feature of the process is the method of bringing the mercury and ore together in the amalgamator so that the former may seize upon and amalgamate with the gold. This is done by passing the charge through a furnace, and the mercury being volatilized it thoroughly permeates the mass. Emerging from the furnace the charge is conveyed by rakes through a water-jacketed chamber, where the mercury recondenses and takes up the gold, the amalgam being caught on plates in collecting vats below the discharge. It is claimed that 85 to 90 per cent. of the gold in mispickel ores is won by this process, and that the by-products of arsenic and oxide of iron will alone pay for the cost of treatment. Lake of the Woods locations are coming into prominence again, and during 1893 Sultana mine on the island of that name was vigorously worked, and mill returns gave a satisfactory yield. The owner of this property, Mr. J. F. Caldwell of Winnipeg, has carried on operations with great energy.

The Northern Gold Company, whose mine is south of Big Stone Bay, has been somewhat unfortunate with the plant first put into its mill, but new machinery has been set up and the mill has started under promising auspices. A number of shafts are being sunk on this company's location, which is a network of veins. Duluth capitalists are putting down shafts upon an adjoining location, and they are also opening up several other properties in the district. Last summer a discovery of gold was made on one of the islands of Rainy Lake, within the Minnesota line, and this was followed by like discoveries on several other islands in that lake, on the Ontario side of the boundary line. Great interest has been awakened by these finds, and it seems likely that many prospectors will be drawn to this new field after the close of winter. A mining town has already sprung up on the Minnesota mainland. In eastern Algoma work on the Ophir and Creighton mines was actively prosecuted in 1893. On the former a Fraser and Chalmers mill of twenty stamps was started in October, and it is now a gold producing mine. A great body of ore has been brought into sight, some of which is rich in free gold. A Crawford mill was tried at the Creighton mine, but it does not appear to have given much satisfaction. The shaft at this mine has reached a depth of about 180 feet, and the quartz vein at that depth is not less than 15 feet wide. Silver mining in the Lake Superior region has suffered disaster from the depreciation of silver so universal at the present time. The Silver Islet vein, discovered in 1868 and sunk upon to a depth of 1,260 feet, has yielded ore to the value of $3,000,000, and it is probable that the mine might be working yet but for the mistakes which characterized its management. Several other properties have been operated in the vicinity of Port Arthur. The mines, which were worked until recently, are situated between Rabbit Mountain and Whitefish Lake, south-west of Port Arthur, the first discovery of silver in this district having been made in 1882. The veins are found in the black shales of the Animikie formation, in widths ranging from two to six feet, and at several mines they have yielded large quantities of silver. The history of copper mining in the Province is almost of a piece with that of iron mining; it is a record of failures. At Bruce Mines, at Mamainse and on Michipicoten Island operations were carried on many years ago, with varying success. At the two latter places capital was wasted under bad management, but little ore was raised. The Bruce Mines locations were opened about the year 1848, and work continued upon them down to 1876. The ore was moderately rich, and had the business been carefully managed and economic methods used the enterprise would no doubt have succeeded fairly well. The total product of those mines is variously computed at from $3,000,000 to $7,000,000; but however much the ore realized in the market it seems to be certain that the cost of production was a still greater figure. Labor was dear and uncertain; scarcely any labor-saving machinery was employed; transportation was a heavy charge; the price of copper was steadily falling; and altogether circumstances were adverse to mining operations in a frontier region thirty years ago. With the railway facilities which we now have, with rock drills and dynamite, and all the modern machinery of well equipped mines, the issue would no doubt have been different.* During the

* The report of Manager Barron for 1857, published with the report of the directors of the Montreal Mining Company, shows that the total quantity of ore raised and dressed that year at

seasons of 1891, 1892 and 1893 development work has been carried on upon the Sand Bay location on Point Mamainse and the prospects are claimed to be very bright. Several thousand feet of borings have been made with a diamond drill on five distinct veins and on a conglomerate bed, the cores of which show in places rich native copper and copper carbonate. One shaft has been sunk to a depth of about 300 feet and 1,600 lbs. of the ore was tested at the St. Louis testing and sampling works, the assay of which gave nearly 23 per cent. copper. Some of the ore is said to carry gold and silver. The discovery a few years ago of extensive ore ranges in the country north of Georgian Bay carrying nickel and copper, and especially in the vicinity of Sudbury, has given a new and strong impulse to the mining industry of the Province. The first mine at Sudbury was opened only six years ago, and now three powerful companies are operating there, taking out and smelting about 200 tons of ore daily and giving employment to about five hundred men. In no other part of the world are there such valuable nickel mines as here, and the results of recent experiments in metallurgy have so satisfactorily demonstrated the utility of this metal that we may with confidence regard the Sudbury region as one of the most promising of all the mining regions of Canada, if not the world.

TORONTO. A. BLUE.

Bruce mines was 467 tons, 13 cwt., 2 qrs., 3 lbs. This was dry weight, and each ton was reckoned at 21 cwt. The average produce of the dressed ore by Mr. Barron's analysis was 20.28 per cent. dry assay, and the average cost per ton on board at the mines was £17 6s. 3d., Halifax currency, or say $68.25. By modern methods and appliances at Sudbury the cost of dressed and smelted ores containing 19 per cent. of copper and 20 per cent. of nickel is about $35 per ton of 2,000 lbs.

THE COAL FIELDS OF VANCOUVER ISLAND, BRITISH COLUMBIA.

"Westward the course of Empire takes its way."—BISHOP BERKELEY.

THE Island of Vancouver (says the graphic historian Bancroft from personal observation) presents a mountainous interior, subsiding at either end, and at places along its eastern side. The shores are exceedingly picturesque, bold rocky and rugged, broken on the western side into numerous bays and inlets, with intervening cliffs, promontories and beaches, while on the northern and eastern sides the absence of ocean indentations is remarkable. The island is generally wooded, the borders with fir, back of which are hemlock, and the mountains with cedar. Between the ridges which cross and interlace each other are small valleys, and on the southern and eastern border there are extremely fertile tracts susceptible of easy cultivation, the open spots offering the first attraction to settlers. Lakes, streams and water falls everywhere abound, though the rivers are none of them large. To the impartial and just description of the leading features of the surface of Vancouver Island, above quoted, should be added the important island dependencies, as it were, lying along the eastern shore, which outvie the island mainland in scenic beauty, and clad with many tinted foliage and verdure to the water's edge, evoke from the enraptured observer feelings akin to those of the bard who loved—

"The isles of Greece! the isles of Greece!
"Where burning Sappho loved and sung.

Bancroft was fully aware of the hidden wealth of Vancouver Island, and who knows but he might have had this western isle in his mind when he adopted the motto of this sketch, slightly altered to "Westward the *star* of empire takes its way," as an epigraph to his magnificent "History of the United States." Whether or not, Vancouver Island claims to be the bright, wealthy and promising star of the Pacific province of the noble Dominion of Canada, a land of balmy air and Italian sky, and possessing all the elements and potentiality for the accomplishment of true national greatness. At the southern end of Vancouver Island is situated the capital city of Victoria, the most delightful place for residence on the whole Pacific coast, and whose commercial and industrial capabilities are rapidly expanding; it is only separated from the rising State of Washington by the Straits of Juan de Fuca, across which railway ferriage is projected and easily practicable, and trending in a north-westerly direction the island extends for about 300 miles, with an average breadth of 30 to 50 miles; its western shore is washed by the waters of the Pacific Ocean, tempered by the genial warmth of the North Pacific current, popularly termed the Japan stream, so that the climate is mild all along the coast of the province. The area of Vancouver Island is

about 16,000 miles, nearly equal to the peninsula of Nova Scotia. Between the eastern shore and the mainland of the province is a "magnificent water stretch" indeed, formed by the Straits of Georgia and other channels, embracing the islands before mentioned. In several parts this inland water is so narrow as to afford most easy crossings for railway ferries; thus, from the coal emporium of Nanaimo (with the adjunct of a short line of railway to the south-eastern end of Gabriola Island), the distance to the mainland at the terminal city of Vancouver is abridged to a water passage of less than 16 miles, and of this route one of the three trans-continental railways entering Vancouver city will be prompt to avail itself to ensure the nearest ocean connection with the Chinese and Japanese trade, to be found in the splendid harbours of Quatsino and other sounds on the north-west coast.

The coal fields of Vancouver Island are of the cretaceous age, bearing bituminous coal of varied structure and hardness, the best quality being pronounced equal to Welsh steam coal, and all the coals produced are of good merchantable character, and far superior to the product of any part of the mainland of the North Pacific slope. The principal of the known coal measures of the island are situated at Quatsino and along the eastern coast. Commencing on the north at Beaver Harbour, where coal was in 1835 first found, and Fort Rupert, established by the Hudson's Bay Company, and extending southerly to Port McNeil, a distance of fourteen miles, with indications of considerable width inland; this tract including also Malcolm Island, lying to the eastward, is known as the Suquash area. The next occurrence of coal measures is after a lapse of many miles to the southward at Campbell River, the locality of the new city and Port of Duluth, the terminus of the Canada Western Railway, in connection with their ferry to the mainland, landing at Waddington Harbour at the head of Bute Inlet. This great national railway had its inception in Chicago, so far as the syndicate for securing the valuable concession from the Provincial Government of the Honorable Theodore Davie was concerned. The title of the railway is, however, in order to avoid a clashing of name with another railway undertaking, about to be changed by statute to "The British Pacific Railway Company." This railway will traverse Vancouver Island, connect with the mainland, and thence colonize and cross the continent; it is one of the most gigantic and promising enterprises of the age. From Campbell River to the Nanaimo coal field—with the exception of the lands very limited in area owned by old settlers—the minerals belong to the Esquimault and Nanaimo Railway Company and the Union Colliery Company for a distance of about 50 miles to Nanoose; the value of this vast property mounts well up into the millions; the northerly half of this field (including the Union Mine) is termed the Comox area, and the remainder to the south is frequently referred to as the Qualicum area. The field, though of considerable length, consists chiefly of a comparatively narrow belt of productive measures—excepting in the Comox proper settlement, where it largely widens—and as at present known the area is estimated at about 300 square miles, mostly the property of the Companies mentioned; but there are goodly areas in the hands of the settlers of Comox, and in one or two hands between that and Nanoose, and in the Nanoose district itself. The measures, deep perhaps, underlying the lands of Denman and Hornby Islands, are outside of the railway belt of the E. & N. Railway Co. and

may yet prove to be of commercial value, by lying at a less depth than has been pronounced by the geological surveyors who have so far reconnoitered the deposits and sections of the country in view.

Passing southwards for about ten miles, over the break in the continuity of the field caused by the older underlying rock series intruding to the shore at Nanoose, the Nanaimo coal field, at the northern extremity of the Wellington area, is reached, where, however, this area ends and the Nanaimo (proper) area begins, is not well settled, if ever it can be; the tendency of the opinion of the mining managers, from the developments in the several overlying seams now being energetically mined, is that the beds throughout are equivalent, and that the distinction of area between Nanaimo and Wellington is being effaced by the facts of production, and that the generic name of "Nanaimo" must survive, even if only by reason of the vastness of the extent of that part of the field which has so long borne the same. The Nanaimo coal field extends south of the present workings through the Cedar and Oyster areas to the town of Chemainus, twenty miles south of the City of Nanaimo, the southern five miles or so below Oyster Harbor area being very narrow, but probably continuous under the water to the several islands lying off the shore, where the measures exist, as well as in the DeCourcey group, off the shore of the Cedar and Oyster areas; and in the "big island" of Gabriola, which, with Newcastle and Protection (or Douglas) Islands, are identical with the Nanaimo area. The Nanaimo field is of considerable width from the known outcrop to the shore (with the exception of the southerly end), and is estimated at between 200 and 300 square miles, with sea room for extension for a vast area, practically inexhaustible.

South of Chemainus is an extensive break, opposite to which, however, in the "Islands" District, on the northern half of Admiral or Salt Spring Island, and on parts of Galiano and Mayne Islands, and on the whole of the other islands of the district to the small Island of Tumbo, at the south-eastern extremity of the district, all in the Straits of Georgia, the cretaceous rocks constituting the Vancouver Island coal fields are found, and are being actively explored at Tumbo.

The same rocks and indications favoring the existence of coal beds are found in the area called the Cowichan coal field, commencing at about five miles south of Chemainus, and attaining width from the mountains to the shore, proceeds southerly until within eighteen miles of the Capital City of Victoria, in the Saanich District. This field is largely belonging, as to its minerals, to the Esquimaux and Nanaimo Railway Company, and the same company owns an immense area of the mineral in the section of the Nanaimo coal field, south of the City of Nanaimo, as well as in the Wellington area. These minerals are of immense value. The Cowichan and "Islands" areas are about 200 square miles, and comprise large tracts of country in private hands or beyond the railway belt, which are open to the attacks of capitalists and energetic exploration.

Returning to the northern end of Vancouver Island, where the Quatsino coal field is worthy of special notice, it is observable that from Suquash coal area there is a valley that goes through to Quatsino Sound on the northwestern coast, about 250 miles northward from Victoria. This sound is one vast harbour entered from the Pacific,

and ramifying into a south-east arm, a west arm, and an east or Rupert arm, which (from its contiguity to Fort Rupert), nearly severs the Island. On the several harbors and inlets of the Sound the cretaceous coal bearing rocks are found, and have in the aggregate a considerable extent—they with the Suquash area, before mentioned, form the northern coal field of the Island. The main areas are those of Winter Harbour and Forward Inlet (where at the head of a lagoon good coal has been found and boring operations would probably prove the existence of workable seams—the area is many thousand acres in extent), and Koprino area, which runs along the north shore of the Sound to the east of Forward area, with which it is connected for seven or eight miles, and is about half as wide. The measures are there and a good deal of reconnoitring has been done—sufficient to prove its great value as a future sphere of operation, and as the beds are regular and not much disturbed, skilled prospecting by boring, which is shortly to be undertaken by certain of the influential proprietors of the area, amongst them the Port McNeill Coal Mining Company, is likely to prove this coal area to be the most important on Quatsino Sound. Here will be the future Queenstown of the North-West Pacific Coast, which will be a formidable rival to Port Simpson situated further north, on the mainland, and doubtless some one at least of the great transcontinental lines of railway will secure an outlet at Quatsino harbours for the trade with Japan and Asia. As may be inferred recent attention has been directed by coal operators, and real estate speculators, to the coal prospects, and eligible situation of the country round Quatsino Sound, and thence to Cape Scott the northernmost point of Vancouver Island. The tract has been laid off by the Survey Department of the Honorable Forbes G. Vernon, the Provincial Commissioner of Lands and Works, and is known as in Rupert District. The provincial laws with regard to disposal of Crown lands and coal privileges are most liberal and calculated to encaurage the settlement and opening up of the Province, and the Koskeemo area is situated on the upper part of Quatsino Sound fronting on west arm and east (or Rupert arm) for between seven and eight miles with a width from two to three miles, having an area of about 6,000 acres, independently of its extent under sea water. This area has been at various times prospected by boring and sinking but the greatest thickness of good coal as yet proved is about four feet thick ; other trials will probably give a better account of this Koskeemo area, which, after lying in abeyance for many years, must with the other coal areas of the Island be utilized to meet the increased demand for a good article of fuel that has arisen within the last decade on the Pacific Coast as well as within the Province itself. The coal is bituminous and was often found by the explorers of excellent quality. It may be interesting to state what was pronounced by those having the research as to the character of the measures at Koskeemo. The coal strata lie on a bed of calciferous sandstone many hundreds of feet in thickness—the last deposit being probably equivalent to the mountain limestone of older series. This coal field has peculiar stratigraphical features. While there are several beds of conglomerate through it, still two of them require particuliar attention and form distinctive features in the basin. The one is of an aggregate thickness of 70 feet, overlying and in contact with the calciferous sandstone, and the other entirely above the coal ; the former containing finer stones and pebbles, and having a dull reddish color,

owing to the presence of peroxide of iron; while the latter is coarser in its material and not so firmly cohesive, and at least 100 feet thick. These two deposits may be classed as the upper and lower conglomerate of the series, by attending to which the explorer knows when he is above or below the coal strata. Through the whole formation consisting of coarse and fine conglomerates, sandstones, shales, fireclays and coal, are found fossiliferous beds. The contained fossils leave no doubt that the age of the beds is cretaceous. Dicotyledonous plants form the principal vegetable impressions, and calamite-like stems are common. Among other animal remains are Blemnites, Ammonites, Plagiostoma, Inocerami, Hippurites, various Chama-like shells, Trigonia, and some still more recent types as Pectunculus sublœvis, Astatrite, Natica and Paludina (several species) all these lying over the coal beds. Most of the shales are more or less bituminous and the different seams of coal are characterized by a shining cubical fracture, by a regular lamination and an almost complete exemption from sulphur in the "cutters" or vertical divisions. A large penine fault cuts off the whole basin by throwing it southwards, on which side of it are to be seen at the surface the calciferous sandstone whereon the basin lies, and also the underlying metamorphic rocks; the trap does not cross the great fault. The seams of this basin are five in number and have been found in croppings in various parts of the field and in sundry small shafts sunk by way of prospecting. The dip is southwards with an average indentation of 1, 3½, or 4 degrees. The seams of this basin are five in number, of nearly 3 feet and less in four of them; in the fifth, or so-called main seam, of four feet six inches thick. Whenever the Quatsino coal areas are worked, the facility of access to the Pacific, without a long inland water passage, will be a great factor in their favor. The characteristics of the coal strata do not disappear except at intervals down the whole west cost of Vancouver Island, until the cretaceous rocks are overlapped by the tertiary on the north shore of De Fuca straits. These regions afford a field for adventure, and may yield a prize of great value. In some places the rocks are highly metamorphosed and, for long distances, only gneissose rocks, crystalline limestones, or rap, are visible.

At Alberni (on Barclay Sound) the coal shales appear, and a few years since borings were made, and after some research suspended, leaving it open for future investigation.

With regard to the coal-bearing probabilities of the interior of Vancouver Island, which is as yet comparatively unexplored, there is fair ground for believing that the numerous plains, lakes and valleys (of good arable land), from one to six miles in width, lying between the mountain ranges which divide up the Island—there being no "back-bone" range of mountains—will prove to be coal-bearing of the same cretaceous horizon. The dense forest which so largely prevails in Vancouver Island will doubtless retard prospecting, and the mass of underbush tends to conceal any but exposed sections. On even the lakes and river banks the timber and vegetation comes so close down as to be laved by the stream.

These hidden and almost unknown resources of this Britain of the Pacific are ready for the hand of man to turn them to account—for some of the teeming millions of the older countries to come and see and conquer.

The Hudson's Bay Company for some years prospected and worked in the part of the Suquash area at and near Fort Rupert, until in the spring of 1851, on the report of the discovery of the Nanaimo field—more accessible to the local and foreign market—the miners and machinery were removed to Nanaimo.

During the several years past the Suquash area, south of Fort Rupert, has been prospected by diamond and hand drilling in the interests of companies desirous of locating a tract for active mining operations. In some instances the explorers made their search under bonding rights, which have not been determined.

In the Port McNeill tract of about 5,000 acres, a most promising part of the Suquash area held by the Port McNeill Coal Mining Company, a bore now in progress presents very favorable indications, and the lucky proprietors will probably meet with a rich reward for their enterprise. The locality of this exploration is surrounded by other holdings of "coal lands," and if the Port McNeill Company's success is achieved, there will be a large amount of prospecting undertaken in that neighborhood, and Suquash will be heard from by the mining world. The fact of this northern field being outside the railway belt makes it attractive for speculation.

At Nanaimo the Hudson's Bay Company founded a trading post with the necessary buildings, and erected a bastion fortress, which stands to this day in front of the now busy city, frowning upon a harbor full of shipping, and within a stone's throw of the site of the original coal mine opened by the company in August, 1852. Before the expiration of 1853 several thousand tons of coal were shipped from Nanaimo, the first being despatched by the ship "William" for San Francisco. The company's price at Nanaimo was then $11; at San Francisco the coal sold for $28 a ton.

Up to the autumn of 1862 the Hudson's Bay Company had mined less than 100,000 tons, when a transfer and sale of the valuable Nanaimo estate, with its mines, townsite, sawmill and shipping wharves, including the foreshore rights and privileges, held by the company by virtue of its charter and special grant from the Crown, was made to a London company styled "The Vancouver Coal Mining and Land Company, Limited,"* that had been formed with the object of purchasing and carrying on the coal industry, combined with the sale of land. The geological structure of the Nanaimo, as well as the Comox coal fields, have been reported upon, after careful examination by the Dominion Government Geologist (Mr. Richardson), and the annual volumes for 1871-2, 1872-3, 1873-4 and 1876-7, may be consulted for details. In the last named report a general review of the geology is given.

Up to 1876 the operations of the Vancouver Coal Company were financially successful, owing to good management and the high price obtained for the coal shipped—chiefly to San Francisco, in California; but the company had many difficulties, caused by faults, to contend with, which, when the market price lowered, absorbed the income and increased the capital outlay, until the concern assumed by degrees quite vast dimensions. In 1884 the output rose to 103,000 tons and steadily increased year by year, and at this date the capacity 600,000 tons is attained.

The company owns about 33,000 acres of "coal lands," of which half may be said to be in the Nanaimo and Cedar areas surrounding the City of Nanaimo, although

* Now the New Vancouver Coal Mining and Land Co. (Ltd.)

according to the old nomenclature several thousand acres, called by the company its "Northfield," would be in the Wellington area, and contain the seam mined as "New Wellington" coal. There is a shaft 8x18 feet for hoisting, and an air shaft of 6x12 feet, reach the coal in 440 feet. This is equal to the Wellington coal of Messrs. Dunsmuir & Sons, whose property and mines adjoin on the north and west, but the seam has not yet developed to the same thickness; at present it is from two to four feet in thickness of good clean hard coal that is much sought for and obtains the highest price in local and foreign markets. The coal is of true bituminous character, but is called, popularly, semi anthracite. The system of working is longwall, though the distance mined so far is not great; the pit has only been open a few years. The output capacity is 500 tons, which will increase as the workings go ahead. The mine is ventilated by a "Murphy" fan, connected with an up-cast shaft, circulating 63,000 cubic feet per minute. There is little or no gas in the mine. The separate split system of ventilation is used. There are 350 to 400 men employed, and leases for 999 years are issued on moderate terms to the employees. Substantial buildings and improvements have been made on the townsite, where stores, hotels and other places of business are established. The coal is hauled to a shipping point at the junction of Departure Bay, with exit passage where superior and extensive wharves enable vessels of any tonnage to load two at a time. The railway is five miles long, and, as are all the railways of this company, of the standard gauge of 4 feet 8½ inches; rails are of steel, 56 pounds per yard, finished. Three deep bores have been put down to the dip of the workings by diamond drilling under contract with the Chicago firm known as the "Diamond Prospecting Company of Chicago." The drilling done by this company both at Northfield and in the Comox area (on land bonded by the Vancouver Coal Company there) was, it need hardly be said, of first-class character, and satisfactory in every respect. One of the splendid drilling machines of the "Diamond Prospecting Company of Chicago," with complete outfit, boring to 4,000 feet, is now stored at Nanaimo ready for future action. There is a wide field for such drilling work in the Province—not that the Vancouver Coal Company are without the best diamond drilling machines; the company has since 1875 had such drills of its own at work in various parts of the Nanaimo estate and on Gabriola and other islands, piercing the measures for upwards of 2,000 feet, and literally miles of diamond-bore holes have been put down by its own machines. The auxiliary aid of the Chicago firm was, however, deemed desirable, and the management has derived all the benefit expected from such assistance.

One of the best roads in the island leads from Northfield to the Wellington colliery to the north, to Departure Bay on the east, and southwards to Nanaimo—the scenery passed through being delightfully picturesque, and the land is obtainable by purchase or lease on easy terms by actual settlers, the workingman or cultivator having the preference in the view of the Vancouver Coal Mining and Land Co's superintendent, Samuel M. Robins, Esq., J.P. It is well understood at Nanaimo that almost any part of the Company's immense estate is open to acquisition by *bona fide* settlers upon conditions of actual improvement, or by residents, at reasonable rates. This has enabled the majority of the Company's employés to acquire a homestead each, and

become interested in the country as true colonists, greatly to the advantage of both employer and employed. As a consequence the city and district of Nanaimo are being closely built upon by a thriving population. The Vancouver Coal Company's No. 1 (or Esplanade) shaft, situated upon the verge of Nanaimo Harbor estuary, is first-class in construction and massive in its proportions. The down and up-cast shafts are both circular, and lined with shaped wooden blocks; they reach the upper or Douglas seam of coal at 650 feet. The hoisting shaft is 18 feet in diameter; the air shaft being 16 feet. Coal is hoisted from No. 1 shaft by a pair of powerful engines (built in England) of 30 inch cylinders with five feet stroke, and winding drums of 14 feet diameter, capable of raising with decked cages, 1,000 tons per shift of eight hours. Connected with No 2 or air shaft, is a newly erected Guibal Fan, of 36 x 12 feet size, and with this fan running at 34 revolutions, 110,000 cubic feet of air per minute is circulated; the fan, however, can be speeded to 60 revolutions, which would largely increase the current. This fan has been erected to replace a similar fan destroyed in the explosion of the memorable calamity that happened on 3rd May, 1887, in this shaft, at the foot of a diagonal slope which with the workings on the south side of the main slope has ever since remained sealed and shut off. Until the recent completion of this new fan the mine has (after the accident) been ventilated by a pair of "Murphy" fans sufficiently, until the workings had got two miles from the shaft in a northerly direction. The mode of working is by pillar and stall laid out in panels. The system of haulage in the main levels is that of electricity, by three locomotives, two of 30 horse-power and one of 15 horse-power, supplied by the Edison General Electric Company. The coal cars are run at six miles per hour. The hauling power of the larger locomotive is 50 tons, and a smaller one 25 tons. The levels are also lighted by electricity. The action of the electric system has, during the several months of trial, been remarkably smooth and efficient and free from accident. The coal produced is of the well known character of the Douglas seam worked and mined at Nanaimo from the beginning of mining operations—of the best quality for gas making, and a strong fuel. The seam, by an enormous expenditure of capital and extremely skilful management, is now proved to be a most valuable and extensive property, with unlimited reserves. Of late the workings have been from Nos. 1, 2 and 3, north levels. The No. 1 level runs from the bottom of the shaft in a northerly course, going under the water of Nanaimo estuary and harbor with its windings for fully two miles, and is the hauling road for two of the electric locomotives, the track being kept in perfect order. The face of No. 1 level is beneath Protection (or Douglas Island), and is in good coal. The coal is mined from this level by pillar and stall, and average six feet in thickness. For 15,000 yards the work has been on the west side, but much of it has not been started away from the level. On the east side it is solid. From this level there is a slope of 300 yards in good coal all the way on the east side, to connect with a shaft put down on Protection Island, and which shaft passes the entrance from the slope down to the "lower seam." From the bottom of the No. 2 (or air) shaft, where there is a winding engine, the main slope of this mine is driven, with counter slope, down 1,200 yards, but below the No. 3 level, which turns off from the main slope to the northwards, no work is being done. This main slope with the south

levels will, in the mining of the coal to the south of it, be put to good future use ; in the meantime these workings stand. The No. 3 level is a long way in and in good coal, corresponding no doubt to the coal won in the No. 1 above it. In this No. 3 level, the smaller of the electric locomotives will haul coal to the slope along the level, which is also to be lighted by electricity. The theory is, that this seam probably reaches northward under the straits of Georgia for a great distance, and south-easterly to and under Gabriola Island, while north-westerly it continues to the opening made in old times, and long and successfully mined, on Newcastle Island, under the name of Fitzwilliam mine, long ago dismantled, and the further working left for the shaft under notice. In this view, and bearing in mind the possibility of getting at the seam southerly of the main slope beneath the estuary and the delta of Nanaimo River, and further to the Cedar area, the No. 1 shaft is a colossal undertaking and of great importance as a wealth producer. Besides there is a lower seam, now tapped by the Protection shaft, underlying all the area described. All timbering below is of the strongest kind of wood and of large dimensions—some of the caps and pillars being 15 x 15, and everything about the pit above and below is made for endurance and strength. The requisite pumps in use below are driven by compressed air levied from the surface—thus saving steam trouble at long distances. The pit-head and frame are constructed of enormous timbers, such as it would be difficult to match away from this country of extraordinary "big trees;" the cage guides are of steel wire rope. The pithead is well laid out, roomy, and well covered in from the weather. There are automatic tippler and treble screens with steam jiggers to help the screening of the coal and secure a clean article for the shipping waggons, which in five minutes are hauled by a forty-ton locomotive to the vessel's side at the Company's main coaling wharves on the city front. A patent coal washer of large capacity is busy all day preparing an excellent article of No. 1 coal, making a fuel in great demand. The Esplanade, or No. 1 shaft, is, as its name implies, in the City of Nanaimo, and distant about a mile from the wharves, to which is a railway of the construction before mentioned ; the coal runs in hopper waggons of five tons capacity, in trains of twenty to thirty on a down grade until nearing the chutes. Steam and other appliances are utilized to affect the loading at all stages of the tide, without subjecting the coal to unnecessary breakage, or the despatch of loading to be delayed. At this as well as at the Northfield wharf, the largest vessels and mail steamers can lie at low water, with ample room to spare, and in this connection it may be mentioned that Nanaimo harbor is never closed in the severest cold. The engine house, electric power house, the Guibal fan house, and the general stores and offices of the Company (under No. 1 shaft) are well defined and efficiently constructed buildings.

The Protection Island shaft calls next for notice in natural order, although it is the most recent of the company's works. This shaft is 12 x 19 and 740 feet to the coal of the lower seam which was found to be five feet thick and of most excellent quality ; and—of the utmost importance in this "lower seam," the habits of which have proved so erratic in other parts of the seam—the coal was regular and well "bedded." The management have the utmost confidence in the superior merits of the article, which will be subjected to the test of the market by shipment to home and foreign consumers

—who are the ultimate judges—as soon as the large wharves and bunkers now rapidly approaching completion will allow vessels to lay alongside. The coal chutes will be within 400 feet of the pit's mouth. Protection shaft is timbered throughout with four inch plank, and partitioned into two compartments, into one of which the slope from No. 1 level in No. 1 shaft workings was holed, and forms a return air way. Powerful double hoisting engines, made by the Hamilton Manufacturing Company, of Peterborough, Ont., with cylinders of 26 inches and 42 inch stroke will take the coal out. A large bin of coal is accumulating so that vessels will not have to wait when the wharf is ready. The mine is worked on the pillar and stall system. The outlay on this shaft has been very great, necessarily, on account of its isolation; even the needful supply of water for boilers has had to be taken across the harbor by tubing, and all material freighted thither, by the constant maintenance of a steam ferry, yet the almost limitless quantity of first class coal in prospect is ample compensation to the company and beyond.

The labor employed at these twin pits consists of about 500 men and boys. The present limited output of No. 1 shaft is about 900 tons, but its capacity is quite 1,500 tons which could be augmented. At the island about 200 tons of lower seam are extracted per day.

The "outsiders,"—enginemen, stokers, pithead men, coal trimmers, blacksmiths, etc.—are about 70 in number, making a total of 570 persons employed at No. 1 and Protection shafts, which number will increase as the workings progress in this "East-field" of the company.

The city and port of Nanaimo, the seat of this great industry—besides being the locality of the Vancouver Coal Company's chief mines and workshops, machine and blacksmith, and carpenter shops, replete with engine-fitting and mechanical machinery, lathes, drills, hydraulic powers, steam hammers, saws, and every modern labor saving contrivance, the whole as well as the No. 1 pit, railway shipping wharves, lighted with gas, and supplied with water from city waterworks—possesses other industries usually established in a mining seaport town of 10,000 inhabitants; but there are few fields for enterprising capitalists that offer greater inducements for opening new manufactories than Nanaimo, with its numerous wage-earning class of consumers.

The Vancouver Coal Company, also owns several other mines in the area called by the company "Southfield," from two to four miles south of Nanaimo. Those known as No. 3 shaft, "No. 4," and Southfield mine, are only being worked to a moderate extent, but are well appointed mines, and produce a first class article; that of No. 3 being a distinctive coal of very superior quality, although from the same seam, (the upper) mined as Douglas coal, but situated south of a fault; the coal is named "Chase River" from its proximity to that river; this grade of coal is what was referred to as awaiting operations from the south of the main slope of No. 1 shaft, and is a most valuable body of coal, it probably extends under and beyond the delta of Nanaimo River, and through to the Cedar area, most of which is held by the company. The E. & N. Railway Company are also large holders of adjoining "coal lands," and a Nanaimo company, "The Cambrian Coal Company" owns a large tract of "coal lands" on the south side. These latter lands are now open to purchase or bonding

from the Cambrian Company (T. D. Jones, of Nanaimo, secretary), and failing speedy realization, will be opened by the proprietors and mined on their own account. There is a splendid shipping point at Brat Harbor, with an easy grade for a short line (less than two miles) of railway.

The Vancouver Coal Company's No. 5 shaft is not far from Southfield mine, but to the dip, a little north of Nanaimo River, and is reached by a branch of the company's Southfield Railway. Great hopes are entertained from the development of this pit, which is a costly and important work ; the shaft is 508 feet to the coal, of 8 x 18 feet in size ; is ventilated by a double fan 8 feet in diameter, speed 250 revolutions ; cubic feet of air, 54,000 per minute. The seam in No. 5 produces good coal, preferred for steaming use on locomotives and swift draft furnaces, but as the workings, on pillar and stall system, are not expanded enough to determine the future of this mine, little more can be said than that it is full of promise. The seam is variable in thickness and not yet settled down to a uniform habit. The area around has been proved by diamond drilling, and the indications were sufficient to justify the undertaking of the shaft and its railway. About 300 men are employed at these Southfield mines at and about the pits, and 600 or 700 tons of coal are put out per day. Owing to the other mines being towards the outcrop, the stress of the output of Southfield will fall ultimately on No. 5 shaft.

Beyond the Southfield and Cedar areas is the extensive area of undoubted productive coal measures of the most regular formation perhaps of any in the field known as the Oyster Harbor and Chemainus area, about eight miles north of Chemainus town, and twelve south of Nanaimo. Mr. Richardson, the Dominion geologist, has stated his opinion--from examination—that the whole of this section contains coal-bearing measures, which are a continuation of, and about the same formation, as are found at Nanaimo, but that the covering seems to be somewhat greater.

The views of Mr. Richardson have been sustained so far as the exploration of their area by the Oyster Harbor Coal Company, has proceeded. Diamond boring was recently carried out by Messrs. M. Bate, W. J. Goepel, and other gentlemen interested in the area. Several holes were put down at stated distances, tentatively, with the intention of renewing research in the future, by boring to greater depths in each hole, where good prospects appeared on removing the drills for other operations. This area will be fully and energetically explored by the company. Shipping facilities are of the best.

The Vancouver Coal Company owns most part of the coal measures on the islands to the south-east of Oyster, and east of Cedar and on Gabriola Islands. On this island the company bored towards the south end to upwards of 2,000 feet, well into the productive measures, when boring ceased from a mechanical difficulty.

In the Vancouver Coal Company's "Westfield," in a tract of country known as Harewood estate, a fine opening has been made into the seam worked many years ago as Harewood mine, nearly two miles south-westwardly from Nanaimo. This prospect shows a face of excellent coal four feet thick, lying more regularly than the part of the seam formerly worked. If the coal should continue good the company will have encouragement to start a mine, and construct a railway for conveyance of the coal to their Northfield wharf.

The chief part of the coal exported from the Port of Nanaimo is shipped to San Francisco, Wilmington and San Pedro, in California, and to Alaska and Hawaiian Islands; and the domestic sales are large—for household, steaming and gas-making uses.

The Vancouver Coal Company employs about 300 hands in various outside and mechanical capacities—in charge of coal trains, loading wharves, etc., connected with the colliery, and also on their "farms" and estate improvements, making the total number of hands employed upwards of 1,500, who are paid in cash monthly, good wages. The company operates 12 miles of standard gauge steel railway, with a rolling stock, in perfect repair and efficiency, of 220 hopper wagons, five to six tons, and five locomotives, up to 40 tons, besides lumber and ballast cars. The railway is connected at Southfield and Northfield by sidings and switches with the main line of the Esquimault and Nanaimo Railway running to Wellington, six miles northward—(from thence the Canada Western (or British Pacific) Railway Company's line will be constructed via Nanoose, Qualicum and Comox to Duluth, on Campbell River, with probably a branch to Alberni). The E. & N. Railway, as its name implies, runs from Nanaimo to Esquimault and thence into the heart of the city of Victoria, distant by rail 73 miles. On this line coal is hauled when required, but the Vancouver Coal Company's customers in general find water carriage the most economical.

The following are coal statistics of the Vancouver Coal Company from 1890 (for those of 1889, *vide* "The Canadian Mining Manual" for 1890-91):

Year.	Output. Tons.	Exports Tons.	Provincial sales, etc.* Tons.
1890	389,505	292,809	98,390
1891	527,457	383,886	140,761
1892	433,298	308,149	117,685

The diminution of the output of 1892 was adopted by the management in order to ease the San Francisco market during a period of over shipments from Australia, and so maintain prices. The losses made by the Australians will prevent an over supply of the market for some time at least. The year 1893 has opened with a favorable outlook for the Vancouver Island collieries, and output and shipments are booming again.

In 1889 the Vancouver Coal Company was reconstructed, and is now represented by the New Vancouver Coal Mining and Land Company (Limited), having its head office at 12 Old Jewry Chambers, London, England. The agents of the company in the United States are the well known firm of John Rosenfeld's Sons, 202 Sansome Street, San Francisco, and the best interests of the company in the Province of British Columbia are in the direction and control of Mr. S. M. Robins, as General Superintendent, residing at the Esplanade, Nanaimo, V.I.

The Land Department of the company is attaining large proportions. Most anxious attention has been devoted to the administration of the company's land, by lease and sale, so as to secure the best results, in proper settlement on and improve-

* These quantities include fuel used in furnaces and miners' house coal, about eight per cent. of output.

ment of the land by those acquiring lots. The town lands on the city map still remaining in the hands of the company, and any other suburban or country lands on the great estate are open to lease or purchase upon reasonable terms as to price and payment, upon condition of use and improvement of the same suitable to the environments. If anything preference is shown by the management to the workmen, and hitherto with marked advantage in all instances, but particularly in the opening up of a large area of suburban land into allotments of five acres, and the leasing of the same to workmen on liberally long terms of payment, with right of purchase conditioned upon certain annual improvement of the property. These "five acre lots" in the hands of frugal and industrious men, have contributed to their advancement and prosperity in homesteads easily made their own, and at the same time has brought about the clearing and cultivation of a large expanse adjacent to the city, up to the foothills. The demand for the allotments is ahead of the surveys, which is good evidence of the success and popularity of the land policy of the company.

A prominent eastern divine, after a recent visit to Nanaimo, thus acquits himself in the columns of a leading paper, and as the impression of an independent and accurate authority it is here submitted as a fitting conclusion to the description of the Nanaimo Colliery and its rising city: "Seventy miles north of Victoria on the east side of the Island of Vancouver, and close down to the water's edge, stands the city of Nanaimo. The streets are laid out in a rather irregular kind of a way. Whether the irregularity was caused by the nature of the ground on which the city is built, the site being a hill side, or by the eccentricity of the people who founded the city, I cannot say, but certainly the place is unique in its plan, or perhaps I should say want of plan. The irregularity of the streets, however, does not interfere with business. Nanaimo is the coal city of the coast, and so excellent is the fuel found there that it overrides all fiscal laws and more than holds its own in the markets of San Francisco and other cities. The supply seems practically unlimited. The amount of money that changes hands seems fabulous to economical eastern people, and one cannot resist the conclusion that some day Nanaimo may be the greatest money producing spot on the coast. The human family cannot do without fuel more than without food. Let any man look at the coal fields of Nanaimo and then at the wheat fields around Brandon, and say if the Almighty has not given us one of the richest countries on earth."

The Wellington colliery of Messrs. Dunsmuir & Sons, upon the area of land owned by the firm, containing about 5,000 acres, lies next and to the northwest of the land of the New Vancouver Coal Mining and Land Company, Limited; the boundaries are of irregular line, but the land lies in a compact tract. The mines of Messrs. Dunsmuir & Sons are known as North and South Wellington mines. The shipping wharves of the colliery are situated on the north shore of Departure Bay, about two and one-half miles north (and forming part) of the twin harbor of Nanaimo port. Departure Bay is one of the beautiful inlets off the Gulf of Georgia. Newcastle and Gabriola Islands lie to the southeast of the entrance to the bay, and the water is of such uniform depth that no buoys are necessary, and vessels can lie in any part of the bay with safety. A narrow gauge railway connects the wharves with Wellington, about three miles distant. There are capacious bunkers attached to the wharves,

which are filled from a platform on a higher level, reached by the track at some 35 feet above the wharves. About 2,000 tons of coal can be stored in these bunkers. The shipping offices and some repair shops, and the dwellings of the officials and employees engaged in the despatch of the loading, are on the hillside, and the shores of the harbor are dotted with houses and enclosures, which, with the surrounding forest and its shrubbery and Mount Benson in the back ground, give a charming view to the beholder—more than one has remarked that it reminded him of the Bay of Naples. The north point of the bay and the fine adjacent sloping ground are bounded by high ridges of picturesque rocks from which there is an entrancing prospect of the country towards and beyond Nanaimo, straight down the magnificent sheet of water called Exit passage and over Gabriola Island, rising like a swan out of the water, with the noble Northumberland channel laving its breast ; thence to south and eastward a splendid panorama extending from Mount Baker (14,000 feet, the Mount Blanc of the State of Washington), along the mainland of British Columbia, and across Texada and Lasqueti Islands northwards, is spread before the eye. This site is destined to be the future Scarborough of the county.

At the several wharves of Dunsmuir & Sons, there are well designed chutes and means for loading without breakage (not that there is much fear of breaking up the hard blocks of Wellington coal sent from the mines for shipment, in the process of loading), and rapid despatch of vessels. At a push 1,500 tons can be put on board per day. The water is deep enough for the largest ship at all stages of the tide alongside the wharf. At busy seasons the harbor is well occupied with shipping.

The narrow gauge railway is 4⅝ miles long, the width being two feet six inches. From the wharves a considerable ascent has to be overcome, and in the first third of the distance the line has to make a long loop or overlap. The assent is with the empty waggons, and the descent with full ones from the mines. The rolling stock is very efficient, and consists of six locomotives, from eight up to twenty tons, and 250 waggons, for discharging endwise, of three tons.

The old Wellington slope, now disused, at North Wellington, or Wellington (proper) was the place where, in 1869, coal was discovered by the late Hon. Robert Dunsmuir (whose ownership descended to his relict, Mrs. Joan Dunsmuir, of Dunsmuir Castle, Victoria). Before the old slope was finished it was carried down about 1,000 yards to a tenth level, and better coal was never mined, either for quality or profit, as the vast fortune accumulated by Mr. Dunsmuir testifies.

The No. 1 pit of Wellington colliery is near to Departure Bay, and was put down to the coal about 15 years ago, but excepting the taking of a little coal out of one of the upper seams, no mining was done. In the fall of 1891 work was resumed and is continued, the old shaft being enlarged. The seam will be prospected and the expectation is that good coal will be won. The railway is near at hand.

Nos. 3 and 4 pits are connected (No. 3 is in South Wellington). No. 3 is 17 x 7 feet and 200 feet down to the coal, which is 10 feet thick there, and averages 6 to 11 feet, all hard and good "Wellington" coal, of the description known as hard bituminous. The workings, as are all those of the mines of Messrs. Dunsmuir & Sons, are on the pillar and stall method, and in this mine are from a slope, the top of which

is about 75 yards in a southerly direction from the bottom of the shaft. This slope is down 750 yards on a gentle grade with good hard coal all the way, varying in thickness from eight to ten feet. Ventilation is by a fan (the first erected in this district) on the top of the up-cast shaft. The fan is 30 feet in diameter and ten feet wide.

No. 4 pit is on a bluff overlooking the valley, and is 633 feet deep, with a borehole at the bottom 63 feet further. In sinking this pit a seam was struck at the depth of 350 feet, but this was at the time thought not to be the Wellington seam, and the pit was continued to the greater depth, as it turned out unnecessarily, though it was useful as an exploration of the measures. The shaft is 700 yards east of No. 3 pit and about 250 yards in a northeasterly course from the foot of the slope in No. 3. A railway of one mile connects the pit with the North Wellington Railway. After overcoming some faulty ground (that had misled them when sinking), and getting into the seam, the coal proved to be of Wellington first-class coal, varying from eight to twelve feet thick, leaving about two feet of hard coal for a roof. The workings are connected with No. 3 pit. Ventilation is by a fan and steam jet; the shaft is partitioned off, the union with the other pit obviating a second shaft. About 60,000 cubic feet of air per minute is circulated. The pit head and loading arrangements are of the best and work almost automatically. The hoisting, tippling and screening, and loading into the waggons for shipment are carried out without a hitch and with the utmost celerity and ease. The general manager of the Wellington colliery is John Bryden, M.E.; he is a thorough master of the art and science of mining and mechanical engineering and is also well versed in the geology of the island. To Mr. Bryden, with his corps of able assistants, is due the successful application of many mechanical labor-saving contrivances in the works and about the pits of this extensive and important colliery, with the satisfactory resultant of profitable returns, as well as despatch and facility in conducting the mining operations. The coal from No. 3 pit is brought up an incline to join the North Wellington Railway system. The output of these mines has from various causes latterly varied, and at the present time, partly owing to the heating of No 3, the mines are standing idle, also to help the diminution of output during the demoralized state of the San Francisco market. It is, however, the intention to start up again immediately, if arrangements can be effected.

No. 5 pit is in North Wellington, about 1,000 yards in a northerly direction from No. 4. The pit is 18 x 8, and is down 234 feet to coal, which was 13 feet thick --hard Wellington coal; this was done on 30th August, 1885. Ventilation is by a fan of large size on top of an upcast shaft, and 90,000 cubic feet of air per minute is circulated ordinarily. The same remarks as those on pithead, etc., will apply to this pit. Here there are sidings from the E. & N. Railway, and 25 ton cars are loaded with coal for Victoria consumers and the railway engines. Messrs. James Dunsmuir and Alexander Dunsmuir, and Mr. John Bryden, in addition to Mrs. Joan Dunsmuir, are proprietors of a controlling amount of stock in the Esquimalt and Nanaimo Railway Company (including its fabulously valuable mineral lands, and several million acres of general lands on Vancouver Island, known as the "Island Railway Belt." The upset price of the land, subject to reservation of minerals, merchantable timber, quarries, etc., is $3 an acre. The railway company also own the foreshores

lying off their "belt," and the rivers, streams and lakes therein—a truly goodly heritage. Mr. Alexander Dunsmuir is president of the company, and his brother and Mr. Bryden are directors. The coal in No. 5 pit averages from four to ten feet in thickness, and the workings are very extensive.

No. 6 pit is fully 900 yards east of No. 4, and near No. 2 of the East Wellington Company's colliery. It reached the Wellington seam on the 1st May, 1889, at a depth of 340 feet from the surface. Shaft is 18 x 8 feet. Coal eight feet thick, of the best quality. This pit is connected with and has a travelling road to No. 5 pit; both pits are, however, otherwise kept independent of each other. Ventilation of No. 6 is by a Murphy fan, circulating about 40,000 cubic feet of air. The coal is proving good and hard, from six to eight feet thick in general, with a few thin places; these can be worked longwall, and will be the only workings of that kind in the colliery, as the plan is that of pillar and stall, combined with a division of the several mines into districts and separate splits for ventilation.

Further south is a tract of mineral land held by the firm, known as "Jingle Pot," acquired by the late Hon. Mr. Dunsmuir from Sabiston and Horne, and here a slope, called No. 2 slope, has been driven. At the top the coal was soon got into, about five feet thick, good and hard, but after some distance the coal was found to be down below the line of the slope, then 150 yards in, and work was suspended.

Immediately south of the New Vancouver Coal Company's "Southfield," some years ago, a slope was driven into the seam below a bluff, just under the E. & N. Railway track. This slope was energetically worked for a long distance, and the mine, named the "Alexandra mine," was looked to as a formidable competitor with the Southfield mine, but operations were suspended at a time when the miners declared that there were many favorable banks of coal passed through that they would like to work by contract, at rates that would be an inducement to the owners. The distance from the headquarters of Messrs. Dunsmuir & Sons at Wellington, however, who had unlimited reserves of first-class coal at hand, was, it is understood, the reason that Mr. Bryden gave for not desiring to have his attention distracted by this distant mine, and for not continuing mining there. It is not unlikely that working will be started at the Alexandra mine in 1893.

The coal statistics of the Wellington colliers since 1890 are as follows—(Vide the "Canadian Mining Manual 1890-91," for statistics of 1889, and analyses of coal):

Year.	Output. Tons.	Exports. Tons.	Provincial sales, &c.* Tons.
1890	174,496	106,281	68,769
1891	345,182	282,452	54,734
1892	290,000	180,625	105,000

The diminution of output in 1892 was intended to check the market at San Francisco, where it was folly to send an article of the high class of Wellington coal to be sacrificed. The corner has now been turned, and the year 1893 will show a return of the Wellington colliery to its normal power of production.

*These quantities include fuel used in furnaces, miner's coal, etc.—about 10 per cent. of output.

The number of persons in the employ of the Wellington colliery averages from 750 to 800, a large number of whom dwell in the houses belonging to the colliery in the old town of Wellington, at moderate rentals, while a new townsite, laid out by Messrs. Dunsmuir & Sons, near to the old town, is being built upon, and stores and town institutions are springing into existence at a rapid rate. This departure from the old time policy of the utmost conservancy in dealing with their large estate may yet be applied to other parts of the estate, and thus the settlement of the country will progress in true colonistic fashion, and that without any possible detriment to the mining interests.

Although the towns at Wellington do not yet possess electric or gas lighting, as at Nanaimo, Messrs. Dunsmuir & Sons have not omitted entirely the application of electricity in their mines; pumping is to be done by electricity—by a triple 6½ inch pump, said to act like a charm—the machinery being on the point of trial, and probably further use of electricity will be made in the mines at Wellington, if its use should prove economical. Messrs. Dunsmuir & Sons own a commercial coal dealing depot and establishment in San Francisco, with large yards for storing coal when required, and the splendid steam colliers "Wellington" and "Costa Rica," and other vessels, are owned by the firm and employed in carrying Wellington coal to San Francisco.

The East Wellington mine, belonging to the East Wellington Colliery Company, principally owned by Mr. R. D. Chandler of San Francisco, is situated to the south-west of No. 6 shaft and Northfield mine. Two shafts 8 x 18 feet are down to the coal in the Millstone Valley, of 200 and 270 feet depth. Ventilation is by a Guibal fan, circulating 28,000 cubic feet per minute. The coal raised at this mine is of first class quality, none better entering the market, but the seam has, with some valuable exceptions, proved thin and expensive and difficult to mine at a profit, unless the prices rule in its favor. Still the plucky proprietors are indomitable in their exertions to get into a more productive portion of their goodly estate, and are deserving of success. About 140 men are employed in and around the mines, and an average of 150 tons of coal is put out per day when at work; the workings are entirely longwall. The coal is disposed of almost entirely at San Francisco, where Mr. Chandler carries on the coal business, his article always commanding a ready sale for domestic use at top prices. All that is needed is more coal of the same quality as that now mined to ensure immense returns. Mr. W. S. Chandler, son of the proprietor, who is a certificated manager, is in charge of the colliery. A narrow gauge railway runs the coal down to the southern shore of Departure Bay in 30 waggons, tipping endwise, of 4½ tons.

The company own two locomotives. The wharf is commodious and well situated for shipping. The regular steamer "Empire," owned by Mr. Chandler, makes regular trips between San Francisco and Nanaimo as a collier, and with the aid of a few sailing vessels has carried the output of the mine to market. At the mine there is a steam sawmill of 12,000 feet capacity per day. The mining village, with its hotel and stores, is well ordered, and the people are doing fairly well.

The coal statistics of the colliery are as follows :—

Year.	Output. Tons.	Exports. Tons.	Provincial sales, etc.* Tons.
1890	44,602	35,132	8,484
1891	41,666	36,181	6,918
1892	32,000	27,761	4,000

The Union colliery, in the Comox coal area, about 60 miles north of Nanaimo, is owned and operated by the Union Colliery Company. The works were begun in the spring of 1889, in the lifetime and under the personal direction of the late Hon. Robert Dunsmuir, then president of the company, and considering the extraordinary difficulties he had to encounter in subduing natural obstacles presented by the country in which it was decided to open the mine and construct 12 miles of railway through the same, the success of Mr. Dunsmuir in constructing the works and opening the mine in, as he was pleased to express it, "a miner-like manner," is a lasting monument to his administrative ability. Since the decease of Mr. Dunsmuir his son, Mr. James Dunsmuir, a thoroughly practical man, has succeeded to the presidency of the company, and has continued the energetic policy of his father in the introduction of modern machinery, and not least the power of electricity, to make the Union colliery second to none on the Pacific slope for the possession of modern appliances and improvements in mining. It is impossible to do justice to the merits of the Union colliery in the limited space of an article on the general state of the coal industry. The able reports of the Government Inspector of Mines for British Columbia, Mr. Archibald Dick, made annually to the head of his department, afford most interesting details of the progress of the Union colliery from its inception in 1889 to date, and such reports can be readily obtained, together with all information relating to coal and other mining regulations in force in the province, by application to the genial and obliging Minister of Mines for British Columbia, the Hon. James Baker, of Victoria, B.C.

Two tunnels or adit levels, of 700 and 1,200 feet, have been driven into two of three seams that crop out on the face of a high bluff. The coal produced is hard and good, but thin, from two to three feet thick, with a strong sandstone roof. This mining is longwall. The ventilation is by a furnace built up at the outcrop of the coal. No. 1 shaft was put down and coal prospected from it. It has been standing, pending other work.

No. 1 slope has been driven in upwards of 2,400 feet in good hard coal, resembling Wellington coal in most respects. The workings are by levels from the slope, in some of which the coal is improving. Upon the pillar and stall system the average height of the seam is four feet. Ventilation is by Murphy Fan of 8 feet diameter on an upcast shaft, passing 25,000 cubic feet of air per minute. No. 2 slope was commenced in the summer of 1890, at a distance of a mile north of No. 1 slope. This slope, afterwards altered in name to No. 4 slope, is down 850 yards in coal varying from five to eight feet thick. The coal is hard and of like character to the "Wellington." The workings are by pillar and stall. A series of bore holes ahead of the slope showing good prospects, and are verified as the slope progresses.

* Including coal used in furnaces, etc.

Ventilation is by a Guibal Fan, circulating 45,000 cubic feet running slow. The coal is worked by pillar and stall, and is cut in great part by coal mining machinery from the Jeffrey Manufacturing Company, Columbus, Ohio. This machinery is operated by electricity by a 100-horse power dynamo. There are four motors with coal cutters. A Stanley heading cutter is also used in this mine. The work done has proved a saving of powder, coal and labor, and in places where such machinery can be used, its use may be economical. The winding engines of this slope are very powerful, of 100-horse power, and equal to great future work, which will undoubtedly be required of them when the mine has developed, as intended by the management, into one of the largest concerns on the coast.

Mr. Francis D. Little, the general manager of the Union colliery, is a man holding advanced views as to the adoption of every possible mechanical means for economizing labor and time, and facilitating the proper performance of needful work, and evidence of his skill in this respect meets the eye at all points of the works.

At the mine is a sawmill of 20,000 ft. per day. The construction of the railway involved several feats in engineering in bridge work. It is a standard gauge, and coal is conveyed to the shipping wharf, on Bayne's Sound, by cars 25 tons burden, and locomotives of 50 tons. The company owns 1,025 cars, and four powerful locomotives, two of 12-inch cylinders, one 14-inch and one 16-inch. The wharves are upon the most improved model. The immense steam colliers "San Mateo," "San Pedro," and others of 5,000 tons carrying burden are rapidly loaded.

The company own diamond drilling machinery of the most approved make and power, which is being put to good purpose in exploring the part of the Comox area owned by the company.

In consequence of the state of the San Francisco overstocked market, the Union colliery has only been worked for about half the year 1892, but now the mines are going at full power, and will be developed to their utmost capacity by the management.

The coal statistics of Union colliery are as follows :—

Year.	Output. Tons.	Exports. Tons.	Provincial sales, etc. Tons.
1890	69,537	74,048	1,481
1891	114,972	103,960	294
1892	94,000	60,535	30,000*

It may be said of the mines of Vancouver Island, that as a general thing they are remarkably free from gas; the mines throughout are worked with naked lights. The possible danger from dust is carefully studied by the Government Inspector and the mining managers, and wherever a doubt arises as to the dryness produced by the breezy ventilation of the immense fans now doing such excellent work in ventilation, causing the accumulation of dust to a dangerous degree, water is brought to bear in sprays to dampen the atmosphere and allay the dust.

The wages paid in the province to the miners and mine laborers are as high as in any coal mine on the continent, and generally the workmen are well provided

* This amount (30,000) comprises coal on hand. For statistics for 1889, *vide* "The Canadian Mining Manual, 1890-1.

with house accommodation, and have the advantage of free public schools for their children.

The outlook for the coal industry of Vancouver Island for the year 1894 is very bright indeed, and the coal owners are in good heart. The output and shipments will be augmented all round, and at the end of the year the trade will no doubt have recovered its ascendency in the market, both as to volume and prices realized, with a probable satisfactory increase.

NANAIMO, B.C. S. P. PLANTA.

PLACER GOLD MINING IN BRITISH COLUMBIA.

IT is commonly said in reference to the British Columbia gold mines, that the rich "placers" are already practically worked out. This is true only in the sense that they no longer contain the extremely rich deposits which yielded so largely under the primitive methods employed in the early days. For some years the "hydraulic" system has been employed to wash down through a flume all the sedimentary deposits of the creeks, the gold being caught in riffles and by mercury placed in the flume.

This system is now being adopted more extensively than ever, not only to work creek deposits as formerly, but is applied to the large benches and flats along the Fraser River and elsewhere. In addition to being able to work the fine gold areas profitably by this method, there is always a chance of striking an older and higher river channel, and thus finding coarse gold and better "pay." Such a channel as this is now reported to have been found near Lytton. Both at Yale and Lillooet, as well as Lytton, mining of this kind is now being carried on with good results. This work is highly creditable to the promoters and of undoubted benefit to the country, where the land so worked is unfit for agricultural purposes, but when suitable for cultivation there is a grave doubt as to the advisability of allowing it, as the ground thus worked is rendered useless for evermore. In British Columbia, and especially along the Fraser River, where the agricultural lands form such a small percentage of the whole, this argument has particular force. Years ago in California this question was argued before the courts, and this style of mining was prohibited, it being clearly shown that the returns from the soil before many years outweigned the more speedy results of the mining, besides keeping in the country many more citizens. There may be special facts in regard to British Columbia, it being a new country, where the immediate good results will go on bearing fruit and perhaps compensate for the future loss of the land. The early history of the placer mines of British Columbia is well given in the "Mineral Wealth of British Columbia," by Dr. G. M. Dawson, C.M.G., of which the following is an extract :—

"The first authenticated discovery of gold within the limits of what is now the Province of British Columbia, occurred at Mitchell or Gold Harbour, on the west coast of the Queen Charlotte Islands. The discovery created considerable interest at the time, but was in no way connected with the Fraser River excitement, and general commencement of placer mining, which occurred later. As, however, the matter is of some historical interest, and as several versions of the affair have been given, the following notes derived from Mr. J. W. McKay, who was conversant with all the circumstances, at the time, are inserted here: The first gold was a nugget accidentally found by an Indian woman on the beach in 1851. After a part had been cut off, it was taken by the Indians to Fort Simpson and sold there, weighing, as received, between four and five ounces. The nugget was then sent by the officer in charge, to

Hudson Bay headquarters at Victoria. The Company in the same year sent the brigantine *Una* to the place of discovery, where a quartz vein seven inches wide and traceable for eighty feet was found, and reported to contain twenty-five per cent. of gold in some places. Some of the quartz was blasted out and shipped, but the brigantine was lost on the return voyage, at Neah Bay, near Cape Flattery, in the month of December. In January, 1852, a U. S. brigantine, named the *Orbit*, which was on the rocks in Esquimalt Harbour, was bought by the Company, registered under the British flag, re-named the *Recovery*, and sent north with 30 miners in addition to the ship's company, the miners going 'on shares' in the venture. Three months were spent in getting a cargo of the quartz, which was eventually sent to England, the miners receiving $30 a month each as the result. Meanwhile, the discovery having become known, several little vessels from San Francisco followed the *Recovery* to the Queen Charlotte Islands, and H. M. S. *Thetis* was sent from Valparaiso to keep order. The deposit proved, however, to be quite limited, and these vessels as well as the *Thetis*, shortly left. Soon after, a vessel named the *Susan Sturgiss* arrived, and the captain (Rooney) collected a quantity of the quartz which had been discarded by the *Una* expedition, and taking it to San Francisco, realized $1,400 on it. A second trip made by this vessel in the same year, ended disastrously, the vessel being captured by the Indians at Masset, and the crew kept as prisoners for some time until released by the Hudson Bay steamer *Beaver*. It would appear that gold to the value of about $20,000 may have been obtained from this little vein, while an estimate as high as $75,000 has been made.

"It is now difficult to ascertain under what precise circumstances the first discovery of gold placers on the mainland of British Columbia occurred. Little attention was at first given to accounts of the finding of small quantities of gold, and at a later date, when gold mining sprung into importance, numerous stories respecting its discovery were invented or exhumed.* One statement, is to the effect that the Hudson Bay Company's agent at Kamloops had bought gold from the Indians as early as 1852, but, if correct, the amount purchased must have been very small. In 1855, a servant of the same company discovered gold near Fort Colville, a short distance south of the international boundary, and moderately rich diggings began to be worked in that vicinity. It seems certain that the epoch-making discovery of gold in British Columbia, was the direct result of the Colville excitement. Indians from the Thompson River, visiting a woman of their tribe who was married to a French Canadian at Walla-Walla, spread the report that gold, like that found at Colville, occurred also in their country, and in the summer or autumn of 1857, four or five Canadians and half-breeds crossed over to the Thompson, and succeeded in finding workable placers at Nicoamen, on that river, nine miles above its mouth. On the return of these prospectors the news of the discovery of gold spread rapidly. It is also probable that their arrival on the Thompson caused the Indians to take an interest in gold mining, for we read in a despatch of Governor Sir James Douglas, that from October 6, 1857, to the end of that year, three hundred ounces of gold had passed

* See Bancroft's Works, vol. xxxii, chapter xx.

through the hands of the Hudson Bay Company, this amount being all, so far as known to Douglas, which had been obtained. Douglas speaks of the region including the Lower Thompson, from which the gold came, as the "Couteau Country."

"Nearly ten years previously, in 1849, gold had been discovered in California, and that country was swarming with a cosmopolitan population of gold-seekers; thus when the discovery of gold in the north became known and authenticated by the exhibition of the gold itself, an extraordinary migration followed. Between March and June, 1858, from 20,000 to 23,000 persons arrived by sea from San Francisco in Victoria, and converted that place (first founded by the H. B. Company in 1843) from a quiet village of 200 or 300 inhabitants, into a city of tents. At the same time, many miners (estimated by some at 8000 in number) reached British Columbia by overland routes from the south. A large proportion of those who arrived at Victoria never got so far as the mouth of the Fraser River, their objective point, and so great were the natural difficulties and the resulting disappointment experienced, that all but about 3000 of this promiscuous migration returned to California before the following January. The inland country was entirely without routes of communication, by nature a singularly difficult one, and unprovided with means for the support of a large population. Meanwhile, by the more fortunate and energetic, the development of its wealth had been fairly inaugurated. The auriferous river-bars in the vicinity of Hope and Yale on the Lower Fraser being the most accessible, were the first to be worked, and the return of gold began to assume important dimensions. The actual shipments made from Victoria during the first five months of work in 1858, are stated as below:—*

June	$ 6,000
July	45,000
August	45,000
September	164,000
October	283,000
	$543,000

"It is impossible here to follow the further progress of gold discoveries in British Columbia in detail, though such facts relating to discovery and former mining, as appear still to possess importance as guides to future development, are mentioned in connection with the several districts and localities to which they relate.† A few words must suffice to indicate in a general way the progress of the army of gold miners, the outlines of the topographical features of the Province previously given, serving to acquaint those not personally familiar with it, with the salient features of the regions which were thus rapidly overspread.

* According to Macfie, Vancouver Island and British Columbia; London, 1865, p. 72. There are said to have been about 4000 miners along the Fraser between Hope and Yale, in November, 1858. At Hope 400, and at Yale 1,300.

† A mass of information respecting the historical and other features of gold mining in the Province is contained in Bancroft's Works, vol. xxxii, History of British Columbia. The details there collected may be consulted with advantage, and have been frequently referred to in connection with localities mentioned in later pages of this report. It must be added, however, that many of the statements quoted by Bancroft must be accepted with caution, having been derived often from the newspapers of the time, and other sources not always trustworthy, but which it has naturally been impossible for the compiler to check, and many of which call for an intimate local knowledge of the country, even to properly correlate.

"Before the close of the working season in 1858, some of the adventurers who had come overland from the south, had pushed onward in face of extraordinary difficulties—resulting not alone from the roughness of the country itself but combined with the want of supplies and occasional overt hostility of the Indians—as far as Fountain, a short distance above Lillooet on the Fraser, and by the line of the Thompson to Tranquille River on Kamloops Lake. In the following year renewed advance brought a number of miners to the Quesnel River, and in 1860 rich diggings were found at The Forks of the river and over 600 whites were at work on its length, while Antler Creek was discovered and some work done upon it by a few score men—thus fairly entered on the extremely rich central region of Cariboo. Also in this year, good placers were found on the Similkameen, in the southern part of the Province.

"The theory formed by the miners who first worked the fine 'flour' gold of the Fraser below Yale, was that this gold had its origin in richer deposits toward the sources of the great river, and though this theory was only partially correct as regards the origin of these particular deposits, it none the less served as the impelling force which led to the opening up of the Cariboo district.

"In 1861, Williams and Lightning Creeks, Cariboo, the two most celebrated in the annals of British Columbian placer mining, were discovered, and in this and the following year most of the other rich creeks in Cariboo became known. The first gleanings from the old Cariboo steam-courses were notable. It is estimated that gold to the value of $2,000,000 had been got out by a population not exceeding 1,500 before the end of 1861. In consequence of these finds a second important migration of miners and others towards the Province commenced before the close of 1861, which continued in greater or less volume till about 1864. A series of letters from a correspondent of the *Times* contributed largely to this result, and extended the area of interest to very wide limits, bringing adventurers from England, Canada Australia and New Zealand. A party of men even set out for Cariboo from Eastern Canada overland, in 1862. Of this party several members lost their lives in the mountains, but some eventually reached their destination.

"A further consequence of the Cariboo excitement was to depopulate almost completely the other mining camps in the Province, even those which were yielding a good average return for work, some promising localities lying untouched for years afterwards, or falling entirely into the hands of the Chinese and Indians.

"In 1863, however, rich placer deposits were found on Wild Horse Creek in the Kootanie region, the extreme south-east portion of the Province. These caused considerable local excitement at the time, and were somewhat extensively worked in the following year and thereafter, notwithstanding the attraction of Cariboo. In 1864 Leech River, in the southern part of Vancouver Island not far from Victoria, was discovered to be auriferous, and in 1865 a number of miners from the Kootanie district were prospecting and working in the neighboring Big Bend (of the Columbia) country, the report of their success resulting in the Big Bend excitement of 1866. This subsided almost as quickly as it had risen, the number of men who rushed to the place being much too great for the opportunities of work.

"Though miners from Quesnel, following the routes employed by the Hudson Bay Company, had reached and worked with some success on Peace River as early as 1861, it was not till 1869 that the richer deposits of the feeders of the Omenica Branch of that river near lat. 56° were discovered, and the Omenica excitement did not attain its height till 1871. In 1872, the rich northern mines of the Cassair district, on the head-waters of the Dease, were brought to light and a general migration in that direction occurred, which, in 1873, led to the almost complete abandonment of Omenica.

"The discovery of the Cassiar mines carried the miners to the vicinity of the 60th parallel, the northern boundry of the Province. Gold was next found in paying quantities on the tributaries of the Yukon, still further to the north, in 1880.* No such rush has occurred to this district as happened in the case of some of those previously mentioned, but in 1886 the miners were at work as far north as lat 64° 30′ having found 'coarse' gold there on Forty-mile creek.

"Granite Creek, a tributary of the Similkameen, was found to yield rich diggings in 1885, and though it has not proved to be as improtant as at first hoped, it has led to renewed activity in this vicinity.

"While it may now be safely affirmed that gold is very generally distributed over the entire area of the province of British Columbia, so much so that there is scarcely a stream of any importance in which at least 'colors' of gold may not be found, the enumeration of the principal discoveries of important mining districts, shows very clearly that most of these are situated along the system of mountains and high plateaux which comprise the Purcell, Selkirk, Columbia and Cariboo ranges and their north-western continuations, lying to the south-west of the Rocky Mountain Range properly so called, and parallel in direction with it. Of all the gold producing districts that of Cariboo has proved the richest and the most continuously productive.

"The first part of the annexed table, extending to the year 1875, was originally prepared in Victoria by Mr. Charles Good (then Deputy Minister of Mines and Provincial Secretary) and the writer (Dr. Dawson) in the winter of 1875-76. It was first published in the Annual Report of the Minister of Mines for 1875, and has since been republished annually in the same report, with the necessary additions. It is based thoroughout on the amounts of gold shipped by the banks, express and other companies from Victoria, this being the best available means of ascertaining the yearly product. It has from the first been impossible to ascertain the amount of gold annually taken away in private hands, largely by Chinese, and no account was obtained of the gold carried south from the Kootanie and Similkameen country, which did not pass through Victoria. To allow of these amounts, an addition of one-third is made to the amount actually known to have been exported, up to the year 1877. In some of the earlier years it is probable that this addition is an under-estimate. while the reverse may hold in the case of the years immediately preceding 1877, Subsequent to the year 1877, an addition of one-fifth only has been made in the British Columbian report. It will thus be apparent that the figures given can only be accepted as a near approximation to the actual yield.

* Whymper states, however, in 1869, that gold had been found in minute specs by employees of the Hudson Bay Company before that date. Travels in Alaska and on the Yukon, 1868, p. 227.

TABLE showing the actual known and estimated yield of gold; the number of miners employed, and the average earnings per man per year, from 1858 to 1891, in the Province of British Columbia.

YEAR.	Amount actually known to have been exported by by banks, &c.	Amount added to represent gold carried away in private hands.	Total.	Number of Miners employed.	Average yearly earnings per man.
	$	$	$		$
1858 (partial return)	543,000	.....	*705,000	3,000	235
1859	1,211,304	1-3rd 403,768	1,615,072	4,000	403
1860	1,671,410	" 557,133	2,228,543	4,400	506
1861	1,999,589	" 666,529	2,666,118	4,200	634
1862	1,992,677	" 664,226	2,656,903	4,100	648
1863	2,935,172	" 978,391	3,913,563	4,400	889
1864	2,801,888	" 933,962	3,735,850	4,400	849
1865	2,618,404	" 872,801	3,491,205	4,294	813
1866	1,996,580	" 665,526	2,662,106	2,982	893
1867	1,860,651	" 620,217	2,480,868	3,044	814
1868	1,779,729	" 593,243	2,372,972	2,390	992
1869	1,331,234	" 443,744	1,774,978	2,369	749
1870	1,002,717	" 334,239	1,336,956	2,348	569
1871	1,349,580	" 449,860	1,799,440	2,450	734
1872	1,208,229	" 402,743	1,610,972	2,400	671
1873	979,312	" 326,437	1,305,749	2,300	567
1874	1,383,464	" 461,154	1,844,618	2,868	643
1875	1,856,178	" 618,726	2,474,904	2,024	1,222
1876	1,339,986	" 446,662	1,786,648	2,282	783
1877	1,206,136	" 402,045	1,608,182	1,960	820
1878	1,062,670	1-5th 212,534	1,275,204	1,883	677
1879	1,075,049	" 215,009	1,290,058	2,124	607
1880	844,856	" 168,971	1,013,827	1,955	518
1881	872,281	" 174,456	1,046,737	1,898	551
1882	795,071	" 159,014	954,085	1,738	548
1883	661,877	" 132,375	794,252	1,965	404
1884	613,304	" 122,861	736,165	1,858	396
1885	594,782	" 118,956	713,738	2,902	246
1886	753,043	" 150,608	903,651	3,147	287
1887	578,924	" 115,785	693,709	2,342†	296
1888	513,943	" 102,788	616,731	2,007	307
1889	490,769	" 98,154	588,923	1,929	330
1890	412,029	" 82,406	494,436	1,342*	423
1891	358,176	" 71,635	429,811	1,199	358
1892	322,938	" 66,588	399,526	1,340	298
1893	316,279	" 63,256	379,535	1,247	304

Total known and estimated yield of gold, 1858 to 1891 55,621,974

* Waddington's estimate.

† Exclusive of a number of men working on or prospecting for quartz.

ACADIA COAL CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia. Authorized Capital $4,000,000; $3,846,100 issued unassessable. No bonds or mortgages.

Directors:

J. W. Clendenin, *President*, 1 Broadway, New York.

Bryce J. Allan,	Thomas H. Hubbard,
H. Montagu Allan,	Johnston Livingston,
Hugh Andrew Allan,	J. Pierpont Morgan, Jr.
James W. Clendenin,	Edwards S. Sanford,
Sir George Elliot, Bart.	George G. Ward.

Head Office: Henry S. Poole, F.G.S., M.E., General Manager, Stellarton, N.S.
J. George Rutherford, M.E., Asst. General Manager.

Formed to acquire and work coal areas in Pictou county and elsewhere in the Province of Nova Scotia.

Acadia Colliery, at Westville, 3 miles from Stellarton. *Mine Manager:* James Maxwell; *Overman:* J. Patton.

Seam of 10 feet worked: dip averages 27 deg.; slope, 3,900 ft.; extreme vertical depth, 1,700 ft.

System of working: in lifts of 300 ft., longwall with timber packs of 5 ft. square.

Ventilation by fan, 24 ft. by 8 ft., iron casing; engine 20 in. by 20 in. cut-off; 17″ water-gauge, barometer, etc.; Liveing's gas indicator.

Lamps—Mueseler and Marsaut.

Hoisting engine on slope, pair 32″ cyl., 60″ stroke direct; drum 14 ft.

Pumping—Duplex compound condensing 22 x 11 in. x 24 in.; rams, 5.5 in.; column length, 2,400 ft., vertical head, 990 ft., wrought pipe, tarred, 6 in. upset ends vanishing threads, metal flanges, no leaks; steam pressure on top 105 lbs., pipe 4 in. covered with infusorial earth from a local deposit; air feeder added to air chamber; auxiliary duplex compound condensing 14″ x 8″ x 16″ at bottom of pit; head 500″; total length steam pipe, 3,800 ft.

Boilers—Water tube; fuel, culm; grates, perforated plates, and Howe's raker with steam jet in ash pit.

Screens double—Primary, 6 in.; secondary, ¾ in. apart curved; 5 sizes of coal; elevator, revolving and shaking screens; Clarke's jig.

A specimen of coal from this colliery gave:—

Hygroscopic water	2·10
Volatile combustible matter	32·27
Fixed carbon	57·57
Ash	7·56
Sulphur	0·50

Albion Colliery, at Stellarton, on I. C. Railway; J. Dunbar, *Manager*; A. McDonald, *Overman*. Railway second built in America; locomotives include "Samson," built in 1838 (since sold); main seam, 38 ft. thick; 148 ft. lower, deep seam, 22 ft. thick; Foord pit, vertical, 900 ft. deep; sunk to main seam; scene of explosion

ACADIA COAL CO.—Continued.

in 1880; loss of life, 44; workings now full of water; machinery massive; hoisting engine, 38" cyls., 5 ft. stroke, 18 ft. dia. drum; Cornish pumps, 62 in. cyl., 9 ft. stroke; beam 34 ft. long, 7 ft. deep in the middle; weight, 18 tons; working barrel, 18 in. dia.; lately equipped with a steam revolving tippler; a Briort movable screen from Drifton, Pa.; 35 ft. belt for cleaning thoroughly the coal; shaking screens; steel pit head frame 50 ft. high, and new bank head; independent condenser on hoisting engine. Fire has been in the old rise workings for 25 years and getting down to the Foord pit required the used workings to be again sealed.

Air-compressors in course of erection at time of explosion, and now not in use; steam cyls., 36 in.; dia., do., 40 in.; stroke 6 ft.; flywheel, 22 ft. dia.; weight 20 tons; present workings in lower seams; capacity 1,000 tons per diem; ventilation by fans; the latter 30 ft. dia. by 10 feet wide; lamps, Mueseler; coal used for coking purposes; 125 ovens; bee-hive, 10 ft. diam.; average pitch of seam, 22 degrees. The following analyses of the coal are by Professor How, of Windsor College, Nova Scotia:—

Main Seam:

Hygroscopic water	1·48
Volatile combustible matter	24·28
Fixed carbon	66·50
Ash	7·74

Deep seam:

Hygroscopic water	2·54
Volatile combustible matter	20·46
Fixed carbon	68·50
Ash	8·50

This coal cokes well, and is largely used both for house and steam purposes.

Vale Colliery, 6 miles east of New Glasgow. McBean seam worked by slope 3,100 ft. long; dips 14° to 35°; vertical depth 1,600 ft., not working.

Six foot seam; slope 2,400 feet; outcrop for 500 left unworked; a new winning ventilated by compression fan, 16 ft. by 6 ft.; engine 10 in. by 16 in. An analysis of a specimen of coal from this seam gave:—

Hygroscopic water	2·22
Volatile combustible matter	30·23
Fixed carbon	59·70
Ash (white)	7·85

COAL DISPOSALS, 1889-93.

(As per returns furnished by the Company.)

Distribution.	1889	1890	1891	1892	1893
Nova Scotia	175,274	159,386	171,896	123,797	178,429
Prince Edward Island	23,541	23,914	33,577	21,354	24,500
Quebec	13,594	23,103	9,459	4,822	9,557
New Brunswick	16,371	16,875	18,885	16,268	19,329
Newfoundland	52	49	46	.....	.....
United States	784	.....	.....	.....	.....
Other countries	.....	289	.....	.....	.....
Colliery employees	5,730	6,160	6,118	5,496	5,803
Bunker steamers	.....	19,081	15,250	7,662	12,954
Engines and coke ovens	.....	.....	.....	73,142	22,634
	235,346	248,857	255,231	252,541	273,206

Coke sold, 1892, 24,458 tons; 1893, 24,266 tons.

Employees, 1893: above ground, 220 men, 34 boys; below ground, 525 men, 67 boys.

ADAMANT MANUFACTURING CO. OF AMERICA.

Authorized Capital, $500,000.

Officers:

E. W. Parmelee, *President.* | G. G. Ruston, *Sec.-Treas.* | C. G. Root, *Vice-President.*

Head Office:

309 East Genesee Street, Syracuse, N.Y.

CANADIAN OFFICE:

W. B. Cherry, Manager, 100 Esplanade East, Toronto.

This company owns, and works for gypsum, an area comprising 65 acres at North Cayuga, in the County of Haldimand, Province of Ontario. Small force employed. It also operates a mill for the manufacture of Adamant at Toronto. The works at Syracuse, N.Y., are supplied with gypsum chiefly obtained from Nova Scotia and New Brunswick.

Superintendent: J. A. Nellis, North Cayuga, Ont.

ALABASTINE CO. Ltd.

Incorporated 1885. Authorized Capital, $50,000, in shares of $100 each, of which to date, $33,500 have been subscribed and paid up.

Directors:

M. B. Church, Grand Rapids, Mich.

J. M. Wheeler, Paris, Ont., | Geo. Kranenberg, Grand Rapids, Mich.
Mrs. Emma A. Wheeler, Paris, Ont. | Chas. R. Haire, Holyoke, Mass.

Head Office: J. M. Wheeler, Secretary, Paris, Ont.

This company operates extensive white rock gypsum mines in the County of Haldimand, and owns and works in Paris, Brant County, the only grey plaster mines in Ontario. It has recently added to the works at Paris a calcining plant for making plaster of Paris. Seventeen persons employed. Estimated value of machinery plant and buildings owned by the company, $15,750.

ALBERTA RAILWAY AND COAL CO.

Incorporated 20th January, 1889. Authorized capital $1,750,000 in fully paid ordinary shares of $100; $1,000,000 in fully paid 6 per cent. preference shares of £100, and 6 per cent. first mortgage debentures for £890,000 with coupons payable January 1st and July 1st and the principal repayable at 105 on Jan. 1st, 1920, or earlier at 115 at the option of the Company on six months notice, power being reserved to purchase the debentures in the market at a price not exceeding 115. Of the £890,000 of debentures £172,400 was taken by the bondholders of the Northwestern Coal and Navigation Company, and the balance was issued to the public through the Trustees, Executors and Securities Corporation, Ltd., at 105.

ALBERTA RAILWAY AND COAL CO.—Continued.

There are also loans at 6 per cent. for £50,000. For the eighteen months to June 30th, 1891, there was a debit to profit and loss of £12,770, after transferring £30,896. From land sales, reserve account towards meeting, £49,528 interest on loans and debentures. In 1891-2 the debit brought forward was increased to £51,147. Upwards of 700,000 acres of farm lands have been sold, and the remainder of the landed estate, with mortgages held on lands sold, have been released by the trustees for the debentures, with the view of enabling an affiliated company to be formed for their purchase and payment by an issue of not exceeding £700,000 of bonds and £100 in shares; the debenture-holders, as above, have agreed to accept payment of their coupons—those due January and July, 1892, 2½ per cent. in cash and 3½ per cent. in bonds; and January and July, 1894, 5 per cent. in cash and 1 per cent. in bonds, payments thereafter to be made entirely in cash. The new company is styled the Lethbridge Land Company, Ltd. This arrangement is being carried out, and on June 30, 1893, the Alberta Company had a "land sales reserve account" of £115,420, represented by bonds of the Lethbridge Company.

Directors:

Sir R. W. Cameron, New York.

T. Davidson, Montreal.	Edward Crabb, Saxmundham, Eng.
E. T. Galt, Lethbridge, Alta.	A. W. Stirling.
Wm. Burdett-Coutts, M.P., London, Eng.	Wm. M. Ramsay, Montreal, Que.
T. E. Collins, Great Falls, Mont., U.S.	Peter Redpath, Montreal, Que.

CANADIAN OFFICE:

Elliott T. Galt, Managing Director, Lethbridge, Alta.

Head Office:

George Edwards, *Secretary*, 37 Old Jewry, London, E.C., Eng.

Formed to take over and control the lands, works, mines and railways formerly owned and operated by the Northwestern Coal and Navigation Company (Ltd).

The company owns the Lethbridge collieries at Lethbridge, in the District of Alberta, N.W.T. The workings consist of three shafts sunk from the level of the prairie to the coal, a distance of about 300 feet, and situated about half a mile from each other.

The system of mining the coal is that known as "pillar and stall" and consists of double entries, each six feet wide, driven parallel with a 30 foot pillar of coal between. Every 400 feet a new pair of entries are extended into the coal parallel to the first pair and along each individual entry a room is turned off every 34 feet, and driven at right angles to, and in the opposite direction from the adjoining entry. At a distance of 30 feet, the room is opened out to a width of about 20 feet, and continued into the coal until it reaches its maximum depth from the entry, viz., 200, there meeting a room which has been taken a similar depth from the next pair of entries, either above or below as the case may be. After carrying rooms to their full depth, the miner returns withdrawing the pillar between his and the adjoining room. There are practically two seams of coal worked. These are separated by a parting of fire clay varying from one to three inches. The lower bench coal has a thickness of 2 ft. 8 in., while the upper bench is 1 ft. 10 in. The main entries are driven staight, and the roadway formed by leaving on the top coal for the roof and lifting about three feet of fire clay making a roadway six feet high, by six feet wide suitable for horse haulage which is the system adopted for drawing the coal from the mine. When the rooms have been formed and the miner has opened out the stall to the required width, the coal is broken up to the full height and carried forward in a breast as previously mentioned.

The mode of ventilation is by means of a Murphy fan 6 ft. diameter. This fan will either exhaust the air from the shaft or force it down, as sometimes required by the state of the weather. The reversing of the current of air is made by opening or closing certain openings. The speed of the fan is usually about 200 revolutions per minute. The winding engines for these shafts are two 20-inch cylinders, direct acting, on a spirally grooved drum and excellent brake connection. The pithead frame, screening and general arrangement at these shafts are of the most modern type, including a safety clutch on the cage, so that if the wire rope was breaking the cage would only descend a few yards until the clutch acted on the guides of the shaft stopping any further descent.

The workings of these shafts are sufficiently developed so as to permit the present output of 1,000 tons daily to be increased on the shortest notice to 1,500 tons.

The output of coal in 1885 was 22,000 tons, in 1892 142,000 tons. 1893 about 150,000 tons, while for 1894 an output of 300,000 tons is expected.

In addition to their valuable coal mining properties this company constructed a narrow gauge railway from Dunmore to Lethbridge, 100 miles, thence on to the international boundary a further distance of 65 miles, and finally on to Great Falls in Montana, making a total distance of 308 miles, equipped with 25 locomotives and cars of all descriptions. They are now converting the Dunmore-Lethbridge line into standard gauge and will transfer the same at an early date to the Canadian Pacific Railway.

The company has extensive machine shops equipped with machinery suitable for all classes of repairs.

In connection with the construction of their railway the company has received a grant of about 1,100,000 acres.

The acquirement and development of their properties has caused them an expenditure of about $5,000,000, and in their service there is on an average about 1,000 men employed, for whose accommodation the company has erected dwellings.

This company markets its coal at no less than 143 points in Manitoba, the Canadian North-West, British Columbia, and the states of Montana and Washington in the United States of America, the most distant selling point being 830 miles from Lethbridge.

The population of the town of Lethbridge is 3,000.

The analysis of Galt coal: carbon 56.20; ash 6.40; water 4.90; vol. matter 32.40.

The officials of the company are:—

E. T. Galt, *Managing Director*,
W. D. Barclay, *General Superintendent*,
Robert Simpson, *Mine Superintendent*,
C. A. Magrath, *Land Commissioner*.

ALGOMA MINES CO.

Incorporated Jan., 1886, under the laws of the State of Michigan. Authorized Capital, $100,000, divided into 4,000 shares, of a value of $25 each.

Directors:

S. L. Ballantine, *President*.

George R. Wallace,	A. R. Ballentine,
B. C. Farrand,	W. L. Jenks,
S. L. Ballentine,	J. H. Talbot.

Head Office: J. H. Talbot, Secretary, Detroit, Mich.

This Company controls some 400 acres of mineral land in the Township of McTavish, near Black Bay, Lake Superior, in the Province of Ontario. Main shaft, 160 ft. deep; drifts, 100 ft. Mining work was not done in 1893, and nothing further is to be done until more definite plans are perfected.

AMERICAN ASBESTOS CO., Ltd.

Registered 18th November, 1889. Authorized Capital, £50,000 sterling, divided into 10,000 shares of £5 sterling.

Directors:

Louis Wertheim, Frankfort, Germany.
L. A. Heinsheimer, New York. | V. Ehrmann, Frankfort.
D. Gabrielsen, Liverpool.

Registered Office: D. Gabrielsen, Sec'y, 5 Chapels Walk, Liverpool, Eng.

Formed to acquire and work asbestos and other mineral lands in the Dominion of Canada. In 1888, Mr. Louis Wertheim, the promoter of the Company, purchased from Dr. James Reed, Reedsdale, Que., Lots 27 and 28 (S.W. ½ of each), in Range B, Coleraine, Province of Quebec, in extent some 104 acres. The price stated was $40,000. Mines and works situated between Black Lake and Thetford Station, on the line of the Quebec Central Railroad. The mine is equipped with excellent accommodation, and a first-class working plant, including: one 16 x 24 Rand 7 Drill straight line compressor, 5 Rand 3 in. steam drills, 5 boom and cable derricks, 2 pumps (Blake and Hunt make respectively), 1 Blake crusher (9 in. by 15 in.), cobbing, cleaning and fibreizing machinery of unique design, 4 boilers (two 45 h.p., one 80 h.p., one 30 h.p.), Copeland & Bacon hoists, etc. Mill building, 30 x 82; crusher house, 30 x 25, 3 storeys; two engine houses (one 60 x 48, the other 25 x 45); 13 double tenement miners' dwelling houses, 4 cottages, etc. The whole of an estimated value of $60,000. The mine has been in operation ever since April, 1889, with but one interruption (1892), and has proved to be one of the most uniform producers of crude asbestos in the district.

Resident Engineer and Manager: L. A. Klein, Wertheim Mines, Que.

AMERICAN GOLD MINING CO.

Canadian Office: Fernando Wadsworth, General Manager, River Gilbert Gold Mines, Beauce County, Que.

This is a syndicate of Boston people interested in certain alluvial gold properties in the Beauce district, Que. During 1893 work was commenced in a small way with a view to determining future operations and we are informed by the management that the results were sufficiently encouraging to warrant more extensive operations in 1894.

ANDERSON GOLD MINE.

Capital invested about $10,000.

Sole Owner:

John H. Anderson, Musquodoboit Harbor, Halifax Co., N.S.

These mines are situated in the Lake Catcha district, about four miles from the village of Musquodoboit Harbor, in the County of Halifax, Province of Nova Scotia. Property comprises 91 gold areas. Operations in 1893 mainly confined to the "Columbus," a new lode found on the property some distance to the west of the old

workings. Work done gives promise of good returns in the future, some $4,100 in gold being taken out in development at a cost of something like $1,500. Small force employed. Equipped with 10-stamp mill and other plant estimated to be of a value of $6,000.

The official returns for 1891 and 1892 are :—

1892.....	282 ozs.,	11 dwt.,	6 grs.	from	344	tons	rock	crushed
1893.....	262 "	3 "	.... "		156	"	"	"

ANGLO-AMERICAN IRON CO.

Authorized Capital, $5,000,000. $3,100,000 issued.

Directors :

Stevenson Burke, Cleveland, O., *President.*

Geo. G. Allen, Akron, O., | C. W. Bingham, Cleveland. O.,
Geo. W. Short, Cleveland, O., | H. P. McIntosh, Cleveland, O.

Head Office : H. P. McIntosh, Secretary, 201 Perry-Payne Building, 103-109 Superior Street, Cleveland, O.

This company owns a three-quarter interest in about 80,000 acres of timber and mineral lands along the line of the Central Ontario Railway, and about 3,000 acres of copper-nickel lands in Dennison Township, Province of Ontario. The iron and timber lands are located between Trenton and Coe Hill, C.O.Ry. ; the copper-nickel properties near Whitefish, all in the Province of Ontario. No mining work done at date.

ANGLO-AMERICAN MINING CO.

Incorporated 15th May, 1890. Capital stock, $3,000,000, in shares of $1 each, one-fourth of which shall be known as development shares.

Directors :

John A. Green, | Jas. Tallyard, | Joseph Johnson.

Head Office : Yale, B.C.

Formed to work auriferous ground on the Siwash Creek, Yale District, in the Province of British Columbia ; to maintain, construct, purchase, hire, improve and manage flumes, hydraulic works, crushing works, furnaces and other works which may be directly or indirectly conductive to the objects of the company, etc.

ANGLO-CANADIAN ASBESTOS CO.

Registered 14th August, 1889, to acquire the properties of a company of the same name (registered 2nd November, 1885.) Authorized capital, £20,000 in shares of £1, of which £11,490 has been issued and paid. There are also 6 per cent debentures to the amount of £4,034, repayable 15th September, 1904. The accounts are made up annually to December 31, and submitted in March. To December 31, 1889, there was a debit to profit and loss of £23 ; in 1890 there was a profit which extinguished this debit brought forward, and provided a dividend of 20 per cent; for 1891 and 1892 20 per cent was paid each year. Carried forward, £2,733.

ANGLO-CANADIAN ASBESTOS CO.—Continued.

Directors:

R. T. Hopper, *President.*

A. F. Watson, | H. W. Paul, | J. H. Armstrong.

English Office: 15 Poultry Chambers, London, E.C.

CANADIAN OFFICE:

R. T. Hopper, President, 314 Board of Trade Building, Montreal.

This company owns and operates certain asbestos lands in Block A, Coleraine, in the Province of Quebec. Mines located about one quarter of a mile from Black Lake Station, on the line of the Quebec Central Railway. Engine equipment comprises: 1 Duplex Rand 5 drill air compressor, Ingersoll and Beatty Hoists, 1 Northey and 1 Valley Machine Co. pump, one 60 h. p. and one 35 h. p. boiler, 3 derricks, etc. Well equipped with building accommodation.

Mine Superintendent: Capt. W. Prideaux, Desjardins P. O., Que.

THE ANGLO-CANADIAN PHOSPHATE CO. Ltd.

Registered 26th February, 1886. The authorized capital is £100,000 in shares of £10, £75,000 in preference and the balance in deferred. Of the preference capital £46,510 has been issued and paid up, and all the deferred shares have been issued and paid up. In 1888-9 a debit to profit and loss of £3,961 brought forward was increased to £4,744, in 1889-90 to £5,749, in 1890-91 to £6,5_4, and in 1891-92 to £7,363.

Directors:

Capt. Robert C. Adams, Montreal, | J. T. Henderson, London,
J. C. Reid, London, Eng., | J. J. Reid, London, Eng.

Head Office:

28 Gracechurch Street, London, Eng.

AGENT IN CANADA:

Robert C. Adams, 41 St. Francois-Xavier Street, Montreal.

The company controls about 3,000 acres of mineral lands in Ottawa County, Que., and the Bob's Lake Mines in Bedford, Ont. Owing to low prices no work was done in 1893. The company is proposing to sell its lands, some of which have given a large production of phosphate and mica.

ANTHRACITE AND BITUMINOUS COAL CO. Ltd.

Incorporated 9th September, 1889. Capital Stock, $250,000, in 2,500 shares of $100 each.

Directors:

B. E. Chaffey, Winnipeg, Man., *President.*

W. Hamilton Merritt, Toronto, Ont., | F. A. Fleming, Toronto, Ont.,
S. H. Fleming, Ottawa, Ont., | G. F. Harman, " "

Head Office: Frank A. Fleming, Secretary, 15 Toronto St., Toronto, Ont.

Formed to acquire and work coal lands in the Dominion of Canada. The property owned is known as the Bow River Mines, and consists of some 1,600 acres of land as under:

619·50 acres in Section 7, Twp. 26, Range 4, W. of 5th Meridian.
296·50 acres in W½ Section 18, Twp. 26, Range 4, W. of 5th Meridian.
372·70 acres in Section 13, N. of Bow River, Twp. 26, Range 5, W. of 5th Meridian.
220·30 acres in Section 13, S. of Bow River, Twp. 26, Range 5, W. of 5th Meridian.
91 acres surfaces surface area occupied by river and railway.

It is situated on the main line of the C. P. R. at a point about three miles west of Cochrane station. A shaft to a depth of 500 feet has been sunk and some preliminary work done on a promising 7 ft. seam of coal About $6,000 had been expended in plant and prospecting to Jan. 1st, 1893. Coal has been mined on the property under royalty, and it is expected that an increased output, over that for the past season, will be made in 1894.

ANTIGONISH GOLD MINING CO.

Incorporated 1892. Authorized capital, $20,000 in shares of $100, all subscribed and half paid at date.

Directors:

J. C. McDonald, J. D. Copeland, C. E. Harris, C. M. Wilkie,

Head Office: C. M. Wilkie, Secretary, Antigonish.

This Company controls about 120 gold areas in Stormont district, Guysboro County, Nova Scotia. Equipped with 15-stamp mill (steam), and pumping and hoisting plant. Thirty-five men employed 1893.

Gold yield, 1892, 2,191 ozs. 18 dwt. 14 grs., from 3,405 tons rock crushed.
" 1893, 1,966 " 19 " 18 " " 4,681 " "

J. C. McDonald, Managing Director, Country Harbor Mines, Guysboro County, Nova Scotia.

ASBESTOS CLUB.

FORMED IN 1889. CLUB HOUSE AT BLACK LAKE, QUE.

Officers and Council 1893-4.

L. A. Klein, Black Lake, *President;* James S. Mitchell, Sherbrooke, *1st Vice-President;* George R. Smith, Thetford mines, *2nd Vice-President. Council:* Matthew Penhale, T. H. Crabtree, J. J. Penhale, B. J. Bennett, Dr. C. E. Morin, D. A. Brown, R. T. Hopper.

Secretary-Treasurer: Mr. H. J. Williams, Black Lake, Que.

ASBESTOS COMPANY OF NEWFOUNDLAND.

Registered in London, 1893. Authorized capital, £10,000 stg. in shares of £1.

Directors:

J. W. Shepherd, | R. W. Mitchell.

R. H. Jones, Manager, Port-au-Port Bay, Newfoundland.

Formed to carry into effect an agreement with R. H. Jones on the one part, and N. W. H. Eady, on behalf of the Company, of the other part; and generally, to search for and deal in asbestos and other minerals. Some prospecting was done in 1893 on a property owned by the Company in the Port-au-Port Bay district, Newfoundland.

ARMSTRONG LIME CO. (Ltd.)

Incorporated under the laws of New Brunswick, 1894. Authorized capital, $60,000, in shares of $100.

Directors:

J. Armstrong, | F. Armstrong, | F. W. Armstrong,
J. A. Armstrong, | J. G. Armstrong.

Head Office: Green Head, Parish of Lancaster, St. John Co., N. B.

Formed to purchase from the owners all rights in the trade mark "Green Head Lime," and to take over and carry on the business of manufacturing lime, etc.

BADGER SILVER MINING CO., OF GILLIES, ONT.

Reconstructed 1891. Authorized Capital, $250,000, in 50,000 shares of a value of $5.00 each. Two dividends have been paid, amounting in all to $37,500, the first on 5th January, 1890, of 50 cents per share, or $25,000; the other on 5th March, 1890, of 25 cents per share, or $12,500.

Directors:

John M. Stowell, *President.*

C. A. Read, | Walter Read,
C. Preusseur.

Head Office: Walter Read, Secretary, N. E. Corner E. Water and Mason Streets, Milwaukee, Wis.

Formed to carry on the business of exploring, mining, smelting, manufacturing and refining ores of silver, and other ores or metals in the district of Thunder Bay, Province of Ontario. The property owned and operated at date is known (1) as the Badger Mine locations, 200 and 201 T, containing 200 acres; and (2) the Porcupine location, 96 T, containing 160 acres, all in the Township of Gillies, in the District of

Thunder Bay. The mines are situate 28 miles S. E. from the town of Port Arthur, and 2½ miles from Silver Creek station, on the line of the Port Arthur, Duluth and Western Railway. Official returns gave the shipments of ore and bullion up to 4th August, 1890, of a value of $250,000. Returns of the production of ore in 1891 gave a yield of 3,500 net tons; concentrates and ore shipped, 125 net tons. 1890: men and boys employed, 125; 1891: about 65 men and boys; 1892-3, closed down owing to depression in silver market. Plant: one stamp mill, 28 x 92, three stories, with boiler and engine house 30 x 32; two steel tubular boilers, 4 x 16; "Conway" automatic cut-off engine 14 x 20; Blake crusher; Strauss "Atmospheric" stamp, of a capacity of 20 tons per diem; four frue-vanners. Average daily capacity of mill, 30 tons. Plant at No. 1: boiler and engine house, 24 x 36 feet; one 4 x 16 ft. tubular boiler; one 12 x 24 reversable engine, geared to 3½ ft. drum. At No. 2: one double cylinder, 8 h. p. friction drum hoist, supplied with steam from No. 1 plant, 350 feet distant.

BANCROFT IRON CO.

Incorporated 12th September, 1889. Authorized Capital, $1,000,000, divided into 10,000 shares of a value of $100 each.

Directors:

Charles J. Pusey, Irondale, Ont.
M. F. Brown, Toronto, | Giles H. Williams, Toronto,
Thos. Shortiss, Toronto, | A. F. Wood, Madoc.

Head Office: Chas. J. Pusey, Managing Director, Irondale, Ont.

Formed to take over the property formerly owned and operated by the Toronto Iron Co. and the Hastings Iron Co., containing in all about 1,000 acres, and situate at Irondale, Counties of Hastings and Halburton, in the Province of Ontario. Only preliminary work has been done and trial shipments made. Nothing new to report in 1891.

BEAMSVILLE PRESSED BRICK CO.

Organized 1870. Capital invested about $30,000.

Owners:

Wm. Tallman, | W. F. Tallman.

Head Office: W. F. Tallman, Superintendent, Beamsville, Ont.

The quarries and works operated by this company are situated on Lots 22 and 23, in the 1st Concession, Township of Clinton, Province of Ontario, about 1½ miles from the village of Beamsville. Sixty men employed. The yearly output is estimated at 6,000,000 brick, and 500,000 drain tile. The works were erected in the spring of 1890, and were opened about the beginning of June in that year. The main building is 30 x 40 feet, the engine room 30 x 24, and the clay shed 60 x 102. There is also a building 30 x 72, two storeys, for making terra cotta and roofing tile. The engine is 70 h. p., and the pressing machine is of the Simpson patent, with a capacity of 15,000 per day of ten hours. The clay is prepared for the press by grinding and sifting it in a machine which has a capacity of 40,000 per day. The crusher is a revolving disc nine feet in diameter, in which runs two wheels with 18-inch face. Into this the clay is shovelled in a dry state, and being crushed under the wheels it is

BEAMSVILLE PRESSED BRICK CO.—Continued.

elevated to a sieve of 16-inch mesh, through which it falls into a hopper and thence into the press where it is moulded into shape under a pressure of fifty to one hundred tons. From the press the bricks are taken direct to the kilns, which are seven in number, and are there burnt to the required hardness. The works are situated alongside the Grand Trunk Railway, where cars are loaded on a switch to be conveyed to Hamilton, Toronto, Montreal, or other markets.

BEAVER ASBESTOS CO., Ltd.

Incorporated 1890, under Letters Patent from the Local Legislature of the Province of Quebec. Capital Stock, $100,000, in shares of $100 each.
Fully subscribed and paid up.

Directors:

R. H. Martin, New York, | Jas. S. Mitchell, Sherbrooke,
Col. Lucke, Sherbrooke, | H. J. Williams, Thetford.

Head Office: J. W. Woodside, Secretary, Sherbrooke, Que.

Formed to acquire and work asbestos and other mineral lands in the Province of Quebec, more particularly Lots 31, 32, Range C, Coleraine, in the County of Megantic, Que. Mines situated half a mile from Thetford station on the Quebec Central Railway. Machinery comprises: two boilers, 125 h. p.; one single drum and one double drum hoists and one winding engine, built by the Jenckes Machine Co.; four boom and one cable derrick; four steam drill (Rand); one Blake and two Northey steam pumps, &c. Well equipped with suitable buildings.

Mine Superintendent: H. J. Williams, Thetford, Que.

BEAVER MINING AND MILLING CO.

Organized November, 1887.

Principal Owners:

General Russell A. Alger, Detroit, Mich. | Col. Frank J. Hecker, Detroit, Mich.

Head Office:

Col. Frank J. Hecker, Detroit, Mich.

CANADIAN OFFICE: Beaver Mine P. O., Ont.

This, one of the leading silver-producing companies of the Dominion, is the owner of Lots 97 T, 141 T, 95 T, 142 T, 155 T, 146 T, 57 T, 149 T, in the Township of O'Connor, and other mining locations in the District of Algoma, Province of Ontario. Engine plant and machinery equipment includes: Burleigh 7 drill air compressor; 7 Rand drills; Lane hoist (drum 51 dia.); 3 Winze hoists; sawmill; 10 stamp mill (Fraser & Chalmers), driven by 200 h. p. engine; 1 Blake crusher, 9 x 14; 1 Dodge, 6 x 10, etc., etc. The workings to date comprise: No. 11 shaft (the deepest), 530 feet; total sinkings of main shafts, winzes and air shafts, 1,700 feet, drifting on vein 6,500 feet; cross-cuts, 1,870 feet. Work suspended temporarily while in good ore on 1st November, 1891. Mines are distant 1¾ miles from Silver Creek Station, on the line of the Port Arthur, Duluth & Western Railway; 11½ miles from Murillo Station, on the Canadian Pacific; and 29 miles S. W. from the Town of Port Arthur.

BEDFORD MINING CO.

Incorporated 3rd September, 1887. Nominal Capital Stock, $250,000, in 10,000 shares of $25 each.

Directors:

President: Sir Richard Cartwright, Kingston, Ont.

B. W. Folger, | Alexander Dunn, | Joseph Bawdon, | M. J. Grady.

Head Office: Joseph Bawdon, Secretary, Kingston, Ont.

This Company was formed to acquire and work some 3,000 acres of mineral lands in the Township of Bedford, County of Frontenac, Ont., containing magnetic iron ores, red hematite ores, plumbago and phosphate of lime. At date no active operations in force.

BELL'S ASBESTOS CO., Ltd.

Registered 4th May, 1888. Authorized Capital, £200,000 stg., in shares of £5, £120,000 stg. of which has been allotted and paid up in full. Accounts to December 31st submitted in February. Dividends for 1888 and 1889 22½ per cent. each year; 1890, 15 per cent.; 1891, 10 per cent.; 1892, 7½ per cent.; 1893, 5 per cent.

Directors:

John Bell,

H. A. Bell, | A. J. Burnett,
H. Heywood, | T. B. Lightfoot.

Head Office:

Geo. W. Giles, Secretary, Southwark Street, London, S. E.

CANADIAN OFFICE: Geo. R. Smith, Manager, Thetford Mines, Que.

Formed to take over the business of Messrs. John Bell & Son, and to buy and work the freehold deposits of asbestos at Thetford, Hayden, and Belmina, and elsewhere in the Townships of Thetford and Coleraine, Province of Quebec. The purchase price for these properties was: Belmina, £8,394, Thetford at £41,300 stg., and Hayden at £8,000 stg. Mines at Thetford Station, on the Q. C. Ry.; 200 men and boys employed; engine and machinery equipment: Norwalk 6 drill air compressor; 4 Blake pumps; 1 pair twin 90 h. p. and 3 upright 30 h. p. boilers, made by the Jenckes Machine Co.; 1 double and 3 single Copeland and Bacon hoists, etc.

DIRECTORS' REPORT, 1893.

The Directors beg to submit to the shareholders the report and audited acccounts for the year ended 31st December, 1893:—

The result of the year's operations is a net profit of.....	£4,683	12	8
To which has to be added the amount brought forward.....	3,047	12	9
Leaving for appropriation.....	£7,731	5	5

BELL'S ASBESTOS CO.—Continued.

The Directors recommend :—

1. The payment on the 19th March of a dividend of 5/- per share, free of income tax, being at the rate of 5 per cent. per annum.

2. To carry forward £1,731 5 5.

Considering the prevailing depression in trade, it is satisfactory to the Directors to be able to state that the sales have increased during the year.

BALANCE SHEET, 31ST DECEMBER, 1893.

DR.

	£ s. d.	£ s. d.
To share Capital :—		
Authorized.		
40,000 Shares of £5 each	200,000 0 0	
Issued.		
6,600 Shares allotted as fully paid to the Vendors	33,000 0 0	
17,400 Shares fully paid	87,000 0 0	
		120,000 0 0
To Mortgage Debentures :— (Charged upon the undertaking)		
613 Bonds of £100 each	61,300 0 0	
Interest	1,532 10 0	
Premium on Bonds drawn for payment	300 0 0	
	63,132 10 0	
Deduct.		
Cash lodged with Trustees for redemption of Bonds	2,338 6 5	
		60,794 3 7
To Creditors :—		
On Bills Payable	5,799 10 7	
On Open Accounts	6,989 8 9	
		12,788 19 4
To Reserve Fund		55,000 0 0
To Profit and Loss Account :—		
Balance from Account, 31st December, 1892	3,047 12 9	
Balance from Account for the Year	4,683 12 8	
		7,731 5 5
To Contingent Liability on Bills Receivable Discounted	4,526 3 9	
		£256,314 8 4

CR.

	£ s. d.	£ s. d.
By Cash :—		
At Bankers	5,160 16 1	
In hand	37 18 1	
		5,198 14 2
By Bills receivable on hand		21,348 13 5
By Debtors		18,813 6 8
Carried forward		£45,360 14 3

Brought forward			£45,360 14 3
By Stock in Trade :—			
London	29,513 3 8		
Asbestos Estates	5,281 2 7		
		34,794 6 3	
By Plant, Machinery, Lease, Fittings, Fixtures and Furniture		11,110 17 0	
By Asbestos Estates, Canada, and Buildings, Machinery and Sundries thereon		69,812 12 6	
By Freehold Premises, Southwark Street	51,301 2 2		
Less Mortgage thereon	25,167 2 6		
		26,133 19 8	
By Goodwill, Patents and Trade Marks of the business of John Bell & Son		69,101 18 8	
			£256,314 8 4

PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDING 31ST DECEMBER, 1893.

DR.

	£ s. d.
To Interest on Debentures, and on Mortgage on Freehold Premises	4,065 0 0
To Salary of Managing Director, and Directors' Fees	1,600 0 0
To Premium on Bonds drawn for payment	300 0 0
To Balance carried to Balance Sheet	4,683 12 8
	£10,648 12 8

CR.

By Profit at London and Branches and Asbestos Estates, Canada	10,610 6 8
By Transfer Fees	38 6 0
	£10,648 12 8

BELMONT BESSEMER ORE CO.

Incorporated 1891. Authorized Capital, $600,000.

Directors :

Jas. M. Ashley, Jr., | John T. Sill,
Robert L. Major, | Wm. A. Kissam.

Head Office : R. L. Major, Secretary and General Manager, 29 Broadway, New York.

Formed to acquire, work and further develop mineral lands in the Province of Ontario, more particularly an iron ore property formerly owned by T. D. Ledyard, Toronto, and situate W ½ lot 19, 1st concession of Belmont, in the County of Peterborough.

Superintendent : G. L. Woodworth, Marmora, Ont.

BELMONT GOLD MINES.

Organized 7th October, 1892. Capital invested at 1st January, 1893, $50,000.

Head Office: A. W. Carscallen, M. P., Marmora, Ont.

The property upon which this Company operates comprises Lots 20 and S. E. ¼ Lot 21, in the 1st Concession, Township of Belmont, County of Peterborough, Province of Ontario. Mines about seven miles from Marmora. Shafts 122 feet and 40 ft.; also three from 22 ft. to 30 ft.; stripping, 300 ft. Equipped with 90 h. p. boiler, steam drills, hoisting engine 6 x 10, three pumps, Gate's rock breaker, and three Crawford gold mills (two 12", one 8".)

The owner writes: Mine has been closed down pending sale to New York syndicate. Arrangements are being made for new plant of most improved and economic description, which will be erected as early in the spring as the weather will permit. Mining on a large scale will be commenced at once under the superintendence of a practical mining engineer. A large quantity of ore is now on the dump waiting the erection of a plant for treatment.

BERTIE NATURAL GAS CO.

Incorporated 21st February, 1891. Authorized Capital, $8,000, of which to date about $4,000 has been paid up.

Directors:

H. N. Hibbard,
B. M. Disher, | I. L. Pound,
John Young, | A. H. Kilman.

Head Office: A. H. Kilman, Sec.-Treas., Ridgeway, Ont.

The operations of this Company are at the Village of Ridgeway, on the Buffalo and Goderich line of the Grand Trunk Railway. One well 870 feet; pipe line laid for about two miles; product entirely consumed in the village for light, heat and motive power. The first gas was found in the Clinton limestone at 725 feet; the second in red Medina sandstone at 785 feet; but the best flow was obtained at 840 to 850 feet in the white Medina. A three-inch-pipe has been put down to the bottom of the well, through which the gas from the second and third horizons is delivered to the service pipe.

In 1893 a second well was put down. It is located about half a mile north-east of No. 1 well. The formations passed through were very similar to those pierced in boring the first well, the chief difference being that corresponding strata were found at from 10 to 15 feet nearer the surface, due to the southerly dip of the rock. The product of No. 2 is estimated at about half that of No. 1; that is to say, nearly 250,000 cubic feet in 24 hours. This well is now piped to the regulating station, and the gas from either well or from both may be used at will. This gas is used for local purposes only.

BLACK BAY MINE AND QUARRY CO.

T. C. Bowman, *President.*

Michael Perron, *Vice-President.* | A. M. Stearns, *Sec.-Treas.*

Western Office: A. M. Stearns, Duluth, Minn.

Organized to acquire and work a location of jaspar and dolomitic limestone, in the Township of Dorion, near the north shore of Black Bay, Province of Ontario. No work done at date.

BLACK JACK MINING CO.

Incorporated October 1892. Authorized Capital, $100,000, divided in 20,000 shares of $5.00.

Directors:

P. Semple, *President.*

Edgar Brown, A. B. Upton, | A. M. Hay, E. W. Barnes.

Head Office: Edgar Brown, Sec.-Treas., 304 Chamber of Commerce Building, Duluth, Minn.

Canadian Offiee: E. W. Barnes, Managing Director, Rat Portage, Ont.

Formed to acquire and work certain gold areas in the Lake of the Woods district, Province of Ontario. Owns a property comprising 363 acres at a point distant from the town of Rat Portage of 15 miles. Property being opened up at date.

BLACK JACK QUARTZ MINING CO., Ltd.

Incorporated 18th March, 1890. Capital Stock, $120,000, divided into 60,000 shares of $2 each.

Directors:

President, E. A. Martin, Barkerville,

John Stevenson, Barkerville, B.C., Charles House, Barkerville, B.C., | John Houser, Barkerville, B.C., A. Kelly, Barkerville, B.C.

Head Office: W. H. Phelps, Secretary, Barkerville, B.C.

Formed for the purpose of mining quartz for precious metals and minerals in British Columbia, etc. The company owns two locations, each 1,500 feet, near Barkerville, Province of British Columbia. Twelve men employed in 1893.

Managing Director: E. A. Martin, Barkerville, B.C.

BLUE LEAD HYDRAULIC CO., Ltd.

Incorporated 1891. Authorized Capital $100,000, in shares of $1.

Directors:

Hon. James Reid, *President.*

James Wilson, | Hon. T. R. McInnes.

BLUE LEAD HYDRAULIC CO.--Continued.

Head Office: Hon. James Reid, President and Managing Director, Quesnellemouth, B.C. Geo. B. Clarke, Secretary.

Formed for the purpose of hydraulic or other processes of mining: to own and construct ditches, flumes and other systems of water ways. The company has a ten years' lease of an alluvial claim two thousand feet in width, by one and a half miles in length, situate on Hixon Creek, at a point 42 miles north of Quesnelle in the district of Cariboo, Province of British Columbia. Estimated value of plant, $3,000. Hydraulic plant, consisting of 1,000 ft. 16-gauge iron pipe, 22 inches, tapering to 9 inches, with a 9-inch monitor, or what is known as a "Little Giant," with crotch pipe, water gates, air valves and a general stock of mining tools. In 1893 a shaft was sunk 45 feet to gravel, but an excess of water compelled its abandonment. A tunnel was then commenced at the same level on which piping was discontinued in 1892, about 25 feet lower than this shaft, and after driving 170 feet, solid rock was reached, but no gold. Work was then closed down for the seasou.

Superintendent: James Deacon, Quesnelle, B.C.

BONANZA MINING CO.

A private Company consisting of the following:—

Owners:

Judge Drake,

J. McB. Smith, F. Jones, | Henry Harvey, P. H. Ward.

Head Office: E. Bell, Secretary, Clinton, B.C.

This Company owns and operates 6 mining locations, each 1,500 x 600', or about 120 acres, situated 8 miles from the town of Lillooet, in the district of Lillooet, in the Province of British Columbia. In a letter under date of 16th December, 1891, the Secretary writes: "We have not done much work during the past summer, but what we have done satisfies us that we have a valuable piece of property. In running a short tunnel of 35' we struck pockets of very rich ore." The property is under bond to an English syndicate.

BOOTANIE CREEK GOLD MINING CO.

Incorporated under the Statutes of British Columbia, 1893. Authorized Capital $150,000 in shares of $100 each.

Directors:

Walter H. Kendall, Vancouver.

Samuel K. Twigge, Vancouver, | D. H. McPherson, High River, Alta.

Head Office: R. C. Campbell Johnstone, M.E., Vancouver, B.C.

Formed to acquire and work certain claims at or near Bootanie Creek, Province of British Columbia.

BOSTON AND NOVA SCOTIA COAL CO., Ltd.

Incorporated by an Act of the Legislature of Nova Scotia, May 1893. Authorized Capital, $5,000,000, in shares of $100, of which $500,000 was reported to have been subscribed at the date of last report.

Directors:

Hon. John W. Candler, Boston, *President.*

John Russell Gladding, Providence, R.I. | John C. Cobb, Boston,
Hon. David S. Baket, jr., Providence, | W. J. Fraser, Halifax,
John McKeen, Mabou, C.B. | A. C. Ross, North Sydney,
R. P. Fraser, Pictou, C.B.

Head Office:

66 State Street, Boston, Mass.

CANADIAN OFFICE:

A. C. Ross, Secretary, North Sydney, Cape Breton.

Formed to purchase, hold, lease and sell any coal, iron or other mineral properties, also earths, clays, stone or mineral substances and the product thereof, manufactured or otherwise, and to mine, quarry and prepare for sale by any process of manufacture, and sell the outputs and products thereof from such mines and properties, etc. The properties acquired by the company are the Broad Cove and Chimney Corner groups, situated in Inverness County, Cape Breton, Province of Nova Scotia, and contain an area of thirty square miles of coal lands. The mines are situated about 14 miles from Mabou, 35 miles from Orangedale station on the Intercolonial Railway and 27 miles from shipping pier to be erected at Whycocomagh and Cariboo Cove, on the Straits of Canso. At last report it was the intention to equip the property with a suitable plant and carry on mining on an extensive scale and at date had under construction a line of railway from the mines at Broad Cove to Orangedale station on the I.C.R. The property includes a very extensive and valuable brown free-stone quarry on the line of their railway about four miles from tide-water at Whycocomagh.

BOSTON BAR GOLD MINING CO.

Incorporated under the Statutes of British Columbia, 1893. Authorized Capital $50,000, in shares of $10 each.

Directors:

Daniel R. Young, Vancouver, B.C.
A. F. Griffiths, Vancouver, B.C., | W. R. Robertson, Vancouver, B.C.

Head Office: Vancouver, B.C.

Formed to obtain by purchase or otherwise and work certain mineral claims at or near Bootaine Creek, on the Fraser river, Province of British Columbia.

BOSTON GOLD MINING CO.

Incorporated under the laws of the State of Maine, U.S.A., 31st August, 1889. Registered at the Department of Mines, Halifax, 25th October, 1889. Nominal Capital Stock $300,000 in shares of $5 each.

Directors :

G. A. Kimball, Boston, Mass., *President*,
B. F. Whittemore, *Sec.-Treas.*, Boston, | F. K. Ballou, Boston, Mass.
Drias Wilson, Boston, Mass., | Frank Leeds, " "

Head Office : B. F. Whittemore, Secretary, Room 94, 620 Atlantic Avenue, Boston, Mass.

Formed to acquire and work 87 gold areas in the district of Malaga, Queen's County, Nova Scotia. Has a modern 10-stamp mill, five-drill Rand compressor, and other plant.

Official Returns of Gold Yield.

1891.....	2,371	ozs.,	5	dwt.,	.....	from	2,624	tons	10	cwt. rock crushed
1892.....	1,607	"	18	"	19 grs.	"	1,825	"	.....	"
1893.....	248	"	15	"	.....	"	306	"	.....	"

Mine Manager : F. K. Ballou, Malaga, Queen's Co., N.S.

BOTHWELL AND LONDON CRUDE OIL CO., Ltd.

Incorporated 1893. Authorized Capital, $20,000, in shares of $10 each.

Directors :

W. T. Strong,
J. D. Wilson, | H. R. Abbott, | P. W. D. Broderick, | G. A. McGillivray.

Head Office : Bothwell, Ont.

Formed for the purpose of purchasing, acquiring, by lease, or otherwise, lands in the County of Kent, Ontario, and boring, digging and constructing petroleum and oil wells, and pumping thereof; and the storing, tanking, refining and dealing in petroleum oil and oil wells, etc. No report.

BRAS D'OR LIME CO., Ltd.

Incorporated 17th July, 1888. Authorized Capital, $50,000, in shares of $10 each, all of which has been subscribed and paid.

Directors :

C. F. Fraser, *President.*

W. C. Delaney, Halifax. | Hy. Sanders, Halifax.
H. H. Read, M.D., Halifax. | E. G. Smith, Halifax.

Head Office : A. Milne Fraser, Secretary, 161 Hollis Street, Halifax, N.S.

The Company owns 6,200 acres freehold and under lease. Quarries at Marble Mountain, Cape Breton, N. S., and Bedford Basin, Halifax Co. Forty men and boys employed.

Quarrymaster: D. MacLachlan, Marble Mountain, C. B., N. S.

BRAS D'OR MARBLE CO., Ltd.

Incorporated 12th June, 1890. Authorized Capital, $200,000, in shares of $10 each.

Directors:

C. F. Fraser, *President.*

Henry Sanders. | Dugald MacLachlan.

Head Office: A. Milne Fraser, Secretary, 161 Hollis Street, Halifax.

Formed to acquire, work and further develop marble deposits situated at Marble Mountain, Bras D'Or Lake, near West Bay, Cape Breton, Nova Scotia. The purchase consideration to the former owners was $55,000 in cash and 8,000 shares in the present company. The quarries have been equipped with an excellent working plant, including Wardwell channeler, portable engine and boiler, gadder, derricks, etc. The deposit is extensive, of excellent quality, and is now being developed.

Quarrymaster: D. MacLachlan, Marble Mountain, C. B., N. S.

BRIDGE RIVER GOLD MINING CO.

Incorporated under the laws of British Columbia 10th April, 1893. Authorized Capital, $25,000, in 250 shares of $100, all of which has been subscribed and 25 per cent. paid at last report.

Directors:

H. T. Bunbury, *President.*

Wm. G. Allan, | J. A. Russell,
John Leatherdale, | F. R. McD. Russell,
George E. Bower.

Head Office: George E. Bower, Secretary, Vancouver, B. C.

Formed to carry on the business of miners, etc. The property owned and operated by the company is held under a 20-year lease and contains a mile of river bed and 160 acres bench alluvial ground, at Horse-Shoe Bend, Bridge River, in the Lillooet mining division, Province of British Columbia. During 1893 the principal operations were confined to bringing in water, and at last report a force of 17 men were engaged in hydraulicing out a new channel for the river with the object of changing its course, which, when completed, will give about 1,000 yards of working ground in the bed of the river.

BRISTOL IRON CO., Ltd.

Incorporated 1888. Capital Stock, $100,000, fully subscribed and paid up.

Directors:

Charles Magee, Ottawa, *President.*
Robert Blackburn, Ottawa, Ont. | Hiram Robinson, Hawkesbury, Ont.

Head Office: E. McMahon, Secretary-Treasurer, Russell House Block, Canal Street, Ottawa.

The property held by this Company contains 400 acres of mineral land in Bristol Township, Pontiac County, in the Province of Quebec. Mining operations were first commenced by the former owners in 1872-3, and during the latter period some 4,000 tons of iron ore were mined; shipments were also made in 1884-5 to the amount of 4,000 tons. Active mining operations were begun by the present Company in November, 1889, from which date up to 1st July, 1890, some 10,000 tons of ore were shipped, mainly to Chatasauqua, Penn.

In 1890 the mines were leased on royalty to Messrs. Ennis & Co., Philadelphia. (See Ennis & Co.)

BRITISH COLUMBIA COAL, PETROLEUM AND MINERAL CO., Ltd.

Incorporated January, 1893. Authorized Capital, $4,000,000, divided into 40,000 shares of $100 each.

Directors:

Joseph D. Pemberton, Victoria.
Lt.-Col. E. G. Prior, M.P., Victoria. | Wm. Fernie, Victoria.

Head Office: Victoria, B. C.

Formed to acquire by purchase from the Crow's Nest Coal and Mineral Company, Limited, all their real and personal property, for the sum of $4,000,000, to be paid in fully paid up shares of the Company, and for the purpose of acquiring coal lands and lands producing coal oil, and other lands, and working the said lands in a workmanlike manner for the purpose of getting and mining coal and coal oil and other minerals therefrom, and selling or leasing the same; and also for the purpose of guaranteeing the debentures or bonds to be issued by the British Columbia Southern Railway Company for obtaining money for the construction of the said railway from Michel Creek, Crow's Nest Pass, to the international boundary, and thence to connect with some railway in Montana, U.S.A.; such guarantee to be limited to $25,000 per mile for 170 miles of railway. (See notice of Crow's Nest Coal and Mineral Co., Limited.)

BRITISH COLUMBIA MILLING & MINING CO., Ltd.

Incorporated 12th January, 1878. Authorized Capital, $1,250,000, divided into 250,000 shares of a value of $5 each.

Directors:

T. Earle, M. P.

F. S. Barnard, M.P. | C. E. Redfern.
Hon. J. H. Turner. | L. E. Erb.
C. A. Vernon, | J. T. Jones.

Head Office: G. A. Sargison, Secretary, 48 Langley Street, Victoria, B. C.

Formed to acquire, work, smelt and otherwise treat ores and minerals in the Province of British Columbia. The Company's property consists of 84 acres of mineral land situate in the Cariboo district. A 20-stamp mill and saw-mill are on the property. Not in operation in 1893.

BRITISH COLUMBIA MINING AND MANUFACTURING CO.

Incorporated under the Statutes of British Columbia, 1893. Authorized Capital, $100,000.

Directors.

W. R. Robertson, Vancouver. | A. F. Griffiths, Vancouver,
D. R. Young, Vancouver, | H. K. Lee, Montreal,
Donald McPhee, Montreal.

Formed to purchase from H. K. Lee, Montreal, all rights, patents and privileges in connection with certain mining machinery, and to manufacture and sell the same, and to carry on the business of manufacturers of mining machinery; also to acquire and work mines in the Province of British Columbia.

BRITISH COLUMBIA POTTERY AND TERRA COTTA CO.

Incorporated October, 1890. Authorized Capital, $60,000, divided into 1,000 shares of a value of $60 each.

Directors:

C. A. Vernon,
S. C. Burris, | B. W. Pearse,
J. H. McLaughlin, | Joseph Hunter.

Head Office: W. H. Bainbridge, Secretary, Victoria, B. C.

Formed to manufacture all kinds of pottery, brick, drain pipes and terra-cotta fire-brick wares, etc. Property covers three acres, and is situated about 1½ miles from Victoria. Forty men employed; yearly turnout of an estimated value of $100,000. Estimated value of machinery, plant and buildings at 1st January, 1894, $58,000.

BRITISH PHOSPHATE CO., Ltd.

Registered 1892. Authorized Capital £20,000 Stg., divided into 4,000 shares.

Directors:

A. Horney,
Herman Voss, | Otto Trübenbach,
W. H. Hutchinson, | Gustav Martens.

BRITISH PHOSPHATE CO.—Continued.

Head Offioe: 15 Leadenhall Street, London, E.C., England.

CANADIAN OFFICE:

J. Burley Smith, M.E., Manager, Glen Almond, Quebec.

This company owns and operates the Ætna and Squaw Hill phosphate mines, situate S½ lot 18, and N½ of lot 17 in the 12th Range of Buckingham, County of Ottawa, Province of Quebec. It has also the mining rights over lot 4, containing 100 acres in the 1st Range of the Township of Derry, County of Ottawa aforesaid.

The Crystal pit (Ætna), where the principal work is being done, is 130 feet deep and still being carried down. At 50, 80 and 113 feet, levels and galleries are driven on the lead. The pit is equipped with one Jenckes Machine Co. boiler, 80 h.p., one Ingersoll-Sergeant compressor, one winding engine, one engineer's lathe, one 25-light 16-candle power dynamo, five Ingersoll rock drills, and a set of sinking and draining pumps and Bullock prospecting drill. The pit house is 50 x 24 feet which includes separating and cobbing floors, there are also blacksmith and carpenter shops adjoining. It is understood that a mechanical classifying and separating machine will shortly be added to the plant. The Grant pit (Squaw Hill) is 120 feet deep. The ore is raised by a horse whim and derrick; this pit is also equipped with a good cobbing house, blacksmith and carpenter shop. The company's phosphate storage bins, wharf, store and offices are on the bank of the River Lievres, and there is also a saw mill. The shipments of phosphate in 1893 were about 2,000 tons, about one-third of which was of high grade (86 to 87%) and the remainder varying from (70 to 75%).

BROAD COVE COAL CO., Ltd.

Incorporated by an Act of the Legislature of Nova Scotia, 1894. Authorized Capital $3,000,000, divided into 30,000 shares of $100 each.

Directors:

W. Penn Hussey, Danvers, Mass.

W. H. Munroe, Edgarton, Mass.,	Wm. H. Wiswell, Halifax.
John Y. Payzant, Halifax, N.S.,	Hon. J. M. Raymond, Salem, Mass.

Formed to mine, quarry and prepare for sale by any process, and to carry, sell and deal in coal, coke, ironstone, copper and copper ores, manganese and other minerals, etc., and generally to carry on the trades of mine and coal owners, etc., in Nova Scotia.

BROMPTON LAKE ASBESTOS CO.

Incorporated 1890. Capital $60,000, divided into 600 shares of $100 each.

Directors:

Andrew Thomson, Quebec, *President*,

Archibald H. Cook, Quebec,	E. J. Hale, Quebec.
E. B. Greenshields, Montreal,	G. H. Thomson, Quebec.

Head Office: A. H. Cook, Secretary, Quebec, Que.

Formed to acquire and work asbestos lands in the Province of Quebec. The Company owns lot 26 and half of lot 25, in the 9th range of Brompton, in all 377 acres, situate 8 miles from the line of the Grand Trunk Railway, and 13 miles north-west of the city of Sherbrooke, Que.

BRUCE LAND AND MINING CO., Ltd.

Registered 9th August, 1878. Nominal Capital, £5,000, in shares of £1 each, of which 2,971 have been issued, and £1,856 17s. 6d. called up, being 12s. 6d. per share.

Directors:

R. B. Lloyd,	E. J. St. John,
T. C. Reynolds,	P. M. Taylor,

Head Office: J. Crocker, Secretary, 6 Queen Street Place, London, E.C.

Formed for the purpose of acquiring a freehold property containing 6,400 acres, and known as the Bruce Location, in the Province of Ontario, and working mines, etc. Annual reports to 30th September, and meetings are held in December. The accounts to 30th September, 1887, showed a balance of expenditure over receipts of £2,173; those to 30th September, 1888, £2,651 18s. 8d., an increase of £478 18s. 1d.; those to 30th September, 1890, an expenditure over receipts of £4,047 18s. 4d.; those to 30th September, 1891, an expenditure over receipts of £4,195 8s. 2d. Cash balances, £735 2s. 5d.

BYRON N. WHITE CO.

Registered 1893. Authorized Capital, $500,000.

Canadian Office: Nelson, B.C.

Formed to develop mineral claims in the Slocan and other districts of the Province of British Columbia. Operates the Slocan Star group of silver lead mines in the Slocan district, B. C. Small force employed.

CALABOGIE MINING CO., Ltd.

Incorporated 8th May, 1882. Capital, $2,500,000, in 100,000 shares of $25.00 each, of which stock to the value of $2,000,000 has been subscribed to date.

Directors:

J. G. Campbell, *President*,

Wm. Hicks, Perth, Ont.,	Edward Elliott, Perth, Ont.,
Peter McLaren, "	J. F. Thompson, "
Hugh Ryan, Toronto, Ont.,	J. A. Allan, "

Secretary: J. A. Allan, Perth, Ont.

This Company owns the east half of Lot 16, in 11th of Bagot; the west half of Lot 16 in the 9th; Lot 14 in the 7th, and the south half of Lot 16 in the 8th; in all 600 acres. Not in operation.

CAMBRIAN COAL CO., Ltd.

Incorporated 5th April, 1886. Authorized Capital, $83,100, divided into 831 shares of a value of $100 each.

Directors :

R. S. B. O'Brien,
Edward Quennell, | Thos. D. Jones.

Head Office: T. D. Jones, Secretary-Treasurer, Nanaimo, B.C.

The property owned by this Company contains 831 acres of mineral land, situate in the Cedar District, Vancouver Island, at a point about two miles from the property owned and operated by the New Vancouver Coal Mining and Land Company. The Company's property being freehold, is not subject to any Government royalty. The property has been inspected and reported upon by the following experts:—J. Hill, C.E. and M.E., New Westminster, B.C. (late of Nova Scotia); E. B. McKay, C.E., Victoria, B.C.; and E. Priest, C.E. and M.E., Nanaimo, B.C., in the reports of which these gentlemen say that it is one of the most valuable properties in the Vancouver Island (Nanaimo District) coal fields. This property is for sale.

CANADA COALS AND RAILWAY CO.

Incorporated by Act of the Legislature of Nova Scotia, 1892. Capital Stock, $750,000. Bonds, $750,000.

Directors :

Samuel Finley, Montreal, *President.*

A. A. Gault, | S. H. Ewing, | R. L. Gault,
Edward Hanson, | R. W. Smith, | E. W. Wilson.

Head Office: A. G. Watson, Sec.-Treas., 157 St. James Street, Montreal.

Mines Office: A. Dick, General Manager, Joggins Mines, N.S.
Robert Archibald, M.E., Superintendent.

Formed to mine, quarry, work, win and prepare for sale, by any process, and to carry, sell and deal in coal, iron and other minerals, &c. The Company controls an area of fifteen square miles, upon which is situated the Joggins Colliery, at Joggins Mines, in the County of Cumberland, Province of Nova Scotia.

COAL DISPOSALS.

	1892.	1893.
New Brunswick	41,553 tons.	48,750 tons.
Nova Scotia	5,817 "	10,793 "
Quebec	16,497 "	23,774 "
United States	395 "	248 "
Colliery employees, engines, &c	4,905 "	7,685 "
Total	69,167 "	91,250 "

Collieries eleven miles from Maccan station, on the main line of the Intercolonial Railway, connected by a standard gauge railway, also one mile from Joggins wharf, on Chignecto Bay, connected by tramway. Rolling stock comprises two locomotives, four passenger coaches, 30 box and flat cars, &c.

Seam from 6 ft. to 8½ ft. worked; coal from 4 ft. to 5½ ft.; clay in centre of seam from 1 ft. to 3 ft.; dip 17°; slope, 1,900 ft.

System of working—Longwall and bord and pillar.

Ventilation by furnace.

Lamps—Anton; all open lights.

Boilers—Six double flue, 3 ft. dia., 30 ft. long.

Winding engines—One double 18″ x 42″, geared 3 to 1; one 15″ x 30″ operating saw-mill; one 14″ x 24″ hauls empty cars from pier to pit; one double 3″ x 10″ used in sinking; one 5″ x 10″, and one 7″ x 16″.

Pumps—Two Burrell-Johnson and one Northey.

Screens—Six in use.

CANADA COMPANY.

Incorporated 1826. The capital originally consisted of 8,915 shares with £32,105 paid, but by repayments and purchases it has been reduced to 8,319 shares of £1, on which there is no liability. Accounts made up annually to 31st December and presented in March; but the dividends are declared half-yearly at meetings held at the end of June and December, and are payable on 10th July and 10th January. The dividends paid in 1883 and 1884 amounted to £4 each year; in 1885, to £3 10s.; in 1886, to £3 10s.; in 1887, to £4; in 1888, to £2 10s.; in 1889, to £2; in 1890, to £1 10s.; in 1891, to £1 17s. 6d.; in 1892, to £2 2s. 6d.; and in 1893 to £1 17s. 6d. On 31st December, 1892, the value of the lands leased (being the price at which lessees had the option of purchasing) was £140-736, and the value of the lands undisposed of, according to the valuation of December 31st, 1886, was £453,721. By the Company's Amendment Act of 1881, all income in excess of £4 per share per year is to be applied to the purchase of shares for cancellation, the number of shares not to be reduced, however, below 4,457, which is half the original number. In 1881 60 shares were purchased; in 1882, 323; in 1883, 130; in 1884, 76; in 1885 and 1886, none, and in 1887, 7, the capital thus being reduced to 8,319 shares of £1.

Directors:

Sir R. Gillespie, (Governor),
P. Redpath, | W. U. Heygate,
J. P. Currie, | Hon. F. S. A. Hanbury Tracey, M.P.

Head Office:

R. M. Steele, *Secretary*, 1 East India Avenue, Leadenhall Street, London, E.C.

CANADIAN OFFICE:

Hon. G. W. Allan, Commissioner, | Alfred Wilson, Commissioner.

204 King Street East, Toronto.

The Company issues, and is prepared to issue, licenses to prospect, or to work the minerals on the following of their lands in Eastern Ontario, upon terms to be known on application to the company or its mining inspectors:—

CANADA COMPANY---Continued.

Con.	Townships and Lots.
	Alfred.
1	A
2	A
3	2, 3, 22, N hf 28 A
4	S hf 5, N hf 13, E hf 15
5	4, W hf 16
6	5, S hf 15
7	7, 11
8	W hf 5, 13
11	4, 7
12	5
13	4
	Alnwick.
3	N h 21
6	15
	Asphodel.
1	E hf 19
2	S hf 3, E hf 16
6	9
10	W hf 19
12	9
	Athol.
5 E. L.	E of W pt 5
	Bastard.
1	14
2	S hf 3, 16
	Bathurst.
8	3
9	4
10	W hf 3, 8
12	F pt 8
	Beckwith.
1	22
2	E hf 23
5	NE hf 14, E hf 26
6	16
7	W hf 22
	Belmont.
1	3, 16, 30
2	5, E hf 11, 19
3	3, 30
4	5, 11, 19, 21, 28.
5	3, 16, 24, 30
6	W hf 5, 11, 21, 28
7	3, 16, 30
8	11, 19, 21, 28
9	W hf 3, W hf 16, 24, 30
10	11, 19, 21, 28
11	16, 24
12	11, 19, 21

Con.	Townships and Lots.
	Brighton.
6	W hf 3
7	N hf 28
8	E hf 24, 30
9	N hf 5, 28
10	24, 30
	Burgess N
3	14, 27
4	23
5	14, 22, 27
7	4, 22
	Burgess S.
1	14
2	3, 23
3	4
	Burleigh.
1	5
2	3
	Caledonia.
1	23, S hf 24
2	15, 18, S hf 20
3	11, 18, 21, 23
4	14, N hf 15, N hf 20
5	S hf 11, 23
6	5, 15, 20
7	4, 11, 21, 23
8	F hf 5, 20, 15
9	21, 23
10	F hf, 15, 20
	Cambridge.
1	4, 11, 18, 26
2	2, 8, 15, 23, 30
3	4, 11, 18, 26
4	2, 8, 15, 23, 30
5	4, 18, 26
6	2 E hf 8, 23, 30
7	4, 18, 26
8	2, 8, 23, 30
9	4, 11, W hf 18, 26
10	2 S hf 8, 15, 23, 30
	Camden E.
5	R hf 6
6	N hf 2, N hf 20, 51
7	S hf 1, S hf 14, S hf 47
8	N hf 2, 9, 11, N hf 21, N hf 23, N hf 27, 51
9	S hf 7, S hf 9, R hf 21, 25, 27, 23, 29, W hf 31, S hf 37, S hf 35, 41, S hf 47

Con.	Townships and Lots
	Cartwright.
1	4, S hf 21, 23
6	W hf 5
9	N hf 21, N hf 23
13	Rem of N pt 23
	Cavan
2	S hf 4
12	N hf 15
	Clarence.
1	5, 6, 11, 21
2	3, 9, W hf 16, 24
3	21 B
4	9, E hf 16, 24
5	W hf 5, W hf 11, W hf 21
6	W hf 9, 16, 24
7	11, 21
8	3, 9, 16, 24
9	N hf B, 5 E hf 11, 21
10	3, E hf 9, 16, 24
11	21
	Clarke.
9	N hf 5, N hf 11, S hf 21
10	9, 16
	Cramahe.
9	N hf 34
10	30
	Crosby N.
1	11, 21, 23
2	5, S hf 15, N hf 20, 26
3	11, E hf 21, 23
4	N hf 15, 20
5	11, 21, E hf 23
6	15, 20, 25
7	21, N hf 23
8	N hf 20, 25
9	4, 21, 23
10	5, 20
	Crosby S.
2	R hf 5
3	R hf 4 23
4	S hf 5, SW hf 15
5	4, SE pt 21
6	5
8	5
9	4, 11
10	15, 20, 25
	Cumberland.
1	W hf 5, 14, 21, 28
2	9, 16, 24
3	5, 11, E hf 21, 28

Con.	Townships and Lots.
4	9, E hf 16, 24
5	E hf 11, 28
6	3, 9
7	5, 21
8	E hf 16, W hf 24
9	5, 21, W hf B
10	E hf 3, 9, 16, 24
11	11, 21, 28, B
O.O.	W hf 2
	Dalhousie.
1	4, 14, 22, 27
2	3, F hf 16, 23
3	4, 22, 27
4	F hf 3, 8, W hf 23
5	2, 14, 22, 27
6	8, 16, 23
7	R hf 4, 14, 22, 27
8	3, SW hf 8, 16, 23
9	4, 22, 27
10	3, 16, 23
11	4, 14, 22, 27
12	3, 16, 23
	Darling.
1	4, 14, 19, 22
2	3, 8, 16, 23
3	4, 14, 19, 22
4	3, 8, 16, 23
5	4, 14, 19, 22
6	E hf 3, 16, 23
7	F hf 4, 14, 22
8	8, 16, 19, 23
9	4, 14, 22
10	R hf 3, 8, 16, 23
11	E hf 4, 14, 22
12	3, 8, 16, 19, F pt 23
	Darlington.
10	3, 16
	Douro.
1	W hf 5, 28
2	E hf 3, E hf 9, 24
3	21
4	W hf 16
5	E hf 11
	Drummond.
3	22, 27
4	NE hf 3
5	4
10	16
	Dummer.
1	E hf 21, 28
2	E hf 3, 16, 24 hf W
3	E hf 21, 28
4	W hf 9, W hf 24, 30
5	11, 21, 28
6	E hf 9, 16, W hf 30, 32
7	11, 21
8	E hf 3, 9, 16, 24, 30
9	E hf 5, 11, 21
10	E hf 3, 9, 16, 24
11	W hf 5, 11, 21
12	S pt 3, 9, 16, 24
	Edwardsburg.
9	F hf 6, E hf 31, S hf 33
10	30, 31, 32, 33, 35, 36, 37
	Elizabethtown.
11	7, 17
	Elmsley.
1	29
5	W hf 4
8	8, 23
	Elzevir.
1	W hf 5, 21
2	W hf 3, W hf 9
3	5, 11, 21
4	9, E hf 16
5	N hf 5, 11
6	3, 9
8	3
9	5
	Emily.
5	N hf 11
7	4, 11
8	5, S hf 15
9	11, 21
10	20
11	N hf 4, 11, 21
12	5, E hf 15
13	N hf 4, 11, S hf 21
14	S hf 15, 20
	Ennismore.
1	4
2	S pt 5
3	N hf 4, 9
6	S hf 5
7	N hf 11
8	N hf 5, 10, 15
	Escott.
6	17
	Finch.
1	N hf 11
2	N hf 5
3	N hf 4, N hf 11
4	5
5	E hf 4, N hf 23
6	W hf 5, N hf 20
7	4, 11, 21, 23
8	15 R hf 20
9	S hf 4, E hf 21, 23
10	15
11	4
12	N hf 5
	Fitzroy.
1	4
4	3
5	4
6	F hf 3
9	F hf 14
10	R hf 8
11	4, 16
12	8
	Gloucester, O. F.
2	S hf 4, S hf 14
3	13
4	4, 9
5	3
6	N hf 4, 18
7	S hf 3, R hf 9, 17
8	S hf 7, 13, 19
9	2 W hf 8, 14
	Gloucester, R. F.
2	W hf 14, R hf 22, W hf 28
5	13, 23
6	14, 22, E hf 28
	Goulburn.
1	14
5	22, E pt 27
6	R pt 23
7	27
10	N hf 8, 16
11	4, 14
12	8, 16
	Gower N.
2	NW hf 33, W pt 38
3	R hf 8, 38
4	F hf 4, 9, 29, 34, 39
	Gower S.
7	W hf 11
8	W hf 5
	Haldimand.
5	N hf 11
6	N hf 24
7	S hf 5, 11, N hf 21
8	9
9	N hf 28
	Hamilton.
9	S pt 34

CANADA COMPANY---Continued.

Con.	Townships and Lots
	Harvey.
4	11
5	9
7	9
10	5 W pt 11
11	3, 9, N hf 16
12	5
13	3, 16
14	5, 11
15	3, 9
16	5, 11
17	3, 9
18	21
19	3, 9, 16, 24
	Hawkesbury E.
3	SW hf 1, 17
5	S hf 1
6	2, E hf 6, 13, S hf 20
7	S hf 2, 17
8	W hf 3
	Hawkesbury W.
9	S pt 17
	Hope.
7	S hf 34
	Hungerford.
1	S hf 9, W hf 16, 23, 33
2	W hf 3, N hf 10, 17, 22, 29
3	E hf 4, S hf 11, 21, 28, 35
4	15, E hf 20, 27, 32
5	9, 16, S hf 23, 33
6	N hf 22, 29, 34
7	21, 28, 36
8	S hf 20, 27, 32
9	W pt 16, S hf 23, N hf 33
10	E hf 17, 22, 29, 34
11	E hf 21, 28
12	E hf 15, 20, 27
13	2, E hf 16, 23, 33
14	3, 17, 22, 29
	Huntingdon.
6	N hf 15
7	E hf 11
8	10, 17
9	16
10	5, 15
11	4, 11, 19
12	3, E hf 10, 17
13	9, 16
14	S hf 15, 20
	Huntly.
1	22, 27
2	F hf 3, 23
3	E hf 22, 27
4	R hf 3
5	R hf 4, 14
6	3, 8, 16
7	4, 14, R hf 22
8	3, 16, 23
9	4, R hf 14, 22
10	3, F hf 23
11	14
12	R hf 3, 16
	Kitley.
2	S hf 23
3	N hf 29
6	S hf 16
7	14
	Lanark.
1	F hf 4, 22, 27
2	23
3	E hf 14, E hf 22, 27
4	8, W hf 16, 23
5	27
6	E pt 2, E hf 3, F hf 8, 23
7	1, 3, 22, 27
8	W pt 16, 23
9	22, 27
10	16
11	22
12	23
	Lancaster.
9	6
	Lansdowne.
5	A
7	4, W hf 11
8	10, 17
9	11
10	15, 20
11	S hf 11
12	3
	Lavant.
1	4
2	E pt 23
3	4, W hf 14
4	3, 8, 16, 23
5	4, 14, 22
6	3, 8, 12, 16, 23
7	4, 14, 22
8	3, 8, 16, 23
9	4, 14, 22, 25
10	3, 8, 12, 16
11	14
12	8
13	4
	Leeds.
4	E hf 17
5	E hf 21
6	E hf 22
7	21
9	E hf 11
	Locneil.
2	N hf 1, N hf 2, N hf 5
	Loughboro'.
6	S hf 24
7	E hf 11, 21, 23
8	W hf 5
9	4, 11, 21, 23
10	5, 15, 24
11	4, 11, 21, 23
12	N pt 5, 15, 24
13	4, 11, 21, 23
14	5, 15
	Madoc.
1	5, N hf 11, 28
2	3, 9, 16, 24, 30
3	W hf 4, 5, W hf 11, W hf 21, 28
4	W hf 3, 9, W hf 16, 24, 30
5	E hf 5, 11
6	9, 16, E hf 24, 30
7	E hf 21, 28
8	E hf 16, 24, 30
9	W hf 28
10	3, 9, 16
11	5, 11, 21, 28
	Manvers.
1	4, 11, S hf 21, 23
2	N hf 5, S hf 15
3	4, 11, 21
4	N hf 5, 15
11	21
13	S hf 21, 23
14	N hf 5, 20
	March.
1	22, 23, 25, 27
3	S hf 22
4	27
	Mariposa.
1	N hf 23
3	N hf 21
4	S hf 5

Con.	Townships and Lots
9	N hf 11
11	S hf 11
15	21, N hf 23
	Marlboro.
1	2
2	E hf 1, 3, 27, 29
3	28, 30
4	13, 16, 23, 28
5	14, 22, 29
6	S hf 16, 23, 28
7	R hf 14, 22, 29
8	8, 23, 28
9	14, 28, 30
10	8, 23, 27
BF	4
	Marmora.
1	E hf 5, 11, 19, 21, 28
2	E hf 3, 16, 24, 30
3	19, 21, 28
4	E hf 16, 24, 30
5	19, 21, 28
6	3, 24, 30
7	5, W hf 11, 19, 21, 28
8	S hf 3, 16, 24, 30
9	5, 11, 19, E hf 21, 28
10	3, 16, 24, 30
11	5, 11, 13, 19, 21, 28
	Monoghan.
5	14
6	W hf 4
	Montague.
2	W hf 8
3	N E hf 4, E hf 14
4	E hf 8
5	N E hf 4, 22
6	3, 8, E hf 16, W hf 23
7	E hf 14, 22
8	R hf 3, E hf 16
9	14, E hf 22, E hf 29
10	3, 8, S W hf 16, S pt of E hf 23
A	W hf 14
	Mountain.
1	E hf 23
3	F hf 21, 23
5	4, F hf 23
6	W hf 5
8	S hf 15
9	21
10	15, S hf 20
11	N hf 4, 11, 21
12	S hf 15, 20
	Murray.
7	S hf 5
9	21
10	9, 16

Con.	Townships and Lots
	Nepean.
2	F hf 18
3	E hf 23, R hf 13
4	E hf 9
5	3
	Osgoode.
BF	37
1	23, F hf 29
3	R hf 3, 33
4	W hf 2, 17, W hf 22, E hf 27, 32
5	W hf 13, E hf 23
6	4, NW hf 24, W hf 32
7	W hf 3, W hf 9, F hf 17
8	W hf 7, W hf 13, E hf 19
9	2, 8, 14, F hf 28
10	3, 13, E hf 23, F hf 33
11	3, 13
	Otanabee.
2	E hf 30
6	9, W hf 30
9	W hf 28
12	9
	Oxford.
5	1
6	S hf 5
7	4
8	1
	Pakenham.
1	4, 14
2	3, 8, 16, 19
3	4, 22, 25
4	3, 8, 16
5	E hf 4, 14, R hf 22
6	E hf 3, W hf 8, 16, 23
7	14, 19, 22
8	16
9	R hf 14, 22
10	F hf 16, W hf 23
12	3
	Palmerston.
9	11
10	W pt 9
	Percy.
2	N hf 5
3	N hf 4
7	S hf 11
9	23
10	E hf of S hf 20, N hf 20
	Plantagenet.
1	W hf 1, 37
2	E hf 15, N hf 22, 29, 34, 36
3	21, 23
4	E pt 5, 15, 20

Con.	Townships and Lots
5	4, 11, 21, 23
6	15, N hf 20
7	N hf 11, 21
8	W hf 5, 15, S hf 20
9	S hf 4, R hf 11, S hf 23
10	S hf 5, W hf 20
11	4, 21, N hf 23
12	N hf 15, 20
13	S hf 21, S hf 23
14	W hf 4, 14, 19
15	3, 10, 20, 22
16	4, 14, 19
17	3, 10, 20, 22
18	14, 19
19	10, 20, 22
20	14, 19
	Portland.
8	N hf 17
9	7, N hf 19
10	6, 17, 24
11	7
12	6, 11, 17, 24
13	7, 19, 25
14	W hf 6, 11, W hf 17, S hf 24
	Ramsay.
1	R hf 4, 22, 27
2	N hf of E hf 8
3	4, 14, E hf 22, 27
4	E hf 15, R hf 23
5	14, F hf 22, 27
6	15
10	W hf 8, E hf 23
11	22, 27
12	E hf 15, 23
	Rawdon.
8	15
9	4
10	5
11	4, S hf 11, N hf 21, 23
12	5
13	4, N hf 11, W hf 21, 23
14	5, 15, S hf 20
	Richmond.
5	N hf 10
8	F hf 10, S hf 16
9	3, N hf 5, N hf 7, 9, N hf 14, 15, N hf 16, R hf 17
10	1, 8, N hf 13, 17
11	3, 9
	Roxboro'.
9	N hf 8, R hf 13, 14, 15, 16, 17, 18, 19

CANADA COMPANY---Continued.

Con.	Townships and Lots
	Russell.
1	W hf 15
2	7
3	W hf 8, 13, E hf 15
4	7
5	S hf 1, 8, 13, 15
6	16, 21
7	13, 15
8	E hf 7, 16, 21
9	W hf 8, 13, 15
10	7, 16, 21
	Scugog.
7	S hf 4
11	4
12	5
	Seymour.
1	4, 21, 23
3	N hf 4
4	S hf 15
6	S hf 5
10	5, 15, N hf 20
11	4, 21, N hf 23
12	5, 20
13	11, 21, 23
14	N pt 5, 15, 20
15	4, 11, 21, 23
	Sheffield.
1	E hf 5, 11, 21, 28
2	E hf 9, 24, 30
3	28
4	24, 30
5	21, 28
6	16, 24
7	21, 28
8	3, 16, 24
9	R hf 5, 11, 21, 28
10	3, 16, 24
11	5, 11, 21
12	3, 16, 24
13	5, 11, 21
14	S hf 3, 16, 24
15	5, 11, 21
16	16, 24
	Sherbrooke N.
1	4, R hf 14, 22, 27
2	3, 16, 23
3	4, 14
4	3, 8
5	4
	Sherbrooke S.
1	4, 21
2	5
3	21
4	5, 15, W hf 20
5	4, 11, 21
6	10, 15
7	F hf 11
8	15, 20
9	11
10	SW hf 10, NE hf 15
11	11
12	R hf 15, 20
	Sydney.
7	S hf 2, 4, 6, 8, N hf 22
8	N hf 5, E hf 13, S hf 21, S hf 25
9	18, S hf 33, 37
	Smith.
6	15
9	28
13	38
14	34, 44
15	20, 21, 38
16	22, S 38*a*, 44
17	38
	Storrington (Pittsburgh).
8	E hf 15, 16, N hf 17
9	18, 27, W hf 31, N hf 34, S hf 36
10	E hf 15, 22, E hf 29
11	5, 11, 21, 28
12	3, 9, 16, 24, 30
13	5, 11, 21, 28
14	3, 16
15	5, 11, 21
	Thurlow.
8	S hf 30
9	W hf 5
	Torbolton.
1	S hf 4, F hf 11, F hf 14, 22
3	NE hf 14
4	3
5	4, 14
6	8
	Tyendinaga.
2	N hf 29
	Verulam.
19	3
	Williamsburg.
8	R hf 2, R hf 3, W hf 5
	Winchester.
2	N hf 15
3	E hf 21, N hf 23
5	N hf 4, E hf 21
6	N hf 15
7	11
8	15, 20
9	4, S hf 21, N hf 23
10	5, F hf 15
11	11
12	15, 20
	Wolford.
2	3
3	S hf 2, S hf 17
4	3, N hf 16
5	S hf 27
8	16, 23
	Yonge.
5	22

CANADIAN GRANITE CO.

Incorporated 23rd February, 1885. Capital, $50,000, fully subscribed and paid up.

Directors :

A. Maclean, Managing Director, Ottawa.
J. C. Rogers, Ottawa. | Macleod Stewart, Ottawa.

Head Office : Ottawa, Ont.

Formed to carry on the trade or business of carriers by water of granite and other freights from, to and within Canada: to work, quarry, raise, make merchantable, sell and produce granite, etc.

The Company's granite quarry is situated on the east cove of Kingston Harbor. The stone obtained varies somewhat in character, sometimes having a gneissic structure, but elsewhere being quite massive. The color is generally some tint of red with grey wavy marking. It is claimed to be peculiarly adapted for decorative purposes, and is much in demand for buildings and monuments. Large quantities of paving blocks are now being prepared at the quarry. In 1885 the Company established works in the city of Ottawa. These are located on the basin of the Rideau Canal, which affords easy and cheap transport by water to the Kingston quarry. The mill has been fitted up with all the most improved machinery, including a granite-turning lathe capable of turning columns, etc., up to a diameter of 3 feet and length of 20 feet; two large double polishing lathes; one marble-turning lathe; two granite-polishing jennies; one vertical polishing machine; double-pendulum polishing machine; large granite-polishing machine with carriage, with a surface capacity of about 84 superficial feet; one basin hole cutter and boring machine; Shortsleeve's patent gang saw, capable of sawing blocks 11 feet long by 9 feet wide, fed by one of Shortsleeve's automatic sand feed machines; rubbing bed 11 feet in diameter with marble machine; Shortsleeve's new patent marble-moulding and counter-sinking machines, etc. The Company also owns and operates a marble quarry at Renfrew, Ont. Estimated value of machinery plant at quarries and works, $30,000. Average men employed, 30.

Manager: J. C. Roger, Ottawa.

Quarrymaster: Wm. Davey, Kingston. | *Foreman of Works:* M. Shields, Ottawa.

CANADA INDUSTRIAL CO., Ltd.

Incorporated 19th May, 1883. Authorized Capital, $50,000, in 500 shares of $100 each.

Directors:

A. Ouimet,
C. B. Falardeau, | F. R. White.

Head Office:

C. B. Falardeau, Managing Director, Montreal.

Formed to acquire and work phosphate and other mineral lands. The property owned and operated by the Company consists of lots 9A, 16A and 28, in the 10th Range of Templeton; lots 20A and 16B, in the 9th Range of Templeton; lots 17A, 17B and 21, of 6th Range of Templeton; lots 13, 14 and 20 in 2nd Range of Templeton, containing in all about 1,200 acres, in the County of Ottawa, Province of Quebec. Estimated value of machinery, plant, buildings, etc., about $30,000.

CANADA IRON FURNACE CO., Ltd.

Incorporated by Dominion charter under date of 29th November, 1889. Authorized Capital, $200,000. To be increased at an early date to $300,000.

Directors:

P. H. Griffin, Buffalo, N.Y., *President.*

G. E. Drummond, Montreal, | J. T. McCall, Montreal.
T. J. Drummond, Montreal, | Robert Schott, Sheffield, Eng.
Hon. T. Guilford Smith, Buffalo.

CANADA IRON FURNACE CO.—Continued.

Head Office:

G. E. Drummond, Managing Director and Treasurer, Room 502 New York Life Building, Place D'Armes Square, Montreal.

Works:

John J. Drummond, M.E,, General Supt., Radnor Forges, Champlain Co., Que.

Formed to acquire and work mineral lands in the Province of Quebec and elsewhere in the Dominion of Canada. At present owns an area of Bog Ore rights extending over 100,000 acres in the counties of Champlain, Gentilly, Chavigny, Lanoraie near Joliette, all in the Province of Quebec. Also Magnetic Iron deposits elsewhere. In the production of ore and fuel and manufacture of iron and in making brick about 800 men and boys are employed.

Ore Deposits.—Lake ore is raised principally at Lac à la Tortue, where a steam dredge of a capacity of 40 tons per day is employed.

The deposits vary somewhat in analysis; some of the bog ores used by the Company being as low as .080 sulphur and .042 phosphorus.

The Lake iron ore is found scattered over the bottom of the lake in an unctuous light-colored mud made up of decayed vegetable matter. The ore does not appear to be found deeper than 12 or 18 in. below the surface of the bottom and is most plentiful in the upper parts of the mud. It occurs in the form of porous, flat, rounded concretions, very irregular in color. The concretions vary from ¼ to 12 in. in diameter, and from ¼ to 2 in. in thickness and closely resemble the dried excrement of cattle. The country surrounding Lac à la Tortue is almost flat, being a great sandy plain underlain by stratified clays, and covered in many places by extensive swamps. The underlying sands are highly impregnated with oxide of iron derived from the decomposition of the rocks of the neighborhood which are highly charged with titaniferous iron ore. The iron in these sands is leached out by the action of acids formed, and fresh ore is being constantly formed, so much so that paying quantities of ore have been obtained from parts of the lake bottom, which had been worked over thoroughly only a few years previously. As the lake is quite shallow and the depth increases slowly from the shore, the whole bottom can be worked over by the dredge belonging to the company. This dredge is of the endless chain pattern, with two rows of buckets. The buckets bring up the ore mixed with large quantities of mud, which they empty into a long cylindrical sieve, having rows of water jets inside. The sieve is slowly rotated and the ore tumbling through is washed clean and discharged on scows moored alongside, and then towed to the railway at the west end of the lake. The company has lowered the level of the water several feet, exposing a wide margin of the deposit, which is worked by hand. This is shovelled into round iron sieves and the ore washed out and made into heaps along the shore. The bog iron ore found all over the country on either side of the St. Lawrence about Three Rivers, was formed in the same manner as those of Lac Tortue, and are often of great extent. It is found in patches near the surface of the soil, and varies in thickness from a few inches to several feet.

FURNACE AT RADNOR FORGES.

Furnace Stack.—Height, 40 feet; bosh, 9 feet diameter; crucible, 5 feet diameter; height of bosh line from hearth, 13 feet; 4 tuyeres of 3½ inch diameter; crucible and bosh from mantle ring down is encased and protected with a Russell wheel and Foundry Co. water jacket; furnace top is provided with a bell and hopper, capacity of which is 25 bushels.

Hot Blast Stove.—This is of the pipe pattern, with a combustion chamber below. Dimensions are: Length, 24 feet; height, 18 feet; width, 9 feet 6 inches; 68 openings between combustion chamber and pipe chamber above.

Steam Power.—Consists of four steam boilers, each 4 feet diameter by 25 feet long, with two 18-inch flues; shells are of ⅜-inch plate and double rivetted; all boilers connected with a brick chimney 75 feet high, and all are bricked separately, and arranged to fire with either wood or gas; gas connections are made so that boilers can be worked in batteries of two each or more, and one or two can be laid off for repairs or cleaning at any time.

Water Power.—This consists of a head of 24 feet, with a "New America" wheel 35 inches in diameter, capable of delivering 65 horse-power.

Blowing Engines.—New Weimer blowing engine, size 16 x 48 x 30, set up on a solid stone foundation, which rests on a limestone bottom. This engine is provided with a patent water heater and a Scanlan patent wind receiver and heater, capable of raising the temperature of wind to about 200 degrees Fah. before entering the hot blast stove.

Auxiliary Blowing Engines.—These are of the horizontal type, with two cylinders, each 40-inch diameter by 46-inch stroke, and are geared to be driven either by a horizontal steam engine of 14 x 20-inch cylinder or by water power. These engines are complete with their own wind receiver and pipes, and are so arranged that they can be used in case of an accident to or a shut down of the Weimer engine. They deliver about 2,100 cubic feet of air per minute, with a pressure of 4½ pounds. The whole is set up in an engine house entirely separate from the Weimer, and is isolated from the latter and the boiler house.

Steam Pumps.—One Blake duplex pump, 12 x 7 x 12; one Holly boiler feed pump, 8 x 10 x 4; one Niagara boiler feed pump, 6 x 4 x 6; one Northey volume pump, 6 x 5 x 7.

Force Pumps.—One horizontal force pump, 4 x 8; one double acting Plunger force pump, 5 x 10. All the above steam and force pumps are so connected that they can be used either on the furnace water jackets, tuyeres, for general fire purposes, or for boiler feed. All the suction pipes in connection with the new engine house are laid through a stone tunnel, which leads from engine-house to river, and are always beyond the action of frost, and so arranged that alterations or repairs can be made at any time, as the tunnel is large enough to allow a man to pass or work.

Hoisting Power.—This consists of a crane pattern double cylinder hoisting engine; size of cylinders, 8 x 10 inch. This engine is connected with two hoisting cages, having a lift of 15 feet from floor of weigh-house to floor of top-house.

Charcoal Kilns.—Radnor forges battery consists of: Eight rectangular kilns, capacity, 55 cords each; three beehive pattern kilns, capacity, 55 cords each. Grandes Piles battery consists of: Fourteen beehive pattern kilns, capacity, 55 cords each. Others in course of construction. Charcoal also made and supplied from pits in the Swedish manner. The buildings and real estate in connection with the entire plant is the property of the company in fee simple.

Output 1893.

Total ore raised: 18,848 tons (2,000 lbs.)
" charcoal made: 750,000 bushels.
" charcoal iron manufactured: 7,422 $\frac{1440}{2000}$; value at furnace, $185,575.
" ore charged: 16,700 tons.
" fuel charged: 750,000 bushels.
" flux charged: 1,680 tons.
" persons employed: 600.

The output will be materially increased in 1894.

CANADA NORTH-WEST COAL AND LUMBER SYNDICATE, Ltd.

Registered 14th August, 1889. Authorized Capital, £70,200, £45,000 being in A shares of £100, £25,000 in B shares of £100, and £200 in founders' shares of £1. The A shares rank first for dividends up to 10 per cent and the founders' shares take half the surplus profits after providing for 10 per cent. on the A and B shares.

Directors :

Sir George Baden Powell, M.P.,
E. Bainbridge, | The Earl of Norbury,
Viscount Grimstone, M.P., | T. B. H. Cochrane.

Head Office :

J. W. Knowles, Secretary, 6 Clement's Lane, London, E.C.

CANADIAN OFFICE :

T. B. H. Cochrane, Managing Director, Canmore and Mitford, Alta.

This company owns 1,280 acres of coal lands at Canmore, and 2,880 at Mitford, in the Province of Alberta. 55 men and boys employed 1891. Seam worked averages 16′; dip, 45°; slope, 270 ft.; length of tunnel, 270 ft.; gangway, east, 1,500 ft.; gangway, west, 700 ft.; ventilation by Guibal fan (self-contained) 6′ dia., 200 revs.; one multi-tubular boiler; one Polson hoist, geared, reversing, capacity 300 tons per diem ; one small Blake 15 h. p. pump ; Ingersoll drill ; two screens, 20 ft. steel bars, nut screen, ½ inch mesh, 35°, capacity, 160 tons each ; coal raised in 1890, 10,000 tons ; no increase in 1891, owing to surface improvements; coal largely used on locomotives of Canadian Pacific Railway. No report for 1892 obtained.

Mine Manager : C. N. Dickinson, M.E., Canmore, Alta.

CANADA PAINT CO.

Incorporated 2nd March, 1892. Authorized Capital, $450,000, in 4,500 shares of a value of $100 each.

Directors :

S. F. McKinnon, *President.*

W. H. Howland, | W. Bell,
R. Munro, | S. Trees,
H. M. Pellatt, | T. Walmsley.

Head Office : 572 William Street, Montreal.

This Company operates certain mineral properties containing iron oxide at St. Malo, Champlain County, Province of Quebec. 15 men employed in mining. Estimated value of machinery, plant and buildings, $25,000.

CANADIAN ANTHRACITE COAL CO., Ltd.

Incorporated 28th October, 1886. Capital Stock, $1,000,000, fully subscribed and paid up.

Officers:

Hon. J. G. Thorpe, Cambridge, Mass., *President.*

O. H. Ingram, Eau Claire, Wis., | Archibald Stewart, Ottawa,
W. K. Coffin, " | L. Crannell, Ottawa, Secretary.

Head Office: The Molson's Bank Chambers, 14 Metcalfe Street, Ottawa, Ont.

Formed to mine and extract coal, especially anthracite coal, in the Dominion of Canada, and generally to carry on the business of colliery proprietors, miners and engineers, in all their branches; and also the trade or business of carriers, by water, of coal, minerals and other freight form, to and within Canada, etc., etc. The Company owns about 7,000 acres of coal lands in the district of Alberta, N.W. Territories. In 1891, the colliery and lands were leased for ten years to the H. W. McNeill Company, notice of which will be found on another page.

CANADIAN COPPER CO.

Organized January 6th, 1886. Capital stock $2,500,000, fully subscribed and paid up.

Directors:

Hon. Stevenson Burke, *President*, Cleveland, O.

C. W. Bingham, *Vice-Pres.*, Cleveland, | Hon. H. B. Payne, Cleveland,
Geo. G. Allan, Akron, O., | H. P. McIntosh, Cleveland.

Head Office:

Rooms 201 and 202 Perry-Payne Building, 103-109 Superior Street, Cleveland, O.

H. P. McIntosh, *Secretary-Treasurer.*

CANADIAN OFFICE:

James McArthur, General Manager, Copper Cliff, Ont.

Mine Captain: Henry Davis.

This Company is the owner of mineral lands in the Townships of Blezard, Creighton, McKim and Snider, and has also a controlling interest in the Vermillion mine in the Township of Denison, in the Province of Ontario, holding in all about 13,000 acres of the richest nickel lands in the Sudbury district.

On this property twelve large deposits of copper-nickel ores are known to exist, three deposits being at the present time developed and worked as producing mines, and nine having been explored by diamond drilling, will be worked as soon as the nickel market warrants such development. At present the three working mines supply enough ore to keep the smelters in constant operation.

All the mines, smelters, general office, etc., are connected by telephone lines to facilitate the transaction of business.

The working mines are known as the Evans, Stobie and Copper Cliff. The ores in each of these are practically the same mixture of minerals, though varying widely in their general appearance and richness.

CANADIAN COPPER CO.—Continued.

The ores may be described a mixture of nickeliferous pyrrhotite, pentlandite, chalcopyrite and diorite. The diorite forms the matrix or gangue, in which the mineral occurs as shots and stringers. On the lower levels of the mines the ore occurs as massive mineral containing very little diorite. The chalcopyrite which is sorted out as copper ore, contains, when pure, about 33% copper. The pentlandite which occurs in spots throughout the nickeliferous pyrrhotite is a pure nickel mineral containing about 35% nickel, 35% sulphur and 30% iron. The nickeliferous pyrrhotite which is the usual nickel ore may be said to contain 60% iron and 40% sulphur, with a portion of the iron varying from 2% to 10% replaced by nickel.

The Vermillion nickel ore is a unique mineral, containing about 40% nickel as sulphide, with about nine ounces of platinum per ton of ore. This platinum is also found to the extent of 12 to 15 ozs. per ton in the surface sand at the Vermillion mine, where it occurs as sperrylite or arsenide of platinum, a silver white sand or powder containing about 50% platinum.

The Evans mine is situated in the southwest corner of the Township of McKim. It is fully equipped with stockhouse, crusher, sorting tables, hoisting engi es and boilers, and is surrounded by neat frame houses erected by the company for the use of its employees. The mine is worked both as shaft and open pit. In the main body of the ore an open pit about 80 ft. square and 200 ft. deep has been sunk. This method of ore mining is particularly adapted to the Sudbury mines on account of the strength and hardness of the diorite through which the ore reaches the surface. A vertical shaft about 30 ft. from the open pit follows it and communicates therewith by drifts in the ore body. The ore is quarried down in the open pit by drilling and blasting, the larger masses are blockholed and broken by small dynamite cartridges, and the ore is trammed through the drifts to the shaft, where it is hoisted by skips to the rock house. Arriving at the top of the shaft the ore is dumped over a grizzley or screen made of heavy rails, whereby the coarse ore is separated from that already broken fine, and the coarse ore is delivered in front of the crushers. These are of the Blake pattern, and crush about 20 tons per hour. The ore falls from the crusher jaws into a hopper which delivers it to a revolving screen. In the upper end of this screen the "fines" or small ore falls through a screen which is perforated with ¾ in. circular holes, and is from this delivered into its respective bins. The medium grade or "raggings" falls through openings 1¾ in. in size in the middle portion of the revolving screen, while the coarse ore passes in pieces about 3 in. square, out of the lower end of the screen to the sorting tables. These tables are of iron, about 10 ft. long by 3 ft. wide, and are moved horizontally over a three or four inch stroke with a jerking motion which carries the ore toward the end of these tables. At each side of these tables a number of boys gather the ore from the rock and throw the ore into bins, marked "copper ore," "nickel ore" and "mixed ore," according to the predominence of one mineral over the other in the specimens.

The Evans mine ore, taking the mine as a whole, will average 2.60% copper and 4.00% nickel. On the lower level the average runs much higher in nickel. The Evans pit copper ore averages 13.86% copper and 1.34% nickel, while the picked nickel ore averages .59% copper and 5.36% nickel. The Evans mine ore is readily distinguished from that from other mines by its peculiar appearance, the nickel and copper ore being scattered through the black diorite in small nuggets or globular concretions like water-worn gravel in a conglomerate rock.

The Copper Cliff mine is about a mile and a half north by east of the Evans. The village of Copper Cliff is situated around this mine, and here the company's offices and shops are located. This mine is reached by an inclined shaft about 700 ft. deep. The ore which on the surface was almost pure chalcopyrite has gradually given place to nickeliferous pyrrhotite, of which the seventh level is almost entirely composed. The machinery and rock houses used at this mine are of the same kind as at the Evans, and the ore is treated in exactly the same way. The ore on the lower levels of both the Copper Cliff and Evans mines is very interesting from the large proportion of pentlandite contained, the Copper Cliff ore contains about 20% and the Evans about 16% of this mineral, and as pentlandite contains 35% of nickel, the richness of the ores is at once apparent. The Copper Cliff ore may be recognized by its coarse grain and the flattened appearance of the pyrrhotite crystals. The average

Copper Cliff ore contains 5.69% copper and 4.75% nickel. The picked copper ore contains 14.13% copper and 2.74% nickel, and the picked nickel ore .80% copper and 8.12% nickel.

The Stobie mine consists of a large open quarry in the face of a hill of ore. Test pits all over the surface of the Stobie hill show the presence of the same ore as is removed in the quarry. An incline shaft penetrates the ore under the quarry and is connected therewith by a cross-cut. This mine, which lies about 3½ miles north of the town of Sudbury, is connected with the town by railway, over which the ore is brought to the roast yard at Copper Cliff. The Stobie ore is very close grained, and does not yield so readily to sorting as the Copper Cliff and Evans ores. It is valuable more for its high iron contents as a furnace flux than for its copper nickel, of which the average ore shows 2.21 per cent copper and 2.28 per cent. nickel. The picked copper ore from this mine contains 15.71 per cent. copper and 1.28 per cent. nickel. The crushing and sorting is carried on in the shaft house in the same way as that at the Copper Cliff and Evans mines.

At all of the mines the ore is loaded on small tilting cars and pushed by an engine to the top of a trestle which runs parallel with the roast yard. This yard is about half a mile long and 100 to 150 feet wide, and has a capacity of treating about 300,000 tons of ore per annum. On this yard the ore is piled to a height of 6 or 8 feet on an 18-inch bed of soft wood, each pile being of rectangular oblong shape, and containing from 600 to 1,800 tons of ore. The wood being fired, each heap burns from six to ten weeks, the sulphur being lowered to about 7 per cent. and the iron being partially oxidized. When cold the ore is taken to the smelters. These are of Heresshoff pattern, of boiler iron, water jacketted, about 9 feet in height, of oval section, 6 feet 6 inches by 3 feet 3 inches at the tuyeres, and completely surrounded by a 3-inch water jacket. Two furnaces are in continuous operation. Each furnace uses 110 tons ore and produces 15 tons matte per day. This matte passes from the furnace into an iron-cased, brick-lined, water-jacketted forehearth or well, in which the slag rises to the surface and flows over a slag spout to a water jet beneath the floor, whereby it is granulated and carried to the dump. The matte is tapped from the forehearth at twenty-minute intervals into conical cast-iron pots holding about 800 pounds, in which it is sometimes allowed to cool, and at other times poured into thin sheets on a slag floor for greater convenience in breaking up.

The average grade of standard matte contains copper 20 to 25 per cent; nickel, 18 to 23 per cent.; iron, 25 to 35 per cent., and sulphur 20 to 30 per cent. From picked ores matte has been produced direct containing 52 per cent. nickel, and any grade of matte can be produced to suit the market.

The standard matte is in part sold as such, and in part refined in Bessemer converters to eliminate the iron. There are three converters in the refinery, one being always in use, while a second is being relined and and a third is in readiness for a charge. The capacity of the Bessemer plant is about 25 tons of cupola matte supplied or 15 tons Bessemer matte produced in 24 hours. In the converters the iron is almost entirely removed, the sulphur lowered to from 5 to 15 per cent., and the copper and nickel raised to about 45 and 40 per cent., respectively. As there are none of the usual flame reactions to guide the operation, the point at which to stop the blowing, after the iron has been removed and before the nickel has commenced to slag in undue amounts is one in which the skill of the furnace manager is best shown. As the converter slags rarely show over 2 per cent. copper and 3.5 per cent. of nickel, and as the ratio of copper to nickel in the supply is about 23 to 20, and in the product about 43 to 39, sufficient proof is given of the skill and judgment needed and practiced in the Bessemer concentration of such an easily oxidizable metal as nickel. All converter slags are returned to cupolas for remelting. For convenience in handling, the converter matte is cast in slabs of 3 feet square and about 3 inches thick, weighing about 1,500 lbs. each. These slabs are lifted on the buggies by hydraulic cranes which serve for handling the converters. A fair average analysis of this is: copper, 43.36: nickel, 39.96: iron, 3.0; sulphur, 13.76; silver, 7 oz. per ton; gold, 0.1 to 0.2 oz. per ton; platinum, 0.5 oz. per ton.

Up to December 1st, 1893, the company had produced 300,000 tons of smelting ore and 30,500 tons of matte, which is equivalent to about 6,500 tons of copper and 5,600 tons of nickel.

CANADIAN COPPER CO.—Continued.

At the refining works in Cleveland an especially fine grade of pure nickel is produced, either in the form of shot, ingots or anodes. An average assay of the nickel produced from the matte shows: nickel, 99 per cent.; copper, 5 per cent.; iron, ·35 per cent.; sulphur, ·06 per cent.; carbon, none; silicon, 0·1 per cent. This nickel is used for German silver, for nickel plating, and also for the manufacture of nickel-steel armor plates.

CANADIAN HOMESTAKE MINING CO. OF ONTARIO, Ltd.

Incorporated 1892. Authorized Capital, $1,250,000, in 250,000 shares of $5.00.

Directors:

S. C. Gilman, *President.*

Parlan Semple, | C. W. Chadwick,
Jeff. Hildrith, | Alex. M. Hay.

Head Office: C. W. Chadwick, Secretary, Rat Portage, Ont.

Owns certain mineral properties in the Lake of the Woods district, Province of Ontario. Camps completed and shaft sunk 50 feet on Company's property on Middle Island, 7 miles from Rat Portage.

CANADIAN PHOSPHATE CO., Ltd.

Head Office: O. Michael, Secretary, 155 Fenchurch Street, London, E.C., Eng.

Owing to depression in phosphates the mines of this Company in Ottawa County, Que., are shut down, and it is understood that they are now offered for sale.

CAPE BRETON COLLIERY.

Organized 1893.

Owners:

J. T. Burchell, | J. E. Burchell.

Managing Owner: J. T. Burchell, New Campbellton, C.B., N.S.

The colliery worked was acquired by the present owners in June, 1893, but was worked as far back as 1861. It is situated at New Campbellton, at the mouth of the Big Bras d'Or Lake, Cape Breton County, Province of Nova Scotia. The property covers an area of three miles.

Seam of 4 feet worked; dip, 12°; opened by slope, 900′. 100 persons employed in 1893. A. Ferguson, *Underground Manager.*

System of working: Pillar and room.
Ventilation by furnace.
Lamps: Naked.
Hoisting engines: Pair, 12″ x 16″ cyl., single drum, dia. 5′.
Pumps: One Cameron, 15″ cyl., 9″ plunger.
Boilers: Two locomotive, 50 h.p.
Railway, one and a-half miles to shipping wharf, 3′ gauge, 40 lb. steel rails.
Colliery being opened up; output in 1893, about 2,400 tons.

CARBONATE MOUNTAIN MINING CO.

Incorporated under the Joint Stock Companies' Act of British Columbia, 1891. Authorized Capital, $100,000, in 100,000 shares of $1.00.

Directors:

James McQueen, *President.*

E. E. Rand, | Charles Whitham, | H. Abbott.

CANADIAN OFFICE:

Rand Bros., Jas. England, Secretary, 100 Cordova St., Vancouver, B.C.

Formed to acquire mines, mining concessions, rights and properties in the district of Carbonate Mountain, and other parts of the Province of British Columbia. The mining claims owned are seventeen in number, each 600 ft. x 1,500 ft., containing principally argentiferous galenas, and situate between Copper Creek and the middle fork of the Spillimicheen River, in the McMurdo country, East Kootenay, B.C.

CARIBOO AND KOOTENAY PROSPECTING AND MINING CO.

Incorporated March, 1894. Authorized Capital, $100,000, in 50,000 shares of $2.00.

Directors:

W. H. Kendall, | Benj. J. Cornish, | E. E. Penzer, | F. M. Roberton, John Williams.

Head Office: Vancouver, B. C.

Formed to purchase from the Vancouver Lardeau Mineral Syndicate all their rights, title and interest in certain claims or mining locations in the Lardeau District West Kootenay, Province of British Columbia. Being organized as we go to press.

CARIBOO CREEK MINING CO., Ltd.

Incorporated 19th June, 1889. Capital Stock, $10,000, divided into 1,000 shares of $10 each.

Directors:

David Woolsey, | A. J. Smith, | Thos. Forrest.

Head Office: Donald, B. C.

This company owns and operates several claims in the Illecillewaet sub-division of the West Kootenay mining district, Province of British Columbia. Mining operations during the year 1893 were confined to the "Maple," "Quebec" and "Corona." A small force employed.

Mine Superintendent: David Woolsey, Illecillewaet, B.C.

CARIBOO HYDRAULIC MINING CO.

Incorporated 1893. Authorized Capital, $300,000, divided into 60,000 shares of $5.

Directors :

J. M. Buxton, | John M. Lefevre, | J. D. Townly.

Head Office : Vancouver, B. C.

Formed to acquire the placer mining claims, leases and property held by the "Bullion," "Hop E Tong," "Bonanza" and "South Fork Hydraulic Mining Company, Limited," etc.

CARIBOU GOLD MINING CO., Ltd.

Incorporated by an Act of Legislature of Nova Scotia, 1894. Authorized Capital, $200,000.

J. B. Neiley, *President.*

Head Office : Jas. T. Burgess, Secretary, Halifax.

Formed to acquire and operate gold mines in the Province of Nova Scotia. Owns 101 gold areas in the Caribou district, Halifax County. Equipped with suitable plant. Small force employed. 1,088 ounces, 2 dwt., 9 grs. gold reported to have been won in 1893.

George W. Stuart, *Manager*, Caribou Mines, Halifax County, N.S.

CASCADES MICA MINE.

Owners :

Lt.-Col. J. Wright, Hull, | W. A. Jamieson, Ottawa, | Thos. Kenny, Ottawa.

Head Office : W. A. Jamieson, 524 Wellington Street, Ottawa, Ont.

The property owned and operated contains 70 acres, and is situated on lots 22 (CI), and 22 (CII), in the 15th range, Township of Hull, Ottawa County, Province of Quebec. An average of 12 men employed. About 80 tons of amber mica mined in 1893.

CENTRAL LAKE MINING CO.

Owners :

S. P. Franchot, Buckingham, Que.

M. W. Base, Olean, N.Y., | DeWitt Lefebre, Olean, N.Y.,
N. V. V. Franchot, Olean, N.Y., | Capt. McNaughton, Buckingham, Que.

Head Office: S. P. Franchot, Buckingham, Que.

Formed to acquire and work phosphate lands, particularly lots 7, 8, 9 and 10 in the 10th range of Portland West, County of Ottawa, P.Q. Owing to depression in the phosphate market, was not worked in 1893.

CENTRAL RAWDON MINING CO., Ltd.

Incorporated 1890. Capital, $120,000, in shares of $100 each, fully subscribed and paid.

Directors:

J. H. Smith, *President*, Windsor, N.S.

Gould Northup, Rawdon, N.S.,	Wm. O'Brien, Windsor, N.S.
Judson Dimock, Scotch Village, N.S.,	C. H. Dimock, Windsor, N.S.,
J. A. Russell, Windsor, N.S.,	J. C. Geldert, Windsor, N.S.

Head Office: J. C. Geldert, Secretary, Windsor, Hants Co., N.S.

The company holds from 150 to 200 gold areas under lease from the Government of Nova Scotia. The mines, which are at Rawdon, are equipped with 15 stamp mill, hoisting and pumping gear and other machinery.

CLEARY'S ASBESTOS MINE.

Owner: Hon. Philip Cleary, St. John's, Newfoundland.

The property contains about 2,560 acres at Port-au-Port, on the west coast of Newfoundland. A certain amount of exploratory work has been done and about 20 tons asbestos mined from surface.

CLEMOW & POWELL.

Head Office: W. F. Powell, Sparks Street, Ottawa.

This private partnership has a controlling interest in a number of mica properties situated in the Townships of Hull, Templeton, Portland and elsewhere in the County of Ottawa, Province of Quebec. Twenty-five men were employed in 1893, and about 225 tons of rough culled mica were mined. A factory for cutting and dressing the mica is in operation at Ottawa, Ont.

COCHRAN HILL GOLD MINING CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia, 1894. Authorized Capital, $500,000 in shares of $1.00.

Directors:

J. T. Burgess, *President.*

Levi Hart,	George Clark,
Dr. David Allison,	Walter Brookfield,
D. F. Quigley,	A. G. Cunningham,

COCHRAN HILL GOLD MINING CO.—Continued.

Head Office: J. T. Burgess, President, Halifax, N.S.

The company at date owns some 600 gold areas near Melrose, Guysboro County, Nova Scotia. At date of writing a 20-stamp mill and other machinery is under construction and is expected to be in operation by 1st May. At 1st April, 1894, 20 men were employed.

A. P. McQuarrie, Melrose, Ont.

COLERAINE MINING CO., Ltd.

Incorporated 20th November, 1891. Authorized Capital, $120,000 in 1,200 shares of $100 each.

Directors:

Hon. J. A. Chapleau,
Hon. A Desjardins, | A. L. DeMartigny.
Hon. A. Lacoste.

Head Office: Hon. A. Desjardins, Managing Director, Montreal.

Formed for the purpose of buying, selling, dealing in, and working mines and minerals, etc. The company owns a large block of asbestos and other mineral lands in the Township of Coleraine, in the Province of Quebec.

COLUMBIA-AMERICAN MINING CO.

Incorporated October, 1890. Authorized Capital, $500,000 in shares of $1 each, of which 100,000 shares are set aside for development.

Directors:

B. C. Van Houton, *President*,
W. H. Lynch, | F. E. Archer.

Head Office: F. E. Archer, Secretary, Spokane, Wash.

This company owns the "Kismet," "Hambone," "Dora D," and a two-fifth interest in the "Retriever," argentiferous galena claims, all situate at Hot Springs, in the West Kootenay district, Province of British Columbia.

COLUMBIA MINING CO., Ltd.

Incorporated 7th August, 1890. Authorized Capital, $500,000, divided into 5,000 shares of a value of $100 each.

Directors:

E. J. Brickell, *President*,

W. A. Donaldson | M. Thomsen,
G. Pahl, | O. B. Nelson.

Head Office: W. A. Donaldson, Secretary, Box 1605, Spokane, Wash.

This company owns six full mining claims: "Eden," "Crescent," Black Chief," etc., consisting in the aggregate of 125 acres of land, and located at Hot Springs, in the West Kootenay district, Province of British Columbia. Small force worked in 1893 opening up claims.

COMMERCIAL MINING CO. OF ALGOMA, Ltd.

Incorporated 1892. Authorized Capital $100,000.

Directors:

A. H. Hillyard, New York,
Charles Strickley, Binghampton, | C. A. Muerrle, Toronto,
J. W. Cheeseworth, Toronto, | E. S. Hemmenway, Boston,
F. E. Sherman, Jameston, | Major W. H. Cooper, Toronto,
F. A. Brown, Boston.

Head Office: H. A. Hillyard, Sec.-Treas., 4 Victoria Street, Toronto.

American Office: 166 North Street, Boston, Mass.

This company owns the north half of lot 2, in the third concession of the Township of Nairn, in the Algoma district, Province of Ontario, containing 139½ acres, and is within ¾ of a mile from Nairn station, on the Sault Ste. Marie branch of the Canadian Pacific Railway.

COLUMBIA GOLD MINING AND MILLING O., Ltd.

Mine Manager: H. Stevens, Oldham, N.S.

Head Office: Attleboro, Mass.

Organized in the fall of 1892, and to date are reported to have spent over $30,000 in plant and development. Property equipped with 10-stamp mill, driven by steam engine, which also works the pumps and the independent steam hoist. About 12 men employed in 1893. Gold yield, 1893, 117 ounces, 2 dwt., 18 grs., from 437 tons rock crushed.

CONSOLIDATED SCOTIA COAL CO., Ltd.

Incorporated 25th April, 1893, by Act of the Legislature of Nova Scotia.

Authorized Capital, $500,000, in shares of $50; but an Act of Legislature passed in 1894 power was granted to permit it to be increased so as not to exceed $5,000,000.

Directors:

John T. Smith,
Edward Curran, | Thompson J. Copp, | C. W. Hewson, | Charles Smith.

Head Office: Amherst, N.S.

Formed to purchase and operate coal and other mines in the Province of Nova Scotia.

CONSUMERS' OIL REFINING CO.

Incorporated 1881. Capital Stock, $30,000, divided into 300 shares of a value of $100 each.

Directors :

John Wolfe, *President.*

John Wolfe, London, Ont., | C. McCallum, London, Ont.,
Wm. English, Petrolia, Ont., | F. Wolfe, Petrolia, Ont.

Head Office : F. Wolfe, Manager and Secretary, Petrolia, Ont.

The company carries on the business of oil producers and refiners at Petrolia, Ont. 18 men employed. The individual stockholders being mainly producers, the company owns and operates a number of wells. The average yearly turnout is about 75,000 barrels of refined and other oils. The first cost of machinery, plant and buildings was $47,500.

COPPER CREEK MINING CO.

Incorporated under the laws of the State of Michigan, October 1892. Authorized Capital, $100,000 ; subscribed to date, $50,000.

C. M. Swift, *President.*

H. S. Sibley, *Secretary.* | T. H. Trethewey, *Superintendent.*

Head Office : H. S. Sibley, Secretary, 80 Griswold Street, Detroit.

Canadian Office : T. H. Trethewey, Point Mamainse, Ont.

This Company has been developing under option a copper property, covering 11,400 acres, at Mamainse, in the district of Algoma, Province of Ontario. Opened by shaft, 308 feet, and open cuts. The machinery equipment at date comprises one 40 h. p. boiler; one double cylinder hoisting engine (Jenckes), having 4' drum ; one Rand four drill air compressor ; Blake pump, etc. 20 persons employed in 1893.

COTTONWOOD GOLD MINING CO., Ltd.

Registered in London, 8th January, 1889.

Authorized Capital, £10,000 stg., in 1,000 shares of £10 each, divided into 625 A shares and 375 B shares, of which 575 A shares have been issued and the full amount paid up.

Directors :

W. J. Cutbill, | F. T. Cutbill,
John Carruthers, | Henry Gale,
Douglas A. Stanley.

Head Office : D. Amey, Secretary, 4 Old Jewry, London, E.C.

Formed for the purpose of purchasing from Douglas A. Stanley his interest in certain mining claims in the West Kootenay Mining District, B.C. The mines owned and operated are known as the "Eagle," "Ella," "Golden King," and "Golden Wreath," and are located on the right bank of Cottonwood Smith Creek, which empties into the west arm of Kootenay Kake, a short distance below the town of Nelson. These claims contain an immense deposit of schistose slate, over 300 feet wide, which assays $6.70 in gold to the ton. The surface is oxidized to a depth of several feet, and is free milling in character. The principal amount of gold in the rock is associated with sulphurets, which will require concentrating to a value of $30 per ton to render profitable. The machinery erected on the ground to date consists of two Huntingdon Mills with a capacity of 12½ tons, operated by 20 horse power engine. No report or balance sheet is to be issued until the completion of negotiations (now pending) for the disposal of the property to a large company. During 1893 mining operations have, therefore, been confined to such work as was necessary to conform with the laws of the Province.

Mine Manager: Montague S. Davys, Nelson, West Kootenay Mining District, B.C.

CRAIG SYNDICATE.

James Todhunter, *President*,

C. H. Watson, *Vice-President*, | W. J. McWhinney, *Sec.-Treasurer.*

Office: 18 King Street West, Toronto.

This company owns certain nickel properties in the Township of Craig, District of Algoma, Ont., but no work is done at date.

CREIGHTON GOLD MINING CO.

Incorporated 1892. Authorized Capital, $1,000,000, in shares of $5 each.

Directors:

Alex. Burritt, Ottawa, *President*,

Hon. E. H. Bronson, Ottawa,	Wm. McGillivray, Ottawa,
E. Seybold, Ottawa,	Frank Burns, Ottawa,
A. W. Fraser, Ottawa,	W. D. McPherson, Toronto,
W. A. Clark, Ottawa,	J. R. Gordon, Larchwood.

Head Office: A. W. Fraser, Sec'y-Treasurer, 106 Sparks Street, Ottawa.

Formed to acquire and work mineral lands in the Province of Ontario. At present operates a gold mining claim in the 4th and 5th Concessions of Creighton, district of Algoma. Mine four miles from Larchwood, on the main line of the Canadian Pacific Railway. 20 men employed. Equipped with working plant, including improved Crawford mill, Ingersoll compressor, two 50 h. p. boilers, etc.

Superintendent: J. R. Gordon, C.E., Larchwood, Ont.

CRESCENT GOLD MINING CO. OF MARMORA, Ltd.

Incorporated 1891. Authorized Capital, $100,000, in shares of a value of $1 each, of which at 1st January, 1893, $57,000 had been paid up.

Directors :

P. A. Peterson, Montreal, *President*,

Wm. G. Reid, Montreal,	J. T. Shearer, Montreal,
John Kennedy, Montreal,	A. W. Ogilvie, Montreal,
Robert Benny, Montreal,	C. R. Hosmer, Montreal.

Head Office : Thos. Watson, Sec'y-Treas., Room 12, 30 St. John Street, Montreal.

Formed to acquire and work certain mineral lands covering 147 acres on lots 16 and 17, 11th Concession, Township of Marmora, Province of Ontario. Mines at Malone station on the Central Ontario Railway. 40 men employed. Opened by shafts, of which at date of returns, "A" was down 92', "B" 45', and "C" 81'. Mill (Fraser & Chalmers) 67 by 26 feet, driven by 35 h. p. engine, and boiler of 60 h. p.; ten stamps, weight, 850 lbs., 80 drops per minute ; capacity of from 18 to 20 tons per 24 hours ; No. 40 Russia iron screens ; two Tulloch automatic ore feeders ; frue vanners, etc. Pending negotiations in connection with the property, no work was done in 1893, but it is expected that active work will be resumed at an early date.

CROWFOOT COAL CO.

Incorporated April, 1890. Nominal Capital Stock, $125,000, in 1,250 shares of $100 each.

Directors :

W. A. Allan, Ottawa.

Heber Archibald, Winnipeg,	Arthur F. Eden, Winnipeg.

Head Office : J. R. Fullerton, Secretary, 180 Owen Street, Winnipeg.

Formed to acquire by purchase, lease, surrender, gift, exchange or otherwise, a tract or tracts of coal lands, or lands assumed or reported to cover or contain deposits of coal or like deposits, in Manitoba, British Columbia or the North-West Territories, of Canada, and to own, hold, work, develop, sell, lease, mortgage or otherwise deal therewith, etc., etc.

CROWN POINT MINING CO.

Incorporated 1890, under the laws of the State of Minnesota. Authorized Capital, $600,000.

Directors :

H. R. Tinkham, Duluth, *President.*

A. D. Cummings, Duluth,	Hon. J. D. Ensign, Duluth,
C. E. Shannon, Duluth,	James Billings, Duluth,
Hon. O. P. Stearns, Duluth,	Geo. F. Piper, Duluth,

E. A. Tinkham, Duluth, Minn.

Head Office: E. A. Tinkham, Secretary, Duluth, Minn.

This company controls 160 acres of mineral land in the District of Silver Mountain, situate at a point on the line of the P. A., D. & W. Railway, 40 miles distant from the Town of Port Arthur. The property was formerly owned by Messrs. A. D. Cummings and W. N. Montgomery, two of the promoters of the present company, and by whom it was formerly worked. The workings to date include: Adit-levels, 788 feet, all on the vein; winzes, 129 feet; cross-cuts, 100 feet. The production to date amounts to 1,500 tons of silver milling ore of an assay value of 187 ozs. to the ton. and 28 tons of high grade smelting ore of an average value of 700 ozs. per ton. Estimated value of plant, $5,000; not worked pending negotiations for transfer to other hands.

Mine Superintendent: W. N. Montgomery, Port Arthur, Ont.

CROW'S NEST COAL AND MINERAL CO., Ltd.

Incorporated 25th March, 1889. Authorized Capital, $2,000,000 divided into 20,000 shares of a par value of $100 each.

Directors:

President: Lt.-Col. James Baker,
Joseph D. Pemberton, C.E., | Peter C. Fernie,
Wm. Fernie, | Edward Bray,
A. W. Vowel.

Head Office: F. B. Pemberton, 45 Fort Street, Victoria, B.C.

This company owns 11,169 acres of coal lands situate near Martin Creek, and also near Morrissey Creek, in the East Kootenay district, Province of British Columbia. On the easternmost property, near Martin Creek, containing 3,969 acres, there are fifteen seams of coal, four of which are a very valuable cannel or gas coal. The remaining seams are bituminous and admirably adapted for coking. In the westernmost property of 7,200 acres, a distance of twelve miles from the former property, there are twelve superposed seams of coal cropping out of the side of the mountain, varying from 2 to 30 feet in thickness. Up to 1st October, 1893, $30,000 have been expended on prospecting and preliminary development, but mining on a more extensive scale will not be begun until better shipping facilities have been provided. Average men employed, 20. An analysis of a sample of fast coking gave:—

Hygroscopic water	1.89
Volatile combustible matter.	30.41
Fixed carbon	63.33
Ash.	4.37

CUMBERLAND RAILWAY AND COAL CO.

Incorporated 25th May, 1883. Authorized Capital, $2,000,000. Bonds, $1,250,000, of which $1,000,000 have been issued.

Directors:

Robert Cowans, *President.*

Hon. G. A. Drummond, *Vice-President.*

David Morrice, | J. R. Cowans,
H. R. Drummond, | W. J. Morrice,
E. McDougall.

CUMBERLAND RAILWAY AND COAL CO.—Continued.

Head Office: H. R. Drummond, Secretary, Imperial Building, Place d'Armes, Montreal.

MINES OFFICE:

J. R. Cowans, General Manager, Springhill, N.S.

E. Laflamme, Assistant to General Manager, Springhill, N.S.
C. Hargraves, Assistant Manager, Springhill, N.S.
R. H. Cooper, Cashier, Springhill, N.S.

Formed to acquire, work and develop coal lands, of which some 70 square miles are held under lease from the Government of Nova Scotia.

No. 1 Slope.—A. D. Ferguson, manager; 209 men and 40 boys employed in 1893.

Seam of 8 ft. worked; dip average, 30°; slope, 2,600 ft.

System of working—Pillar and bord.

Ventilation—By blow-down fan, 20 ft. dia.; width of blade, 8 ft.; length of blade, 6 ft. 8 in.; length of shaft, 11 ft. 3 in.; dia. of shaft 8 ft.

Lamps—Marsaut.

Boilers—6 double flue, 45 h. p. each; 4 tubular, 25 h. p., loco. pattern.

Hoisting engines—1 double-geared winding engine, cyls. 18 x 36 in., drum 9 ft. dia.; 1 elevator engine, cyl. 9 x 18 in.; 1 electric light engine, cyl. 8 x 12 in.; 1 fan engine, cyl. 15 x 30 in.; 1 pr. Link reversing geared haulage engines, cyls. 16 x 20 in. with four 5 ft. drums to operate underground haulage system.

Pumps—Two Blake, 11½ x 28 x 36 in.; one Cameron, 4 x 10 x 15 in.; one boiler feed, Jeanesville duplex, 8 x 4 x 8 in.

Screens—Straight steel bars, 15 ft. long, 1 in. square.

No. 2 Slope—M. Blue, manager; 188 men and 18 boys employed in 1893.

Seam of 10 ft. 6 in. worked; dip, 30°; length of slope 3,000 ft.

System of working—Pillar and bord.

Ventilation—By blow-down fan, dia. 16 ft.; length of blade, 6 ft. 6 in.; width of blade, 4 ft. 10 in.; dia. of shaft, 8 in.; length of shaft, 10 ft. 8 in.

Lamps—Marsaut.

Boilers—Six double flue, 40 h. p. each; two Lancashire flue, 70 h. p. each; one return tubular, 45 h. p.

Hoisting engines—One double-geared winding engine, cyls. 22 x 36 in.; drum dia., 9 ft. 10 in.

Pumps—Two Allison, 14¼ x 30 x 72 in.; one boiler feed (Jeanesville), duplex, 8 x 4 x 8 in.

Screens—Straight steel bars, 1 in sq., 15 ft. 10 in. long.

1 pr. Link reversing, geared haulage engines, cyl. 16 x 20 in., with four 5 ft. drums, to operate underground haulage system.

1 direct acting fan engine, cyl. 12 x 30 in.

1 engine, cyl. 12 x 36 in., for hoisting timber to bank, raising empty boxes up incline by means of endless chain, driving slack conveyers, elevators and rotary screen.

Conveyor—50 ft. long, for conveying slack from stationary screens to rotary screen.

Rotary screen—20 x 5 ft. complete with set of 36 ft. elevators.

Set elevators—46 ft. centres for hoisting culm for boilers at Nos. 2 and 3 slopes.

No. 3 Slope—W. D. Matthews, manager; 251 men and 28 boys employed in 1893.

Seam of 10 ft. worked ; dip, 28° ; slope, 2,600 ft.
System of working—Bord and pillar and longwall.
Lamps—Marsaut.
Ventilation—By blow-down fan, 14 ft. dia. ; length of blade, 3 ft. 6 in. ; width, 6 ft. ; dia. shaft, 7½ in. ; direct acting engine, cyl. 12 x 30 in.
Boilers—Eight double flue, 40 h. p. each.
Hoisting engines—One double-geared winding engine, cyl. 15 x 30 in. ; dia. of drum, 9 ft. 10 in.
1 pr. Link reversing, geared haulage engines, cyls., 16 x 20 in., with four 5 ft. drums to operate underground haulage.
1 direct-acting fan engine, cyl. 12 x 24 in.
1 engine, cylinder 8¾ x 10 in., for hoisting loaded boxes up trestle incline.
Pumps—1 "Jeansville" compound duplex, cyls. 38 in. and 25 in., 10 in. plungers, 36 in. stroke ; 1 "Cameron," 4 x 6 x 10 in. ; 1 "Jeansville" boiler feed, duplex, 8 x 4 x 8 in.
Nos. 2 and 3 Slopes are connected by trestle, and output of both slopes shipped from No. 2 screenhouse.
Machine shop fitted with necessary tools for repairs to colliery plant, including eight locomotives which are employed in hauling coal from the collieries, etc.

— —

COAL DISPOSALS, 1889, 1890, 1891.

	1889.	1890.	1891.
Nova Scotia	99,847½	89,525	109,783¼
New Brunswick	93,527	107,047	123,652
Quebec	172,405½	173,277	163,955¾
United States	9,986	7,734	8,815
Colliery employees and engines	3,445	6,368	52,262
Total	272,211	383,951	458,468

COAL SALES FOR 1892.

	Round.	Run of Mine.	Slack.	Culm.	Total.
Sold in Nova Scotia	43,427¼	3,331	48,859¾	23,265¾	118,883¾
" New Brunswick	32,565	50,853¼	15,819½	6,234½	105,472¼
" Quebec	17,482	95,561	16,003¼	225	129,271¼
" United States	....	.....	.....	8,373½	8,373½
	93,474¼	149,745¼	80,682½	38,098¾	362,000¾
Colliery Consumption.					
Locos. and hoisting engines	.....	2,716	.....	20,793	23,509
Employees	.....	7,216	.....	.....	7,216
	.....	9,932	.....	20,793	30,725
	93,474¼	159,677¼	80,682½	58,891¾	392,725¾

COAL SALES, 1893.

	Round.	R. of Mine.	Slack.	Culm.	Total.
Nova Scotia	47,310	2,380½	24,991	54,833¾	129,515¼
New Brunswick	41,311¼	64,698	15,067	12,214	133,290¼
Quebec	9,407	99,842¼	9,555	479¾	119,284
United States	.....	.....	.....	9,049½	9,049½
Total	98,028¼	166,920¾	49,613	76,577	391,139

DE NEDERLANDSCHE PHOSPHAAT-MAATSCHPPIJ.

Registered in Amesterdam, 1890. Authorized Capital, 500,000 Flor. ($200,000) in shares of 1,000 Flor.

Directors:

Eugen Bunge, | D. A. Fock, | S. Piek, | Dr. W. A. Van Dorp.

Head Office: F. Kogel, Secretary, Amsterdam, (Netherlands)

CANADIAN OFFICE:

K. Boissevain, General Agent, 22 St. John Street, Montreal.

Formed to acquire and work phosphate lands in Canada and elsewhere. In March, 1890, the company commenced mining on Lot 6 in the XI Range, 200 acres; Lot 6 B in the X Range, 100 acres; Lot 5 in the X Range, 200 acres; and Lot 5 A in the IX Range, 100 acres, altogether six hundred acres in the Township of East Templeton, County of Ottawa, Province of Quebec. Mines, six miles from Perkins' Village, and 14 miles by road from East Templeton station on the Canadian Pacific Railway. In June, 1892, work on the mine was provisionally suspended to await better prices of phosphate.

DIXON GOLD MINE.

A private company in which Messrs. Hartlen, Dixon and Putnam are the principals.

Mine Office: Herbert Dixon, Managing Owner, Cariboo, N.S.

Mines: Upper Musquodoboit, Halifax Co., N.S.

This company owns and operates a gold mining property containing some seventy-two gold areas in the Cariboo district, County of Halifax, Province of Nova Scotia. Twenty-five men employed 1893. Equipped with 5-stamp mill, and steam pumping and hoisting equipment of an estimated value of $2,500.

Gold Yield 1892 and 1893.

1892 .... 1,118 ozs., 10 dwt. from 730 tons rock crushed
1893 ..... 1,014 " ..... " 710 " "

DOMINION COAL CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia 1st February, 1893. Authorized Capital, $18,000,000. Issued, $16,500,000. Common, $15,000,000. Preferred, $1,500,000. Authorized bonded indebtedness, $3,000,000, 1st mortgage bonds at 6 per cent. Issued, $1,500,000.

Directors:

Henry M. Whitney, Boston.

Sir Donald A. Smith, Montreal,	W. C. Van Horne, Montreal,
Henry F. Dimock, New York,	Robert Winsor, Boston,
Hugh McLennan, Montreal,	W. B. Ross, Q.C., Halifax,
F. S. Pearson, Boston,	Alfred Winsor, Boston.

General Offices: 95 Milk Street, Boston.

Henry M. Whitney, *President*,
Alfred Winsor, *Vice-President*,
John S. McLennan, *Treasurer*,
F. S. Pearson, *Chief Engineer*.

CANADIAN OFFICE: Glace Bay, Cape Breton, Nova Scotia.

David McKeen, M.P., *Resident Manager*,
W. Blakemore, M.E., *Assistant Resident Manager*,
J. R. Blackett, *Cashier*,
B. F. Pearson, Halifax, *Secretary*.

CANADIAN SELLING AGENTS:

Kingman Brown & Co., 14 Place Royale, Montreal, and M. R. Morrow, 50 Bedford Row, Halifax.

This company has been formed to carry on the business of mining, transporting and selling bituminous coal from the County of Cape Breton, Nova Scotia. It operates under a lease which gives a tenure of its mining property of ninety-nine years, the royalty to the Nova Scotia government for the whole period being fixed at a maximum of 12½ cents per tonwith a minimum gross amount for each year to be paid on at least as many tons as were, in the year 1891, sold by all the mines included in the new company.

At 1st March, 1894, it had acquired an area of some seventy square miles of coal lands in Cape Breton upon which are the following collieries:—"Caledonia," (formerly the property of the Caledonia Coal and Railway Co., Ltd.); "International," (formerly owned by the International Coal Co., Ltd.); "Gardiner," (formerly owned by Burchell Bros., Sydney); "Glace Bay," (formerly owned by the Glace Bay Mining Co., Ltd.); "Old Bridgeport," (formerly owned by the International Coal Co., Ltd.); "Reserve," (formerly owned by the Sydney & Louisburg Coal and Railway Co., Ltd.); "Gowrie," (formerly owned by the Gowrie Coal Mining Co., Ltd.); "Victoria," (formerly owned by the Low Point Barrasois and Lingan Mining Co., Ltd.); the "Ontario" Colliery, and the "Sword," "Meagher" and other coal areas, steamers, lines of railway, etc., etc.

Directors Report to 31st December, 1893.

The company was organized on the 16th February, 1893. Since then all the properties then held under option have been acquired and paid for in full.

About $20,000 has been expended in the construction of the railroad to Louisburg, about $150,000 for discharging plants and for mining machinery, and about $100,000 for tugs and barges; and we have on hand cash assets as appear in the treasurer's report.

The total quantity of coal mined was 834,019 tons. This is exclusive of the output of the Victoria mine, which, by the terms of the option, was not to be delivered until the season for mining and shipping coal was ended; but it will be included in the coming year's business.

The shipment of coal from the mines under the control of this company for the past year shows an increase of about 90,000 tons over the preceding year, and as the demand in Canada is steadily increasing, the prospects for a considerable increase in the Company's business for the current year are good.

DOMINION COAL COMPANY—Continued.

With a view to improving the quality of the output and reducing its cost, the Company is sinking a new pit and remodelling two old ones. These improvements, in addition to modern machinery and shipping facilities, will, it is believed, place us in a position to meet any competition which may arise.

The railroad to Louisburg has made satisfactory progress, and it is believed that, unless unforeseen delays occur, it will be completed within the current year.

Your Directors ask you to ratify a change in the bylaws, making the Company's fiscal year to begin on the first of March, and the annual meeting to fall in June,—it having been found that the interval between the first of January and the date of the annual meeting now fixed by the bylaws is too short to allow a satisfactory closing of the Company's accounts."

FINANCIAL STATEMENT, 1893.

Net proceeds Coal, 834,019 tons		$1,189,499 44
Less—Net cost Mining, Railway Transportation, Royalty, etc	$929,278 52	
Agency and General Office Expenses, Interest, Provision for Bad Debts, etc	29,058 21	
		958,336 73
Gross Profit on Coal		$ 231,162 71
Add—Profit on Steamships, Barges and Railway		103,267 95
		$ 334,430 66
From which has been written off to Profit and Loss:		
All Expenditure for Machinery, etc., at Mines	$ 67,989 84	
Office Furniture	3,160 19	
10% off cost of Tugs, Barges and Equipment	8,242 42	
10% Discharging Plant in Montreal	5,828 77	
33⅓% Sydney Hotel Investment	2,500 00	
		87,721 22
Net Profit		$ 246,709 44
Less—Dividends, Preferred Stock, July, 1893	$ 45,000 00	
" " " January, 1894	60,000 00	
Coupons, Mortgage Bonds, September 1, 1893	45,000 00	
Accrued Interest Bonds to January 1, 1894	30,000 00	
Sinking Fund	14,731 96	
		194,731 96
Carried forward to Credit Profit and Loss		$ 51,977 48

If full year's charges were deducted from the Net Profits, the result would be as follows:

Net Profits as above		$ 246,709 44
Less—Interest on Bonds	$ 90,000 00	
Dividend on Preferred Stock	120,000 00	
Sinking Fund	14,731 96	
		224,731 96
To Credit Profit and Loss		$ 21,977 48

BALANCES, DECEMBER 31ST, 1893.

Assets.

Cash	$ 134,068 10	
Accounts and Bills Receivable	141,894 22	
Merchandise in Stores	22,129 85	
Mining Supplies in Warehouses	45,059 98	
Property	17,729,407 48	
Coal at Distributing Points	81,504 22	
		$18,154,063 85

Liabilities.

Capital Stock: 150,000 Shares Common, par $100; 15,000 Shares Preferred, par $100	$16,500,000 00	
First Mortgage Bonds Issued	1,500,000 00	
Accounts and Bills Payable	57,354 41	
Accrued interert on Bonds to December 31st	30,000 00	
Sinking Fund	14,731 96	
Balance Profit carried forward	51,977 48	
		$18,154,063 85

Caledonia Colliery.—One mile from Little Glace Bay; *Superintendent*, J. G. S. Hudson; *Underground Manager*, George Scott; 404 persons employed above and below ground; coal raised, 1893, 169,041 tons.

Phelan seam of 7 ft. worked; dip averages 1 ft. in 10 ft.; vertical depth of shaft, 185 ft.; length of slope, 1,600 ft.

System of working: pillar and bord.

Ventilation by Murphy fan 12 x 6 ft., running at 120 revolutions per minute and giving 100,000 cubic ft. of air.

Naked lights.

Boilers: 2 Babcock, 2 multitubular.

Pumps: two bucket and lift and one No. 7 Blake.

Hoisting engines: 1 20-in. double cylinder, 3 ft. 6 in. stroke, with 8-ft. drum; 1 double engine for hauling coal from deep, having 12-in. cylinder, 15-in. stroke.

Air compressor: One 20 x 30 piston inlet, Ingersoll make, with a capacity for 12 coal cutters; 8 Sergeant coal-mining machines and necessary boilers, air receivers, piping, etc.

Coal heading machines: Two Stanley.

Glace Bay Colliery.—Situated 14 miles from the Town of Sydney, and half a mile from Glace Bay Harbor, from which shipments are made. William Adamson, *Underground Manager;* 343 persons employed; total coal raised 1893, 128,316.

Harbor seam, 6 ft.; dip averages 1 ft. in 10 ft.; vertical depth of shaft, 240 ft.

System of working: pillar and bord; coal from deep hoisted to pit bottom by a double 12-inch cylinder engine; coal from rise workings lowered to pit bottom by self-acting incline.

Ventilation: By Murphy champion fan, 8 ft. dia., driven at a speed of 90 revolutions per minute, giving 35,000 to 40,000 ft. of air and capable of being worked up to 80,000 cubic ft.

Naked lights.

Boilers: one flue, 33 x 3 ft., 16 h. p., steaming fan engine; six plain cylindrical, 33 x 3 ft., 66 h. p., at hoisting shaft for engines, pumps, &c.; two multitubular.

Hoisting engines (on surface): one double drum, 18 in. cylinder, 24 in. stroke; drums 8 ft., built by Matheson, New Glasgow; (below ground) one double 12-inch cylinder, 24-in. stroke, drums 4½ ft., built by Davis, Pictou.

Pumps: two in number—one steam (Cameron's "special"), and one double 10 in., having independent 9 in. col. (double).

Screens: ordinary plain parallel, ¾ stationary.

Air compressor: one, 20 x 20 x 24 in. stroke.

International Colliery at Bridgeport, 12 miles from the town of Sydney; John Johnstone, *Superintendent;* Thomas Johnstone, *Underground Manager;* 247 persons employed; total coal raised 1893, 126,000 tons.

Harbor seam worked averages 5 ft. 10 in.; dip, 1 in 12; length of slope, 2,800 ft.; vertical depth shaft, 90 ft.

System of working: pillar and room.

Ventilation: Murphy fan, 8 ft. dia.

Naked lights.

DOMINION COAL COMPANY—Continued.

Winding engines (on surface): pair 16 x 36 in. and 14 x 30 in.; 8 ft. drum; (below ground), pair Lidgerwood, 9 in. cyl., 12 in. stroke, tandem drums, 30 in. dia.

Pumps: one Knowles, 160 ft. suction, 2,300 ft. discharge.

Boilers; five, aggregating 300 h. p.

Gowrie Colliery, situated on the north side of Cow Bay; Alex. Macdonald, *Underground Manager;* 350 persons employed. Total coal raised in 1893, 117,993 tons.

Seam worked (MacAuley) averages 5 ft.; dip 1 in 8; Odiorne shaft, 200 ft.; New Pit, 260 ft.; two slopes from pit bottom, being West Slope, 1,400 ft.; East Slope, 2,800 ft.

System of working: pillar and room (modified, the rooms being 10 yards wide and the pillars 7 yards), and one section long wall.

Ventilation: by furnace, 7 ft. 8 in. x 6 ft., giving 40,000 c. ft. air.

Naked lights.

Winding engines: pair, 20 in. x 3 ft. 6 in., direct acting by hoisting engines; 8 ft. drum, and pair 10 x 12 in. Lidgerwood hauling engines, geared 5-1; 4 ft. drums, also pair 9 x 12 in. tail rope hauling engine, geared 6-1; two drums, 3 ft. 6 in,

Pumps: 1 Knowles pump, 20x36x10 in., capacity about 30,000 gals. per hour.
1 " " 14x24x8¾ in. " 16,000 "
1 Cameron " 12x12x5½ in. " 6,000 "
1 Fly Wheel " 10x12x5½ in. " 6,000 "
1 V. Bob Lift " 16½x48x10½ in. " 18,000 "

Boilers: 2 30-h. p. tubular, 5 ft. 3 in. x 17 ft. 6 in.
1 30-h. p. " 5 ft. 6 in. x 17 ft. 9 in.
6 12-h. p. shell, 3 x 30 ft.
5 10-h. p. " 2 ft. 10 in. x 27 ft.

Screens: common bar (3); angle 31°; size, 18 ft. x 5 ft. 9 in.

Air compressors: one 16½ x 20 x 24 in. stroke and one 20 x 20 x 24 in. stroke.

Patent fuel plant: Yeadon's; capacity five tons per hour.

Reserve Colliery, situated at Bridgeport Basin, two and one half miles from Glace Bay; James McVey, *Superintendent;* Norman McKenzie, *Underground Manager;* 347 persons employed.

Phalen seam, averages 8 ft. 8 in.; dip 1 in 13; worked by two slopes, of which the "Main" is 2,500 ft., and the "French" 3,580 ft. long; vertical depth, about 267 ft.

System of working: pillar and room.

Ventilation by furnace.

Naked lights.

Hoisting engines: two winding engines, 22 in. cyl., 3½ ft. stroke; geared 2-1; drum, 4 ft. dia.

Pumps: one pumping engine, 15 in. cyl. 8 in. water cyl., 24 in. stroke; one Cameron pump, 14 in. steam cyl., 8 in. water cylinder, 18 in. stroke; one plunger, double, 6 in. diameter, 8 in. stroke.

Boilers: nine boilers, 3 ft. dia., 30 ft. long, flash flues.

Screens: three in use, 20 ft. long.

Old Bridgeport Colliery, situate on north side of Lingan Bay, ten miles from the town of Sydney; Robert Robson, *Superintendent;* George W. Greenwell, *Underground Manager;* 165 persons employed; total coal raised in 1893, 50,363 tons.

Phelan seam, 6 ft. worked; dip averages 1 in 11; shaft, 120 ft.; system of working, pillar and bord.

Naked lights.

Ventilation by furnace.

Two air compressors: one 20 x 20 x 24 in. stroke; one 24 x 24 x 30 in. stroke.
Hoisting engines: one pair Lidgerwood, 10 in. double cyl.; 5 ft. drum.
Boilers: two 40 h. p. water-bottom, tubular, loco. type.
Pumps: none. (Level to sea natural drainage.)
Screen: one ⅜ mesh, 20 x 6 feet.

Victoria Colliery, situate at Low Point, on the south side of Sydney Harbor; (acquired in 1894); T. J. Brown, *Superintendent;* John Wilkinson, *Underground Manager.*

Ross seam: 6 ft. 7 in. worked; dip averages 25°; length of slope, 1,740 ft.

System of working: pillar and bord; bords 18 ft. wide; also one section of longwall.

Ventilation: Murphy fan 6 ft. dia.

Naked lights.

Hoisting engines: one horizontal engine, having two cylinders, each 24 in. dia. by 4 ft. stroke; drum 7 ft. dia.

Pumps: one forcing pump, cyl. 18 in. dia. by 4 ft. stroke; pump dia., 8 in.; one Knowles, cyl. 12 in. dia. by 1 ft. 3 in. stroke.

Boilers: three cylindrical egg-end, 30 ft. long, and four multi-tubular.

Screens: four, each 5 ft. wide by 20 ft. long.

There are also two locomotives and 120 waggons.

In addition to the plane and tail rope systems referred to above, the first instalment of endless rope haulage that have been inaugurated in Cape Breton are in process of being fixed at Caledonia, Reserve and Little Glace Bay Mines but were not in operation at the date of our report.

Transportation and Rolling Stock.—At date the Company owns five cargo steamers, three steam tugs and five coal barges. It controls and operates 13½ miles of narrow gauge railway and 20 miles standard gauge, while 22 miles are now under construction. The rolling stock comprises 13 locomotives and some 600 passenger and coal cars. The line of railway to Louisburg is now open for coal and passenger traffic from Sydney to Glace Bay, a distance of 14 miles, while the second section under construction is expected to be completed by October, 1894. The maximum grade is limited to eight-tenths of one per cent.; it is being laid with steel rails, 80 lbs. to the yard, and constructed in all respects in a most substantial manner.

COAL DISPOSALS, 1893.

The following are the official returns furnished by the Company of its coal disposals during the year ended 31st December, 1893:—

Distribution.	Tons.
To Nova Scotia	109,822
" New Brunswick	35,391
" Prince Edward Island	9,834
" Quebec	499,873
" Newfoundland	30,054
" United States	13,664
" St. Pierre Miquelon	4,220
" West Indies	4,325
" Colliery Employees	10,024
" Colliery consumption (engines, etc.)	29,043
" Bunker steamers	32,195
	868,445

DOMINION COAL, COKE AND TRANSPORTATION CO

Incorporated by Dominion Charter, 1883. Authorized Capital, $500,000; subscribed, $250,000; paid, $190,000..

Directors:

A. G. Yates, Rochester, N.Y.
A. Jardine, Winnipeg. | Major Walsh, Winnipeg.
D. Adams, Winnipeg. | Louis Walsh, Port Arthur.

Head Office: D. E. Adams, Secretary, Winnipeg.

Company owns 2,000 acres of coal lands in the Province of Assiniboia. Mines at the town of Estevan, in the Souris district; connected with the Souris line of the Canadian Pacific Railway, and the main line of the Sault branch from St. Paul, connecting with the Canadian Pacific Railway at Pasqua; mining for lignite began at November, 1892; output for three months, 10,000 tons, sold altogether in Manitoba; seam averages 8 feet; opened by three side drifts 500 feet in at date; method of working, pillar and room; 85 persons employed. No report for 1893 received.

DOMINION LIME CO.

Incorporated 1889. Authorized Capital, $400,000, in shares of a value of $100 each, the whole of which has been subscribed and fully paid.

Directors:

Hon. Frank Jones, Portsmouth, N.H., *President*,
Hon. J. G. Robertson, Sherbrooke, Que., | R. H. Pope, M.P., Cookshire, Que.,
Hon. W. B. Ives, M.P., Sherbrooke, Que., | Chas. A. Sinclair, Boston, Mass.,
F. P. Buck, Sherbrooke, Que., | Chas. B. Gafney, Boston, Mass.
T. J. Tuck, Sherbrooke, Que., | Geo. Van Dyke, Lancaster, N.H.

Head Office: Sherbrooke, Que., F. P. Buck, Managing Director and Treasurer. J. R. Woodward, Secretary.

This company owns some 2,000 acres of land in the Township of Dudswell, in the Eastern Townships of the Province of Quebec, and carries on the business of producers of lime, lumber, etc. The company's quarries are situate in the Township of Dudswell at Lime Ridge on the line of the Maine Central Railway and yield an annual production of 42,000 tons of lime. The limestone is obtained from large ledges of a dark or greyish rock, in places crystalline, which, in the upper quarry, presents a nearly vertical face of 90 feet. This is situate in close proximity to the kilns, of which there are ten in all, six in the upper or older works, and four in the lower and newer works, about half a mile distant. Each of these kilns is stated to have a daily capacity of 300 barrels of lime. The lime manufactured is remarkable for its purity, the foreign matter in the rock averaging not more than one or two per cent. An analysis by Donald gave:—

Silica and Insoluble	1.20	
Lime	55.33	Carbonate of Lime.
Carbonic Acid	43.47	
Iron Oxide	Traces.	
Magnesia	Traces.	

The company also turns out yearly some 2,000,000 feet of lumber and 40,000 barrels from its cooperage. Estimated value of machinery, plant and buildings, $300,000. One hundred and twenty-five men and boys employed.

Superintendents: J. H. Barker and O. C. Bickford, Dudswell, Que.

DOMINION MARBLE CO.

Incorporated 5th January, 1886. Authorized Capital, $100,000, divided into 2,000 shares of a value of $50 each, of which, to 1st November, 1890, 1,000 shares of a value of $50,000 have been subscribed and fully paid up.

Directors :

President: Thomas J. Tuck.

Hon. W. B. Ives, | F. P. Buck,
Wm. White.

Head Office: Howard P. Buck, Secretary, Sherbrooke, Que.

This company owns about 200 acres of land containing certain deposits of an excellent quality of marble, in the Township of Dudswell, County of Wolfe, Province of Quebec. Estimated value of plant, machinery, buildings, etc., $10,000.

DOMINION MINERAL CO.

Incorporated 16th April, 1889. Authorized Capital, $100,000. By a supplementary Act assented to 24th April, 1890, the capital stock may be increased by the board of directors from time to time, to the sum in all of $500,000, in shares of $100 each, provided that the authorization and consent of all the shareholders of the Company are previously obtained, either by their unanimous vote at a special general meeting duly called and held for that purpose, or by an instrument in writing to that effect executed by all the shareholders.

Directors :

John M. McIntyre, Montreal, *President.*

James Worthington, Toronto, | D. L. Lockerby, Montreal.
Wm. C. McIntyre, Montreal. | John Ferguson, North Bay.

Head Office : Ian Cameron, General Manager, Sudbury, Ont.

Henry Cutt, *Secretary*, 157 St. James Street, Montreal.

This Company owns and operates certain mineral lands in the Townships of Blezard, Drury and Denison, in the mining district of Algoma, in the Province of Ontario. Mining operations for copper and nickel were begun in the fall of 1889. 150 men employed in 1892. Boilers, one 90 h. p. and one 60 h. p. ; Ingersoll compressor and drills ; Worthington & Knowles pumps ; two Copeland & Bacon hoisting engines; Marsden rock-breaker; also equipped with complete lighting plant furnished by Edison Electric Co. Herreshoff smelters (2), of a capacity of 100 to 125 tons per 24 hours. Mines, 25 miles from the town of Sudbury on the line of the Canadian Pacific Railway, connected by branch line.

DOMINION PHOSPHATE AND MINING CO., Ltd.

Incorporated 25th May, 1883. Capital Stock, $125,000, in shares of $100 each, fully subscribed and paid up.

Directors :

Henry Earle, New York, *President.*

T. C. Keefer, Ottawa, | W. H. Nichols, New York,
Chas. Kyte, New York, | A. D. Shepard, New York.
J. B. F. Herreshoff, New York.

DOMINION PHOSPHATE AND MINING CO.—Continued.

Offices: 103 St. Francois-Xavier St., Montreal; 45-49 Cedar St., New York.

W. H. Nichols, *Managing Director.*

Formed to acquire and work phosphate and other mineral lands in the County of Ottawa, Province of Quebec. The properties owned and operated are known as the North Star and Washington mines in Township of Portland East, Ottawa County, Que. The former is held in fee simple; the latter the company own the mining rights only. Considerable development work has been done at the North Star, from which, during the year 1889, about 8,350 tons of phosphates were exported, mainly to Europe. The mines are well equipped with buildings and a good working plant. Owing to depression in phosphate market was not operated in 1893.

Mine Superintendent: Capt. T. W. Williams, North Star Mines, via Buckingham, Que.

DONALD GOLD MINING CO., Ltd.

Incorporated 13th May, 1889. Authorized Capital, $10,000, divided into 10,000 shares of $1 each.

Directors:

James Cullen,
John Houston, | James Wright,
Alex. McDonald, | William Elliott.

Head Office: Donald, B.C.

Formed to purchase, lease, or otherwise acquire mining ground in the Kootenay district, British Columbia; also, to conduct a general trading business in connection with that of mining. No report.

DON VALLEY PRESSED BRICK WORKS.

Capital invested, $160,000.

Owning Partners:

John F. Taylor, | Geo. A. Taylor, | Wm. T. Taylor.

Head Office: W. F. Tasker, Manager, 60 Adelaide Street, Toronto.

Own 1,150 acres on lots 13, 14 and 15 in the 2nd, 3rd and 4th Concessions, Township of York, Province of Ontario. Quarries and works are situated directly on the lines of the Grand Trunk and Canadian Pacific Railways. Experiments made with the clays of the locality resulted in showing that pressed brick of superior quality could be produced from the shale of the Hudson River formation which outcrops at the base of the bank at several points along the River Don, and early in 1891 the company started to erect works and fit them with plant of the best and most modern description. This consists of two power presses having a capacity of moulding 30,000 bricks daily, one with a capacity of 10,000 and a fourth of 4,000, or a total of 44,000 per day, together with grinding and screening machinery in which the clay is prepared for the presses. These machines are driven by two engines, one 175 h. p. and one 50 h. p.

Several buildings have been erected on the premises for burning the bricks, 23 kilns, which have an aggregate capacity of 1,750,000. The period of burning depends on the size of the kiln, and ranges from four or five days to three weeks. 175 men employed in 1893. Estimated value of machinery, plant and buildings $160,000. Value of manufactured product in 1891, $24,000; in 1892, $50,000; 1893, estimated at about $120,000.

DOUGLAS MINING CO.

Incorporated 1st May, 1888. Authorized Capital, $100,000, divided into 100,000 shares of a value of $1 each.

Directors :

O. T. Waring, Jos. Bushnell, J. E. Turrell, O. W. Joslyn, | George H. Vilas, Patrick S. Trainor, Edwin Hawley, M. A. Robinson, Jas. W. Musson, | Silas H. Paine, Geo. B. Wilson. R. T. Davies, John Douglas.

Head Office : Rock Creek, Osoyoos Division, Yale District B.C.

Formed to acquire and work ores and minerals in the Province of British Columbia. Seven men employed.

DRURY NICKEL CO.

Incorporated 6th January, 1892. Authorized Capital, $500,000, divided into 10,000 shares of a value of $50, of which $250,000 is to be first preference stock.

Directors :

R. P. Travers, Chicago, Ill., *President.*

H. R. Durkee, J. A. Kruse, | A. C. Pond, Thos. L. Nelson.

A. F. Mason.

Head Office : Thos. Travers, Whitefish P.O., Ont.

Formed to acquire and work nickel and other minerals in the Township of Drury and elsewhere in the Province of Ontario. Owns lot 3 in the 5th concession of Drury, district of Algoma, and operates thereon the Inez mine, about 4½ miles north from Worthington station, on the Sault Ste. Marie branch of the Canadian Pacific Railway, or about 30 miles from the town of Sudbury. Smelter (Herreshoff) is of the rectangular type, consisting of four 4 in. water jackets, made from ½ in. steel plates, butted and mounted on a brick base. Smelts satisfactorily over 100 tons in 24 hours, and used as it is in processes of bessemerizing gives excellent results. Equipped with air compressor, hoisting and other working plant.

DUFFERIN GOLD MINING CO.

Reorganized and Incorporated, 1890. Authorized Capital Stock, $500,000, divided into shares of a value of $25 each, the whole of which has been fully subscribed and paid up.

Directors :

Gardner Clish, Truro, N.S.

A. Kent Archibald, Truro, N.S. | John McNab, Halifax, N.S.

Silas Tupper, Truro, N.S.

Head Office : A. Kent Archibald, Managing Director, Truro, N.S.

DUFFERIN GOLD MINING CO.--Continued.

Formed to mine and smelt ores in the Province of Nova Scotia. The Dufferin mines of the company are situated in the Darrs Hill district, four and a-half miles from the village of Salmon River, in the County of Halifax. The distance by water to Halifax is about 70 miles, by road 90 miles, and by a good waggon road to Shubenacadie, the nearest station on the Intercolonial Railway, 68 miles. The fee simple rights cover about 1,000 acres. The property on which mining rights are held is in two blocks. The one on which the mines are situated, comprises 342 gold areas, each 150 x 250 feet, making an aggregate of 8,550 feet in length on the gold belt and 1,500 feet across it. The other block containing 14 areas further south. (For history of discovery of this productive property see Canadian Mining Manual, 1893).

After paying over $150,000 in costs for litigation, which lasted continuously for more than nine years, and which finally ended before the Privy Council, and paying for all lands, machinery, construction works and equipments, all expenses including labor and management the owners had received up to 1887 in net profits over $300,000. The official returns of the gold yield are as follows:—

Year.	Tons Rock Crushed.	Gold Yield.	
		Oz.	Dwt.
1881	1640	1785	16
1882	3460	4315	16
1883	7474	3635	15
1884	9799	3397	—
1885	10880	4924	—
1886	10557	6509	—
1887	10702	3258	—
1888	9935	3354	10
1889	7740	1961	10
1890	6415	2070	—
1891	5210	1407	—
1892	445	1042	10
1893	3560	965	—

The machinery equipment comprises a 20-stamp mill driven by a Little Giant turbine of 96 h.p.; stamps drop 95 per min.; weight, 850 lbs.; automatic Hammond feeder; capacity, 60 tons per 24 hours. There is a wire transmission of a distance of 4,067 ft., driven by Vulcan 52 in. wheel of 146 h.p., operating plunger pumps, four suction pumps, Blake rock breaker, etc. Opened by 13 shafts, the deepest of which is 300 ft. Underground works aggregate between 1,700 and 1,800 ft. Between 40 and 50 men employed in 1893.

DULUTH AND ST. PAUL MINING CO.

Incorporated 1892. Authorized Capital, $200,000, in shares of $100 each.

Directors:

G. C. Howe, *President*, Duluth.

John Graham, Minneapolis,	J. H. Upham, Duluth.
J. McNaught, New York,	N. C. Thrall, St. Paul,
E. C. Long, St. Paul,	F. W. Wilsey, Duluth,

Head Office: F. W. Wilsey, Secretary-Treasurer, Duluth, Minn.

Formed to work the "Fourth" and other claims near Coffee Creek, British Columbia. No report of operations in 1893 received.

DUNNVILLE NATURAL GAS CO.

Incorporated 1891. Authorized Capital, $20,000, in 600 new shares of a value of $25 each.

Directors :

F. J. Ramsay, G. A. McCallum, G. S. Middaugh, H. Penny, | J. Taylor, J. H. Smith, R. F. Latimore, J. Brown, | J. Nichol, L. A. Congdon, J. A. McIndoe, W. D. Swaze.

Head Office : Louis A. Congdon, Secretary, Dunnville, Haldimand Co., Ont.

Formed to bore and drill for natural gas, and supplying the same in the town of Dunnville, Haldimand Co., Province of Ontario. The secretary writes that at date, four wells have been sunk in the village of Dunnville, yielding approximately about 400,000 ft. of gas per day. The first show of gas was found in the Clinton formation at 612 ft., and this bed yields about one-fifth of the total flow. The second flow was obtained in the white Medina sandstone, between 740 and 752 ft., but the strongest flow came from 747 ft. The boring was continued in the red shale so that it might serve as a drain or pocket to receive any fragment of sand or other rock which might fall into it. When the well was finished the gas showed a pressure of 335 lbs., and the yield was estimated at 150,000 to 200,000 cubic ft. per day, measured with an open flow. A second well was commenced immediately after on the left bank of the Grand River, distant about a mile from the first and bored to a depth of 780 ft. A third and fourth well were afterwards put down. At last report six wells had been completed and the seventh was down about 100 feet. The flow in the fifth and sixth wells was similar to No. I. and larger than either No. II., III. or IV. The well pressure has decreased from 335 lbs to 250 lbs. The product is consumed for fuel in 100 cooking stoves and about the same number of heating appliances, and perhaps 50 lamps or jets. Two miles of pipe line owned.

EAGLE'S NEST GOLD MINING CO. OF ONTARIO.

Incorporated 1892. Authorized Capital, $200,000, in 2,000 shares of $100, of which at date $50,000 are reported as subscribed.

Directors :

Alexander McArthur, *President.*

Reuben Millichamp, Lt.-Col. G. A. Shaw, | John Flett, W. H. Hunter,

Henry Lowndes.

Head Office : Henry Lowndes, Secretary, 27 Front Street West, Toronto.

Formed to acquire and work mines and mineral lands in Ontario. Has a lease-hold right over mining locations W.D. 25, W.D. 40, containing 258 acres, in timber-belt 41, on Kookagaming Lake, district oi Nipissing. Mine distant 13 miles from Wahnapitae station, on the line of the C.P.R. The mine was discovered in the spring of 1892 and preliminary development was in progress during the year, giving results sufficient to warrant the erection of suitable milling plant at an early date,

Superintendent : Peter McKellar.

EASTERN DEVELOPMENT CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia, passed in 1882, and amended in 1884. Authorized Capital, $5,000,000, in shares of $10 par value each. Up to January 1st, 1894, 152,000 shares had been issued, on which $6.60 had been called in. At the annual meeting of the company, held in Boston, 4th May, 1891, the directors authorized an issue of $1,000,000 7% twenty years' gold bonds, American Loan and Trust Co. of Boston, trustees. The bonded indebtedness January 1st, 1894, was $422,000—the company has no floating indebtedness and a substantial proportion of the amount of bonds needed to be sold to ensure the erection of the works, have been subscribed for. During the business depression of 1893, the only progress made was, drifting 200 feet on the 320 level of slope No. 2: the purchase of a smelting site on North-West Arm of Sydney Harbor, and purchase of some 1,300 acres of land covering timber, water privileges and proposed railroad station. The company made a very credible display of its ores in the Canadian Department of the World's Exposition at Chicago.

Directors:

Capt. Isaac P. Gragg, *President.*

Col. Albert A. Pope, | S. K. Hamilton,
H. W. Richards, | M. F. Dickinson, jr.

Head Office: Thos. Mair, Secy.-Tres., 53 State Street, Boston.

The company hold certain copper areas under lease from the Provincial Government, and is the owner of the Coxheath Copper Mines, on the Island of Cape Breton, and situate at a point about ten miles from the towns of Sydney and North Sydney, and five miles from the north-west arm of Sydney Harbor. The mines being located so near to the extensive coal fields of Cape Breton, with limestone and iron ores for fluxes in abundance, are extremely favorably situated for copper smelting operations on an extensive scale. Well equipped with necessary engine and mining plant. Dr. E. D. Peters, jr., in 1891, reported as follows—

"The ore may be considered to consist of 50 per cent. raw-ore, in lump form, and containing enough metal to yield in matte form 7 per cent. of their gross weight in copper; and 50 per cent. concentrating ore assaying 3½ per cent. copper, which after concentration, will yield us concentrates rich enough to produce 10 per cent. of their gross weights in copper. From the actual results of concentration experiments on a large scale in Germany, it seems to me that these figures are entirely safe, as much better results can be obtained from a regularly running concentration mill. I approach the subject of 'Smelting' with some reluctance, as the extremely cheap coal and labor, and low ocean freights, owing to deep water right at the dock of the smelter, renders this operation so much cheaper than usual, that my estimates at first sight might seem preposterous; but I am calculating from the result of years of practical work, and merely substituting the figures of Cape Breton cost for the ordinary costs. The cost of crushing, handling, and smelting the first-class ore should not exceed $2 per ton. The cost of calcining and smelting the concentrates not over $3 per ton.

100 tons of first-class ore, at $2	$200.00
50 tons of concentrates (from 200 tons of low-grade ore) at $3	150.00
	$350.00

or an average cost of $2.33⅓ per ton of material handled."

The report on the mine made by George Grant Francis, M. E., of London, England, in 1891, stated there was at that time 42,732 tons of ore in sight; since then the 325 ft. level of Vein B has been opened up, largely increasing the amount in sight.

"In addition to the copper properties, the company owns the coal rights of over fifteen square miles of territory, located near the Straits of Canso, at Little River, in which three veins of coal are known to exist, and a shaft is down 200 feet in a five-foot seam of good coal. Some surface prospecting was done during 1893, tracing the crop of the veins 5,000 feet towards Port Hawkesbury; and a diamond drill made some preliminary borings, the 5 ft. vein being cut at depth of 350 ft. The new Government railroad is within two thousand feet of this shaft. The company also owns seven hundred acres of land in fee, through which the railroad runs."

The county council of Cape Breton has relieved the company from all taxes for 25 years from Jan. 1st, 1890.

Mining Captain: Col. Brownell Granger, Coxheath, C.B.

EAST TEMPLETON DISTRICT PHOSPHATE MINING SYNDICATE, Ltd.

It is understood that the phospate lands operated under agreement by this company in the Templeton District, Que., have reverted to the original owner, Mr. Robert Blackburn, New Edinburgh, Ottawa, Ontario.

EAST WAVERLEY TUNNEL CO.

Directors:

T. R. Gue, Halifax, N.S. | B. C. Wilson, Waverley, N.S.

Head Office: 169 Hollis Street, Halifax.

Owns a gold mining property known as Laidlaw's Hill at Waverley, in the County of Halifax, Province of Nova Scotia. A cross-cut tunnel has been driven a distance of 635 feet, cutting at that point the Barrel quartz lode, at a distance of something like 200 feet on the incline below the outcrop. The vein has been opened systematically by levels and upraise and everywhere shows a large body of quartz, the vein running from 10 inches to 20 inches in thickness. Only one small lot has been milled, yielding about 8 dwt. per ton, but the mine is now ready for its milling equipment and will undoubtedly give a good account of itself.

EAST WELLINGTON COAL CO.

Authorized Capital, $1,500,000.

Directors:

J. Lawrence Pool, *President*, San Francisco,
J. Eastland, *Vice-President*, San Francisco,
Col. Mendall, *Director*, San Francisco,
R. D. Chandler, *Treasurer*, San Francisco,
Wm. Whitney, *Secretary*, San Francisco.

Head Office: 507-509 East Street, San Francisco, Cal.

CANADIAN OFFICE:

W. S. Chandler, General Manager, East Wellington, B. C.

EAST WELLINGTON COAL CO.---Continued.

The Company owns a property containing 650 acres, upon which is the East Wellington Colliery, at East Wellington, in the Province of British Columbia. In 1893, from January to October, 140 persons were employed and 28,000 tons of coal raised. The seam being thin and expensive to work, a reduction of wages was decided upon in the fall of this year, to which the men objected and the pit was closed, with but slight prospects of ever being opened again.

ELARTON SALT WORKS CO., Ltd.

Incorporated 2nd July, 1885. Authorized Capital, $10,000, divided into 100 shares of a value of $100 each.

President: C. V. Morris.

Head Office: T. G. Morris, Sec.-Treas., Warwick West, Ont.

This Company owns and operates a property 7 9-10th acres in extent, and known as the north-east corner of the east half of Lot 6, in the 3rd Concession, Township of Warwick, Lambton County, Ontario. Depth of wells, 1,200 feet. Annual output about 1,000 tons. A small force of men employed.

EL DIVIR GOLD MINE.

(A private company.)

Owners:

J. H. Webster, Cleveland, Ohio, | E. A. Angell, Cleveland, O.

CANADIAN OFFICE:

E. W. Gaylord, Manager, Rat Portage, Ont.

The property on which this mine is situated contains 80 acres and is situated near Rossland, a telegraph station on the line of the Canadian Pacific Railway, and about nine miles east of the town of Rat Portage, in the Lake of the Woods district, Ontario. Shafts 80 ft. and 20 ft. at 1st October, 1892. Small force employed. Equipped with Jenckes hoisting engine, 45 h. p. boiler, Linn crusher, and one Crawford gold mill.

ELECTRIC MINING CO.

Incorporated 1891. Authorized Capital, $60,000, of which at last report $30,000 had been paid.

Directors:

Hector McRae, | J. W. McRae, | A. Stewart.

Head Office: Hector McRae, Managing Director, 58 Queen St., Ottawa.

Formed to carry on phosphate and other mining work in Ontario and Quebec. The property owned and operated at date consists of Lots 9, 10 and 11 in the 5th

Range of Templeton, 600 acres in extent; S ½ of Lot 12 in the 11th Range of Templeton, containing 100 acres; Lot 24 in the 4th Range of Portland West, containing 100 acres, all in the County of Ottawa, Province of Quebec. It has also acquired the River Blanche water power with 5 acres of land on Lot 14, 4th Range of Templeton, distant from mines about 1¼ miles. In August, 1892, the Company acquired Lot 6, in 11th Range, Township of Hull, mining mica, the monthly value of the output being reported to average $500 per month to end of year. Owing to depressed phosphate market the working force on the Company's phosphate properties was reduced in the beginning of the year and entirely suspended in April, at which date 385 tons of high grade had been raised (3 months). Since the Company began work 1,735 tons of phosphate have been won and 850 shipped.

EMERALD PHOSPHATE CO.

Incorporated under the laws of the State of New York. Authorized Capital, $30,000, in shares of a value of $50 each, all of which have been fully subscribed.

Directors:

A. P. Strong, Schenectady, N.Y.
S. W. Jackson, Schenectady, | S. P. Franchot, Buckingham, Que.

Head Office: S W. Jackson, Secretary, Schenectady, N.Y.

CANADIAN OFFICE:
S. P. Franchot, Managing Director, Buckingham, Que.

Formed to acquire and work the mines and mineral property formerly owned and operated by the Ottawa Phosphate Company, situate in the Township of Buckingham, County of Ottawa, P.Q.

The "Emerald Mine" is situated on Lot 19 of the 12th Range of Buckingham, has been worked by the company since 1884. It lies on a hill 360 feet high, and three or four hundred yards from the Lievres River, and is distant eight miles from the Village of Buckingham. The workings consist of open cuttings at different levels, supported by the pillars that have been left standing and connected by galleries. Steam is not employed for any purpose, and all the work is done by hand. Not worked in 1893.

EMPIRE CONSOLIDATED GOLD MINING CO.

Incorporated 25th July, 1890. Authorized Capital, $500,000, in 50,000 shares of a value of $10 each.

Directors:

A. E. Davidson.
S. Oppenheimer, | P. J. Nason,
Martin Cooney, | Michael Maloy.

Head Office: Martin Cooney, Secretary, Spokane Falls, Wash.

Formed to acquire and work certain mineral claims known as the "Dictator," "Thanatopsis," "Siwash Chief," "Cooney" and "Penobscab," near Hot Springs, in the Kootenay mining district, British Columbia. No work done in 1893.

Superintendent: P. J. Nason, Hot Springs, B.C.

ENGLISH PORTLAND CEMENT CO.

Incorporated 15th January, 1890. Capital, £25,000, issued and paid.

Directors:

Richard Morris, J.P.
Sir Henry Bennett, J.P., | A. Lindsay Lister,
John Wightman, | Paul Ewens,
R. T. Hopper.

Head Office: 15 Poultry Chambers, London, Eng.

CANADIAN OFFICE:

30 St. Francois-Xavier St., Montreal.

Owns a property containing 200 acres at Marlbank in the County of Hastings, Ontario, and has erected a works for the manufacture of Portland Cement. Fully equipped with plant for manufacturing by both wet and dry process.

ENNIS & CO.

Private Company.

Head Office: 420 Walnut St., Philadelphia, Pa.

This company holds, under lease, the mines and works of the Bristol Iron Co., at Billerica, in the County of Pontiac, Province of Quebec (see Bristol Iron Co.) Idle since June, 1893.

EUREKA MINING CO., Ltd.

Incorporated under the laws of New Brunswick 1894. Authorized Capital, $290,000

Directors:

James Hayden, Woodstock,
Fred'k H. Hall, Grafton, N.B., | Jas. Carr, Woodstock.

Head Office: Woodstock, N.B.

Formed to take over the rights, privileges and property of the Britton Mining Company of New Brunswick.

EUSTIS MINING CO.

Directors:

W. E. C. Eustis, Boston, *President*,
John Blue, Capelton, Que.. | Hugh Cochrane, Boston.

Head Office: 55 Kilby Street, Boston.

Canadian Office: John Blue, Capelton, Que.

This company owns and operates the Eustis mines on Lot 11, in the II Range of Ascot and situate at Capelton station, on the Boston and Maine Railway, Que. The mine was formerly worked by the "Orford Nickel and Copper Co." and then by the "Orford Copper and Sulphur Co.," being transferred to the present owners in 1878. The ore bed is an immense deposit of chalcopyrite, with much iron pyrites, yielding an average of four to five per cent. copper, some of the ore being very rich, and in addition contains an appreciable amount of silver; the lode varies in width from four to over fifty feet. From several assays of the ore the quantity of sulphur averages 38 to 40 per cent. Average yearly output from 25,000 to 30,000 tons. No 1 shaft, 2,100 feet deep; No. II. 2,000 feet, each from surface and measured on incline. The mine was originally opened on the top of the hill, at a height of 600 feet over the Massawippi river. Work was begun starting from shaft No. 5 and, at a level of 400 feet lower, an adit, 1,000 feet long, was run in to strike the lode, the development of which has been continued by means of the three shafts already mentioned and by leaving standing between them ore masses of 60 to 70 feet. These masses are from 50 to 120 feet high and constitute an important reserve, which can be drawn upon and removed at will. Mining work is carried on by means of compressed air drills and supports are provided for the mine by leaving pillars and putting up a few timbers; a single pump keeps down the water. As for the total output of the mine since its first working, it is difficult to estimate it, but it is believed that it cannot be far from 400,000 tons, and for the last ten years the annual output has been from 25,000 to 30,000 tons. A part of the ore extracted is treated by the company and the remainder is shipped to New York for the manufacture of sulphuric acid, for which it is admittedly well adapted. At the works near the mine, there are 50 roasting ovens with a capacity of 1,000 tons per month, and two smelting furnaces for the reduction of the ore into matte. In addition, a portion of the crude ore is roasted in the open air in piles containing as much as 250 tons and the combustion of which is kept up for two months and upwards. About 200 persons employed. Six boilers with total of 450 h.p.; air compressors (two); 1 Ingersoll 20 x 30, 12 drill, and 1 Rand compound, 14 x 22, 12 drill capacity; 12 3 in. steam drills; Dean steam pump 8 in. cyl., 3 in. suction, 2 in. discharge (about four hours pumping done weekly in mine), 1 Cameron duplex, 6 in. suction, 4 in. discharge, used for pumping water from river to dressing house to supply jigs; 2 winding engines (coupled on same shaft at opposite ends); each 14 in. dia., 26 stroke and 6 ft. 6 in. drum; 5 double jigs for small ore, etc.

FAIRBANKS CONSOLIDATED MINING CO. OF ONTARIO, Ltd.

Incorporated 26th June, 1890. Nominal Capital Stock, $500,000, in shares of $5 each.

Directors:

Henry Lowndes, *President.*

John Flett,	W. G. Shaw,
Lt.-Col. G. A. Shaw,	H. A. Coston,
J. R. Gordon,	O. A. Howland,

Richard Caddick.

Head Office: J. L. Nichols, Room 17, Yonge Street, Arcade, Toronto.

Formed to acquire and work mineral lands in the Province of Ontario, more particularly 1,152½ acres in the Townships of Creighton, Fairbanks and Trill, in the Sudbury region, District of Algoma, Ont.

FINDLAY CREEK MINING CO., Ltd.

Registered 14th April, 1887. Authorized Capital, £100,000, in shares of £1.

Directors:

Lieut T. B. H. Cochrane, | James Brady, M. E., | Hugh Graham.

Head Office: E. T. Bernard, Secretary, 53 Coleman Street, London, E.C.

Formed to acquire and work mining rights at Findlay Creek, British Columbia. No report or balance sheet has been issued for some years.

FISH RIVER COPPER AND SILVER MINING CO., Ltd.

Incorporated by Dominion Charter, 21st October, 1893. Authorized Capital, $500,000, in shares of $100.

Directors:

S. S. Ryckman, M.P., Hamilton, Ont. | G. H. Bisby, Hamilton, Ont.
W. A. Wood, " " | J. S. Hendrie, " "
C. E. Newberry, " " | J. H. Tilden, " "
W. H. Ryckman, Hamilton, Ont.

Head Office: Hamilton, Ont.

Formed to carry on the business of mining in the Province of British Columbia and elsewhere in Canada. No report.

FORREST ROSE AND ST. GEORGE HYDRAULIC GOLD MINING CO.

A private company, organized in 1876, and composed of the following shareholders:

James Innes,
W. P. Smith, | William Manson.

The Company holds 114 acres of land in fee simple, and has for a number of years successfully worked alluvial ground at William's Creek in the Cariboo district, British Columbia. $25,000 expended to date in opening up the claims. The previous owners won gold to the value of $750,000; since 1876, when this present company started, gold to the value of $50,000 has been taken out.

Superintendent: James Innes, Barkerville, B.C.

FOXTON PHOSPHATE MINING CO., Ltd.

Being wound up.

Liquidator: W. Adams, 12 Pancras Lane, London, E.C., England.

FRASER RIVER GOLD GRAVELS SYNDICATE.

Registered in London, 20th March, 1889. Authorized Capital, £7,000, divided into 30 founders' shares and 6,970 ordinary shares of £1 each.

Directors:

J. H. Collins, F.G.S., T. A. Shepherd, James Wilson, T. J. Lawrence, T. Higgin.

Head Office: Stanley A. Burrell, Secretary, 165 Fenchurch St., London, E.C.

Formed to execute and carry into effect an agreement made between J. H. Collins, T. J. Lawrance, T. A. Shepherd and Jas. Wilson, with the object of acquiring certain mining rights on the Fraser River, B.C. The property owned consists altogether of some 600 acres at or near the town of Yale.

Mine Engineer: Wm. Teague, Yale, B.C.

FREDDIE LEE MINING CO., Ltd.

Registered in Victoria, B.C., 23rd March, 1893. Authorized Capital, $500,000.

C. G. Griffith, Secretary, Kaslo, B.C.

American Office: Helena, Montana.

This company owns the Freddie Lee argentiferous galena mining claim in the Slocan District, British Columbia. In 1892, 450 tons shipped. It has since been leased to Messrs. Goldstein, Flaherty, Fitzwilliams and Crowley, who, at date of last return had 100 tons ready for shipment, the value of the ore being reported at 120 ounces silver and 70 per cent. lead to the ton. About 2,000 feet of development done to date.

FULLER MINING COMPANY, Ltd.

Incorporated at Spokane, Wash., 1893. Authorized Capital, $100,000.

Directors:

T. D. Fuller, of Ruby, Wash., and A. J. Duncan, G. H. Herberling, W. H. Wiscombe, W. H. Downes, G. E. Spoor, S. A. Wells and J. W. Feigan, of Spokane, Wash.

Head Office: Spokane, Wash.

Formed to operate the Fuller group of mines in the Okanagan country, Province of British Columbia.

GENERAL MINING ASSOCIATION, Ltd., OF LONDON, ENG.

Registered 1825. The Capital was £274,690 in fully paid shares of £10, but in 1874 a return of £1 per share was made, and in 1880 a further £1 per share was repaid. There is now, therefore, a capital of £219,752 in shares of £8. Accounts to December 31st, submitted in April, but an interim meeting is held in November. A dividend of 2s. 6d. per share was paid in 1877; for 1878, 4s.; for 1879, 2s. 6d.; for 1880, 4s. 6d.; for 1881 and 1882, 8s.; for 1883 a dividend of 10s. per share was paid, with a bonus of 5s. per share out of the profits derived from the sale of shares in the Spring Hill Mining Company; in 1884 a dividend of 8s.; for 1885 and 1886, 5s. each year; 1887, 7s. 6d.; 1889 and 1890, 6s.; 1891, 8s.; 1892, 10s. Reserve Fund, £29,850 stg., carried forward £1,610. The company holds $429,700 shares in the Low Point Barrasois and Lingan Company.

Directors:

J. D. Hill, Chairman.
Sir Charles Tupper, Bart., | W. S. Cunard,
Col. W. C. Western.

Head Office:

E. E. Bigge, *Secretary*, Blomfield House, London Wall, London, E.C., England.

Mines Office:

R. H. Brown, General Manager, Sydney Mines, C.B.

Canadian Agents:

Messrs. Cunard & Co., Halifax, N.S.

This company owns and operates certain coal areas on the Island of Cape Breton, in the Province of Nova Scotia. From 1785 to 1827 they were worked in a very irregular manner, sometimes by the Government and at others by various individuals and companies. According to Mr. Richard Brown, father of the present manager, the production during this period was only 275,000 tons, or less than one-half what should have been produced from the area worked. On 1st January, 1827, the mines passed into the hands of the present company. The following is an analysis of the coal made by Dr. E. Gilpin, Jr., F.G.S., Inspector of Mines for the Province, under date of 29th December, 1890—

	Slow Coking.	Fasting Coking.
Moisture	·420	·420
Volatile Combustible Matter	34·962	37·110
Fixed Carbon	59·993	57·845
Ash	4.625	4·625
	100·00	100·00
Sulphur	·95	·95

Sydney Colliery—Situate on the north side of Sydney Harbor; Robert Robertson, *Underground Manager*. Average persons employed, 595; average output, 160,000 tons per annum. Main seam 5 feet 4 inches worked; dip averages 1 in 12; shaft, 800 feet; system of working, pillar and bord, the latter 16½ feet wide.

Lamps—Muesler and naked lights.

Ventilation by Guibal fan, 30 feet diameter.

Hoisting engine having two cylinders, each 36 inches diameter, 5 feet stroke, drum, 18 feet diameter.

Pumps—One Cornish pump, 68 inch cylinder, with two lifts of pumps, each 20 inch diameter. One forcing set of 8 inch diameter, with 12 inch steam cylinder.

Boilers—Eleven egg-end cylindrical and three tubular.

Screens—Five each, 5 feet wide by 24 feet long. There are also three locomotives and 220 coal waggons.

[*Coal Sales.*

	Round.	Slack.
1890.....	143,365½ tons.	9,316 tons.
1891..	136,552 "	6,740 "
1992.....	151,884 "	7,631 "
1893.....	186,615 "	8,994 "

MANAGER'S REPORT.

(8th Feb., 1893.)

I beg to submit the following Report for the year 1892:—

At the Sydney Mines an average number of 230 colliers was employed during the season; and the pit worked 250½ days drawing coal, and the total quantity of 189,995 tons of coal was raised.

Four cargoes of coal were shipped in January and one in February, but regular shipments for the season commenced only April 19th.

The demand for our coal fell off in the latter part of October; in November we worked little better than half time, but in December there was an improvement in the trade.

The total shipments for the year were 159,515 tons, and the local sales 10,565 tons of Large, Run of Mine and Slack Coal.

The lining of our pumping shaft with cast iron tubbing, which I mentioned in my last report as being then commenced, has been completed. The tubbing put in weighed about 170 tons in all, and makes the shaft safe and good for probably ninety or one hundred years to come.

The main pulley frames over our winding shaft having for some little time shown signs of weakness, we have strengthened them by bolting heavy pieces of pitch pine timber to each leg; as this could only be done on days when the pit was idle, we had not completed the job when bad weather set in. Whenever the days get milder a day or two will finish it, and the pulley legs will then be serviceable for the next twenty years.

Among numerous other repairs that have been effected during the year may be named the re-lining, with planking and cribbing, of the upcast shaft at Queen Pitt; making and putting in a new steam receiver at the Queen Pit underground pump; putting new steam cylinders to the north-side hauling engine in the pit; erecting small engine and boiler to operate the new (No. 2) bank filling apparatus; repairing and rebuilding the top of the large chimney at our foundry and workshops; patching fire-box and re-boring one of the cylinders of our locomotive "Stephenson;" repairing the ventilating fan and the engine that drives it; relaying portion of the railway with new rails and sleepers; repairing and painting a number of our workmen's houses; repairing several of the steam boilers; and mending and renewing the colliery waggons, coal tubs and machinery generally.

I may mention that during the year several breakages of the pumping spears of our main pumps having occurred it was found necessary to draw the whole set of pumps and spears, remove obstructions found in the windbore pump bottom, and to thoroughly clean out the sump.

Our two hauling engines are at present underground; the steam which operates them being taken down the shaft in cast-iron pipes of 10 inches diameter. Though these pipes are coated with asbestos, the heat from them is found to be prejudicial to the ventilation; with the Board's permission it was, therefore, determined to place the hauling engines on the surface, and to accompolish this without suspending the work of either of the engines in use, the engine formerly employed as a winding engine at Lingan has been brought over, and the work of building the stone pillars and foundation for it was progressing when stopped by the setting in of winter.

GENERAL MINING ASSOCIATION.—Continued.

Low Point, Barrasois and Lingan Mining Company.

At the Victoria Mines there was an average of 134 colliers employed during the year, the pit worked 264¼ days drawing coal, and a total of 121,638 tons was raised.

Some coal was shipped in the month of January and a steamer was bunkered in February; the season's work of shipping began on the 8th of April. The demand thenceforth may be said to have been fair except during the months of July and August, when some dullness was experienced. The total shipments for the year were 107,312 tons, and local sales 1,348 tons of Large Coal, Run of Mine and Slack, together.

During the earlier portion of the year the West Slope was extended towards the dip, a new level broken off, and several back balances driven. The East levels were also extended to provide more pit room in that direction. The plan of driving the centre slope further to the dip was proposed; the objects being to get more coal without further taking the power of the winding engine. This will be accomplished by widening the slope and laying a double track therein, whereby one trip of empty tubs runs in while one trip of full tubs is being drawn out. Advantage is thus taken of the weight of the empty trip helping to hoist the full trip. The widening, straightening and extending of the centre slope, with its side slopes for air, and for steam and water pipes for the underground pumps was commenced during the year and still progresses.

The anterior portion of the heapstead was roofed over in the autumn; the new Murphy Ventilating Fan was got into operation; five new single tenement houses for workmen have been built, and the usual repairs done to the coal waggons, pit tubs and workmen's houses.

On the 24th day of December the business for the year was brought to an abrupt termination by the explosion of one of the boilers, which, while it dislodged the other boilers in the set, and laid the colliery totally idle for a time, also, I much regret to state, caused the death of three of our workmen and injury to two others.

DIRECTORS' REPORT, 1892.
(21st April, 1893.)

The directors present to the proprietors their annual report, together with the accounts for the year ending 31st December, 1892.

The sales of coal were as follows:—

	1892. Tons.	1891. Tons.	Increase. Tons.
Sydney Mines	170,080	151,584	18,496

From the colliery worked by the Low Point, Barrasois and Lingan Mining Co.:

	1892. Tons.	1891. Tons.	Increase. Tons.
Victoria Mines	108,660	96,990	11,670

The profit on the year's trading, as set forth in the Accounts, amounts to	£13,284	18	2
Brought forward from 1891	1,060	9	2
	£14,345	7	4
Out of which the directors propose a dividend of 10s. per share	13,734	10	0
Leaving balance to carry forward	£610	17	4

There was a brisk demand for coal at the opening of the season, and large shipments were made during the first two months after navigation opened. Enquiry fell off somewhat in the summer, but autumn brought an average demand, which increased towards the close of the year, and, as the harbor remained free from ice, considerable shipments were made at both collieries in December, towards the close of which month, however, an unfortunate accident to the boilers at Victoria brought operations at that colliery to a close.

At Victoria Mines, the year's result has again, unfortunately, not come up to expectation. The board have made now, however, a change in the management, which they hope may lead to better results this year."

BALANCE SHEET.

Liabilities.

	£ s. d.	£ s. d.
To Share Capital, viz., 27,469 shares of £8 each....		219,752 0 0
" Sundry Creditors—		
At the Mines.....	2,643 13 10	
At Halifax	1,984 9 2	
In England	1,569 3 11	
Unclaimed dividends.....	253 6 0	
" Return of Capital.....	69 0 0	
		6,519 12 11
" Reserve—		
Per last account.....	29,850 0 0	
Maintenance and Renewal account—from 1891	36,250 0 0	
		66,100 0 0
" Profit and Loss—		
Balance from 1891.....	1,060 9 2	
Profit this year, per Account "B".	13,284 18 2	
		14,345 7 4
		£306,717 0 3

Assets.

	£ s. d.	£ s. d.
By Property of the Association, viz.:—		
Pits, Railways, Engines, Wharves, Buildings, Machinery, &c.....	141,303 7 0	
Other Property, including Real Estate, Stores, Mining Implements, &c., valued per Inventory	41,016 5 11	
	182,319 12 11	
" Low Point, Barrasois and Lingan Mining Co.—		
The General Mining Association's Interest, represented by—		
4,297 shares of $100 each		
Valued at £49,704 13 0		
Due from the Low Point, Barrasois and Lingan Mining Co. on Loan and Current Account..... ..... 16,199 13 3		
	65,904 6 3	
		248,223 19 2
" Sundry Debtors—		
At Halifax	17,029 13 2	
At the Mines	2,442 2 1	
		19,471 15 3
" Bills Receivable—		
In England	1,002 6 8	
In Halifax.....	3,015 15 1	
		4,018 1 9
" Government and Indian Securities.....	22,221 15 6	
Accrued Interest thereon.....	162 1 6	
		22,383 17 0
" Cash—		
At Halifax	2,591 18 7	
do on deposit.....	8,219 3 7	
At the Mines.....	311 7 10	
At London Bankers and Office.....	1,496 17 1	
		12,619 7 1
		£306,717 0 3

GENERAL MINING ASSOCIATION.--Continued.

PROFIT AND LOSS.

DR.

	£	s.	d.	£	s.	d.
To Coal Stock on hand 1st January, 1892				838	17	0
" Sydney Colliery General Working Expenses, Railroad Expenses, Shipping Charges, Royalty, &c..				50,833	5	3
" Management Expenses at Sydney Mines				1,438	1	7
" Income Tax (average of three years)				225	15	8
" Expenses of Management in London—						
Directors' Salaries	787	10	0			
Secretary, Clerks and Auditors' Salaries	600	0	0			
Office Rent, Printing, Advertising, Stationery, Telegrams, Postages, Travelling and Petty Expenses	578	17	3			
				1,966	7	3
" Legal Expenses				48	7	7
" Balance—Profit carried to Account "A"				13,284	18	2
				£68,635	12	6

CR.

	£	s.	d.	£	s.	d.
By Proceeds of Sale of 170,080 Tons of Coal and Miscellaneous Receipts at Sydney Colliery				64,462	15	11
" Rents of Cottages, Lands, Royalty from Bridgeport Area, etc				1,881	12	6
" Interest and Exchange	1,470	3	5			
Less interest, etc., paid	157	0	2			
				1,313	3	3
" Transfer and other Fees				6	10	0
" Profit on Real Estate Sales				62	9	3
" Received on Bad Debts Account				620	3	6
" Stock of Coal 31st December, 1892				288	18	1
				£68,635	12	6

GENERAL MINING ASSOCIATION OF THE PROVINCE OF QUEBEC.

(Organized 1891.)

Past President: Hon. George Irvine, Q.C., Quebec; *President:* John Blue, Capelton; *Vice-Presidents:* J. Burley Smith, Glen Almond, Que.; George E. Drummond, Montreal; Col. Lucke, Sherbrooke; F. P. Buck, Sherbrooke. *Council:* Capt. R. C. Adams, Montreal; R. T. Hopper, Montreal; James King, M.L.A., Quebec; S. P. Franchot, Buckingham; John J. Penhale, Black Lake; George R. Smith, Thetford Mines; F. Cirkel, Ottawa; F. A. Halsey, Sherbrooke, Hector McRae, Ottawa. *Treasurer:* A. W. Stevenson, C.A., 17 St. John St., Montreal. *Secretary*: B. T. A. Bell, 17 Victoria Chambers, Ottawa.

GENERAL PHOSPHATE CORPORATION, Ltd.

Being wound up.

Liquidator: C. J. Stewart, 33 Carey, Street, London, W.C.

The summary report issued by the official Receiver in October, 1893, stated: "In June, 1891, a trust deed was executed by the Company, by which the whole of the Company's undertaking and property, including uncalled capital amounting to £156,-784, was vested in the Debenture Corporation as trustees. The failure of the Company was attributed to insufficiency of working capital and to the fall in the phosphate market. It would appear that this failure is also due to the manner in which the Company was financed in 1891, and also to payments in connection with a scheme to acquire other property in the neighborhood of the High Falls Mines."

The assets, valued at £52,324, are absorbed by the claims of the debenture holders.

In December, 1893, a call of £8 per share was made on the ordinary shares by the liquidator.

GIBSON STONE QUARRIES.

Wm. Gibson, M.P., Owner, Beamsville, Ont.

The property upon which these quarries are located contains 75 acres and is situate in the Township of Clinton, County of Lincoln, Province of Ontario. The quarries were opened by the present owner in 1884 and have been worked continuously since, an average number of 150 men being employed. They are one and a half miles from the village of Beamsville and three miles from the station of that name on The Grand Trunk Railway, being connected with a tram line. Equipped with six boilers (35 h.p., 24 h.p., three 18 h.p. and one 14 h.p.) four steam drills (three Ingersoll), five steam derricks (Beatty), etc. The stone is all cut by hand, and is used largely for the construction of bridges, culverts, tunnels and buildings on the line of the Grand Trunk Railway.

Output.

1891	32,316	cubic yards (masonry built)
1892	15,330	"
1893	14,000	"

GLASGOW AND MONTREAL ASBESTOS CO., Ltd.

Registered in Edinburgh, Scotland, 23rd July, 1891. Authorized Capital, £70,000, divided into 35,000 preferred and 35,000 deferred shares of £1 each. The preferred shares rank first for non-cumulative dividends of 7 per cent. per annum, and take one-half the surplus profits, the remaining half going to the deferred. The preferred shares have also a priority as to capital.

Glasgow Board:

R. E. Aitken, C.A., | Wm. Jacks, M.P., | W. H. Kidston.

CANADIAN BOARD:

E. Hanson, Montreal.
E. B. Greenshields, Montreal, | William Ramsay, Montreal.

Scottish Offices:

Messrs. Mackenzie & Aitken, C.A., Secretaries, 68 St. Vincent St., Glasgow.

CANADIAN OFFICES:

Matthew Penhale, Manager, Black Lake, Que.

GLASGOW AND MONTREAL ASBESTOS CO.—Continued.

Formed to adopt and carry out an agreement with Robert Easton Aitken, chartered accountant and stock broker, in Glasgow, providing for the purchase by the company of the properties, mining rights, and others, including the Martin mines in the Township of Coleraine, Megantic County, and the Fraser mines, in the Township of Broughton, and County of Beauce, both in the Province of Quebec, with all the mining machinery, plant, tools and other personal property, and the whole other rights, members and appurtenances; to carry on the business of asbestos producers, manufacturers, and merchants, of a mineral or mining company in all its branches. The property owned and operated was formerly worked by the Scottish Canadian Asbestos Company. Work commenced in May, 1891, by present company, 200 persons employed. *Engine equipment:* two 60 h. p. boilers; one 16 x 24 Ingersoll straight line 7 drill air-compressor; two 8 x 12 Bacon winding engines; Blake and Cameron pumps; two small hoists, etc., etc. Mill building contains 60 h. p. boilers, horizontal Brush engine, Blake crusher, set 24 in. Cornish rolls, revolving picking tables, Sturtevant double exhaust blower, screens, etc., the whole of an estimated value of $50,000.

GLEN IRON MINING CO., Ltd.

Incorporated 1891. Authorized Capital, $50,000, in 50 shares of a value of $100.

Directors:

J. W. Mackay, *President.*

J. A. Mara, | E. A. Nash,
J. O. Grahame, | F. J. Fulton.

Head Office: Frederick J. Fulton, Manager, Kamloops, B.C.

Formed to prospect for, acquire and work mineral claims and coal lands; the erection of the necessary plant; the operation of railway and steamship service. The property owned by the company consists of 165 acres in Sections 19 and 30, Township 20, Range 19, west of the 6th Meridian, B.C. Small force employed. Since operations were begun in 1891, 3,000 tons raised. Ore worked is magnetite, and the works, which are situated contiguous to the line of the Canadian Pacific Railway, are supplied by a chute 300 feet long and a Pickett aerial tramway of a length of 1,300 ft. The plant and buildings at date of last returns were valued at $9,000. Estimated value of machinery and engine equipment at date, $5,000.

GOLDEN LODE MINING CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia, 1894. Authorized Capital, $30,000 in 300 shares of $100.00.

Directors:

Andrew M. Jack, | Henry H. Bell, | Alonzo A. Hayward.

Head Office: Halifax.

Formed to acquire and operate gold properties at Mount Uniacke, County of Halifax, and elsewhere in the Province of Nova Scotia. Being organized at date of publication.

GOLDEN MINING AND SMELTING CO. OF CANADA.

Incorporated 1890. Capital Stock $400,000, divided into 4,000 shares of $100 each.

Directors:

Hon. H. B. Alexander, Calgary, Alta., | T. A. Lougheed, Calgary, Alta.,
George Alexander, " " | Peter McCarthy, " "

Head Office: P. McCarthy, Secretary, Calgary, Alta.

Formed for the purpose of erecting, operating and owning works for smelting, refining, and otherwise treating mineral ore; also for purchasing and selling mineral ore; purchasing and holding interests in mineral claims; and of buying and selling, and otherwise dealing in the same, etc., etc. The mines at present owned and operated by the company consist of certain argentiferous galena locations situate at Field, on the line of the C. P. R., and are known as the "Caine" (on Cathedral Mountain) and the "Carleton" (on Tunnel Mountain); the latter being a continuation of the "lode" of the celebrated Monarch mines. The smelting works are at Golden, B.C. The buildings include: An assay office and laboratory 34 x 24; roast house 70 x 80; engine room and sampling building 53 x 66; furnace room 40 x 40. There is a spur from the C.P.R. running into the works, and all necessary platforms, tramways, ore bins, and coal and coke bins. The special plant was manufactured by Fraser & Chalmers, Chicago. The machinery and plant is made up as follows:

A water jacket blast furnace 33 x 72; No. 4 Root blower; Blake rock crusher, 7 x 10; belt rolls 14 x 24; sampling mill, steam elevator, scales, etc.: one reverberatory roasting furnace; motive power consists of 35 h.p. engine and 40 h.p. boiler; a steam pump, Northey make, capacity, 200 gals. per minute.

The works have a capacity of 40 tons in 24 hours.

Superintendent: S. S. Fowler, Golden, B.C.

GOLD QUEEN MINING COMPANY, Ltd.

Incorporated 30th September, 1892. Authorized Capital, $400,000, in 400 shares of $100 each.

Directors:

Lewis Steager, *President.*

R. C. Higginson, | Le. De Champlain.

Head Office: R. C. Higginson, Secretary, New Whatcom, Wash.

Formed to acquire and operate the "Ruby," "Captain Jack," "Old Puss," "Sou Isabelle," "British Queen" and other claims situate on the Siwash Creek, Yale dirtrict, Province of British Columbia. Mines situate about eight miles from the town of Yale. Small force employed in 1893 developing the property.

Superintendent: C. W. Paton, Abbottsford, B.C.

GOLD RIVER GOLD MINING COMPANY, Ltd.

Incorporated 1893, under the Statutes of Nova Scotia. Authorized Capital, $50,000.

Directors :

Milner T. Foster, | J. P. Burgess,
A. W. Whitman, | George Musgrave,
Ingram B. Straffner.

Head Office : J. P. Burgess, Halifax.

Formed to acquire and work gold areas in the County of Lunenburg, or elsewhere, in the Province of Nova Scotia.

GOLD ROCK MINING AND MILLING COMPANY OF ALGOMA AND NIPISSING, Ltd.

Incorporated under Ontario Statutes, 1892. Authorized Capital, $100,000, in 100,000 shares of $1.00.

Directors :

William McCabe, *President*,
James Beatty, Q.C., | Elmer S. Townsend,
W. Thomas Newman.

Head Office : Jos. J. Davis, Secretary, Don Brewery, Toronto.

Formed to acquire and work mineral lands in the Province of Ontario. Owns the Gold Rock mining claim situate about twelve miles from Larchwood station, (Canadian Pacific Railway) in the district of Algoma, Province of Ontario.

GORDON HYDRAULIC MINING CO.

Incorporated 1891. Authorized Capital, $50,000; shares $1.

Directors :

James Bennett, *President*,
Fred S. Roper, | W. G. Stevenson,
J. Boyd Jones, | John R. Stewart,

Head Office : Fred S. Roper, Victoria, B.C.

Formed to work certain placer diggings in the Leach River district, Province of British Columbia. Property contains 480 acres. Small force employed 1893.

GRAND LAKE COAL CO.

Incorporated 22nd September, 1888. Capital Stock, $200,000, divided into 2,000 shares of a value of $100 each.

Directors:

John P. Isley, Philadelphia, *President*,
Louis G. de Bertram, New York, | Thos. M. Williamson, Buctouche, N.B.

Head Office: Chipman, N.B.

This company owns 5,000 acres of coal lands in the Newcastle district, and in addition 500 acres at Chipman, Queen's County in the Province of New Brunswick. Not at present in operation.

GRAND RIVER PLASTER CO.

Authorized Capital Stock, $50,000, divided into shares of a value of $100 each, the whole of which have been subscribed and fully paid up.

Directors.

Dr. Coles,
Geo. S. Coutant, | Ernest R. Ackerman,
M. Albert Scull, | Wm. Hamilton Merritt.
Marion S. Ackerman, *Secretary*, 67 William Street, New York.

Head Office: Cayuga, Haldimand County, Ont.

This company controls the gypsum underlying 300 acres of land known as the Huff Tract, and 116 acres known as the Jones Tract, at North Cayuga, in the county of Haldimand, Ontario, upon which are situated the Merrit and Glenny gypsum quarries. The former has been worked for a period of forty-five years, and the latter some twelve years. Average yearly output, 500 tons. The company also manufactures calcined plaster, white and grey land plaster, etc. Twelve men employed.

GRASSELLE CHEMICAL CO., Ltd.

C. A. Gasselle, *President*, | Daniel Bailey, *Secretary*.

Head Office: Cleveland, Ohio.

CANADIAN OFFICE:
Benjamin Rising, Sherbrooke, Que.

Owns and operates the Moulton Hill and Howard copper pyrites mines, situated on lot V. in the VI. range (Howard mine) and lot 23 of the III. range in the Township of Ascot, Que. No particulars as to operations obtainable.

GRAVEL BAY MINING CO. OF ONTARIO, Ltd.

Incorporated 25th January, 1890, under the Ontario Joint Stock Companies Letters Patent Act. Nominal Capital, $100,000, in 20,000 shares of $5 each.

Directors:

Hugh Wilson, Mount Forrest, Ont., | F. T. Sibley, Detroit, U.S.A.
J. J. Kingsmill, Walkerton, Ont., | W. E. Price, Montreal, Que.
W. A. Dickson, New York.

Head Office: William P. Torrance, Secretary, Toronto.

Formed to acquire, work and further develop mineral lands in the Province of Ontario, particularly mining location A. West White Fish River, Nepigon Bay, in the Thunder Bay district. Was not in operation during 1892.

GRIMSBY QUARRY COMPANY, Ltd.

Incorporated 1891. Authorized Capital, $20,000, in shares of $100.

Directors :

S. Webster, Grimsby, | Frank L. Webster, Grimsby,
F. T. Webster, London.

Head Office : F. L. Webster, Secretary, Grimsby, Ont.

Formed to acquire, lease and sell lands for quarrying purposes in the County of Lincoln, working quarries, etc., in the Province of Ontario. The property owned by the company covers thirty-two acres, and is situate on lots 9 and 10 of North Grimsby. Shipments by rail and water. About 25 persons employed.

GUARANTY SILVER MINING COMPANY.

Incorporated under the laws of the State of Minnesota, 5th June, 1891. Authorized Capital, $500,000 in shares of $1.00.

Directors :

A. C. Dunn,

John G, Rickel, | Wm. Snell,
A. D. Westley, | Verdine Truesdell,
Samson Parker, | W. G. Thornton.

Head Office : John G. Rickel, 13 Nicollet House Block, Minneapolis, Minn.

Formed to acquire and work mines. Owns a property containing 80 acres at Silver Mountain in the district of Thunder Bay, Province of Ontario ; also a mineral claim near Ainsworth, in the Kootenay district, Province of British Columbia, upon which in 1893, a small force was at work.

HALIFAX ASBESTOS CO., Ltd.

Incorporated 1893. Authorized Capital, $15,000.

Directors :

T. R. Gue,
C. E. Willis, | Arthur E. Curran,
Joseph H. Austen.

Head Office : H. M. Wylde, Secretary, 129 Hollis Street, Halifax.

Formed to acquire and work asbestos and other minerals. Holds under Crown Lease a property containing two square miles at Port-au-Port Bay, Newfoundland.

The Management Report.—"The Company has been actively engaged during the summer in prospecting, and developing its property, and has demonstrated the existence of large quantities of first class fibre, running up to 2½ inches in length. A

large part of the land has been proved to be asbestos bearing, and the Company intend to prosecute the work during 1894 on a large scale. The property is but two miles inland, and has a fine shipping point near at hand on the Bay. The claims are cut through the centre by a deep ravine, exposing the serpentine for a vertical height of from 1,500 to 2,000 feet, and veins of the fibre have been uncovered from the foot to the top of the mountain, thus proving an enormous depth of ground to be asbestos bearing. The settlements of Port-au-Port and Bay St. George are but a few miles distant, giving a regular mail and telegraph service, while direct railway communication with St. Johns will soon be established, as the railway is now building under contract from the government. The fibre is chrysotile and difficult to distinguish from the best Canadian article."

HALL MINES, Ltd.

Registered in London, 5th June, 1893. Authorized Capital, £300,000, in shares of £1, £50,000 in preference and the balance in ordinary. The preference shares rank first for 7 per cent. commulative dividends, have a priority as to Capital, and may be redeemed by the Company at 25 per cent. premium after the expiration of five years from issue. Of the preference Capital £25,000 has been subscribed, and £12,500, or 10s. per share, called up; and of the ordinary £250,000 has been subscribed, and £212,500 called up, 175,000 shares (issued to the vendor) being fully paid, and £75,000 having 10s. called. In addition to the ordinary shares as above, the vendors received £40,000 in cash. Director's qualification, £500 of ordinary shares.

Directors:

Sir J. W. Crutch, K.C.M.G., *Chairman.*

J. R. Brown, | R. Dawson, M.D., | R. Day, | J. R. Drake, D. H. Gibb and W. Neilson.

Head Office: T. Ramsay, Secretary, Wool Exchange, Coleman Street, London, E. C.

Canadian Office: Nelson B.C.

Formed to acquire copper and silver mining properties situated in the West Kootenay district, British Columbia.

The property includes the following mining claims, viz.: the Silver King, Kootenai Bonanza, American Flag, and Kohinoor, containing in all about 56 acres, but there is at present excluded a 1-26th interest, the owner of which, however, is under the mining laws of the Province prevented from interference with the majority of the owners from working the property. All of these claims, with the exception of the Kohinoor, are held free of royalty under Crown grant, and this may also be obtained for the last named claim on application.

The Company along with these properties acquired the timber and buildings on the property, tools, plant and ore on the dumps and in the ore house, estimated at 800 tons shipping ore in stock, of quality similar to the ore bodies mentioned below as still to be won.

The mines were previously worked under a mining partnership known as the "Kootenai Bonanza Mining Company" merely for the purpose of opening the mines sufficiently to prove the mineral value of the property.

The ore bodies in the 900 feet of the mine now explored, Mr. C. Roepell, M.E., after careful sampling and assaying, estimates will yield 55,000 tons of 21cwt. of shipping ore, carrying 100 oz. of silver per ton and 17½ per cent. of copper, which he values at £20 16s. per ton, which would give a gross value of over £1,000,000; and

HALL MINES.—Continued.

after the erection of a smelter at Nelson, would indicate a net profit of over 30 per cent. per annum for seven years on the capital of the Company. When referring to these ore bodies Mr. Roepell says:—"The most important body which has been opened up here is no doubt the one which runs between 350 and 530 feet. Such an abundance of high grade ore as is to be seen here is seldom met with in the richest mines;" and again, "at the same time I may mention that there is no indication whatever that the mineralization of the belt decreases or discontinues in depth, the large and valuable ore bodies which have been exposed in the lower levels promising well to be persistent;" and again, "there is no indication whatever in the mine from the outcrop down to the lowest worked point that the assay value of the ore decreases in depth." In reference to the above estimate of the quantity and value of the ore Mr. Roepell says:—"This calculation altogether ignores the ore struck in other parts of the underground workings, and especially the most valuable finds which have been made in the surface work of the Kootenai Bonanza claim. It shows that even by adopting very safe figures large reserves of ore are found to exist. Other ore bodies will likely be found, it not being probable that with the comparatively small amount of work done up to date all the existing ore has been laid bare."

Mr. Roepell's report shows that from the development workings there has already been taken about 1,000 tons of shipping ore, and 184 tons of this have been shipped to different smelters, which gave an average smelting return of 190.88 ozs. of silver per ton of 2,000 lbs., equal to 213.9 ozs. of silver per ton of 2,280 lbs., and 18.17 per cent. of copper, yielding net proceeds of $36,238, equal to £40 per ton. In the last paragraph of Mr. Roepell's report he says:—"I have to state that I consider the mines of the Kootenai Bonanza Mining Company a most valuable property, the value of which consists not only in what is already known, but also in its remarkable prospects for the future. I feel confident that if properly taken in hand and managed they will rank among the greatest and most profitable mining enterprises of their kind."

From Nelson the ore can be conveyed to the Northern Pacific Railway, Great Northern Railway (U.S.) or the Canadian Pacific Railway. A railway is in course of construction and expected to be completed in 1894, which is intended to pass within about three miles of the mines, and will bring Nelson in close communication with the railway system of the U.S.

Mr. Roepell estimated that to supply to the mines at once efficient mining plant and concentration works and to provide for the erection of a smelter, from £50,000 to £60,000 would be amply sufficient. The directors having carefully considered the subject propose that there should be provided at least £60,000 for present working capital, leaving it open for them to decide upon for their advice and consideration whether the improving of the mode of transport by the railway or otherwise or the erection of a smelter should be first dealt with.

HAMILTON IRON AND STEEL CO., Ltd.

Incorporated under Ontario Statutes, 1893, Authorized Capital, $1,000,000 in shares of $100.

Directors:

J. Jennings Moorehouse, New York,
Wm. Foster, jr., New York,
E. H. Thompson, Millerton,
J. H. Tilden, Hamilon,
W. Van Veighten Reynolds, Reynoldsville.
H. N. Curtis, New York,
John Milne, Hamilton,
Robert Jaffray, Toronto.

Head Office: Hamilton, Ont.

New York Office: J. J. Moorehouse, 1440 Broadway, New York.

Formed to mine lands and operate mines in the Province of Ontario.

HARRIGAN COVE GOLD MINING CO., Ltd.

Incorporated 1894. Authorized Capital, $60,000, in shares of $100.

Directors :

George Fawn, Halifax, A. Carter, Truro, | E. Whidden, Halifax, J. G. White, Halifax,
J. N. White, Halifax.

Head Office : E. Whidden, Halifax.

Formed to carry on mining operations at Harrigan Cove, Nova Scotia. Operations begun at date of report.

HARRISON MINING COMPANY, Ltd.

Incorporated 1894. Authorized Capital, $200,000, in shares of $10.

Directors :

W. Wheeler, St. John, N.B., E. C. Elkin, St. John, N.B., | Cyrus W. Davis, Waterville, Maine, M. S. Beach, Silverton, Colo,
C. T. Bailey, St. John.

Head Office : Fairville, Parish of Lancaster, N.B.

Being organized at date of going to press.

HASTINGS MINING AND REDUCTION CO., Ltd.

Incorporated August, 1892. Authorized Capital, $100,000, in 1,000 shares of $100 of which at date $55,000 have been subscribed.

Directors :

W. B. Scott, Philadelphia, *President*,

A. Kitson, Dr. W. T. Parry, — Graham, | Alex. Keith, *Vice-President*, J. A. Wright, Geo. E. Keith, *Secy.-Treas.*

Head Office : Geo. E. Keith, Secy.-Treas., 24 Toronto Street, Toronto.

Formed to acquire and work mineral lands in the counties of Peterborough, Hastings, Addington, Frontenac, Lanark and Renfrew, in the Province of Ontario. At present owns and operates certain gold locations in the Township of Marmora, County of Hastings.

The company operates under a license from Messrs. Kitson & Graham of Philadelphia, and Mr. Alex. Keith of Toronto, the Walker-Carter process for the treatment of refractory gold ores, which was introduced about one year ago, and has, it is understood, fulfilled all the claims made for it by its owners. A mill with a capacity of from seven to ten tons was erected in the village of Marmora, and has been in constant and successful operation for the last six months. About 600

HASTINGS MINING AND REDUCTION CO.—Continued.

tons of ore has been successfully treated, and an average of 85 per cent. of the assay value of the gold recovered, besides which the arsenic in the Mispickel is entirely recovered in a commercial form, as arsenious acid. As this is the first complete plant erected in connection with this process, a description of the operation may be of interest.

The ore is first crushed, then dried and ground to a fine pulp. It is then conveyed to the hopper of the roasting furnace, which is one of the chief features of the invention. The ore is caused to travel over an extended heating surface, entering at the coolest part and coming out at the hottest part of the furnace. The roaster consists of a series of horizontal retorts, to which the heat is applied externally. Each retort contains a rake shaft with a series of rakes of a peculiar shape, which are moved to and fro in a semi-circle, and serve to push the ore from one end of the retort to the other. The ore then slides from the uppper retort to the lower, and undergoes the same treatment as before until it leaves the fur ace. On leaving the roaster, the ore is found to be entirely free from sulphur and arsenic. The arsenic leaves the retorts as arsenious acid, together wlth the sulphurous fumes, and are caused to pass through specially constructed condensers, where the arsenious acid is condensed, the sulphurous acid being allowed to escape through a chimney. The ore is then conveyed to the amalgamator, where the mercury is applied in a state of vapor. It is then put through a water cooled tube, and falls into the pans, where the amalgam is recovered in the usual way. At present the tailings are allowed to escape, but it is intended, as soon as a concentrating plant is erected, to recover the oxide of iron, which is of a considerable value as a paint. The arsenious acid recovered will more than pay for the whole cost of treatment. The process is continuous, involves no hand labor, and requires comparatively little attention.

Superintendent: W. H. Wylie, Marmora, Ont.

HEYWOOD HYDRAULIC GOLD MINING CO.

Mining Partners:

Veith Borland, | Thomas Heywood.

Head Office: Jas. McKen, Superintendent, Keithley Creek, Cariboo, B.C.

A private company operating alluvial ground at Keithley Creek, in the district of Cariboo, Province of British Columbia. In 1893 was operated from 1st May to August 10th, with a force of seven men, yielding gold to the value of $2,394. Dividend paid, $563 on season's work, 100 days.

H. H. VIVIAN & CO., Ltd.

Registered 12th February, 1883. Subscribed Capital, £328,000 stg.

Directors:

Sir H. H. Vivian, Bart., M.P., *Chairman*,

R. W. Lindsay, | G. W. Campbell,
A. S. Merry, | G. W. Hastings, M.P.
T. Lea, M.P.

Head Office:

9 Queen Street Place, London, E.C., Eng.

CANADIAN OFFICE:

Hubert Lidgey, Manager, Sudbury, Ont.

Formed to take over nickel and cobalt works at Swansea, in Wales, German silver rolling mills at Birmingham, the nickel mine and smelting works at Senjen, in Norway. In 1889 the company acquired certain mineral properties in the townships of Makim, Blezard and Snider, in the mining district of Algoma, Province of Ontario. Mining for copper-nickel ore was begun at the Murray mine in the same year, and has been continued steadily ever since. Equipped with suitable mining and smelting plant of an estimated value of $40,000.

HIDDEN TREASURE MINING CO., Ltd.

Incorporated 15th June, 1888. Authorized Capital, $100,000, divided into 10,000 shares of a value of $10 each.

Directors:

Morris Moss, Victoria, *President*,

J. S. Chase,	D. M. Hosker,
John Morrison,	Dr. Richard Morrison,
Robt. McDougall,	R. E. Smith.

Head Office: R. H. Lee, Secretary, Kamloops, B.C.

Formed for the purpose of acquiring, prospecting, working and developing lodes or veins of gold or silver bearing quartz and other minerals, etc., in the Province of British Columbia.

The claims owned by the company are three in number, each measuring 600 x 1,500 feet on Cherry Creek, Okanagan district. Was not in active operation in 1893.

HIDDEN TREASURE SILVER MINING CO.

Incorporated under the laws of the State of Minnesota, 19th December, 1891. Authorized Capital, $100,000.

Directors:

David D. McKenzie,

Neil Campbell,	L. Kimball,
W. R. Steadman,	F. W. Nevens.

Head Office: W. R. Steadman, 207 Masonic Temple, Minneapolis.

Holds under lease a property comprising 160 acres, in the Thunder Bay district, Ontario. Was being opened up for silver at date of last report.

Superintendent: Neil Campbell, Beaver Mines, P.O., Ont.

HOMESTAKE MINING CO. OF ALGOMA, Ltd.

Authorized Capital, $300,000, in shares of $1.00, of which 65,000 have been taken.

Directors:

Jeff Hildreth, | A. Upton,
E. Barnes, | S. C. Chadwick,

Head Office: Jeff Hildreth, Managing Director, Duluth.

This company owns and operates the Homestake gold mine on Middle Island, Yellow Girl Bay, Lake of the Woods, Ont., about 25 miles in a southerly direction from Rat Portage. A small force was at work in 1893 opening up the property.

HORSE FLY HYDRAULIC MINING CO., Ltd.

Incorporated 1893. Authorized Capital, $200,000, in shares of $10 each.

Directors:

H. Abbott, | W. F. Salsbury, | J. M. Browning.

Head Office: Vancouver, B.C.

Formed to work hydraulic ground in the Province of British Columbia. Being organized at date of report.

H. W. McNEILL CO., Ltd.

Incorporated 8th January, 1892. Authorized Capital, $50,000, in 500 shares of $100.

Directors:

H. W. McNeill, Anthracite, N.W.T.,
E. L. Little, Anthracite, N.W.T., | R. A. Phillips, Anthracite, N.W.T.

Head Office: H. W. McNeill, President and Manager, Anthracite.

W. P. Williams, *General Superintendent.*

Formed to mine and extract coal in the Dominion of Canada. It operates mines under a ten year's lease, from June1st, 1891, on the property of the Canadian Anthracite Coal Company, Ltd., on the line of the Canadian Pacific Railway, at Anthracite and Canmore, Province of Alberta.

Mining capacity at Anthracite, for house use exclusively, 100 tons per day. Mining capacity at Canmore, for locomotive use, 200 tons per day.

Business year ends June 1st. 47,000 tons hoisted last year. Mueseller safety lamps used. Fan ventilation. Pillar and room system. Three hundred men employed.

HYNES TERRA COTTA AND BRICK CO., Ltd.

Incorporated 16th April, 1888. Capital, $200,000.

Directors:

Michael J. Hynes,
William J. Hynes, | George W. Banks.

Head Office: H. W. Smith, Treasurer, Toronto.

Greenhow Banks, *Secretary*, Toronto.

This company owns and operates 100 acres, containing a red clay deposit, situate in the county and township of Toronto, Province of Ontario. It also manufactures terra cotta and brick in the city of Toronto. Twenty-five men employed. Estimated yearly turnout of a value of $25,000. Machinery plant valued at $12,000.

INTERCOLONIAL COAL MINING CO., Ltd.

Incorporated 1867 by Act of the Legislature of Nova Scotia.

	Authorized.	Issued.
Capital—Common stock.....	$500,000	$500,000
Preferred stock.....	250,000	219,700
First mortgage bonds.....	250,000	250,000

Directors:

Jas. P. Cleghorn, *President.*

Henry A. Budden, | G. Goff Penny,
Hartland S. MacDougall, | Alexander Gunn,
W. M. Ramsay, | Thomas Wilson,
A. W. Hooper, | R. MacD. Paterson.

Head Office: Wm. J. Nelson, Secretary, 199 Commissioner St., Montreal.

H. A. Budden, Vice-President and Managing Director.

Mines Office: Chas. Fergie, M.E., Westville, N.S.

This Company's property contains 2¾ square miles of coal areas upon which is the Drummond Colliery at Westville, in the County of Pictou, Nova Scotia.

The main and second seams are worked, the third and fourth being intact. The second seam is only in process of being opened up, and the following notes refer to the main seam alone, which is worked by slopes, size 12 x 8 ft., having an average dip of 16 degrees, and are 4,200 ft. long; the fan shaft is situated to the south of these slopes at a vertical depth of 70 ft., and is 10 x 8 ft. The coal is good for steam and household purposes and makes an excellent coke. The No. 1 slope is used exclusively for hoisting coal, the No. 2 for lowering and raising men, also for dropping down timber, materials, etc.

Mode of Working.—The seam is worked on the bord and pillar system; each lift is 450 ft.; the levels are S.E. and N.W. 20 degrees; the dip is 20 degrees on the north and 16 degrees on the south side; counterbalance planes are driven every 450 to 500 ft.; the bords are 12 ft. wide by 9 ft. high on the south, and 10 ft. wide by 7 ft.

INTERCOLONIAL COAL MINING CO.—Continued.

6 in. high on the north side; heads are driven every 50 ft., 6 x 6 ft.; the pillars average 50 x 40 ft.; the roof is left on and no timber, as a rule, is required until the extraction of the pillars. The main levels of every lift are driven out to the extreme boundary before the work of opening out bye-bords is commenced. The coal is then worked back towards the slopes. No explosive is used, the coal being worked by maul and wedge.

Employees.—The average number of persons employed is:—Underground cutters 176, loaders 24, on cost 70, boys 66, total 336; surface, 118 men and boys; total underground and surface, 454. The average daily output is 900 tons in summer and 500 tons during winter months when working.

Ventilation.—The ventilation of the mine is produced by a fan of the Guibal type, constructed by G. W. Snider, Pottsville, Pa., and erected July 8th, 1875; it is 20 x 7 ft. wide, driven direct by an engine 16 x 24 in.; the engine and fan running at a speed of 45 revolutions per minute produces 100,000 cubic ft. of air per minute, with a gauge of seven-tenths of an inch. A steam jet is provided in case of accident to fan, and is capable of producing 25,000 cubic ft. of air per minute.

Winding.—The winding and hauling engines are set back in direct line with the slopes. No. 1 winding engine has two horizontal cylinders, 28 x 60 x 60 in. stroke; balanced piston valves; pair of plain drums 10 ft. diameter by 3 ft. 6 in. wide, with independent action. The Lane friction gear is used; hauls 12 boxes, each containing 1,344 lbs. of coal, up 3,700 ft. in three minutes.

Hauling Ropes.—These are of plough steel, 1 in. diameter, "Lang's" patent, have been running steadily for 20 months, and are now apparently as good as when put on.

Boxes.—These are of wood, size 4 ft. 2 in. x 2 ft. 2 in. wide by 2 ft. 6 in. deep. The wheels are steel, 12 in. diameter, fast to the axle, which is 1⅝ in. diameter, and also steel; the bearings are inside; the gauge is 2 ft. 8½ in.; 300 boxes are used in and about the mine and the greasing is done on the surface. To avoid waste of oil and grease, and to provide a continuous and sufficient lubrication, a self-lubricating pedestal, lately patented by the manager, is being introduced with good results.

No. 2 winding engines are a pair of 16 in. x 36 in., V friction, geared 2 to 1; drums 8 ft. diameter; work singly or connected. The rope used is ⅞ in. of crucible steel.

Boilers.—There are 5 egg-end steel boilers, each 30 ft. x 3 ft. 6 in.; the working pressure of steam is 80 lbs., two Cornish steel boilers 30 ft. by 5 ft. 6 in., flues 1 ft. 10 in. diameter, working in conjunction with 1 "Heine" boiler of 200 h. p., the working pressure of these is 100 lbs.; this latter boiler is a quick generator of steam, accessible at all points, costs little to erect, and will burn the smallest slack or duff. Steam is conveyed down the mine by 5 in. cast iron pipes, having spigot and faucet joints, for the first 2,000 ft., afterwards by 3 in. wrought iron flanged pipes to a point of 3,700 ft., on the slope. The latest pipes provided for the lower workings are 3 in. wrought iron tubing flanged at ends, with loose cast iron spigot and faucet flanges.

Pumping.—Three steam pumps are employed. No. 1 is "Knowles" direct acting compound plunger pump, cylinders 8 in. and 14 in., plunger 6 in., stroke 24 in.; independent condenser; vertical lift 347 ft., column 10 in. cast iron. No. 2 is a "Northey" improved steam pump, cylinder 14 in., plunger 5 in., stroke 12 in., with separate condenser; vertical lift 500 ft., column 4 in. cast iron. No. 3 is also a "Northey," 12 in. cylinder, 4 in. plunger, 12 in. stroke; vertical lift 80 ft., column 3 in. wrought iron.

Underground Hauling.—The haulage on the south levels, from which two-thirds or more of the output is taken, is by tail-rope; the engines, built at the colliery, a pair of 8½-in. by 6-in. stroke; geared 7 to 1; drums 4 ft. by 2 ft. 6 in. wide; haul 22 boxes each trip; average speed of boxes 6 miles per hour; rope crucible steel ⅝ in. diameter; boxes run on T rails 18 lbs. to the yard.

Coke Ovens.—There are 20 bee-hive ovens, each 12 ft. diameter by 6 ft. high; a charge consists of 5 tons of unwashed coal, and which has passed through a ½ in. screen; ovens are drawn every 72 hours; average yield of coke is 2 tons 16 cwt. per

oven per charge. A "Sheppard deadweight" coal crusher has just been erected, capable of crushing 12 tons per hour; the coke produced from this crushed coal is a great improvement on that previously made, it is stronger, brighter in appearance, more uniform in texture, and has more of a metallic ring when struck. A "Robinson" coal washer is about to be erected, and this is expected to remove a large percentage of dirt in the slack, and consequently reduce the ash in the coke.

Lighting.—The workshops, engine houses and bankhead are all lighted by the incandescent electric light supplied from a dynamo, placed in the machine shop, and which is driven by a counter shaft from the shop engine; its capacity is 75 lights of 16 candle power. No open lights are allowed in the mine; the lamps used are the Marsaut and Clanny, the latter one being replaced by the former.

Screens.—The ordinary fixed screens are used, arranged to make Round, Run of Mine, Nut and Coking coal. The height of the bankhead is 25 ft., length of screen bars 14 ft., set at an angle of 29 degrees. To avoid breakage, and allow for more thorough picking and cleaning, the coal, after passing over the screen bars, slides onto an apron where a man in attendance examines it, after which the apron, actuated by a lever is lowered, and the coal allowed to fall gently into the car.

Workshops.—These consist of a carpenter's, blacksmith's, car, machine shops and sawmill. The machine shop contains lathes, drilling and screwing machines, also the dynamo for electric lighting. The sawmill contains travelling rotary saw and cross-cut, drilling and notching machine for cutting groove in edge-rail sleepers. This machine will cut and groove 60 sleepers per hour. When formerly cut by hand they were turned out at the rate of 10 per hour per man.

Shipping Wharf.—This is situated at Granton, on the Middle River, 7 miles north of the mines, with which it is connected by a line of railway owned and operated by the company. Steamers of 2,600 tonnage can and have loaded here. Two locomotives and some 160 hopper cars are employed during the shipping season.

COAL DISPOSALS.

—	1892.			1893.		
	Round.	Slack.	Total.	Round.	Slack.	Total.
Nova Scotia.....	39,367	37,744	77,111	53,613	47,038	100,651
New Brunswick.....	5,388	2,701	8,089	2,912	653	3,565
Prince Edward Island	2,213	3,654	5,867	8,812	7,133	15,945
Quebec.....	83,439	9,073	92,512	79,794	6,101	85,895
Ontario.....	.....	.....	.....	23	10	33
Newfoundland.....	.....	.....	.....	880	.....	880
Coke ovens.....	38	2,312	2,350	143	987	1,130
Colliery employees ..	2,854	62	2,916	3,402	18	3,420
Colliery engines.....	3,540	5,263	8,803	8,111	2,755	10,866
Totals.	136,839	60,809	197,648	157,690	64,695	222,385

INTERNATIONAL ASBESTOS MINING AND MANUFACTURING CO., Ltd.

Organized 1893 under the Laws of the State of New Jersey. Authorized Capital, $200,000, in shares of $100.

INTERNATIONAL ASBESTOS MINING CO.--Continued.

Directors :

G. C. Kruger, Newark, *President*,
Otto Heintz, | J. L. Armitage, | F. C. Preisel.

Head Office : 928 Prudential Building, Newark, N.J.

Formed to operate an asbestos property containing 130 acres, situated in the Township of Denholm, County of Ottawa, Province of Quebec. Operations to be begun in the spring of 1894.

INTERNATIONAL MINING AND MILLING CO. OF BRITISH COLUMBIA, Ltd.

Incorporated 1891. Authorized Capital, $500,000 in shares of $1.

Directors :

R. A. Brown,
J. L. Broe, | J. L. Wilson.

Managing Director: R. A. Brown, Mareno, Stevens Co., Wash.

Mine Office : Volcanic Mountain, North Fork of Kettle River, Osoyoos Division, Yale District, B.C.

Formed to acquire and work certain mines and mining properties situate at the North Fork of Kettle River in the Osoyoos Division, District of Yale, Province of British Columbia, known as the "Volcanic Mountain" mines and to otherwise deal in lands and claims. Eight men employed.

JEFFERY ASBESTOS MINE.

Trustees :

Wm. Farwell, Sherbrooke, | F. C. Thompson, Sherbrooke.

The property (owned by Mr. W. H. Jeffery of Richmond, Que.), upon which this productive asbestos mine is situate contains 75 acres on Lot VI. of the III. Range of Shipton, at a point about four miles from Danville station, on the line of the Grand Trunk Railway. Was acquired by the present owner in 1879 and worked by him on royalty up till 15th October, 1892, when it was purchased outright. Is equipped with an excellent working plant comprising four Jenckes winding engines, boom and cable derricks, etc. About 2,000 tons of all grades produced in 1893.

Manager : Capt. Thorpe, Danville, Que.

JOHNSON'S CO.

Incorporated 1885, under letters patent from the Local Legislature of Quebec.
Capital $250,000, in shares of $500 each, fully subscribed and paid up.

Directors :

Hon. George Irvine, Q.C., Quebec, *President*,
John Mooney, Inverness, Que., | W. J. Johnson, Clapham, Que.,
Samuel J. Johnson, Inverness, Que., | A. S. Johnson, Thetford, Que.

Lawrence Lynch, Secretary-Treasurer, Quebec, Que.

Formed to acquire and work asbestos and other mineral lands in the Province of Quebec, particularly Lot 27, 6th Range of Thetford, and Lots 25, 26 in the 10th Range of Ireland, also Lots 25, 29, 30, in Range 3 of the township of Coleraine, all in the county of Megantic.

Engine equipment including steam drills, horizontal and upright boilers, pumps, single and double hoisting engines, and a complete crushing and separating plant; has been considerably augmented during 1892.

A. S. Johnson, *Managing Director*, Thetford, Que.

JOSEPHINE MINING CO.

Incorporated 1893. Authorized Capital, $600,000.

Canadian Office: Nelson, B.C.

Formed to mine in British Columbia, but no information obtainable.

KAMLOOPS COAL CO., Ltd.

Incorporated 1892. Authorized Capital, $200,000.

Directors:

J. F. Smith,
M. Gaglietto, | Jean B. Latremouille.

Head Office: Kamloops, B.C.

This Company owns 2,275 acres of coal lands on Newhykwalston Creek, a tributary of the North Thompson, at a point about 50 miles north from the town of Kamloops. The measures dips 60° E., at an angle of 23°. Coal is bituminous in character and carries 62 per cent. of fixed carbon, and is reported to make 70 per cent. of good strong coke.

The seam when visited in July, 1892, showed in the face of the workings 38 inches from roof to pavement, with a 4 inch parting of sandy shale, and immediately next the pavement a similar sandy shale about 4 inches in thickness. It has been reported since by the man in charge of the work that the seam now measures 42 inches with only the centre parting. The coal is very hard, compact and clean, and can be mined with very little waste, and is constantly increasing in thickness on the dip. There is also at a distance of 10 ft. below this seam, another which measured 4 ft. and showed signs of running into the upper seam at no great distance on the dip. The quality, however, is not equal to the upper seam, at the cropping, although it would prove a good useful fuel.

The workings at date consist of a tunnel driven upon the strike 150 ft., well timbered and in good order. About 250 tons of coal, mined above this level, were taken to Kamloops by steamboat on the North Thompson River in June, 1893, in order to thoroughly test the quality, and is used there exclusively for domestic purposes, except where anthracite is required. The coal has also been tested by the C. P. Ry. Co. for steaming purposes, and proved highly satisfactory. The mine is not now in operation, but the Company hope to arrange for extensive development in the spring of 1894.

KANAKA BAR GOLD DREDGING CO., Ltd.

Incorporated under the Statutes of British Columbia, 1893. Authorized Capital, $50,000, in shares of $10.00.

Directors :

R. A. Anderson, | W. H. Goodwin, | Chas. S. Bailey.

Head Office : Vancouver, B.C.

Formed to purchase the rights, concessions and privileges owned by Thos. J. Beatty, C. S. Bailey, W. H. Gallagher, and H. G. Neelands, known as the Kanaka Bar Driving and Dredging Company, by virtue of an indenture dated 31st Jan., 1890, and made between Frederick Hussey, as Gold Commissioner, and the said parties as licensees ; also to carry on the business of miners.

KING BROTHERS.

A private company, consisting of the following partners :

James King, M.P.P.,
Chas. King, | E. A. King.

Head Office : 15 Bell's Lane, Quebec, Que.

This company is one of the largest producers of crude asbestos in Canada, and is the owner of some 21,000 acres of mineral lands in the townships of Thetford and Ireland. Thetford mines at Thetford station, on the line of the Quebec Central railway ; on an average about 200 persons employed. Engine equipment includes Rand compressor (7-drill), three Copeland & Bacon hoisting engines, steam pumps, cable derricks, etc. Output for 1889, about 1,500 tons all grades : 1890, 1,050 tons all grades ; 1891, 925 tons ; 1892, 550 tons.

General Superintendent : Wm. King, Thetford, Que.,
Resident Engineer : A. M. Evans, M.E., Black Lake, Que.

KINGSTON AND PEMBROKE IRON MINING CO.

Capital Stock, $5,000,000, in $25 shares.

Directors :

Henry Seibert, New York, *President*,

J. D. Flower, New York, N.Y.,	B. W. Folger, Kingston, Ont.,
W. G. Pollock, Cleveland, Ohio.	F. A. Folger, " "
M. H. Folger, Kingston, Ont.,	C. F. Gildersleeve, " "
J. Bawden, " "	J. H. Hollister, New York.

Head Office : George Osborne, Secretary, Kingston, Ont.

The Freehold and Leasehold mines of the Kingston and Pembroke Iron Mining Company, comprise, with other property, the mines formerly operated by the "Glendower," "Zanesville," "Roberts," "Mississippi," "Levant" and "Calabogie" Mining Companies. The acreage is as follows :—

TOWNSHIP OF BEDFORD, County of Frontenac:

	Acres.
E ½ Lot 3, 1st Con	100
Lot 4, 1st Con	200
E ½ Lot 6, 2nd Con	100
N ½ Lot 5, 2nd Con	100
Part S ½ 5, 3rd Con	50
Part Lot 6, 3rd Con	50

TOWNSHIP OF OSO:

NW ½ Lot 13, 6th Con	69
14, 6th Con	200
12, 8th Con	200
22, 10th Con	200
Part Lot 14, 1st Con	25

TOWNSHIP OF PALMERSTON:

W ½ Lot 3 and part of E ½ Lot 3, 9th Con	106
E ½ Lot 5, 9th Con	100
E ½ Lot 1, 9th Con	100
E ½ Lot 2, 9th Con	100
Lot 6, 9th Con	200
N ½ Lot 6, 10th Con	100
E ½ Lot 6, 11th Con	100
Lot 7, 10th Con	200

TOWNSHIP OF LAVANT, County of Lanark,

	Acres.
Lot 4, 12 Con	200
E ½ Lot 22, 4th Con	100

TOWNSHIP OF SOUTH SHERBROOKE:

Part of Lot 14, 8th Con	60
N ½ Lot 17, 7th Con	100

TOWNSHIP OF BATHURST, County Lanark:

NE ½ Lot 1, 6th Con	100
Lot 3, 6th Con	200
W ½ Lot 6, 6th Con	100

TOWNSHIP OF BAGOT, County of Renfrew.

E ½ Lot 16, 11th Con	100
E ½ Lot 24, 10th Con	100
Lot 22, 11th Con	200
N ½ Lot 21, 7th Con	100
N ½ Lot 21, 8th Con	100
N ½ Lot 23, 9th Con. } N ½ Lot 23, 10th Con. }	120

Also 1,700 acres at Gun Flint Lake and 3,200 in township of Moss, in the Lake Superior district. These mines are now about to be actively worked.

KINGSVILLE NATURAL GAS AND OIL CO.

Incorporated 30th October, 1890. Authorized Capital, $43,740, all subscribed and one-ninth paid up. Shares, $20.00 each.

Directors:

Dr. S. A. King, *President*,
Jas. Brown, *Vice-President*, | J. A. Fitch,
Curtis Green, | Sol. Wigle.
Dr. Allworth, *Treasurer*.

Head Office: S. T. Copus, Secretary, Kingsville, Ont.

This Company was first known as the Kingsville Citizens' Natural Gas Oil Association. Four wells have been put down at the village of Kingsville, Ont., the average depth being 1,035 feet. Writing under date of 2nd February, 1892, the secretary reports: "We are supplying the village of Ruthven, a small place four miles east of us, and the line has been extended to the west, until at present we have upwards

of ten miles of pipe line, with five reducing stations. The pipe lines vary from 1 to 4 inches. Our main high pressure line to Kingsville is 3 inches to the reducing station. After leaving the station the main low pressure line is 4 inches, from which different sized lines branch. In the village of Ruthven we carry from 1 to 1½ pounds pressure. In Kingsville we carry from 1 to 2 pounds. We have about 350 cook stoves attached, 175 heating stoves, 25 house furnaces, besides open grates, lights, etc. Then in addition to this we supply gas to the woolen mill, grist mill, sash and door factories, turning factory, grain elevator, the Mettawas summer resort, fruit drying establishment, the churches, halls, lodge rooms and many other places. It also furnishes the fuel for burning lime, the stone for which is brought here from Pelee Island."

KOKSILAH QUARRY CO., Ltd.

Incorporated 1890. Capital Stock, $100,000, divided into 1,000 shares of $100 each.

Trustees:

Joseph Hunter, | Peter Dunlevy, | Theodore Lubbe.

Head Office: Victoria, B.C.

Formed to quarry, dress, ship, sell and otherwise dispose of marble, granite, sandstone and other stone. No report at date.

KOOKAGAMAMING GOLD MINING CO. OF ONTARIO.

Incorporated 1893. Authorized Capital, $200,000.

Directors:

D. Hunter, | W. H. Cathro, | G. L. Macdonald, | H. Lemon, | A. G. Lindlack.

Head Office: Toronto.

Formed to mine in Ontario. Operations to be carried on in the District of Nipissing.

KOOTENAI MINING AND DEVELOPMENT CO., Ltd.

Incorporated July, 1893, under the laws of British Columbia. Authorized Capital, $1,000,000.

Directors:

Willis Baker, *President*,

S. H. Wood, | J. B. Geiser, | R. N. Noble, | J. B. McArthur,

T. J. Lendrum.

Canadian Office: J. B. Geiser, Secretary, Ainsworth, B.C

The Company owns three claims, covering about 51 acres each, on Woodbury Creek and Kootenay Lake, West Kootenay District, Province of British Columbia. Samples of the ore run as high as 120 oz. silver and from 60 to 80 per cent. lead per ton. Was being opened up at date of last report.

KOOTENAY AND COLUMBIA PROSPECTING AND MINING CO., Ltd.

Incorporated 1892. Authorized Capital, $40,000, in shares of $100.

Directors :

G. P. Brophy, C.E., Ottawa, Ont.
W. A. Allan, Ottawa, | Hector McRae, Ottawa.
S. H. Fleming.

Head Office : Hector McRae, 58 Queen Street, Ottawa, Ont.

Formed to carry on a general mining business; to buy and sell and otherwise deal in mines, mining lands and minerals; to prospect and explore for, quarry, develop, work, extract and mine throughout the provinces of the Dominion of Canada, ores and minerals of every kind, etc. Owns fourteen mineral claims in the West Kootenay district, Province of British Columbia, as follows: (1) *Toad Mountain Group:* comprising the "Buckingham," "Silver Tip" and "Valley of Achor" claims, situate nine miles from the town of Nelson. (2) *Kaslo Group:* comprising the "Wellington," "Ottawa" and "Bolderwood," situate twelve miles from the settlement of New Denver; and (3) the *Johnson Creek Group:* situate about 15 miles west of the village of Kaslo, and comprising the "Stanley," "Nip and Tuck" "Morning Glory," "Hidden Treasure" and "Evening Star" claims. The mineral is mainly argentiferous galena. During season of 1893 nine additional claims were staked by the company's prospectors, seven of which are in the St. Mary's district and the other two in the Slocan district.

Four carloads (15 tons each) of ore were shipped in August, September and October, 1893, from the Wellington mine to Tacoma which netted over $2,250. A considerable quantity of concentrating ore, averaging 120 ozs. silver and 55 per cent. lead, was taken out but retained at the mine, awaiting cheaper shipping facilities. About 12 men on an average are employed. On October 1st No. 2 shaft had to be abandoned owing to water. A tunnel 130 feet is being driven into the mountain to tap the vein lower down.

On the "Stanley" mine, under the superintendence of James Cronan of Spokane, six men were employed for less than three months, taking out 150 tons of high grade ore, averaging about 200 ozs. silver and 57 per cent. lead. This ore will remain at the mine till the season of 1894, when work will be resumed and a cable road with buckets arranged to transport the ore 2½ miles to the waggon trail. The company expended $25,000 during the year in prospecting and assessment work and in development and machinery.

KOOTENAY LAKE REDUCTION CO.

Registered 23rd August, 1892. Authorized Capital, $250,000, in shares of $100.

Head Office : Pilot Bay, Kootenay District, B. C.

Formed to carry on the business of mining, milling, smelting, concentrating, reducing and refining gold, silver, copper, lead ores, and other ores and minerals in all its branches at Kootenay Lake, in Kootenay mining district, in British Columbia, and in other mining districts in British Columbia and the United States.

KOOTENAY MINING AND SMELTING CO.

Registered 23rd August, 1892. Authorized Capital, $30,000, in shares of $25.00.

Head Office: Pilot Bay, Kootenay District, B.C.

Formed to transact the business of mining, milling, and smelting gold, silver, copper, lead ores, and other ores and minerals in all its branches, at Kootenay Lake, in Kootenay mining district, British Columbia, and in the Territory of Idaho, and in other mining districts of British Columbia and the United States of America; also to purchase, own, work and develop the mines, mining claims, and mining property known as the "Blue Bell," "Silver King," "Surprise" and "Black Hawk" lodes, located at Kootenay Lake, in Kootenay mining district, British Columbia; and to purchase, own, work and develop other mines, mining claims, and mining property at other places; to own, buy and sell, and deal in gold, silver, copper, lead ores, and other ores and minerals; also to obtain, buy and own the franchise and property of the toll road from Mud Slough to a point on Kootenay River near Bonner's Ferry, Idaho Territory, and to maintain and operate the same; to buy, own, and hire steamboats, and other boats, and to operate the same for the transportation of freight and passengers, etc.

KOOTENAY SMELTING AND TRADING SYNDICATE, Ltd.

Incorporated 21st February, 1889. Authorized Capital, £40,000, divided ints 3,990 ordinary shares of £10 each, and 10 founders' shares of £10 each.

Directors:

M. McC. Bruce,
Lionel R. C. Boyle, | Richard A. Tiessen,
Herbert Cecil Pelly,

Canadian Office: F. Storer Brown, 11 Notre Dame Street, Winnipeg, Man.

The company owns 320 acres of land at Revelstoke, in the Kootenay district Province of British Columbia. The company erected smelting and sampling works in 1889, and is prepared to smelt ores at a stipulated price per ton, or will defray all charges on consignments, and after deducting therefor, pay their cash value, based on the assays obtained. The works are equipped with and excellent plant.

Superintendent: Dr. Campbell, Revelstoke, B.C.

LAKE GIRARD MICA MINING SYSTEM.

Organized, 1891.

T. J. Watters, *Owner*,
Don. C. Watters, *Manager*,
G. E. Davison, *Secretary*.

Head Office: 504 Besserer Street, Ottawa, Ont.

This company is extensively engaged in the production of cut and dressed mica, owning at date the following properties in the Province of Ontario and Quebec:

PROVINCE OF ONTARIO.

Name of Mine.	*Township.*	*Acreage.*
Martha	North Burgess	100
Pike Lake	"	200

PPOVINCE OF QUEBEC.

Alice	Hull	100
Bradley	"	200
Cassidy	"	300
Charette	Templeton	200
Foley	Hull	200
Lake Girard	Wakefield	210
Murphy, P.	Templeton	100
Murphy, B. J.	"	200
Nellie & Blanche	Hull, Villeneuve, Templeton, Wells	1000
Prudhomme	Hull	80
Stevenson	Templeton	200
Snapshot	Hull	20
White Mica	Portland West	100
	A total of	3,210

The principal mining has been done on the Lake Giarad. in Township of Wakefield, Que., the Nellie & Blanche in the township of Hull, and the Martha mine at North Burgess, Ont., all of which are equipped with suitable buildings, and an excellent working plant. In 1892 and 1893, an average daily output of 5 tons merchantable mica was obtained.

The cutting and dressing works at Ottawa are equipped with twenty-three power presses, operated by electricity, for cutting irregular dies and segments, and employed in 1893 about 80 persons.

The following are the official returns of output from the commencement of operations, to August, 1893, on which date the great business depression and consequent cessation of demand for mica rendered it necessary to suspend active operations on most of the properties then being worked:

Total from June, 1891 to December 31st, 1891	288,000 lbs.
Total from Jan'y., 1892 to December 31st, 1892	2,454,448 "
Total from Jan'y., 1893, to July 31st, 1893	1,909,562 "
Total block mica as raised from the shafts	4,652,010 lbs.

LA PRAIRIE PRESSED BRICK AND TERRA COTTA CO.

Registered 8th September, 1892. Authorized Capital, $150,000, in 1,500 shares of $100.

Directors:

Hugh Cameron, Toronto, | Dr. T. A. Brisson, La Pairie,
A. D. Taylor, Montreal, | Peter Lyall, Montreal,
J. W. Lister, Montreal.

Head Office: Montreal, Que.

Formed to manufacture bricks, tiles and all other articles made from clay or shale, etc. Works at La Pairie, Que. Estimated value of product in 1893, $20,000; 30 persons employed.

LANARK CONSOLIDATED MINING AND SMELTING CO., Ltd.

Incorporated 1891. Authorized Capital, $200,000, in 8,000 shares of $25, of which at date 8,009 shares have been subscribed.

Directors:

Thomas Earle, M.P., | F. S. Barnard, M.P.,
W. J. Goepel, | N. P. Snowdon,

Head Office: G. A. Sargison, 48 Langley Street, Victoria, B.C.

Formed to acquire the rights and interest of the Selkirk Mining and Smelting Co., Ltd., in and to the Lanark mine, the Sutton mine, the Red Fox, the Isabella, the Dorothy and the Sprague mining claims, and all and every the other real and personal property of the said Selkirk Mining and Smelting Co. lying at or near the town of Illecillewaet, West Kootenay district, Province of British Columbia, for the sum of $120,000, to be paid for in fully paid shares of the company. The principal mine, the Lanark, upon which somewhat extensive work has been done is situate about four miles from the town of Illecillewaet. About 2,000 ons of ore raised to date. Shipments of argentiferous galena reported to have yielded a profit of $65 per ton. No work done in 1893. Value of machinery plant (estimated) $10,000: buildings, $5,000.

LAURIER MINING CO.

Registered in October, 1889. Capital, $25,000.

Directors:

Hon. W. Laurier, M.P.,
J. Lavergne, M.P., | F. Beauchene,
L. Lavergne, N.P., | T. Baril.

Head Office: J. Lavergne, Secretary, Arthabaskaville, Que.

Formed to acquire and work asbestos and other mineral lands in the Province of Quebec. The company owns a small asbestos property adjoining the mines of the Anglo-Canadian Asbestos Company, and the mine formerly owned by Johnson and Loomis, in the district of Black Lake; also properties in the townships of Chester, Tingwick and Ham, all in the Eastern Townships of the Province of Quebec. No work done in 1893.

LEDYARD GOLD MINES.

A company was being incoporated under this designation at date of going to press, to operate certain gold properties in the 1st concession Township of Belmont, Province of Ontario. Mr. T. D. Ledyard, 56 Colborne St., Toronto, is understood to be one of the principals. Huntingdon mill and other machinery being put in.

LEEDS COPPER CO., Ltd.

In liquidation, but may be reconstructed.

Liquidator :

C. H. Smith, 6a Austin Friars, London, E.C., England.

LITTLE RAPIDS MINING CO.

A private company consisting of the following

Owners :

W. A. Allan, Victoria Chambers, Ottawa, Ont.
Major W. Holbech, Burnham House, Oxford, Eng.

Head Office : Victoria Chambers, Wellington Street, Ottawa, Ont.

The Company owns some 600 acres of phosphate lands, in the 1st Range of Portland East, in the County of Ottawa, Province of Quebec, and is the owner of the Little Rapids phosphate mines, situate at Little Rapids, on the left bank of the Lievre River, in the range, township and county aforesaid. Main shafts 210 ft. and 190 ft. respectively ; tramways ⅞ of a mile from mines to wharf, narrow gauge, steel rails. The working plant includes a Rand compressor, 3 Ingersoll and 1 Rand drills, winding engine, 3 boilers, Knowles pumps and other machinery plant. Well equipped with suitable accommodation for a large force of miners. A small force employed.

LONDONDERRY IRON CO., Ltd.

Incorporated 1887 under special charter from the Dominion Government. Capital Stock—Preferred, $400,000 ; Ordinary, $600,000.

Directors :

Lord Mount Stephen, Montreal,
Sir Charles Tennant, Glasgow, | A. T. Paterson, Montreal,
A. S. McClelland, " | John Turnbull, "
Hon. D. McInnes, Hamilton, Ont., | R. McD. Paterson, Montreal.

Head Office : James Phymister, Secretary, 35 St. Francois-Xavier Street, Montreal.

Works Office : R. G. Leckie, M.E., General Manager, Londonderry, N.S.

Formed to acquire the property, mines, telegraph lines, machinery, plant, materials and other assets of the Steel Company of Canada, Limited, for the sum of three hundred thousand dollars of preferential shares, and such amount, not exceeding four hundred thousand dollars of ordinary shares, to be used in paying off the bondholders and ordinary creditors of that company, as may be necessary for that purpose, together with such undertaking for the payment of the indebtedness incurred by the liquidator of the said Steel Company of Canada, and such minor arrangements as to details as may be finally agreed upon by the company and the liquidator of the said

LONDONDERRY IRON CO.—Continued.

Steel Company of Canada, with the authority of the proper court; and, upon the completion of the arrangements for such acquisition, to issue as paid-up shares such preferred and ordinary shares as shall be required for the performance of the obligations to be assumed by the company; and as a means of providing for the expense of completing the said arrangements and of procuring the means of carrying out the same, of remunerating divers agents and others who have been engaged in negotiating the same in Canada and in England, and generally of relieving the company from all liability in respect of any and all preliminary proceedings and arrangements, the company is authorized to make and use a further issue of paid-up ordinary shares, not exceeding in all the sum of $80,000; also to construct and operate such other roads and additions to the said railway, tramway and telegraph line, in connection with the said mines and properties, or the rights they may have acquired, as are needed for their business; also to acquire, charter and operate vessels, steamers and other suitable craft for the transportation of the products of their business to ports in Canada or to any foreign port or ports. Annual meeting held on the second Wednesday of each year, at which the affairs of the company are submitted to the 31st December preceding. Dividends at the rate of 6 per cent. on the preferred stock have been paid for the years 1889 and 1890, dividends payable 1st March each year. The company's property covers about 36,000 acres freehold. Machinery, plant, etc., valued at $150,000. Mining has been carried on since 1849. A charcoal furnace was erected in 1853, which was in blast at short intervals for some years.

Roasting Kilns.—The kilns in which the carbonate ores (a mixture of sideropelsite and ankerite) are calcined, are a modification of the gas roasting furnace first introduced by Westmann in Sweden. The total height of kiln from floor to charging door is 28 ft.; diameter at top 13 ft.; diameter at base 18 ft. In the centre is a circular brick wall 13 inches thick, enclosing an air space 36 inches in diameter. This opens at the top into the chimney and assists in drawing the gases and products of combustion, laterally through the ore by twelve ports 12 x 2½ in., situated a little above the line of gas ports. The gas ports are sixteen in number, and in front are 10 x 8 in., but flare back so that in the interior there is but a point of fire-brick 3 in. wide separating them. This is divided by a fire-brick partition so as to give a more uniform distribution of gas and flame. The gas is admitted by a double opening in bottom of port, covered by a loose plate of cast iron, which can be readily moved so as to regulate admission of gas. Formerly gas was made in producers, but now waste gas from blast furnace is brought over in wrought iron pipes 18 in. in diameter, and distributed around the kiln by a cast iron pipe, containing openings for cleaning and removing dust carried over in gas current. The carbonate ores are used not alone for the iron contained, but also on account of their earthy constituents, which form a very desirable flux. The raw ore, when charged into the kiln, contains on an average about 23% metallic iron, and when thoroughly calcined carries about 33% after carbonic acid (CO_2) has been expelled. Under normal conditions each kiln can treat daily (24 hours) 60 tons of raw ore, but over 80 tons have been put through and perfectly calcined when good gas was employed. Two men are employed per shift on each kiln, one charging on platform and one attending to gas and drawing ore. The ore is wheeled direct to the scales and is charged into the furnace whilst still hot.

Blast Furnace—The blast furnace was rebuilt in 1890, and in April of that year was blown in. It is of the ordinary type, having a height of 75 ft.; bosh 18 ft.; diameter of hearth, 9 ft.; diameter at stock line, 14 ft., and of bell, 10 ft. 6 in. It is blown with 7 tuyeres, 4½ in. diameter. The gas down-take is 4 ft. 6 in. in diameter, and the dust catcher is a circular iron chamber 25 ft. high by 10 ft. diameter. Inside it has two diaphragms, between which the gas passes downwards and then rises up behind these diaphragms to a gas conductor, which on one side leads to boilers and kilns and on the other to the hot blast stoves. The gas in its travel through the dust catcher deposits a large amount of dust, which enables the stoves to run for nine months without cleaning, instead of for three months. as was the case before its introduction. The bell of furnace is also novel. Instead of being a plain cone, the periphery is indented—that is, a space 8 in. wide alternates with a plate 12 in. wide, which enables a more regular distribution of the fine and coarse ore to be made. Although the bell

is 2 ft. larger in diameter than the hopper it was put in without removing it. The bell was cast in two pieces, that is, a section was cut off by an interposed slip, and after main portion had been swung into place, the cut out portion was replaced and the two bolted together by raised flanges on upper side.

East Mines—Within easy distance of works and connected by railway; 36 persons employed, 1892; average monthly output about 19,000 tons; ores worked, spathic and brown hematite; ore bed 20 ft., opened by shaft 120 ft. and adit level. Francis Park, *Superintendent.* Equipped with two boilers aggregating 37 h.p., three winding engines, Ingersoll steam drills, etc.

West Mines—Opened by three shafts, 325 ft., 285 ft. and 160 ft. deep; ores worked, red hematite and spathic; ore bed averages 15 ft.; monthly output, 1,400 tons; 75 persons employed. R. Boutelier, *Superintendents.* Equipped with two boilers, one winding engine (Copeland & Bacon), 12 in. stroke, 3 ft. drum, Cameron pumps, &c.

Lanark Lime Quarry—Situated near New Brookfield, Colchester County. Weekly output averages 300 tons; 12 persons employed. F. Park *Superintendent.* Equipped with one pair engines, 8 in. cyl. 12 in. stroke, single drum, one steam and four plunger pumps, &c.

OUTPUT FURNACE, 1893.

	Long Tons.	Value at Furnace.
Pig Iron made	21,203	$275,366
Ore charged	50,933	127,179
Coke	25,933	88,849
Raw Coal	5,214	11,419
Flux	12,198	11,954

Four hundred persons employed.

LONGFORD QUARRY AND LIME CO.

Organized, May, 1889.

Partners:

Wm. Thomson, | Geo. Thomson, | Andrew Craig, | Maxwell Hall.

Head Office: Maxwell Hall, Secretary, Longford Mills, Ont.

Operates quarries on the shore of Lake St. John. Township of Rama, Ont. Value of plant, $3,000.

MABOU COAL AND GYPSUM CO., Ltd.

Incorporated by Act of the Nova Scotia Legislature, 19th May, 1891. Authorized Capital, $100,000; subscribed at date, $73,000.

Directors:

C. L. Snow, *President.*

Lewis McKeen, | J. H. Helmer,
J. J. Arnold, | Geo. P. McCelland.

Head Office: Lewis McKeen, Sec.-Treasurer, Mabou Harbor, Cape Breton, N.S.

MABOU COAL AND GYPSUM CO.--Continued.

This company owns and operates the Converse, Rankin, Beaton and McDonald gypsum quarries, the Florence plaster mills, and the Mabou coal mines, situate at Mabou Harbor, Cape Breton County, Province of Nova Scotia. 50 persons employed. Estimated value of machinery and buildings, $13,000. Writing under date of 18th January, 1892, one of the officers of the company says: "Our gypsum lies in three distinct deposits; the first at the mouth of Mabou River, containing five quarries and a steam mill of a daily capacity of 15 tons. These are known as the "Converse." The second—the "Rankin"—lies on the gulf shore about three miles from the "Converse." The third, consisting of six quarries, and known as the "McDonald," lies about one mile and a-half from the "Rankin." Our coal properties cover two square miles on the gulf shore near the Rankin quarries, known as the Mabou coal areas, and also five square miles adjacent thereto, known as the Snow area; seams, 8 ft. 3 in., 13 ft. and 17 ft.

Superintendent: James Hudson, M.E., Mabou Harbor, C.B.

MacLAURIN PHOSPHATE MINING SYNDICATE, Ltd

Being wound up.

Liquidator: C. J. Stewart, 33 Carey St., London, W. C., England.

The unsecured liabilities are returned in the accounts at £3,795, against assets £1,538, the total deficiency as regards contributories being £13,708. The failure of the syndicate is attributed to the low state of market values and inability to discover phosphates at the mines in sufficient paying quantities.

MacNAUGHTON GOLD MINING CO.

Incorporated 1891. Authorized Capital, $16,000, in shares of $1.

Directors:

A. C. Blair,
Robert MacNaughton, | A. Wishart,
J. Gordon Forbes, | A McDonald.

Head Office: J. Gordon Forbes, Q.C., St. John, N.B.

Formed to mine, mill and develop gold deposits on the properties owned by the company, of which 780 acres are held on lease from the Government, at Seal Harbor, in the county of Guysborough, Province of Nova Scotia. Fifteen stamp mill (steam), hoisting, pumping and other machinery.

Superintendent: Robert MacNaughton, Isaac's Harbor, Guysborough County, N.S.

MacDOUGALL & CO.

Estate Late John McDougall.
Robert Cowans, Montreal.

Head Office: Imperial Building, Place D'Armes Square, Montreal.
Works: Drummondville, Que.

Own an extensive area of bog iron ore territory and operate a charcoal furnace plant at Drummondville, Que. Two furnace stacks, both built of stone, 35 feet high; capacity, about six tons per day each. At present the whole of the output is used in the manufacture of car wheels at the company's works in Montreal.

Furnace Ontput 1893.

Total charcoal iron made	2,054	$\frac{1288}{2000}$
" Ore charged	10,304,600	lbs.
" Fuel charged (charcoal)	484,500	bush
" Flux charged	1,820,200	lbs.

Average men employed 1893, 105.

McGREGOR LAKE PHOSPHATE AND MINING CO.

Incorporated 1891. Authorized Capital, $60,000, in 600 shares of a value of $100 each.

Directors:

James Cooper, Montreal,
James Williamson, Montreal, | G. R. Smith, Thetford Mines,
Jas. Reid Stewart, Glasgow, Scot. | J. C. Smeaton, Montreal.

Head Office: 164 St. James Street, Montreal, Que.

Formed to acquire and work phosphate and other mineral lands in the Dominion of Canada. The company owns lot 14A, in the 9th range; lots 14A and 14B in the 10th range, and lot 25B in the 13th range of Templeton, County of Ottawa, Province of Quebec, containing in all about 400 acres. No work done in 1893 owing to market depression.

MEMPHREMAGOG MINING CO.

Incorporated in 1889. Capital, $50,000, divided into 500 shares of $100 each.

Directors:

President: C. C. Smith, Sherbrooke, Que.,

George E. Smith, Sherbrooke, Que., | Lyman Libby, Dillonton, Que.,
John Eade, Eastman, Que., | T. A. Knowlton, Waterloo, Que.

Head Office: Thos. Bell, Secretary-Treasurer, Eastman, Que.

Formed to acquire and work mineral lands in the townships of Potton and Bolton, in the county of Brome, in the Province of Quebec. The company owns some 150 acres in the township of Potton, upon which development work was begun in 1889, and about 20,000 tons of copper ore were raised. The company will erect a smelting plant, but until this is done very little will be mined.

MEMRAMCOOK GOLD MINING CO., Ltd.

Incorporated under the laws of New Brunswick. Authorized Capital, $500,000.

MEMRAMCOOK GOLD MINING CO.—Continued.

Directors:

J. B. Neily, *President.*

J. W. Y. Smith, A. C. Vanmeter, M. T. Foster, | F. W. Sumner, T. W. Prince, A. W. Whiteman.

Head Office: H. J. Logan, Secretary, Amherst.

Mines Office: J. B. Neily, College Bridge, N.B.

The company owns a gold mining property containing 370 acres at College Bridge, Westmoreland County, Province of New Brunswick. Equipped with suitable machinery and a 50 stamp mill. Worked in 1893 but no report of operations obtainable.

MIDDLE RIVER ALLUVIAL GOLD MINING CO., Ltd.

Incorporated 1893 under the laws of Nova Scotia. Authorized Capital, $5,000.

Directors:

J. A. Watt, Halifax, A. W. Ross, New Glasgow, | E. J. Treen, New Glasgow, F. W. Wright, New Glasgow, Jas McArthur, New Glasgow.

Head Office: New Glasgow, N.S.

Formed to acquire and work mineral areas in Nova Scotia. Operated in 1893 a property at Middle River, Victoria County, but no report obtainable.

MILNE, COUTTS AND CO.

Not Incorporated.

Partners:

A. Milne, W. Coutts, | J. D. Chipman, J. T. Whitlock, C. Johnson, Jr.

Head Office: A. Milne, St. George, N.B.

This company purchased on 5th March, 1885, the land, plant, quarries and other property formerly owned and operated by the Bay of Fundy Red Granite Co.

The land owned by the company is an area about sixteen hundred acres.

The quarries (now in active operation), are situated about three miles from the town. Easy access to them is obtained by the turnpike road, which passes directly in front of the western quarries, and connects with a road leading to the other quarries. In addition to the road there is a navigable river (Maguadavie), within an eighth of a mile of the western quarry, which is also the outlet for the waters of the lake. The main portion of the company's property borders the lake.

On the north bank of the river, and adjacent to the road, the company has built a wharf with the necessary derricks, etc., from which the granite for the works at the town is loaded in boats constructed for the purpose, towed down the river to the dock at the company's works.

The works are situated a short distance from the main street of the town on the eastern bank of the river, immediately over the falls (from which is derived the motive power), and cover an area of over an acre. The workshops form a quadrangle, divided into sections as follows: 1st, the polishing shop; 2nd, the granite cutting shop; 3rd, blacksmith, machine and pattern shops; 4th, offices, etc. The inner area of the quadrangle is covered by a large "traveller," that is used for carrying the granite from the cutting to the polishing shop, and for loading and unloading the granite as it arrives from the quarries, and when completed for shipment.

The workshops are 30 ft. in height (one storey). The polishing shop has shafting extending through its entire length, supported by transverse beams upheld by 18 inch square posts, sunk eight feet in the ground, resting on granite blocks.

The machinery was imported from Scotland, and has all the late improvements; it consists of six Jenny Lind polishing machines, column cutter for circular work, four pendulums, one boring machine, four lathes, etc. In addition to these machines, the company has contracted to duplicate all of them and extend the shops to receive them. The present machinery will polish over 200 superficial feet per day, exclusive of mouldings.

The motive power is derived from the adjacent falls, the shafting extending from the shops to a flume built from the lower level of the falls to level of river, and is 10 feet square by 30 feet deep. The water is conveyed to the flume by a Penstock, a Leffell turbine wheel (48 inches diameter), at the bottom of the flume, giving a motive power equal to 200 horses, sufficient to drive four times the quantity (at present employed) of machinery, and can be used night and day throughout the entire year.

The business done in 1890 amounted to $34,000; 1891, $32,000; 1892, $33,000; 1893, $35,000.

MILTON PRESSED BRICK AND SEWER PIPE CO., Ltd.

Incorporated 7th Jan., 1891. Authorized Capital Stock, $50,000, divided into fifty shares of $1,000 each.

Directors:

E. Harvey, *President*, Guelph,

Dr. David Robertson, Milton, | A. W. Alexander, Guelph,
Walter Macdonald, Toronto. | J. S. McConnell, Milton.

Head Office: J. S. McConnell, Managing Director, Milton, Ont.

Clay beds and works are situated on the main line of the Canadian Pacific Railway, near Milton, in the County of Halton, Province of Ontario. 25 persons employed. The machinery is in a large brick building 40 x 50, and the four kilns, with a capacity of over 700,000 brick, are enclosed in a shed 50 x 260. The brick press has a capacity of 20,000 brick in 10 hours. On the fancy press all kinds of ornamental brick are made. On the property there is a large quarry of fine freestone, near to the siding; also an abundance of limestone. Machinery, plant and buildings estimated at $50,000.

MINERVA MINING AND MARBLE CO.

Benj. Raper, *President*,

Alfred Raper, | James Raper, | Elijah Priest, C.E.

Head Offiee : (Box 21) Nanaimo, B.C.

The company's property consists of 160 acres, containing a large deposit of black and white streaked marbles, also 6 mineral claims, two 1,500 ft. x 600 ft., and four 1,500 ft. x 1,500 ft. Development work is being pushed forward, a small force being employed. The gold deposits are reported to be showing up highly satisfactorily.

MINNEAPOLIS MINERAL LAND CO.

Incorporated under the laws of the State of Minnesota, 7th July, 1891. Authorized Capital, $50,000, in shares of $10 each.

Directors :

L. M. Lane, Otis Jones, E. N. Best, | J. S. Lane, J. J. Best, Moses McKinney, A. T. Irving, J. T. Wiman, | E. J. Edwards, J. F. Calhoun, C E. Brewston,

Head Office : E. N. Best, Secretary, New York Life Building, Minneapolis, Minn.

This company owns two silver claims, covering 421 acres in the Thunder Bay district, Province of Ontario. Only exploratory work done to date.

MINNESOTA AND LAKE MANITOU GOLD AND SILVER MINING CO.

Incorporated under the laws of Minnesota, 11th August, 1884. Authorized Capital, $200,000.

Directors :

T. Kundson, *President*,

Ceorge Camden, F. Bedard, | J. M, Danlez, T. J. Bergeron, | T. F. Young, Aug. Morden,

Head Office: Anthon Arneson, Benson, Minn.

Formed to own and work gold and silver properties at Manitou Lake, in the district of Keewatin, Province of Ontario. Not in operation 1893.

MINING SOCIETY OF NOVA SCOTIA.

Organized 1892. *Past President:* Henry S. Poole, M.A., A.R.S.M., F.G.S., Stellarton; *President:* John E. Hardman, S. B., Oldham; *Vice-Presidents:* R. G. Leckie, Londonderry; David McKeen, M.P., Glace Bay, C.B.; George W. Stuart, Truro; *Hon.-Secretary:* B. T. A. Bell, Ottawa; *Secy.-Treas.:* H. M. Wylde, 169 Hollis St., Halifax; *Council:* W. R. Thomas, F.G.S., Montagu; R. H. Brown, Sydney Mines, M. E., C. B.; Duncan McDonald, Truro; Chas. Fergie, M. E., Westville; W. L. Blakemore, Glace Bay; W. G. Matheson, New Glasgow; C. E. Willis, Halifax; Graham Fraser, New Glasgow; Geoff. Morrow, Halifax.

MOIR GRANITE CO.

Incorporated 1891. Authorized Capital, $100,000, in shares of $25.

Directors:

D. W. Moir, Stanstead, Que.

G. H. House, Beebe Plain, Que., | D. W. Davis, Derby Line, Vt.,
S. Stevens, Stanstead Plain, Que., | John T. Foster, Derby Line, Vt.

Head Office: George H. House, Secretary-Treasurer, Beebe Plain, P.Q.

Formed for the purpose of quarrying and dealing in granite and other stone, etc. The company's property at date contains 200 acres on lot 1 in the 4th range, and 80 acres (on lots 3, 4, 5) in the 5th range of Stanstead, Que. 30 to 40 men employed. Quarries situate 2½ miles from Beebe Plain and Stanstead Junction, on the line of the Boston and Maine Railway. The output of granite from the quarries since they were first opened is reported as follows:—

1888	125	carloads,	equivalent to	20,000	cubic feet.
1889	175	"	"	24,000	"
1890	350	"	"	49,000	"
1891	695	"	"	100,000	"
1892 (to 1st Oct.)	740	"	"	110,000	"

Seventy persons employed. At date a branch line is being constructed to connect the quarries with the B. & M. Ry. Machinery equipment comprises two 50 h. p. boilers, Rand steam drills, eight derricks, six steam polishing machines, one turning lathe, etc.

Superintendent: David W. Moir, Beebe Plain, Que.

MONCTON FREESTONE CO., Ltd.

Incorporated 1892. Authorized Capital, $10,000, of which $5,000 had been subscribed at date of last returns.

Directors:

Theo. B. Leblanc, Moncton, N.B.

T. Fitzsimmons, Moncton, N.B., | R. A. Borden, Moncton, N.B.,
Matthew Lodge, " " | Philip D. Bourque, Moncton, N.B.

Head Office: Moncton, N.B.

Formed to quarry, manufacture and deal in stone and freestone. Quarry to be operated by company is situated at Notre Dame, in Kent County, N.B.; being equipped with a working plant at last report.

MONTREAL AND KOOTENAY MINING CO., Ltd.

Incorporated 1891. Authorized Capital, $20,000.

Directors:

President: E. B. Greenshields,

P. A. Peterson, F. Fairman, | R. T. Hopper, R. Wilson Smith,

Edwin Hanson.

Head Office: R. T. Hopper, 314 Board of Trade Building, Montreal Que.

Formed to acquire and work mines in the Province of British Columbia and elsewhere in the Dominion. The Company owns the "Tam-o'-Shanter" and "South Tam" mines situated at Hendryx Camp on the east side of Kootenay Lake opposite the town of Ainsworth, B.C. Samples of the ore taken out from the different workings run from 60 to 480 ounces of silver. A sample car-load from the surface workings treated by the Tacoma Smelting Company, ran $82\frac{3}{10}$ ozs. to the ton. Between 300 to 400 tons of ore are ready for shipment awaiting the starting of the Pilot Bay Smelter, 10 miles distant, on the same side of the lake, which it is expected will shortly begin operations.

Mine Superintendent: Richard Irwin, M.E., Ainsworth, B.C.

MOOSELAND GOLD MINING CO., Ltd.

Incorporated 1890. Capital Stock, $100,000, in 10,000 shares of a value of $10.

Directors:

President: W. J. Stewart, Halifax, N.S.,

H. G. Stemshorn, W. C. Northey, | Thomas Brown, Joseph Starr,

W. C. Bishop.

Head Office: W. C. Bishop, Secretary, Halifax, N.S.

Formed to acquire, work and further develop mineral lands in the Province of Nova Scotia. The company owns a block containing 148 gold areas situate at a point about two miles from Mooseland, Tangier district, Province of Nova Scotia. In 1891 built an 8-stamp mill and erected a steam hoisting and pumping plant. Have a lode seven feet in width, said to give five dwts. to the ton.

Gold Yield 1892 and 1893.

1892.....	373 ozs.	18 dwt.	.....	from	893 tons	rock crushed
1893.....	471 "	2 "	13 grs. "		1,323	"

MUTUAL NATURAL GAS CO., OF PORT COLBORNE, Ltd.

Incorporated 1891. Authorized Capital, $20,000, in 200 shares of $100 each, of which $14,000 has been subscribed and paid.

Directors:

H. Cronmiller, *President;* De Witt Carter, *Vice-President;*
J. H. Smith, | J. A. Ramsden, | J. C. Jordan.

Head Office: Frank D. Noble, Secretary, Port Colborne, Ont.

Formed to drill wells for natural gas, oil and other mineral products, to construct pipe lines, etc. The company owns twenty-five acres, situated on the west side of the Welland Canal, in the county of Welland, Province of Ontario, and to date has drilled five wells each of a depth of 830 ft., yielding a daily flow of about 3,000,000 cubic feet of gas. It supplies the village of Port Colborne, the number of consumers being about 200. Among other industrial consumers are the Erie Glass Company's factory and the Ontario Silver Company's works at Humberstone, where the gas is used for annealing, and the estimated daily consumption is 50,000 cubic feet in winter and 25,000 to 30,000 cubic feet in summer, Neff Bros. foundry and machine shop, Morningstar's grist mills and Grand Trunk Railway water pumping station. The value of machinery plant and buildings owned by this company is estimated at $27,000.

NAPANEE CEMENT WORKS, Ltd.

Capital $20,000.

Directors:

F. S. Rathbun, | E. W. Rathbun, E. Walter Rathbun, C. A. Millener, | H. B. Rathbun,

Head Office: F. S. Rathbun, Secretary, Deseronto, Ont.

The company owns a property containing 200 acres and operates cement works thereon, situate at Napanee Mills, a station on the line of the Bay of Quinte Railway. The capacity of the works is 200 bbls. of native cement, 160 bbls. Portland cement; cooperage, 300 bbls. per day. Since our last report 2 new Deitsch continuous burning kilns have been put up. 75 persons are employed. Three kilns have been erected for Portland and three for natural rock cement.

NAPIER MINING CO., Ltd.

Incorporated under the laws of Nova Scotia, 19th November, 1890. Authorized Capital, $120,000, divided into 1,200 shares of $100 each.

Directors:

Wm. J. Fraser, Halifax, *President,*
Frederick Taylor, Lowell, Mass., | J. E. Hardman, Oldham, N.S.

Office and Mines: John E. Hardman, Manager, Oldham, N.S.

This company owns forty gold areas in the Oldham district, Province of Nova Scotia. The workings at date comprise a vertical shaft, 200 ft. deep, sunk on the axis

NAPIER MINING CO.---Continued.

of the anticlinal ; cross-cuts of 200 ft. south and 150 ft. north from the station on the 100 ft. level, and over 300 ft. of drifts on the veins opened by the cross-cuts.

The machinery consists of 20 h.p. boiler with 15 h.p. Howell steam winding and pumping engine, cylinder, 9 in. x 8 in. ; drum, 36 in. x 30 in., and one 3 in. bucket lift pump, also a Rand Pony air compressor and two drills. Quartz is crushed by contract with the Oldham Gold Co. at its mill.

Average persons employed 12.

NATIONAL OIL CO., Ltd.

Incorporated by Dominion Charter 1892. Authorized Capital, $150,000, in shares of $100.

Directors :

James Fides, | John McDonald, | Chas. H. Schooley.

Head Office : Petrolia, Ont.

Formed to sink wells and carry on the business of oil refiners in Canada. No report of operations.

NELSON HYDRAULIC MINING CO., Ltd.

Incorporated 13th Dec., 1893. Authorized Capital, $100,000, divided into 20,000 shares of $5 each ; 15,000 being ordinary shares, and 500 preference shares.

Principals :

J. A. Kirk, C.E.,
R. B. Dougan,
John Elliot,
R. J. Bealey,
J. F. Ritchie,
F. M. McLeod,
J. F. Dunn,
G. W. Richardson.

Head Office : G. W. Richardson, Secretary, Nelson, B.C.

Formed to acquire and work an alluvial claim half a mile in length and 700 ft. in breadth ; (350 feet on each side of the creek) containing valuable deposits of coarse gold, and known as the Boulder Placer claim, on Forty-nine Creek, about eight miles west from the town of Nelson, in the West Kootenay District, Province of British Columbia. The terms of purchase are 9,060 shares in the company to the former owner, Mr. R. B. Dougan.

Tests made in an open cut in the channel gravel for a distance of 70 feet gave returns of one-half cent per pan, or about 60 cents per cubic yard. The uneven nature of the bed rock and the character of the gold distributed through the entire deposit point to rich deposits in favored places on the bottom.

The channel gold is heavy, of a flat, angular shape, comparatively coarse, and of a character to save in the sluices. The rim bars or banks, on either side, are in places extensive deposits that vary in depth and extent, in some places showing a depth of 40 to 60 feet, and extending over several acres, consisting for the most part of a finer gravel than that of the channel, and an occasional strata of sandy clay, which varies in thickness from a few inches to several feet. Gold is disseminated through the entire deposit, from grains at the surface to heavy and coarser particles as depth is attained and the gravel more compact. Samples taken from over a large

area, including the surface, sides, and foot of the banks and the surface of the channel, gave an average of 20 cents per cubic yard.

A large number of places along the creek have been partially worked by the primitive means of the earlier miner, such as the pan, hand sluice, and the rocker. The surface, however, is only skimmed in places. The only attempt to exploit the channel has been made on the company's ground by Mr. Dougan, mainly by man power, whose returns, averaged about 80 cents per cubic yard.

Work commenced at date of going to press.

NELSON ISLAND GRANITE CO., Ltd.

Incorporated 16th October, 1889. Authorized Capital, $30,000, divided into thirty shares of a value of $1,000.

Directors :

E. J. Thain, | James C. Prevost, | Robt. L. Fox.

Head Office: Edward J. Thain Secretary, P.O. Box 654, Victoria, B. C.

Formed to acquire and work the Nelson Island granite quarry. Property contains 320 acres, and is situate on Nelson Island, Province of British Columbia. Twenty to thirty men employed.

NEOSHO MINING CO.

Incorporated under the laws of the State of Washington, 19th Sept., 1891. Authorized Capital, $50,000, in shares of $10, with power to increase to $1,000,000.

Directors:

F. H. Coe, | L. R. Dawson, | J. K. Basye, | I. P. Taylor, | M. W. Wallace.

Head Office: I. P. Taylor, 5 & 6 Sullivan Block, Seattle, Wash.

This Company owns and operates four mineral claims carrying silver and carbonate ores, near Hot Springs, West Kootenay district, Province of British Columbia. Assays of the ore vein worked have given as high as 237 ounces to the ton. Shaft sunk 165 ft. ; 235 ft. of drifts to date. Estimated value of machinery, plant and buildings at 31st Dec., 1892, $4,000. Small force employed.

Superintendent : M. W. Wallace, Ainsworth, B.C.

NEW BRUNSWICK BROWN STONE CO., Ltd.

Incorporated under the Statutes of New Brunswick, 1893. Authorized Capital, $10,000.

Directors :

Stephen Clarke, | Josiah Wood, | Henry A. Powell, | Wm. Clarke, | Wm. Milner.

Head Office: Sackville, N.B.

Formed to carry on the business of quarrymen in the Province of New Brunswick.

NEW BRUNSWICK COAL CO., Ltd.

Incorporated 15th April, 1893. Authorized Capital, $300,000, in shares of $100.

Directors :

C. A. Boardman, *President.*

Frank Todd, | J. G. Stevens, Jr., | Henry F. Todd, | J. J. Doune.

Head Office : J. G. Stevens, Jr., Secretary, St. Stephens, N.B.

This Company's property comprises 700 acres in fee and 25 square miles under lease, in the counties of Queens and Sunbury, upon which are certain workable deposits of bituminous coal. Not in operation, pending construction of the extension of the Central Railway, and if this is not pushed in 1894 it proposes to build a line of its own to the Grand Lake, three miles distant from mine, and ship from thence by water.

NEW BRUNSWICK MINERAL DEVELOPING CO.

Incorporated 1891. Authorized Capital, $50,000, in 5,000 shares of a value of $10 each.

Directors :

J. DeWolffe-Spurr, *President,*

G. W. Merritt, | H. A. Drury.

Head Office : G. Wetmore Merritt, Secretary, St. John, N.B.

Formed to prospect for minerals, deal in mines and mining claims, operate mines and carry on a smelting and refining business. The company holds an interest in 148 gold areas in King's county ; also leases of coal and copper, covering an area of five square miles in Albert county, in the Province of New Brunswick.

NEW EGERTON MINING CO.

A private organization.

Directors :

John Macdougald, M.P., Westville, N.S., | J. D. McGregor, M.P.P., New Glasgow.

Head Office : J. D. McGregor, M.P.P., New Glasgow, N.S.

Owns about two hundred gold areas in the 15-Mile Stream district, Province of Nova Scotia. The official returns of the gold won by the former and present operators are as follows :

1887	299	ounces,	15	dwt.	from	569	tons rock crushed
1888	946	"	8	"	"	2,151	"
1889	786	"	9	"	"	1,417	"
1890	2,184	"	9	"	"	2,476	"
1891	2,446	"	5	"	"	4,263	"
1892	1,285	"	..	"	"	2,460	"
1893	497	"	17	"	"	1,401	"

Was only worked a portion of 1893 pending the completion of an amalgamation with the Stanley Gold Mining Co., Ltd., owning an adjoining property. Twenty-five persons employed. Equipped with an excellent working plant which includes two mills (of 15 and 10 stamps respectively), Rand air compressor hoisting and pumping gear.

Jas. A. Fraser, 15-Mile Steam, N.S., *Mine Superintendent.*

NEW EUREKA SILVER MINING CO.

Incorporated October, 1890. Authorized Capital, $150,000, divided into 150,000 shares of a par value of $1.

Directors:

Robt. P. Rithet, C. T. Dupont, | Hon. Hugh Nelson, Hon. C. E. Pooley, | G. W. Haynes, F. S. Barnard, M.P.

Head Office: George A. Sargison, Secretary, 48 Langley Street, Victoria, B.C.

Formed to acquire the Eureka mine, and all the other real and personal property of the Eureka Silver Mining Company (Limited), situated near the town of Hope, in the district of Yale, in the Province of British Columbia, for the sum of $80,000, to be paid for in fully paid up shares of the New Eureka Silver Mining Company, (Limited). No work done in 1892.

NEWFOUNDLAND AND CANADIAN EXPLORATION TRUST, Ltd.

Registered 19th March, 1891. Authorized Capital, £150,000, divided into 75,000 ordinary shares of £1 each, of which 32,800 preference shares have been issued and are fully paid up. There are 6 per cent. debentures amounting to £25,000.

Directors:

Right Hon. Lord Thurlow, Col. J. W. Young, | Charles Clark, Aden Beresford, Hon. Chas. Cumming Bruce.

Committee of Management in Newfoundland:

Sir Robt. Thorburn, Hon. Moses Munroe, | Sir James Winter, Hon. A. M. MacKay.

Head Office: H. D. J. Chudleigh, 5 Salters Hall Court, London, E.C.

Formed to acquire through the Patents, Mining and Financial Trusts (Limited), the mining rights of the Newfoundland Colonization and Mining Company (Limited), over 100 square miles of land in the Colony of Newfoundland, upon which a lead mine, known as Lamanche, is situated. The consideration for the property was £100,000, payable £50,000 in cash (or cash shares and 6 per cent. debentures), and £50,000 in 25,000 fully paid ordinary and 25,000 fully paid preference shares, and in addition a royalty of 12½ per cent. on the net profits.

NEW GLASGOW IRON, COAL AND RAILWAY CO., Ltd.

Incorporated under the laws of Nova Scotia by special Act of the Legislature in 1888. Authorized Capital, $1,000,000, divided into 5,000 Ordinary shares of $100 each, and 5,000 Preference shares of $100 each. Dividends on Ordinary shares deferred till Preference shares have been paid 8 per cent.

Directors:

John F. Stairs, M.P., Halifax, N.S., *President*,

Graham Fraser, New Glasgow, N.S.,
Frank Ross, Quebec, Que.,
John McNab, Halifax, *Secretary*,
Geo. F. McKay, New Glasgow, N.S.,
J. Walter Allison, Halifax, N.S.,
Harvey Graham, New Glasgow, N.S.

Head Office: Graham Fraser, Managing Director, Ferrona, Pictou Co., N.S.

R. E. Chambers, M.E., Mine Superintendent.

This Company owns an extensive area of mineral lands in the County of Pictou, Province of Nova Scotia.

Blast Furnace, at Ferrona, connected with the mines, limestone quarries and Intercolonial Railway by Company's own railway, at present completed for a distance of 13 miles. It is of modern design and fitted up with the most approved appliances. The clear lines inside the brick work are: Height, 65 feet; bosh diameter, 15 feet; crucible diameter, 9 ft. 6 in. There are eight tuyeres and two cinder notches. The casting house is 50 by 153 ft., constructed of iron. The furnace has two down-comers (gas flues), one carrying gas to the hot blast stoves, the other leading to the boilers. There are three hot blast stoves, of the three-pass Massick and Crook type, each stove being 16 ft. 6 inches in diameter, inside of the shell, and 60 ft. in height. There is also a chimney on each stove 35 ft. high. Each stove is lined with 160,000 fire bricks. The blast is produced by two blowing engines, each weighing about 90 tons, having steam cylinders 36 inches in diameter, air cylinders 84 inches in diameter, and a 4 ft. stroke. The engines are placed in a brick building designed for strength, and 35 by 60 ft. Steam is generated in a battery of eight boilers, set in pairs, tubular, and designed to carry a pressure of 100 lbs. Each boiler is 6 ft. in diameter, 20 ft. long, and contains 52 tubes, each 4½ inches in diameter. The fuel used is waste gas from the furnace, the draft being produced by an iron chimney 125 feet high and 7 ft. 6 in. in diameter, and lined with fire-brick 4 in. in thickness. The water supply is pumped from the East River into a stand pipe 10 ft. in diameter and 80 ft. high. There is a large ore shed, hoists, scales, etc.

Coal Washing Plant was put into successful operation in May, 1892, and is the first of its kind erected in in Canada. The coal is elevated, screened and the large coal crushed. The resulting fine coal is separated into three sizes: nothing to one-eighth inch, one-eighth to one-quarter, one-quarter to three-eighths. The coal is washed on two compartment feldspar jigs arranged with variable stroke. The washed coal is removed by elevation to a storage tower, and the refuse led to a convenient dumping-place. The water used is raised by a centrifugal pump and after performing its round of work returns again to the pump. The entire plant works automatically, requiring the services of three men.

The coal washed contains from 17 to 35 per cent. of ash, beside 2½ per cent. of sulphur. The washed coal contains on the average 10 per cent. of ash, or 1 per cent. more than the fixed ash, 9 per cent. of the coal. This is a remarkably good showing, and seldom surpassed. The fixed ash, of course, cannot be reduced. The sulphur is reduced by washing to 1.35 per cent., that being partially organic and partially fixed with lime or alumina. The total capacity of the plant is 300 tons of washed coal in ten hours. The average cost of washing, winter and summer, is put at 7½ cents.

Coking Plant—This is situated near the coal washer and contains 54 retort coke ovens of the Bernard system (improved Coppée), of the following dimensions: Length, 33 feet; height, 6 feet 6 inches (under roof); medium width, 23½ inches. Each oven is charged with about 7 tons of washed coal (all below ⅜ in. mesh), every 40 or 48 hours; the 54 ovens produce every 24 hours between 115 and 120 tons of first-class large coke, which is all used in the blast furnace of the company. The coal used yields 73 or 74% of large coke right along, the same coal only yields 60 per cent. max. in the bee hive oven. Each oven can supply 130 to 150 square feet of boiler surface for steam raising if desired. Each two ovens work together and for this reason the ovens are charged alternately; one day the ovens 1, 3, 5, 7, 9, etc., uneven numbers are pushed, the next day the even numbers, 2, 4, etc., are discharged; this arrangement makes it possible to work a hot and cold oven together, utilizing the surplus heat of the hot oven to heat the cold (freshly charged), oven. After the process of coking is finished the doors at both ends of the respective ovens are lifted by means of windlasses and the ram now pushes the whole cake of coke out of the retort, landing it clear of the ovens on the discharge side, where it is water-cooled. As soon as the coke is pushed out by the ram of the coke pushing machine, the oven doors are reclosed and sealed air tight with ordinary clay; the coal to be charged is now dumped into the oven through the charging holes 15, 15, 15, and levelled in the usual way.

The main advantages of these retort ovens, without saving of tar and ammonia, over the bee hive oven are as follows:—

1st. A larger yield, 12 to 15 per cent. at least.

2nd. Considerable lower cost of coke making (labor—expenses).

3rd. All coke produced is large and strong, there is less than 3 per cent. of fine coke—braize.

4th. Larger production per oven.

5th. Fewer repairs, etc.

6th. Owing to the high temperature carried and to the high and narrow column of coal (6 feet), inferior coking coals can be successfully coked, also a mixture of coking and non-coking coal.

Ore Deposits—The ore occurs at the junction of the Carboniferous and Silurian formations, in bodies of large size, which are opened at different points in the East River, extending over a distance of five miles. The ore is won by shafts or inclines according as the pitch of the ore is more or less inclined. During the past year the ore used has come principally from the McDonald and Grant mines.

There has also been used in the furnace during the last few months a red hematite, which occurs in the Lower Silurian formation as bedded deposits. It occurs in large beds in Pictou Co. and also at Arisaig, in Antigonish Co. So far this ore has been won from open cuts, no systematic mining having been done. The amount of ore mined is about 4,000 tons per month, including both brown and red hematites.

Mining Machinery—Grant Mine—One upright boiler of 25 h.p.; one double cylinder; hoisting engines having cylinders 8 x 10; one Cameron sinking pump, 9 x 8 x 4. etc.

McDonald Mine—On Slope—One 60 h.p. locomotive boiler, and one 50 h.p. double cylinder Lidgerwood hoisting engine. On Shaft—One 60 h.p. hoisting engine (Jenckes) and one 12 x 11 x 5 Cameron steam pump.

Fraser Mine—One 30 and one 15 h.p. upright boiler, one 16 h.p. double cylinder hoisting engine, one 8 x 6 x 4 Cameron pump, and one 7 x 8 x 4 duplex Worthington pump; also ore washer, operated by one 100 h.p. upright boiler, and one 15 h.p. single cylinder stationery engine.

Ore Washing Plant—The principal impurity in this ore is clay, which is easily and cheaply separated by washing. The washer used is a section of a conical revolving drum with inclined blades or fins on the inside, which work the ore from the large to the small end, while the water (from a Cameron pump) enters at the small end of the drum, washing the clay from the ore which it meets in its descent, and discharging it in spouts, which lead to the settling pond. The ore is discharged from the small end of the drum into a bin, and from thence into the cars.

Furnace Output, 1893—The following returns of the output for 1893, have been kindly furnished by the company:

NEW GLASGOW IRON, COAL & RY. CO.—Continued.

Total Pig Iron made.....22,500 tons of value at furnaces of $270,000.
" Ore charged.....44,856 "
" Fuel " .....30,846 "
" Flux " .....12,890 "

Average men employed, 480.

DIRECTORS REPORT FOR THE YEAR ENDED 30TH JUNE, 1893.

"The Directors of the Company in presenting their fifth annual report to the shareholders, are pleased to advise that the expectation of the early completion of the works, which was referred to in the last annual report, has been realized, and the furnace was blown in on 25th August last.

Since that time the various operations of mining iron ore and limestone, making coke, etc., and operating the furnace, have been prosecuted as vigorously as possible.

During the year about 2½ miles of railway have been constructed and put in operation, completing the road to Sunny Brae, a distance of 12½ miles. It is expected that the balance due, on account of subsidies referred to in the last annual report, will soon be paid.

It was found, after the furnace had been in operation a short time, that a greater quantity of coke would be required than could be produced, and as a very large saving could be effected by making the coke instead of buying it, your directors took steps to erect 18 additional ovens, which were completed in March last, and have been in operation ever since.

Owing to the want of coke and other reasons, it was necessary to bank the furnace several times for about three months in all during the current year, the effect of which was to largely reduce the output, and consequently very materially increase the cost of the iron.

Owing to the desirability of closing the business year of the company on the 30th June, the reports and statement now presented cover the period of eleven months only."

BALANCE SHEET.

Assets.

Iron Mines and Mining Property	$540,561 00	
Coal Mining Property	120,115 00	
Real Estate	5,198 79	
Furnace, &c	305,297 58	
Railway and Rolling Stock	181,285 75	
		$1,152,458 12
Cash on hand		336 49
Balance due on Subsidies		21,411 97
Tools		920 58
Sundry Accounts		41,088 79
Office and Laboratory		1,163 71
Ore and Lime Stone Mined and Mining Machinery		30,184 17
Pig Iron, Coke and Sundry Stores on hand		70,045 48
		$1,317,609 31

Liabilities.

Capital Account	$1,000,000 00
Union Bank of Halifax and other Accounts	256,827 33
Bills payable Account	17,055 15
Profit and Loss	43,726 83
	$1,317,609 31

NEWPORT PLASTER, MINING AND MANUFACTURING CO., Ltd.

Incorporated 1892. Authorized Capital, $40,000, in 400 shares of $100.

Directors :

Allan Haley, *President.*
Hobart Russell, | J. A. Russell.

Head Office : J. A. Russell, Secretary, Windsor, N.S.

The company's property contains 156 acres, upon which is operated gypsum quarries at Newport, Hants County, Nova Scotia, within half-mile from Newport station, on the Windsor & Annapolis Railway and six miles from shipping wharf at Windsor. In addition to the white plaster mines at Newport, the company controls the output of quarries at Mellin Creek and Walton, and a land plaster quarry known as "Grants," at Summerville.

Superintendent : C. B. Hobart.

NEW ROCKLAND SLATE CO.

Capital, $150,000, fully subscribed and paid up.

Directors :

Hon. G. A. Drummond, *President,*
James Ferrier, | Peter Redpath,
Sutherland Stayner, | F. R. Redpath,
A. Dunbar Taylor.

Head Office : T. P. Bacon, Secretary, 377 St. Paul Street, Montreal.

This company owns lots 21, 22, 23 of the 4th range of Melbourne, and operates the large slate quarry situate (lot 23) at New Rockland, in the Province of Quebec. Two hundred men employed. Average yearly production, about 6,500 tons. The manufactures include roofing slates, billiard table tops, mantels, wash tubs, hearthstones, tiles, etc. Quarries and works equipped with an excellent plant, with first-class water power from the Salmon River, transmitted to the works by cable, and an outfit of travelling derricks, etc. The quarry has at present a depth of over 200 feet, and is connected with the main line of the Grand Trunk Railway, four miles distant, by a narrow gauge railway, by which a great saving in the cost of transportation is effected.

Quarrymaster : Thos. Torrance, New Rockland, P.O., Que.

NEW VANCOUVER COAL MINING AND LAND CO.

Organized 1862, and reconstructed 30th January, 1889. The authorized capital is £215,000, in 215,000 fully paid shares of £1 each. The capital was increased from £185,000 to its present amount in January, 1892, by the creation of 30,000 new shares which were issued credited as paid to Messrs. Rosenfeld, the agents, in settlement of a debt to that amount. Shareholders in the old company receive 10 new £1 shares in exchange for each old share of £10. There are 6 per cent. debentures amounting to £70,600, £60,000 of which were issued in exchange for

NEW VANCOUVER COAL MINING & LAND CO.—Contiuued.

similar debentures in the old company, and the remainder form part of an issue of £20,000 authorized 1892. The bonds are registered, and are secured on the whole of the properties, the interest being payable half yearly on the 31st March and 30th September. In April, 1889, previous to the transfer of the undertaking, the old company declared a bonus of £1 per share, but as the old shares were then only £9 paid a final call of £1 per share was made, and the bonus applied in payment of the call.

Dividends:

June, 1889.....2½ per cent.	Dec., 1890.....2 per cent.
Dec., 1889.....2½ "	June, 1891.....3 "
June, 1890.....2 "	Dec., 1891.....2½ "

June, 1892.....1½ per cent.

At the 31st December, 1890, a credit to profit and loss of £7,699 12 1d. was carried forward after payment of a dividend. The accounts to the 31st December, 1891, showed a profit on the half year of £7,850; after payment of dividend a balance of £23,981 18 3d. was carried forward. For the half year ending the 30th June, 1892, a loss of £4,691 7 4d. was shown, reducing the credit balance to £19,290 10s. 11d. At the 31st December, 1892, a profit on the half year of £3,097 5 10d. was shown, making a credit to profit and loss of £22,387 16s. 9d., which was carried forward. Reserve fund, £20,000.

Directors:

John Galsworthy, *Chairman*,

John Fry,	Frederick Tendron,
William Needham,	Edwin Andrew.

Head Office:

Joseph Ramsden, Secretary, 12 Old Jewry Chambers, Old Jewry, London, E.C.

CANADIAN OFFICE:

Samuel M. Robins, General Manager, North Corner of Farquhar Street and Esplanade, Nanaimo, B.C.

Agents at San Francisco: Messrs. John Rosenfeld's Sons.

Formed to acquire the properties of the Vancouver Coal Mining and Land Co., Limited, registered in 1862. The Company owns some 32,000 acres of freehold land and operates the Nanaimo Collieries, Vancouver Island, in the Province of British Columbia.

Northfield Colliery.—Four miles from Departure Bay, Nanaimo; 410 persons employed. Robert Scott, *Underground Manager.*

Wellington seam, averages from 3 to 5 ft.; dip 6°, or about 1 in 10; vertical depth of shaft, 440 ft.; length of slope at foot of shaft, 500 yds.

System of working—Longwall.

Ventilation—By double fan, 8 ft. dia., 220 revolutions giving 65,000 c. ft. of air per minute.

Lamps—Naked lights.

Boilers—Four Lancaster double flue, 4¼ ft. x 25 ft., aggregate 200 h.p.

Winding engines—One high press, direct acting double horizontal at shaft, 16 in. dia., stroke 36 in., dia. of drum, 6 ft.; at head of slope, one 8 in. cyl., 12 in. stroke, drum 2 ft. 10 in.; at ventilation shaft, one 10 in. cyl., 12 in. stroke, 4 ft. drum.

Pumps—Four Cameron.

Screens—Two stationery ⅝ in. x ¾ in. mesh, length 16 ft.

Other plant—An air compressor on surface supplying power for running small pumps below. Fire pump with necessary hose. Patent tipplers for delivering coal to screens, etc.

No. 1 Esplanade, situate half-mile from wharves, Nanaimo harbor; 475 persons employed. Joseph Randle, *Underground Manager.*

Douglas seam, averages from 5 to 10 ft.; dip 6°; hoisting and ventilating shaft, 650 ft.

System of working—Pillar and stall.

Ventilation—Guibal fan, 36 ft. dia., 12 ft. wide, giving 110,000 ft. per minute.

Lamps—Naked lights.

Boilers—Ten plain cylindrical, of which six are 5 x 30 ft., and four 24 x 4 ft.

Winding engines—One high pressure, direct acting, double horizontal, at head of shaft, 30 in. cylinder, 60 in. stroke, drum 14 ft.; one (at head of slope) 16 in. cyl., 36 in. stroke, drum 5 ft.; one (at air shaft) 7 in. cyl., 10 in. stroke, drum 3 ft.

Pumps—One Cameron, drawing water from shaft, with tanks under cages, 4 in. water col., dis. 70 gals. per minute.

Screens—Two, fixed; length 16 ft.; ½ in. x ⅝ in. mesh, with tipplers for placing coal on screen.

Electric haulage—In hauling the coal from levels, which are in from foot of shaft a distance of two miles, the Company utilize three 30 ton electric motors made by the Edison General Electric Company. There is also a large power house on surface, having two double flue boilers, 4½ x 25 ft.; one ball engine of 150 h. p.; one kilowatt dynamo, and all necessary equipment for lighting and generating power required.

Other plant—Air compressing plant for running underground pumps. Fire pumps with necessary hose to protect buildings on surface.

South Field Mine No. 2, situate five miles south-east from the town of Nanaimo; 200 persons employed; Thomas Morgan, *Underground Manager.*

Douglas seam worked; average from 6 to 12 ft.; dip, 8°; length of slope from surface, 800 yds.; small ventilating shaft 70 ft.

System of working—Pillar and stall.

Ventilation—Guibal fan, 14 ft. dia. x 5 ft. wide, running 110 ft. per minute, and circulating 109,000 cubic feet of air per minute.

Lamps—Naked lights.

Boilers—Six plain cylindrical egg end, 5 x 30 ft., each 40 h.p.

Winding engine—One direct acting, high pressure, horizontal winding engine, 16 in. cylinder, 36 in. stroke, drum 5 ft.

Pumps—Two Cameron; col., 5 in.; dis. 100 to 200 galls. per minute.

Screens—One stationary; ½ in mesh, 14 ft. long.

Other plant—Air compressor on surface for supplying power for pumps; small power hoists for hauling from dip places under ground.

South Field Mine No. 3, situated two miles from the Port of Nanaimo; not worked in 1892, but when in operation employing 100 men. Richard Gibson, *Underground Manager.* Douglas seam worked; averages 6 to 10 ft.; dip, 7°; length of slope from foot of shaft, 400 yds.; hoisting and ventilating shafts, 70 ft.

System of working—Pillar and stall.

Lamps—Naked lights.

Ventilation—Fan (double) 8 ft. dia., 220 revolutions, circulating 50,000 cubic ft. per minute.

Boilers—Two double-flue Lancaster, 4½ ft. x 25 ft., of 100 h. p.

Winding Engines—One double cyl. geared at shaft, 10 in. cylinder, 15 in. stroke, 4 ft. drum; one double cyl. geared at head of slope, having 8 in. cyl., 12 in. stroke and 3 ft. drum.

Pumps—Two Cameron, col. 3 in. dia., discharging 120 gals. per minute.

Screens—One stationary 10 ft. long, ¾ in. mesh.

South Field Colliery No. 5.—Situated five miles from Nanaimo; 158 persons employed. Richard Gibson, *Underground Manager.*

Douglas seam (South Field coal), averages from 6 ft. to 18 ft.; dip 6°; vertical depth of shaft 508 ft.

System of working—Pillar and stall.

Ventilation—Double fan (Murphy) 8 ft. dia. circulating 50,000 ft. per min.

Lamps—Naked lights.

Boilers—Two double-flue, Lancaster, 4½ ft. dia. 25 ft. long, 100 h.p.

Winding Engines—Two double cyl. geared; one at shaft, 10 in. cyl., 15 in. stroke, 5 ft. drum; one at slope 7 in. cyl., 10 in. stroke, 2 ft. 10 in. drum.

NEW VANCOUVER COAL MINING & LAND CO.—Continued.

Pumps—One Cameron, 3 in. col., discharging 40 galls. per min.

Screens—One stationary, ⅝ in. mesh, 16 ft. long with tippler for placing coal on screens.

Protection Island Shaft—(Nanaimo Harbor), situate 300 yds. from shipping wharf and half mile from town of Nanimo; 125 persons employed; Robt. Jamieson, *Undergronnd Manager.*

Seams worked: Douglas, upper and lower. Upper seam averages from 6 ft. to 10 ft. in thickness; dip. 6°; vertical depth of shaft to seam 670 ft.; lower seam averages from 3½ ft. to 4½ ft.; dip. 6°; vertical depth of shaft to seam 740 ft. No slope from foot of shafts driven to date.

System of working—Pillar and stall, same as in No. 1 shaft, esplanade, across the harbor with which it is connected.

Ventilation—by fan as at No. 1 Esplanade shaft.

Lamps—Naked lights.

Boilers—Four double flue, Lancaster, 4½ ft. x 25 ft., 200 h.p.

Winding Engines—One in use; (and one in place for slope when started,) having 26 in. cyl., 42 in. stroke, drums 10 ft. and 10 ft. 11 in., so as to adjust ropes in hauling from both seams.

Pumps—One Cameron, 2 in. col. discharging 20 gals. per min.

Screens—Not yet in place but it is intended to put in shaking screens and travelling belts.

Harewood Estate—Several bores and trial shafts have been put down and a prospect tunnel is being driven in near the croppings where there is 5 feet of good hard coal.

In addition to railway and plant at mines there are five locomotives,, 225 coal cars (6 tons), besides lumber and ballast cars; fitting shops wtth turning lathes, boring, drilling, planing, screw cutting machines, hydraulic press, steam hammer, &c., &c.; diamond boring machinery (bores to 4,000 feet): wharves 2,000 feet frontage at which ships of the largest size can load at all stages of the tide. Estimated value of plant, $350,000.

Output.

Year.	Tons. T.	C.
1890	389,505	12
1891	527,457	15
1892	433,386	7
1893	469,311	15

Shipments.

Year.	Tons. T.	C.
1890	391,149	5
1891	524,647	
1892	437,652	6
1893	468,578	15

Balance Sheet for the Year Ended 31st December, 1892.

(Submitted at Annual Meeting, 6th June, 1893.)

Dr.

	£	s.	d.	£	s.	d.
To 215,000 shares of £1 each, fully paid				215,000	0	0
" Debenture Capital				70,600	0	0
" Insurance Fund	800	0	0			
" Estate Fund	16,437	9	1			
" Land Sales Reserve Fund	16,876	2	10			
" Reserve Fund	20,000	0	0			
				54,113	11	11
" Sundry Creditors in London	1,986	0	7			
" " " Colony	58,750	10	2			
				60,736	10	9
" Profit and Loss Account				22,387	16	9
				£422,837	19	5

CR.

	£ s. d.	£ s. d.
By Estates, Buildings, Collieries, Railway Plant, Rolling Stock, and Wharves		331,691 7 7
NOTE.—The Company's Estates comprise upwards of 30,000 acres of Freehold Land.		
" Goods Depot and Reserve Stores		15,176 5 9
" Coal in Bin and San Francisco		27,779 7 6
" Sundry Debtors in London	1,060 7 6	
" " " Colony	41,562 1 4	
		42,622 8 10
" Investment in £2,000 Metropolitan 3½% Stock		1,945 0 6
" Cash in London	641 10 3	
" " Colony	2,981 19 0	
		3,623 9 3
		£422,837 19 5

PROFIT AND LOSS ACCOUNT FOR THE SIX MONTHS ENDED 31ST DEC., 1892.

DR.

	£ s. d.	£ s. d.
To Depreciation	6,103 14 0	
" Repairs and Maintenance	4,226 14 9	
		10,330 8 9
" Amount carried to Insurance Fund	100 0 0	
" " " Land Sales Reserve Fund	524 14 7	
" " " Estate Fund	2,441 9 8	
		3,066 4 3
" Directors' Fees	500 0 0	
" Auditors' Fees	13 2 6	
" Office Rent	50 0 0	
" Salaries	340 10 0	
" Law Charges	25 16 2	
" Printing, Stationery, Postages, Telegrams, Commission and Incidental Expenses	138 16 7	
		1,068 5 3
" Income Tax		617 4 6
" Interest on Debentures		2,089 15 11
" Balance carried down		3,097 5 10
		£20,269 4 6
To Balance, as per Balance Sheet		22,387 16 9

CR.

	£ s. d.
By Gross Profit, including £1,049 9 3 profit realized from Lands Sales	20,225 0 9
" Dividends on Metropolitan 3½% Stock	34 2 6
" Registration Fees	1 15 0
" Interest	8 6 3
	£20,269 4 6
By Balance brought forward from last Balance Sheet	19,290 10 11
" " " down this half-year	3,097 5 10
	£22,387 16 9

NICHOLS CHEMICAL CO.

Incorporated under the laws of the State of New York. Authorized Capital, $2,500,000.

Officers:

W. H. Nichols, *President*,
J. B. F. Herreshoff, *Vice-President*, | E. R. Nichols, *Treasurer*,
Geo. Martin Luther, *Secretary*, | George G. Teller, *Auditor*.

Head Office: 45-49 Cedar Street, New York.

CANADIAN OFFICE:

S. L. Spafford, Manager, Capleton, Que.

A. W. Elkins, *Superintendent Chemical Works.*

This Company's property contains some 640 acres, and is situate in the township of Ascot, Sherbrooke county, and the township of Bolton, Brome county, Province of Quebec. It operates at Capleton station on the line of the Boston and Maine railroad, the Albert pyrites mine and the Capleton Chemical and Fertilizer Works, employing in all about four hundred persons. The annual output of ore from the mines ranges from 30,000 to 40,000 tons, a portion of which is utilized at the works and the remainder shipped to New York.

NICOLA MINING CO., Ltd.

Registered in London, Eng., 1st July, 1887. Authorized Capital, £50,000, in £1 shares, of which £35,000 has been allotted and paid up; 12,500 shares (allotted to the vendors) being fully paid.

Directors:

George Hopkins, *Chairman*,
E. C. Morgan, | E. Gotto.

Head Office: Chas. Akers, Secretary, 11 Abchurch Lane, London, E.C., England.

Formed to acquire some 2,000 acres of mining properties situate on Mineral Hill, above Stump Lake, Nicola, in the Province of British Columbia. The consideration for the property was £17,713 14s., payable £12,500 in fully paid shares, and £5,213 14s. in cash. The operations of the company to date are as follows:—

Joshua: This shaft has been sunk to a depth of 420 feet, and three levels run north and south, at depths of 100, 200, 300 and 400 feet respectively.

The	100	foot	North	level	has been driven	120	feet.
	200	"	"	"	"	48	"
	300	"	"	"	"	155	"
	100	"	South	"	"	97	"
	200	"	"	"	"	129	"
	300	"	"	"	"	363	"
	400	"	"	"	"	182	"

Tubal Cain: This shaft has been sunk 220 feet, and two levels run north and south, one at 116 feet and one at 220 feet. The 116 foot north level has been connected with the tunnel driven in the hill, making a total distance driven in this level of 500 feet. The 220 foot North level has been driven 106 feet, and the tunnel from the hill, at the same level, has been driven 360 feet.

The 116 foot South level has been driven 109 feet, and the 220 foot South level has been driven 80 feet.

King William: This shaft has been sunk to a depth of 175 feet, and two levels started, one at 100 feet, and the other at 175 feet. The 100 foot North level has been driven 182 feet, and the 175 foot North level 100 feet.

Gentle Annie: A shaft has been sunk 50 feet and a short cross cut run.

Other Claims: Prospecting and development work has also been done on the other claims in order to comply with the mining laws of the Province.

At the ordinary General Meeting of the Company on 15th December, 1892, it was reported:

"No change has taken place in the situation since the General Meeting in 1891. As stated in their last report, in the opinion of the directors the property has been sufficiently developed to warrant the erection of plant and machinery, and the directors have been, and are still, in communication with those interested in the undertaking in British Columbia on this subject."

BALANCE SHEET, 30TH SEPTEMBER, 1892.

DR.

	£ s. d.	£ s. d.
To Capital Account:		
Authorized	50,000 0 0	
Issued 36,000 Shares fully paid		36,000 0 0
" Sundry Creditors:		
Directors' fees	500 0 0	
Secretary's salary and rent	250 0 0	
Sundries	583 6 0	
		1,333 6 0
		£37,333 6 0

CR.

	£ s. d.	£ s. d.
By Purchase of Property:		
As per last Balance Sheet		19,270 16 11
" Expenditure at Mines:		
Per last Balance Sheet	15,875 13 11	
During the year	75 0 0	
		15,950 13 11
" Expenditure in London:		
Per last Balance Sheet	1,656 1 7	
During the year:		
Directors' fees, incurred but not paid	£200 0 0	
Secretary's salary and rent, do.	150 0 0	
Office Expenses	4 9 11	
Audit fees	5 5 0	
	359 14 11	
		2,015 16 6
" Arrears of Calls (since paid)		62 10 0
" Cash Balances		33 8 8
		£37,333 6 0

NORTH AMERICAN GOLD CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia, 24th January, 1844. Authorized Capital, $250,000.

Principal: A. McKay, Halifax.

Formed to acquire and work gold properties in Nova Scotia. Not fully organized at date of going to press.

NORTH AMERICAN MINING CO.

Registered 11th November, 1892. Authorized Capital, $200,000, in shares of $100.

Directors:

G. N. Ducharme, *President*,

Alphonse Bayard,	Arthur Yale,
F. Bayard,	A. Montreuil,
Alfred Renaud,	Oril. L. Teriault.

Head Office: T. Lapaline, Sec.-Treasurer, 96 Francois-Xavier Street, Montreal.

This Company has been organized to work a mineral property containing one hundred acres, and situate Lot 19 A, Range X, in the Parish of St. Hypolite, Township of Kilkenny, County Terrebonne, Que.

NORTHERN BELLE MINING CO., Ltd.

Incorporated 1893. Authorized Capital, $250,000.

Dr. E. C. Kilbourne, Seattle, *President.*

Head Office: Seattle, Wash. Canadian Office: Kaslo, B. C.

This company owns the Northern Belle Group of mineral claims located on Jackson Creek, four miles from its junction with the Kaslo river, and 21 miles from the town of Kaslo, in the West Kootenay District, Province of British Columbia.

The group comprises the Northern Belle, Dublin Queen, Kootenay Star, and Ophir claims, each 1,500 feet square. The property has been worked continuously since the date of location, in June, 1892. Six hundred tons have been marketed or are in transit from the mine to smelters since the company assumed possession. From 300 to 450 tons per month is the proposed output for the future. This ore has an average value of 100 ounces in silver and runs 80 per cent. lead per ton. 25 persons employed.

NORTHERN GOLD CO.

Directors :

Judge A. J. Smith, | L. C. Barnet, | L. S. Cass, | D. B. Burdette.

Head Office : Judge A. J. Smith, Minneapolis,
D. B. Burdette, Minneapolis.

This company owns and operates a property containing 906 acres, formerly owned by the Gold Hill Company, and situate about 20 miles from the town of Rat Portage, in the Lake of the Woods district, Ontario. A small force was employed in 1893 opening up the property.

NORTHUMBERLAND COAL CO., Ltd.

Incorporated by an Act of the Legislature of Nova Scotia, January, 1894. Authorized Capital, $250,000.

Principals :

Thos. F. Wentworth, New York,
C. D. Ross, New York, | J. E. March, St. John, N.B.,
H. D. Walbridge, Washington, | J. O'Connell, New York,
J. A. Blanchard, New York, | F. V. Wedderburn, Hampton.

Being organized at date of report to mine in the Province of Nova Scotia.

NORTH STAR GOLD MINING CO.

A private organization.

Owners :

C. De W. Smith, | John Smith, | George Churchill,
John Churchill, | Dr. Cameron, | Walter Brookfield,
W. H. Johnson, | Alex. Macdonald, | Rod'k Macdonald,
J. A. Macdonald, | Rufus O. Bayer.

Head Office : J. A. Macdonald, Halifax, N.S.

Mines Office : Roderick McLeod, Isaac's Harbor, N.S.

This company's property at date comprises about 30 gold areas held under Crown lease, and 90 areas operated under prospecting license, and situate on the west side of Isaac's Harbor, Guysboro County, Province of Nova Scotia. Equipped with 10-stamp mill and other machinery of an estimated value of $5,800. Official returns of gold produced are as follows :—

1892, 165 ounces gold from 163 tons rock crushed ; 1893, 957 ounces 5 dwt. from 890 tons, 15 cwt. rock crushed.

NOVA SCOTIA GOLD MINES SYNDICATE, Ltd.

Registered 13th August, 1892, to acquire from the Montagu Syndicate, Ltd., a gold mining property in Nova Scotia. Purchase consideration, £65,000, payable £10,400 in cash, £30,000 in fully paid shares and £24,600 in cash or shares of which at date 31,675 have been issued and are fully paid, 17,750 being credited as paid. Authorized Capital, £100,000, in shares of £1 each.

Directors:

Charles G. Palgrave,
Alfred Woodhouse, | Patrick C. Don.

Head Office:

A. G. Wulff, *Secretary*, 13 St. Helen's Place, London, England.

CANADIAN OFFICE:

W. R. Thomas, General Manager, Montagu, N.S.

Formed to acquire certain gold properties, notably the "Annand," "Lawson," "Rose" and "Montreal" gold mines, situate at Montagu, Halifax County, Nova Scotia. Mines seven miles by road from Halifax. The company entered into possession in August, 1892. The gold yield, officially reported has been: 1892, 2,201 ozs., 10 dwt. from 1,716 tons rock crushed; 1893, 810 ozs., 14 dwt., from 1,219 tons, 5 cwt. rock crushed.

NOVA SCOTIA MIDLAND RAILWAY AND IRON CO., Ltd.

Incorporated by Act of the Nova Scotia Legislature, 16th April, 1888; amended by Act dated 17th April, 1889. Authorized Capital, $1,000,000, with power to increase to $10,000,000, divided into shares of a value of $100 each.

Directors:

Herbert Richmond, 52 Broadway, New York, *President*,
Hon. S. H. Holmes, Halifax, | Hon. W. Ross, Halifax,
Wm. M. Walton, New York, | B. W. Chipman, Halifax,
E. P. Kennard, New York.

American Office:

E. P. Kennard, *Secretary*, 52 Broadway, New York.

CANADIAN OFFICE: New Glasgow, N.S.

This company controls some thirty square miles of iron, coal and other mineral lands in the Province of Nova Scotia, and is at present coustructing a line of railway from New Glasgow to Sunny Brae, a distance of 18½ miles, to be extended to the Atlantic coast in Guysboro' county, a total distance of about sixty miles. When this line is completed, the development of the company's mines will be proceeded with. Up to 1st September, these lands had been opened and several hundred tons of ore mined and smelted.

NOVA SCOTIA STEEL AND FORGE CO., Ltd.

Incorporated under the "Companies Act" of 1877, and by an Act of the Parliament of Canada, 1892. Authorized Capital, $1,000,000, divided into 5,000 eight per cent. Cumulative Preference shares of $100 each, and 5,000 ordinary shares of $100 each.

Directors :

Graham Fraser, New Glasgow, *President*,

H. S. Poole, M.A., A.R.S.M., Stellarton,
J. F. Stairs, M.P. Halifax,
John McNab, New Glasgow.
J. D. McGregor, M.P.P., New Glasgow.
J. M. Carmichael, New Glasgow,
Geo. F. McKay, New Glasgow.

Head Office and Works : New Glasgow, N.S.

The operations of this company are carried on at New Glasgow, Pictou County, Province of Nova Scotia.

The plant consists of :—two Siemens melting furnaces, 20 tons capacity each ; three gas heating furnaces ; five reverberatory heating furnaces ; 26 in. reversing cogging mill, with train of live rolls : heavy vertical hot billet shears, with live rolls ; one 20 in. plate mill ; one 16 in. bar mill ; one 12 in. bar mill ; one 9 in. guide mill : ten pairs shears, 40 tons and smaller ; one 5 ton steam hammer, with 15 ton hydraulic crane ; four smaller steam hammers ; machine shop 175 ft. x 75 ft., with 30 ton travelling crane commanding whole shop, equipped with 24 in. slotter, 6 drills (one a 9 ft. radial, 5 in. spindle), 9 lathes, one of which will take in 50 in. over carriage, and 8 in. x 10 in. in the gap, will take 37 ft. between centres, small shapers, etc. Power is supplied by some 50 steam and 10 hydraulic cylinders. Entire works are lighted by arc and incandescent light plant. Output, 100 tons of steel ingots per day, all of which is worked up into bars, sheets, axles and other forgings. Over 97,000 axles of this company's make were supplied to Canadian railways. 400 persons employed in 1893.

The gross profits of the company have been :—

1889	$63,920 58	
1890	91,994 99	
1891	45,366 33	
1892	59,466 55	
Gross profits for four years		$260,748 45
There has been written off for bad debts in four years	$11,080 77	
There has been written off for depreciation of machinery, buildings, &c., in that period	46,059 66	
		57,150 43
Leaving the net earnings for the four years		$203,598 02
Or an average annual net profit of		50,899 50

DIRECTORS' REPORT FOR THE YEAR ENDED 30TH JUNE, 1893.

"Your Directors in laying before you the Balance Sheet and Revenue Report of the Company for the fiscal year ended on the 30th June, 1893, beg to report that the volume of business done by the Company, during the year just expired, has exceeded that of any previous year and that, notwithstanding a lower scale of prices, a favorable statement of profits is shown.

NOVA SCOTIA STEEL AND FORGE CO.—Continued.

Judging from the orders already received and looking forward to the advantages to be gained from the new plant now approaching completion, your Directors are hopeful of the results of the present year's business.

The profits for the year ended 30th June 1893, were		$83,966 45
To this must be added the balance at credit of profit and loss account carried from last statement		50,491 22
Total		$134,457 67
In accordance with the resolution of the last annual meeting one new share was issued to the holder of every six shares of ordinary stock as at 1st October, 1892, which disposed of	$50,599 05	
The dividend upon the old Preferential Stock called in on the 1st October, 1892, namely the three months' dividend at the rate of 8 per cent. per annum on $150,000, disposed of a further sum of	3,000 00	
Your directors recommend that the remainder be appropriated as follows :		
Reserve as insurance against bad debts	5,600 00	
Reserve for depreciation on plant	10,500 00	
Pay 8 per cent. cash dividend to Preferential Shareholders.	9,124 94	
Pay to ordinary shareholders a dividend of 16 per cent. one half to be in cash and one half in 8 per cent. Preferential Stock or as near thereto as can be conveniently divided	52,690 00	
		$131,513 99
Leaving a balance to be carried forward to Profit and Loss account of		$2,943 68
The Reserve Fund for bad debts on the 30th June, 1892 was	$12,037 52	
To which is added as above	5,600 00	
		$17,637 52
There has been written off for bad debts during the year		7,976 91
Leaving a balance to credit of reserve account of		$9,660 61

The dividends both to the Preferential and Ordinary Shareholders are payable on the 5th September next.

Your Directors have to report that the old issue of 1,500 shares of Preferential Stock was redeemed on the 1st October, 1892, and that the 2,500 shares of 8 per cent. Preferential Stock referred to in the last annual report were issued. Of this issue 1769 shares have been disposed of and 731 shares remain in the treasury.

Your Directors have to report that the extensive additions to the plant of the Company are in a forward state of progress and are expected to be in operation in the course of a few weeks."

FINANCIAL STATEMENT FOR YEAR ENDED 30TH JUNE, 1893.

Assets.

Real Estate, Plant, &c		$492,381 20
Stock, Scrap Steel, Scrap and Pig Iron, &c	$119,550 36	
Supplies, Furnace Sand, Fire Brick, Oil, &c	11,579 58	
Steel, manufactured and partly manufactured	99,701 66	
Coal	1,371 22	
Ledger Accounts	41,185 30	
		273,388 12
		$765,769 32

Liabilities.

Capital Stock—Preferential	$176,900 00	
" —Ordinary	333,300 00	
		510,200 00
Union Bank, for cash advances	67,489 87	
Bills Payable and unpaid accounts	47,723 29	
		115,213 16
Depreciation		65,936 93
Dividend to Preferential Stock	9,124 94	
" Ordinary "	52,690 00	
		61,814 94
Reserve	9,660 61	
Profit and Loss	2,943 68	
		12,604 29
		$765,769 32

ABSTRACT OF PROFIT AND LOSS ACCOUNT.

Dr.

To Reserve for bad debts		$ 5,600 00
" " Depreciation		10,500 00
" Ordinary stock bonus to shareholders 1st Oct., 1892		50,599 05
" Dividend to Preferential Stock called in 1st Oct., 1892	$ 3,000 00	
" Cash Dividend to Preferential Stock	9,124 94	
" Dividend of 16% to Ordinary Stock: one-half cash and one half 8% Preferential Stock	52,690 00	
		64,814 94
" Balance		2,943 68
		$134,457 67

Cr.

By Balance carried over from last year	$50,491 22
" Profits for the year ended 30th June, 1893	83,966 45
	$134,457 67
By Balance	$ 2,943 68

ABSTRACT OF RESERVE ACCOUNT.

Dr.

To bad debts written off during the year	$ 7,976 91
" Balance	9,660 61
	$ 17,637 52

Cr.

By Balance carried over from last year	$ 12,037 52
" Profit and Loss	5,600 00
	$ 17,637 52
By Balance	$ 9,660 61

OGEMA MINING AND SMELTING CO. OF THE DISTRICT OF THUNDER BAY, Ltd.

Incorporated 1891. Authorized Capital, $150,000, in shares of $50.

Directors :

J. H. Sixsmith, Camden, N.J.,

C. Allen, C. Garpe, | H. W. Cranmer, J. M. Scott, | J. Mair, B. Shoe, | F. Leahey, John T. Dohan, | H. B. Radcliffe, N. C. Ellis.

Head Office :

H. W. Cranmer, 325 Federal Street, Camden, N.J.

CANADIAN OFFICE :

John C. Smith, Superintendent, Port Arthur, Ont.

Formed to carry on an exploring, mining, smelting and refining business in silver, copper, lead, nickel, etc. The company owns a property containing 273 acres, carrying promising indications of gold and other minerals, in the Thunder Bay District, Ontario. Mine situate eight miles from the line of the Canadian Pacific Railway, and about thirty miles from the town of Port Arthur. Machinery, plant and buildings estimated to be of a value of $7,000.

OLDHAM GOLD CO.

Owners :

John E. Hardman, Oldham, N.S. | Frederick Taylor, Lowell, Mass.

Head Office : John E. Hardman, M. E., S. B., Manager, Oldham, N.S.

This Company controls a property containing some 96 gold areas, situate in the District of Oldham, in the County of Halifax, in the Province of Nova Scotia. Mines about three miles from Enfield station on the main line of the I. C. Railway. The mines, which have been operated since 1884, have been thoroughly and systematically developed, and at date consist of the following workings :

No. 5 shaft, 420 feet deep ; No. 3 shaft, 383 feet ; has three sets of levels aggregating 1,500 feet ; total length of openings, 2,500 feet. Average men employed, 12. Engine and machinery equipment comprises : double hoisting and pumping gear, operated by 60 h.p. compound condensing engine; new ten-stamp mill, operated by a Pelton water wheel working under a 78 feet head; stamps weigh 860 pounds and drop 90 to the minute, crushing two and one-half tons quartz to the stamp in 24 hours ; Forster rock breaker ; roll feeders ; also Golden Gate concentrator. Concentrates assay $75.00 to the ton. Official returns kindly furnished by the Mines Department report the yield from this mill as follows :—

1885..	925	tons,	6	cwt.,	rock	crushed,	yielding	1,700	ounces,	6	dwt.,	17 grs.
1886..	928	"	8	"	"	"		2,164	"	17	"	3 "
1887..	2,359	"	16	"	"	"		2,560	"	8	"	11 "
1888..	2,107	"	6	"	"	"		1,699	"	9	"	15 "
1889..	1,393	"	2	"	"	"		2,705	"	4	"	18 "
1890..	1,126	"	14	"	"	"		2,775	"	0	"	20 "
1891..	1,789	"	14	"	"	"		2,447	"	19	"	0 "
1892 .	2,233	"	0	"	"	"		3,079	"	4	"	12 "
1893..	2,334	"	5	"	"	"		3,292	"	0	"	8 "

OLD PROVINCIAL GOLD MINING CO.

Incorporated under the laws of the State of Maine. Authorized Capital, $200,000, in 20,000 shares of $10 each.

Directors :

H. S. Mackay, | R. D. Evans, *President*, | J. Murray Marshall.

Head Office : H. S. Mackay, Sec.-Treas., 64 Devonshire Street, Boston.

Mines Office : Dean S. Turnbull, Manager, Sheet Harbor, N.S.

The property owned and operated by this Company contains 96 gold areas, and is located on Killag River, near Sheet Harbor, County of Halifax, Province of Nova Scotia. Twenty persons employed in 1893. Equipped with 10-stamp mill operated by 60 h. p. slow speed engine; weight stamps, 950 lbs.; drop 100 p. m.; 2 Hammond self feeders; 400-light dynamo; 30 h. p. Hoist, 11x16 in., double drums, 32 in. dia.; Rand drills; Blake ore-breakers; pumps, etc., etc.; the whole being of an estimated value of $20,000. Cost of mining and milling reported by management to be $4.90 per ton.

ONEIDA QUARRY CO., Ltd.

Incorporated 1892. Authorized Capital, $50.000, in 500 shares of $100, of which at 1st November, 1893, $24,900 had been issued and taken.

Directors :

George H. Wilkes, *President*,

A. D. Hardy, C. De Cew, | W. Bowman, W. R. Hobbs, C. A. Birge. | Frank Wilson, W. E. Winskell,

Head Office: A. D. Hardy, Secretary, Brantford, Ont.

Formed to acquire and work stone quarries in the Province of Ontario. Owns what was formerly known as the De Cew quarries in the Township of Oneida, County Haldimand. The product is sandstone, limestone, lime and marble, quarries located 1¼ miles from Nelles Corners, on the Air Line of the Grand Trunk Railway, with which they are connected by tramway. Operated under lease by Mr. J. R. McIntosh, Nelles Corners, Ont. Small force employed in 1893.

ONTARIO MINING CO., Ltd.

Incorporated 2nd August, 1889. Capital Stock, $20,000, in 2,000 shares of $10 each, fully subscribed and paid up.

Directors :

H. G. McMicken, Winnipeg. *President*,

John S. Ewart, Winnipeg, H. J. Belch, Winnipeg, | J. G. Bennett, St. Paul, Minn., M. M. Wheeler, St. Paul, Minn.

Head Office : J. K. Strachan, Secretary, 376 Main Street, Winnipeg.

The property owned by this company contains 400 acres, and is situate on Sultana Island, in the Lake of the Woods mining district, Province of Ontario.

ONTARIO MINING INSTITUTE.

Organized 1894. *President*, Jas. Conmee, M.P.P., Port Arthur, Ont.; *Vice-Presidents*, Judge Kingsmill, Toronto; Archibald, Blue, Toronto; Prof. Goodwin, Kingston; W. Hamilton Merritt, M.E., A.R.S.M., Toronto; *Secretary*, B. T. A. Bell, Ottawa; *Treasurer*, T. W. Gibson, Toronto; *Council*, Prof. Coleman, Toronto; Ian Cameron, Sudbury; A. W. Carscullen, M.P., Marmora; Peter McKellar, F.G.S.A., Fort William; Wm. Young, Rat Portage; J. M. Clark, Toronto; Prof. Nichol, Kingston; Prof. Eames, Toronto; T. D. Ledyard, Toronto.

ONTARIO NATURAL GAS CO., Ltd.

Incorporated 1889. Capital $500,000.

Directors:

N. A. Coste, *President*, Amherstburg, Ont.

D. Coventry, Windsor,
M. A. MacHugh, Windsor,
Col. Atkinson, Detroit,
Hiram Walker, Detroit.

Head Office: Windsor, Ont.

This company has acquired some 30,000 acres under lease in the county of Essex, Ontario. Three wells have been bored to a depth of over 1,000 feet, at a point thirty miles from the town of Windsor, yielding an estimated flow of 10,000 cubic feet.

ONTARIO PEAT FUEL CO., Ltd.

Incorporated 1892. Authorized Capital, $300,000, in shares of $100.

Directors:

Horace T. Archibald, Toronto,

Horace Thorne, Toronto,
F. C. Ireland, Toronto,
A. A. Dickson, Montreal,
A. Gunther, Toronto.

J. R. Silliman, Toronto.

Head Office: J. R. Silliman, Secy.-Treas., Room 29, Bank of Commerce Building, Toronto, Ont.

Formed to acquire the right to manufacture peat fuels, or other fuels, under patent from the Dominion Government: to acquire, hold and operate peat lands, etc. At last report was operating a bog about 3,000 acres in extent on the Welland Canal, Welland county, Province of Ontario, and in manufacturing peat fuel by the Dickson process.

ONTARIO SILVER AND ANTIMONY MINING CO., Ltd.

Incorporated 1892. Authorized Capital, $300,000.

Directors:

James C. Cockburn, Toronto,
Isaac M. Scott, | Thos. Howorth, | John Critchley.

Head Office: James C. Cockburn, 71 Victoria, Street, Toronto, Ont.

Formed to carry on mining in the township of Barrie, County of Frontenac, and elesewhere in the Province of Ontario. Not in operation.

OPHIR MINING CO. OF CHICAGO.

Incorporated January, 1893, under the laws of the State of Illinois. Authorized Capital, $3,000,000, in 300,000 shares of $10 each.

Directors:

G. E. Milligan, Chicago, *President*,
Capt. Torrey, Duluth, | W. H. Plummer, Sault Ste. Marie,
Morris O'Brooks, Duluth, | A. E. Humphreys, Duluth.

Head Office: W. T. McClurg, Sec.-Treas., 418 Phoenix Building, Chicago, Ill.

CANADIAN OFFICE: Bruce Mines, Ont.

Formed to acquire and work the Ophir Gold Mine, located in lot 12, concession 3, Township of Galbraith, District of Algoma, Province of Ontario. The property comprises 153 acres and is distant from Bruce Station about 12 miles. 30 men employed in 1893. Equipped with 30 stamp mill, driven by Corliss engine; weight of stamps, 850 lbs.; drop 80 per m.; 10 frue vanners; Blake rock breaker; Ingersoll compressor and drills, etc. A mill test by Prof. Fred F. Sharples, at the Michigan Mining School gave the following results:—

1st Sample.

Weight of ore..... ....1525 lbs.
Assaying silver.....2.3 oz. per ton.
Assaying Gold.....2.7 oz. per ton.

2nd Sample.

Weight of ore.....2520 lbs.
Assaying silver.....2.05 oz. per ton.
Assaying gold.....3.50 oz. per ton.

A considerable amount of work was done in 1893, but no returns of the gold yield are obtainable.

ORMSTOWN BRICK AND TERRA COTTA CO., Ltd.

Incorporated 25th August, 1888. Authorized Capital, $50,000, divided into 500 shares of a value of $100 each, the whole of which has been subscribed and fully paid.

Directors:

George McCullough, *President*, Ottawa, Ont.

J. H. Shaw, Shawville, Que., | J. G. Butterworth, Ottawa, Ont.
G. W. Cameron, Montreal, Que., | R. N. Walsh, Ormstown, Que.

Head Office: N. S. Corbett, Ottawa, Ont.

This company's property contains 28 acres of land at Ormstown, Que. During the year 1893, 60 persons employed. Estimated value of machinery, plant and buildings at date, $55,000.

Value of product, 1890.....$20,000 00
" 1891..... ..... "
" 1892..... .....$30,000 00
" 1893..... ..... "

Superintendent: George Vaughan, Ormstown, Que.

OWEN SOUND PORTLAND CEMENT CO., Ltd.

Authorized Capital $100,000, in 200 shares of a value of $500, of which at date $88,000 have been taken.

Directors:

H. B. Harrison, *President*,

John Lucas, | Wm. Manders, | John Corbet,
R. P. Butchart, | S. Loyd, | W. H. Pearson.

Head Office: John Corbet, Secretary, Owen Sound Ont.

This company, originally known as the North American Chemical, Mining and Manufacturing Company, was organized in 1889. The deposit of clay owned by the company extends over an area of 500 acres and is known as Shallow Lake, in Keppel Township, County of Grey, Ontario, occupying lots 6, 7, 8 and part of 9 in the 7th Concession. The bed of the lake is covered with shell marl to depths ranging from one to six feet, the average being about four feet. Uuderlying the marl is a bed of clay two feet in depth, which by experiment has proven to make a strong Portland cement when mixed with the marl in definite proportions. The marl and clay used in the manufacture of cement are taken out during the dry season and carted to the works. The main building of the works is constructed of rubble stone, 270 feet by 40 feet, and was erected in 1889. They are 9 miles from Owen Sound and 2½ miles from Parkhead Station on the Grand Trunk Railway. The wet process, was first adoped in the manufacture of cement, the mixture being burnt in a Ransome cylinder, but it did not prove satisfactory. Operations were also delayed for some time on account of litigation between the company and the owner of the location, and when matters where finally settled it was decided to remodel the works according to the English system. For this purpose the manager of the company, Mr. Butchart, visited England and spent some time in examining a number of the best works there. He secured the

service of three experienced men to have direction of the works, and after his return the improvements were commenced and carried on to completion. Kilns have been substituted for the cylinder, a new mixing machine has been constructed and an engine of 250 h.p. has been put in to drive all the machinery of the works except that used in the manufacture of heading and staves for barrels. 40 persons employed.

R. P. Butchart, *Manager*, Shallow Lake, Ont.

OWEN SOUND STONE CO.

Incorporated March, 1888. Authorized Capital, $30,000, in shares of $100.

Directors :

S. T. Parker, *President*,

George Inglis, W. B. Stephens, | P. W. Sabiston, Jas. Douglas.

Head Office : W. B. Stevens, Secretary, Owen Sound, Ont.

This company owns and operates sandstone quarries at Owen Sound, Orangeville and Inglewood, and also in the Township of Mono, County Dufferin, and Township of Caledon, County of Peel, Province of Ontario, all favorably situated for shipment. Output in 1893, about 200 cars ; 30 persons employed ; estimated value of machinery, plant and buildings, $10,000.

P. W. Sabiston, *Manager*, Orangeville, Ont.

OXFORD GOLD MINING CO.

Incorporated under the laws of the State of New York in 1882. Authorized Capital, $125,000.

Head Office : J. M. Reid, Manager, Musquodoboit Harbor, Nova Scotia.

This company owns 63 gold areas situated at Lake Catcha district, near Musquodoboit Harbor, and 25 miles east of Halifax, Nova Scotia. The working plant comprises : A steam ten-stamp mill complete, with Blake breaker ; ore bins ; automatic feeders, &c. ; 1 5-drill duplex air compressor ; 3 engines, one 12 x 24, one 10 x 16, and one 9 x 12 ; two 40 and two 20 h.p. boilers ; hoists, pumps and every thing necessary to a well equipped mine, the machinery and buildings being of a value of over $14,000. Twenty-five men employed. The average value and profit per ton of ore are $22.69 and $6.14 respectively. Dividends paid, $78,000. Official returns of the gold yield are :—

Year.	Rock crushed.	Gold Yield.
1882	615 tons giving	1,017 ounces, 2 dwt. 3 grs.
1883	1,472 " "	2,575 " 15 " 19 "
1884	2,287 " "	2,01[illegible] " 19 " —
1885	1,670 " "	1,094 " 14 " —
1886	492 " "	1,683 " 18 " 15 "
1887	886 " "	3,050 " 2 " —
1888	1,559 " "	2,161 " 15 " —
1889	767 " "	588 " 2 " —
1890	901 " "	779 " 5 " —
1891	2,177 " "	580 " 8 " —
1892	2,124 " "	764 " 7 " 14 "
1893	1,646 " "	811 " — " —

PACIFIC BRICK CO., Ltd.

Incorporated 1894. Authorized Capital, $20,000, in shares of $20.

Directors

C. A. Beales. | Jas. Stokes. | George Hartley.

Head Office: Vancouver, B.C.

Formed to carry on the business of manufacturers of brick, tile, terra cotta, sewer and drain pipe and pottery, etc.

PACIFIC BULLION MINING CO., Ltd.

Incorporated 13th March, 1889. Authorized Capital, $1,000,000, divided into one million shares of the par value of one dollar each; stock unassessable.

Directors:

L. C. Dillman, *President*,

John H. Stone. | Frank T. McCallough. | W. B. Cowgill.

Head Office: Frank T. McCallough, Secretary, Spokane, Wash., U.S.A.

Formed for the purpose of mining, milling, smelting and working ores and minerals contained in the mines known as the Spokane and Trinket, situate at Ainsworth, in the West Kootenay mining district, in the Province of British Columbia. Spokane shaft 91 ft. deep; 45 feet from surface, levels have been driven 60 feet north and 50 feet south. A tunnel has been run in on the Spokane vein for a distance of 200 feet, and will develop the Spokane vein to a depth of 200 feet below the outcrop of ore. There are also several minor workings on the property. Was not in operation in 1890, pending negotiations for a transfer of stock, which was not successful. Mining was resumed in the spring of 1891. No report, 1893.

General Manager: John Wolgamot.

PALGRAVE GOLD MINING CO.

Incorporated 30th January, 1889, under the laws of the State of Maine. Capital Stock, $100,000, in shares of $1 each, of which, to date, $85,000 has been subscribed and paid up.

Directors:

H. K. Fisher, Isaac's Harbor, N.S., *President.*

T. R. Gue, Halifax, N.S., *Treasurer.* | W. H. Harrington, Halifax, N.S., *Secretary.*

Head Office: Portland, Maine.

Property situate at Isaac's Harbor, in the Stormont district, Guysboro' County, Nova Scotia. Owing to litigation mine has been idle since April, 1889. Writing under date of 27th Dec., 1892, the president of the Company says: "Litigation, un-

fortunately, was not ended by the decision of the Privy Council, but there is little doubt decision will soon be given that will enable the Company to resume work early in the year 1894."

Official returns are :

1888.....	1,869	tons	rock	crushed,	gave	2,212	oz.,	15 dwt.
1889.....	2,927	"	"		"	1,745	"	2 "
1890 (to 5th April only)	731	"	"		"	390	"	10 "

PETO COMPANY.

Head Office : Robert C. Adams, Manager, 41 St. Francois-Xavier Street, Montreal.

This is a private association of Montreal and Boston capitalists for the purpose of acquiring mineral claims in British Columbia. They own the Mount Adams group of silver mines, consisting of the "Chamblet," Britomarte," "Landscape" and "Slater" in the Slocan District, and have a half interest in the Bon Ton Silver Mine in the Kaslo District. They also have the Black Horse group, consisting of eight gold claims in the Okanogan District. Development work has been done on all in the past year and will continue in 1894.

PETROLEUM OIL TRUST, Ltd.

Registered 20th August, 1891. Authorized Capital, £430,000 ; £330,000 in ordinary shares of £1, and £100,000 in preference shares of £10, ranking first for dividends of 7 per cent. per annum, with the option to holders of converting into ordinary shares at any time within three years on six months' notice. Of the ordinary capital, £345,940 has been allotted and paid up, £314,988 having been issued to the vendors, and of the preference capital £39,490 has been subscribed and called up. The preference dividend is guaranteed for three years by the Charing Cross Bank, and has been regularly paid in June and December.

Directors :

Lord Berwick, *Chairman*,

J. H. Atkins, | A. W. Carpenter, | J. Foley, | P. A. Hutchison.

Head Office : E. S. Peach, Secretary, 22 Henrietta Street, London, W.C.

Canadian Office : J. Foley, New York Life Building, Montreal.

Formed to acquire properties in the Gaspé district and elsewhere in the Province of Quebec, covering an area of 40,137 acres freehold, with mining rights over 10,220 acres in addition. Numerous borings have been made to a considerable depth and oil found in small quantities.

PETROLIA CRUDE OIL AND TANKING CO.

Incorporated 1874. Capital Stock, $50,000, divided into 1,000 shares of $50 each, of which, to date $49,376.36 has been subscribed and paid up.

Directors :

Chas. Jenkins, *President*,

J. D. Noble, | J. H. Fairbank,
R. D. Noble, | C. O. Fairbank,
R. Morris, | John Fraser.

PETROLIA CRUDE OIL & TANKING CO.—Continued.

Head Office: Chas. Jenkins, President, Petrolia, Ont.

This Company owns and operates 31 wells, situate on Lot 12 in the 12th Concession of Enniskillen, Lot 11 in the 12th Concession, Petrolia, and Lot 16 in 2nd Concession Oil Springs, Ont.; average depth, 470 feet; average daily capacity of each, one-half to three-fourths of a barrel. The Company has 50 tanks, with a storing capacity of about 300,000 barrels. Receiving stations at Oil Springs, Marthaville, and three at Petrolia; owns 30 miles of pipe line. It has an oil refinery capable of turning out from five to six hundred barrels of refined oil weekly.

The following statistics have been kindly furnished by the secretary:

	Bbls. Received.	*Bbls. Shipped.*
1884	255,768	184,214
1885	299,407	312,554
1886	255,022	240,134
1887	244,979	360,309
1888	285,013	240,950
1889	298,806	341,346
1890	288,330	333,052
1891	294,222	311,215
1892	309,898	296,796
1893 (to 1st Nov.)	236,548	214,787

Estimated value of machinery and plant, etc., $100,000. Seventeen men and boys employed.

PETROLIA OIL CO.

Incorporated 31st January, 1881. Authorized Capital, $40,000, divided into 1,000 shares of a value of $40 each, of which $20,040 has been subscribed and paid up.

Directors:

Robert D. Noble,
John D. Noble, | Charles Jenkins.

Head Office: Robert D. Noble, President, Petrolia, Ont.

This Company owns ten acres of land situate in the township of Enniskillen, in the County of Lambton, in the Province of Ontario. It also operates nine wells, each of an average depth of 460 feet, and yielding in the aggregate five barrels of crude oil per diem. The Company also manufactures the celebrated "Jacques Cartier" brand of refined oil, at Petrolia, Ont.; and they have made arrangements for barrelling oil at Peterborough, Ottawa and Montreal for distribution in those districts. They also do a large lubricating oil business. Thirteen men employed. Estimated value of machinery, plant, buildings, etc., $7,000.

PRODUCTION OF CRUDE OIL TO DATE.

1883	3,314 Bbls.	1889	1,723 Bbls.
1884	2,518 "	1890	1,051 "
1885	1,860 "	1891	1,346 "
1886	2,090 "	1892	930 "
1887	1,653 "	1893 (to 1st Nov.)	877 "
1888	1,626 "		

Managing Director: John D. Noble, Petrolia, Ont.

PHOSPHATE OF LIME CO., Ltd.

Registered 7th October, 1881. Capital, £50,000 stg., in 5,000 shares of £10 each. Of this amount £35,000 has been subscribed.

Directors:

Augustus Abraham, *Chairman.*

Thomas Fuller, Sir J. H. Johnson, | Admiral B. C. Mayne, C.B., M.P., Charles Schiff.

Head Office:

Fleetwood Richards, Secretary, Winchester House, Old Broad St., London.

CANADIAN AGENTS:

Wilson & Green, 30 St. Francois Xavier Street, Montreal.

This company owns and operates the High Rock phosphate mines in the township of Portland West, Ottawa County, Province of Quebec. The property, which covers some 600 acres, is situate on lots 1 and 2 in the 8th range, and lots 5, 6 and 7 in 7th range, in the township of Portland West, and has been extensively developed. The mines are about two miles from High Rock landing on the Lievres river, connected by gravity tram line, and are distant from the town of Buckingham, on the line of the Canadian Pacific Railway, about 22 miles. They are well equipped with commodious buildings for the miners, offices, stores, etc. Machinery equipment comprises: eight boilers, two 80 h.p., two 30 h.p., three 25 h.p., and one 15 h.p.; one Ingersoll 20 x 30 14 drill air compressor; one 16 x 24 7 drill Rand compressor; seven Ingersoll Eclipse drills and two Rand sluggers; nine steam hoisting engines; seven derricks; seven pumps (Knowles, Cameron and Worthington). Owing to depression in phosphate market the force was reduced to 45 men and boys in 1893. The following returns of the shipments from the High Rock mines are official:—

	Tons.
1883	4,500
1884	5,000
1885	5,732
1886	6,360
1887	5,686
1888	6,249
1889	6,054
1890	5,497
1891	3,933
1892	2,000
1893	2,633

Superintendent: Ashley P. Twidale, High Rock Mines, High Rock, via Buckingham, Quebec.

PICTOU CHARCOAL IRON CO., Ltd.

Incorporated under the laws of Nova Scotia, in November, 1891. Authorized Capital, $200,000, divided into 1,000 ordinary shares of $100 each, and 1,000 preference of $100.

Directors:

Wm. B. Moore, *President*, New Glasgow, N.S.

Alfred Markham, St. John, N.B., J. N. W. Winslow; Woodstock, N.B. Jas. D. MacGregor, New Glasgow, | D. R. Grant, New Glasgow, N.S., E. A. Sjostedt, New Glasgow, N.S., M. H. Fitzpatrick, New Glasgow.

PICTOU CHARCOAL IRON CO.---Continued.

Head Office: A. C. McDonald, Sec.-Treas., Pictou, N.S.

Works: E. A. Sjostedt, M.E., General Manager, Bridgeville, N.S.

Formed to manufacture charcoal pig iron on the East River of Pictou, Pictou County, Nova Scotia, and to transact any other business in connection therewith, etc. The company controls a valuable deposit of brown hematite on the Grant farm at Bridgeville; also some 8,500 acres of heavy old-growth hardwood timber land, situate within fifteen miles of furnace site.

The buildings consist of offices, stables and store houses, carpenter and blacksmith shops, a coal shed (with a capacity of 40,000 bushels), carting house, stack house, and engine house. The shops and furnace buildings are all covered, roof and sides, with corrugated iron, painted on both sides with mineral paint. The working plant proper consists of the following structures: The furnace stack is 50 ft. high with a 11 ft. bosh and 7 ft. diameter under the hill. The conventional iron shell has been dispensed with and substituted by a crinoline strapping and red brick shell. This, together with the 15 inch fire brick lining is supported by six cast iron columns, and he bosh is surrounded by a boiler plate mantel, and the hearth by a water cooling cast iron jacket. The tuyers, 6 in number, are of bronze and set in water coil breasts. The down comer has a diameter of 36 in., and the bustle pipe 15 in. The top of the furnace is provided with a Weimer patent friction winch and gas seal for facilitating an even distribution of the stock, and to prevent waste of gas. The hot blast is a modified Cooper-Durham cast iron stove, with 30 V-pipes, built in two sections and provided with two combustion chambers side by side, and so arranged that the cold inlet and the outlet of the heated blast, as well as the two combustion chambers, are placed in the same end of the stove. This arrangement was successfully adopted by the manager some years ago at Katahdin Iron Works mine. Besides economizing space and blast and gas connections, it facilitates maintaining the blast at a high temperature with a small amount of fuel gas, the 2,000 ft. of heating surface sufficing to keep the 3,000 cubic ft. of air per minute (engine measure), up to 750° to 800° F. The boilers are 4 in number (30 ft. x 36 in.), made of best $\frac{5}{16}$ Dalzel steel, and built in sets of two with separate draft stacks, and independent steam and water connections, and provided with gas valves and combustion chambers similar to those in the hot blast, besides separate grates for wood or coal, in case of shortage of gas. The blowing engine consists of two horizontal blowing cylinders of 5 ft. diameter and 5 ft. stroke, and a pair of horizontal steam engines, 18 in. x 36 in. each, capable of performing the work in case of necessity.

The elevator comprises a double Whitney hoisting machine and two Wood & Co's safety cages. These, as well as the limestone breaker (a Forster "crusher and pulverizer") are run by belt from a horizontal steam engine of about 15 h.p. capacity. For the handling and weighing of the stock and the pig iron, Weimer patent steel charging barrows and Richle's furnace charging and pig metal scales are used.

Water supply has been provided for by building a 25 ft. dam on the Mill Brook, from which the water is conducted 700 ft. through 3 in. wooden pipes to the furnace, besides which a reservoir is built (at an elevation of 75 ft. above the foundation level of the furnace) for collecting the spring water from the hills above, as well as the water pumped from the river; in case of lack of water from the above mentioned sources, a Northey duplex steam pump (7½ in. s.c. x 4½ in. w.c. x 10 in. st.), is performing this work and a series of iron pipes are laid to the reservoir, and to different parts of the work, and fitted with valves, hydrants and hose connections in case of fire.

For the carbonization of the wood, 19 brick kilns have been erected at different places. These are of the round (bee-hive) type, each holding 50 cords of wood, and capable of carbonizing 1,200 cords per annum, which will produce 5,000 bushels of coal. Those built in the woods are of the Plattsburg (conical) type, each holding about 30 cords, with an annual capacity of 700 cords of wood, or three thousand bushels of coal. The present coaling capacity is therefore, about 500,000 bushels per annum, requiring about 1,300 cords of wood. Three more kilns were built in the

spring of 1893, making the total capacity about 600,000 bushels of charcoal, which is the estimated requirement for producing 5,000 tons of pig iron a year.

The wood used for the charcoal making is principally yellow birch, also beech and maple.

The iron ores on the north side of the East River of Pictou have been opened up in several places between Springville and Sunny Brae and are at present worked by the company in two places on the Grant farm at Bridgeville, and by the New Glasgow Iron, Coal and Railway Company, both at Bridgeville and at Black Rock. They are contact deposits between the carboniferous limestones and the Upper Silurian measures, and consist of brown hematites, "residual precipitated found from the disintegration of the older Silurian rocks above, more or less mixed with pyrolusite in form of nodules and mosses, mostly in the hanging wall, but also as veins or crystals in the deposits themselves." On the south side of the river there are the Weaver and Watson specular ores, but these have as yet not been worked.

The ore deposits worked by the company being situated but a few hundred feet from the furnace, on a hillside of an elevation of about 100 feet above the same, the mining and handling of the ore is rendered especially easy. Two tunnels have been driven, one on the east and one on the west side, back of the furnace. The latter, or "A" tunnel goes through a seam or vein of gravel ore easily mined, and 10 to 15 ft. in width. After being driven in about 300 ft. a slope was driven up through the ore, at an incline of about 45° south-west, to the surface 60 ft. above, which showed up a large body of ore, in some places 18 ft. wide.

The ore in No. 2 tunnel is of an entirely different character, being fibrous and compact, and requiring blasting. It is besides richer in metallic iron, nearly free from manganese. This ore was first worked by an open cut on the top of the hill, as it displayed a remarkable deposit of solid limonite, yielding 58% metallic iron, and three to four thousand tons were removed. About 60 feet below this cut the company has now driven a tunnel about 200 feet in the same kind of ore, besides an air shaft (at an incline with the dip of the ore of about 60° s.) and three different levels, all in ore from 10 to 15 feet wide.

The following analyses will serve to give an intelligent idea of the above mentioned ores:

	Gravel ore from No. 1 tunnel.			Gravel ore from No. 2 tunnel.	
Insoluble Matter	12·80	6·75	....	8·58	5·58
Metallic Iron	45·02	53·41	....	54·83	56·57
Metallic Manganese	1·56	1·88	....	0·20	0·20
Comb Water	9·45	11·02	....	10·00	10·90
Sulphur	0·05	0·04	....	0·41	0·09
Phosphorous	0·12	0·02	....	0·03	0·21

The variation in manganese and sulphur is, however, even more marked than the above figures indicate, as crystals of pyrolusite and barite are met with here and there among the ore, without any regularity or warning. The intention of the company is to wash and roast the ore before using it in the furnace; but at present it is simply heap-roasted, with wood and charcoal braize at the end of the tunnel track. From here it is afterwards carried on the tramway tracks to the chute above the stock-house; and being here dumped on iron rails, placed about 2 inches apart, and broken sufficiently to pass through these, it falls in a wire netting (10 gauge 3 x 3 mesh) down in the stack-house, whereby the dry clay to a large extent is screened through the ore.

The limestone used for flux is quarried at Springville, and is hauled (3 miles) to furnace, costing about 85 cents per gross ton delivered. It contains about 94·0% carbonate of lime; 2·5% carbonate of magnesia; 2·0% insoluble matter.

In 1893 the furnace was not in blast until the end of year, the following being the official returns of output for a few month's work:

Total quantity of iron manufactured	498 tons
" Ore charged	853 "
" Fluxing material	124 "
" Fuel charged	68,220 bush charcoal

One hundred persons employed.

PICTOU DEVELOPMENT AND MINING CO., Ltd.

Incorporated 1894, by an Act of the Legislature of Nova Scotia. Authorized Capital, $100,000.

Principals:

W. McKenzie, | Thos. Tanner, | C. L. Rood,
A. J. Craig, | George A. Pyke, | Hugh D. McKenzie,
D. G. McDonald.

Head Office: A. J. Craig, Secretary, Pictou, N.S.

Formed to acquire and work the gold mining property at Renfrew, Halifax County, Province of Nova Scotia, as follows:—

New Haven and Renfrew Co's property	.....	42 areas.
North Mining Co's	"	242 "
Colonial Gold Co.	"	101 "

At date of report 30 persons were employed.

PREMIER OIL CO.

Incorporated 1890. Capital Stock, $150,000, divided into 1,500 shares of $100 each, of which, to 1st September, 1890, $135,000 had been subscribed and paid up.

Directors:

F. W. Mitchell, Franklin, Pa., *President*,

J. M. Binham, Toledo, Ohio, | George T. Carter, Pittsburg, Pa.,
Seymour Cunningham, Washington, D.C. | Robert Reid, Montreal, Que.,
R. K. Thomas, Montreal, Que., | Duncan Robertson, Montreal, Que.

Head Office: Thomas Kelly, Secretary, Petrolia, Ont.

Formed to manufacture, buy, sell and deal in oil producers and oil refiners' supplies; to sink for natural gas, and to lay down and maintain pipe lines for the transportation of such gas; to put down and work pipe lines for carrying petroleum, etc., etc. The Company purchased in June, 1890, the property and plant formerly owned and operated by the Producers' Oil Company, of Petrolia. Estimated value of machinery plant, $90,000. Twenty-five persons employed.

General Manager: R. E. Menzie, Petrolia, Ont.

PRINCE ALBERT FLAT HYDRAULIC MINING CO., Ltd.

Incorporated 1893. Authorized Capital, $200,000.

Directors:

George D. Scott, | W. J. McGunigan, | A. H. McNeil.

Head Office: Vancouver, B.C.

Formed to take over and acquire mining leases of lands or claims in the Province of British Columbia, and to acquire all the rights and interest of all parties interested in such lands; to carry on the business of hydraulic processes of mining, etc.

PRODUCERS TANKING CO.

Incorporated 1884. Capital Stock, $50,000, divided into 500 shares of $100 each, of which, to date, $25,328.63, have been subscribed and paid up.

Directors :

W. H. Hammond, *President*,

John Kerr, | Jas. McCort, | D. Trotter, | A. T. Gurd,
J. H. Fairbank, | John Walker, | Robt. Morris, | John Macalpine.

Head Office : W. H. Hammond, Secretary, Petrolia, Ont.

This company owns and operates some nineteen oil wells at Petrolia, in the Province of Ontario ; average depth of each 470 feet ; average yearly production about 2,000 bbls. The company also carries on the business of storers for the other producers ; capacity of tanks about 82,000 bbls. It also owns a pipe line extending for a distance of seven miles around the corporation. Machinery plant includes Northey, McKee and Marwick pumps, engine and boiler, etc. Six men and boys employed.

PROVINCIAL MANGANESE MINING CO., Ltd.

Incorporated under the laws of Nova Scotia, 23rd March, 1893. Authorized Capital, $75,000.

Directors :

D. C. Fraser, M.P., *President*,

G. E. Boak, | J. T. Burgess, | Lewis W. Des Barres, | W. F. Jennison.

Head Office : J. P. Burgess, Secretary, Halifax, N.S.

Mines Office : W. F. Jennison, Manager, Walton, Hants Co., N.S.

The property containing 500 acres, is situated at Walton, in Hants County, Province of Nova Scotia. The ore occurs in pockets and irregular beds, in and under the alluvial drift which overlies the limestone, and also in pockets and irregular veins in the limestone.

The following are analyses of the ores from the property :—

ANALYSES.

	No. 1.	No. 3.
Hygrometric water	1.66%	.....
Water in composition	3.63	14.00%
Peroxide of iron	.60	3.34
Soluble baryta	.72	1.65
Gangue	1.73	6.04
Oxygen by loss	7.04	2.10
Peroxide of Manganese	84.62	71.86
Insoluble	.....	1.01
	100.00	100.00

PROVINCIAL MANGANESE MINING CO.—Continued.

	No. 2.	No. 4.
Water	10.00%	12.04%
Sesquioxide of Manganese	86.81	71.87
Gangue, Silica, &c	1.14	.....
Oxide of iron	2.05	6.05
	100.00	100.00
(Undetermined		10.04

(Nos. 1 and 2 were made in Prof. Howe's Laboratory; 3 and 4 by Wm. Smaill, Analyst for Londonderry Iron Co., Ltd.) Property being opened at date of report. 20 persons employed.

PROVINCIAL NATURAL GAS AND FUEL CO. OF ONTARIO, Ltd.

Incorporated 1890, under letters patent from the Federal Government of Canada. Authorized Capital, $600,000, in shares of $100 each. In March, 1892, there was a quarterly dividend of 1½ per cent., the remaining quarters yielding 1% each, In 1893, 1% was paid every quarter.

Directors:

Hon. Peter McLaren, Perth, Ont., *President*,

N. A. Coste, Amherstburg,
Daniel O'Day, New York,
C. N. Payne, Oil City, Pa.,
John F. Wood, M.P., Brockville,
Samuel Rogers, Toronto,
E. Strong, Oil City, Pa.

Head Office: T. S. McFarland, Secy.-Treas., 53 Coal and Iron Exchange Bdg., Buffalo, N. Y.; E. M. Coste, M.E., Manager.

The company holds some 40,000 acres under lease in the County of Welland Ont. To Nov., 1893, 69 wells had been drilled, of which 48 were connected to the 8 inch pipe line to Buffalo, N. Y., delivering gas into a large plant in that city, and also to local consumers along the line, and to the Village of Victoria or International Bridge, Ontario. In Buffalo the gas is sold to the Buffalo Natural Gas Fuel Co., who in turn sell it to private consumers in the city at the rate of 25 cts. a thousand. This Buffalo company has been selling natural gas in Buffalo since 1886, when they completed a line 90 miles long from several fields located in Pennsylvania. Both the Canadian and Pennsylvania line are now furnishing gas simply with the natural rock pressure of the gas, but this pressure having fallen from 550 to 130 lbs. in some parts of the Canadian fields, the Provincial Natural Gas Company is now erecting two gas compressors in the field to again raise the pressure by artificial means in the line to what it was two years ago.

PYRITES CO., Ltd.

Registered 3rd April, 1891. Authorized Capital, £300,000, in 60,000 shares of £5, of which 30,000 are preference shares. There have been issued and fully paid seven preference; and 30,000 ordinary have been allotted and fully paid.

Directors :

E. H. Forward, *Chairman*,

Fred Levick, | Jas. Parker, | G. E. Way, | O. F. Waterfield.

Head Office : J. H. Carleton Levick, 63 Cornhill, London, E.C.

Formed to acquire and work the Standard Pyrites Company's mines at Pilley's Island, in the Colony of Newfoundland.

QUEENSTON CEMENT QUARRIES.

Capital invested $20,000

Owners :

Messrs. Isaac Usher & Sons, Thorold, Ont.

The quarries are located on a property containing ten acres near the village of St. Davids, township of Niagara, County of Lincoln, Province of Ontario. Sixteen men employed. Average yearly turnout estimated at 24,000 bbls.

The quarry was formerly worked for building stone, but a bed of cement rock underlying the blue limestone having been exposed by the removal of the latter it was found that a new industry could be profitably established. The cement bed varies in thickness from two feet on the west to six feet on the east side of the quarry, but the proportion of lime is too great in the upper part of it so that care has to be taken to cull it out. Messrs. Usher & Sons are lessees of the quarry, but the works are carried on by Mr. Edwin Tyler, who manufactures for them at a fixed price per barrel. The plant is maintained by Usher & Sons and consists of two burning kilns and a mill of two run of stones to grind the rock. After being ground it is run through a cylindrical screen of rolled steel of 55 mesh for which Mr. Tyler has obtained a patent. This screen has a capacity of 150 barrels per day, but is run at a 100 barrels. The kilns and grinding mill have a capacity of 600 barrels per day.

QUEENSTON STONE QUARRIES.

Capital invested to date, $15,000.

Owners :

Messrs. P. A. Johnson & Co., Queenston, Ont.

The limestone quarries operated are situated on lot 47, Township of Niagara, Ont. Eighty persons employed. Estimated value of machinery at quarry and works, $7,500. Shipments : 1892, 8,140 yards ; 1893 (to 1st Nov.), 10,300 yds.

QUESNELLE FORKS CANAL AND HYDRAULIC MINING CO., Ltd.

Incorporated 1893. Authorized Capital, $300,000, in shares of $100.

Directors :

J. Lewan, | C. Y. Gowan,
W. P. Sayward, | Wm. Wilson,
F. S. Barnard, M.P.

Head Office : Victoria, B.C.

Formed to take over and operate certain water rights, and for bringing a ditch or canal to the bench lands in the neighborhood of the North and South Forks of the Quesnelle River, Cariboo district, in the Province of British Columbia, etc.

QUESNELLE QUARTZ MINING CO. Ltd.

Incorporated 20th August, 1878. Authorized Capital, $600,000, divided into 600,000 shares of a value of $1 each.

Directors:

Hon. James Reid,
James Mason, | D. W. McDonald,
W. A. Johnston, | Robt. McLeese.

Head Office: W. A. Johnston, Secretary, Quesnelle, B.C

This company owns 103 acres of mineral land, situate in Hixon Creek, in the Cariboo district, in the Province of British Columbia. A good deal of preliminary work has been done on the claim, but further operations were suspended during 1890, and have not yet been resumed. Estimated value of plant $17,485.

RABBIT MOUNTAIN MINING CO.

Fred W. Wieland, *Superintendent*, Beaver Mines, Ont.

Owns mining locations 39T and 40T in the Thunder Bay District, Ont. Mines situate five miles from Stanley Station on the Port Arthur, Duluth and Western R.R., and 25 miles from the town of Port Arthur. Equipped with two double drum hoisting engines; one 80 h. p. and one 70 h. p. boiler; one 16 x 24 Ingersoll compressor; four Ingersoll drills; Worthington and Blake pumps; Blake rock-breaker; 10 stamp mill, etc. Operations were carried on in the winter of 1893, but were stopped at date of going to press in consequence of low price of silver.

RATHBUN COMPANY.

Incorporated by Dominion charter, 1883. Authorized Capital, $2,000,000, of which $1,500,000 has been subscribed and paid.

Directors:

F. S. Rathbun, | E. W. Rathbun, | H. B. Rathbun.

Head Office. E. W. Rathbun, Managing Director, Desoronto, Ont.

While extensively engaged in other lines of business, this Company operates works for the manufacture of porous and ornamental terra cotta, pressed brick, drain tile and other products at Deseronto, Ontario. Clay is furnished from the properties of the Napanee Cement Works, at Napanee, (a branch of the same company). Sixty persons employed. The average yearly output is estimated at: 5,000,000 pressed brick; 7,500 tons terra cotta; 250,000 drain tile.

RAT PORTAGE MINING CO., Ltd.

Incorporated 1893. Authorized Capital, $3,000,000.

Directors:

E. Wilbur Barnes, | Albert B. Upton, | A. C. Boyce.

Head Offiee: Rat Portage, Ont.

Formed to mine and carry on a reduction works in the Lake of the Woods District, Province of Ontario. Being organized at date of report.

RAWDON ANTIMONY MINING CO., Ltd.

Incorporated 1890. Capital Stock, $50,000, in 5,000 shares of a value of $10 each.

Directors:

Robert McNaughton, Truro, N.S.,
B. F. Pearson, Halifax, N.S., | Fred. Annand, Halifax, N.S.

Head Office: B. F. Pearson, Secretary, Halifax, N.S.

Formed for the purpose of acquiring, holding, working, leasing, selling and conveying, any mines in the Province of Nova Scotia, and any mining rights or licenses, prospecting or otherwise, in, upon, or over any portion of said Province. The property is situate at South Rawdon, in Hants County, Province of Nova Scotia, and contains about thirty acres. Four shafts have been sunk, the deepest being thirty feet. After taking out a fair quantity of ore of good grade, the mine was shut down in the summer of 1891 pending negotiations for its transfer to a New York syndicate, and up to date has not been re-opened.

REED ASBESTOS CO.

Sole Owner:

Dr. James Reed, Reedsdale, Que.

The properties owned cover three hundred acres, and are known as lots 27, 28 and 29, range A, Coleraine, Que. Fifteen men were employed during five months in 1891. The output during that period was as follows: No. 1 grade, 10 tons; No. 2, 60 tons; No. 3, 70 tons. The engine and machinery equipment at date includes: two 60 h.p. boilers; one 16 x 24 Ingersoll air compressor; seven 3⅛ in. Ingersoll rock drills; one double-drum Ingersoll hoisting engine; and the necessary pumps, air receivers and attachments to make the plant complete, the whole being of a value of $12,000. Dr. Reed is also owner of 20,000 acres of mineral lands in Coleraine, Thetford and South Ham, containing antimony, asbestos, copper and iron deposits. The output of asbestos in 1892 was 6 tons No. 1; 60 tons No. 2; 30 tons No. 3; no work done in 1893.

REVELSTOKE MINING CO., Ltd.

Incorporated 27th November, 1889. Authorized Capital, £40,000, divided into 4,000 shares of a value of £10 each. Number of shareholders at last return, seven.

Directors :

Lionel R. M. Doyle, | H. Cecil Pelly.

Head Office :

Wm. Bailey, *Secretary*, 80 Lombard Street, London, E.C.

CANADIAN OFFICE :

F. Storer Brown, Secretary, 11 Notre Dame Street, Winnipeg.

The company owns and operates the "United" and "No. 1" silver lead mines, two miles from Hot Springs, (or Ainsworth,) in the Kootenay district, British Columbia. Twenty men employed.

Superintendent : J. Campbell, Revelstoke, B.C.

RHODE ISLAND MINING CO.

Organized 30th December, 1891.

Is now (January 1894), equipping property with light steam hoisting and pumping gear. The mine has produced 54 tons of quartz since starting, which yielded about ½ oz. to the ton. Ten men are employed on an average. Up to date has sunk a shaft 250 feet.

Manager : Norman Logan, Oldham, N.S.

RICHARDSON GOLD MINING CO.

Paid up Capital, $50,000. Organized 1892.

Directors :

A. N. Whitman,

G. A. Pyke, C. F. Andrews, | Thos. Spry, S. R. Griffin.

Head Office : C. F. Andrews, Manager, Isaac's Harbor, N.S.

Owns 126 gold areas at Gold Brook, in the Stormont district Nova Scotia. 32 persons employed 1893. Equipped with 30 h. p. boiler, winding engine, (3 drums, one 36 in., two 30 in. ; two Ball bucket pumps ; mill building 33 ft. x 50 ft. ; 20 stamps 850 lbs., driven by a 40 h. p. compound condensing engine. Equipped with ore breaker, automatic feeders, ore bins, etc. Gold yield, 1893 : 2,237 ozs., 18 dwt., 10 grs. from 6,048 tons quartz crushed.

RIDGETOWN CITIZENS' GAS CO., Ltd.

Incorporated 1893. Authorized Capital, $24,000, in shares of $25.00.

Directors:

H. Porter, Z. Watson, | J. McMaster, K. C. Young, | J. H. Melton, R. R. Lothian,
And J. L. Wallace, all of Ridgetown, Ont.

Head Office: Ridgetown, Ont.

Formed to bore for natural gas and to supply the same for fuel and light in the County of Kent, Province of Ontario.

RIVER HEBERT MINING CO., Ltd.

Incorporated 1892. Authorized Capital, $9,900 in 99 shares of a value of $100.

Directors:

Amos Seaman,
Gilbert Blenkhorn, Rufus S. Hibbard, | David W. Robb, Harvey Pipe.

Head Office: Harvey Pipe, Secretary, Amherst, N.S.

Formed to mine, quarry, etc., in the Province of Nova Scotia, and to take over the property formerly owned and operated by the Minudie Mining and Transportation Company at River Hebert, Cumberland County. Mine now being opened up.

Superintendent: Amos Seaman, Lower Cove, Cumberland Co., N.S.

R. J. DOYLE MANUFACTURING CO. OF ONTARIO, Limited.

Incorporated 1892. Authorized Capital, $100,000, in 2,000 shares of $50 each.

Directors:

R. J. Doyle, *President*,
R. J. Doyle, Jr., | Robert A. Stark, | J. D. Morgan, | D. C. McDonald.

Head Office: R. A. Stark, Secretary, Owen Sound, Ont.

Operates certain clay silicate beds in the township of Keppel, County of Gr[illegible], Ontario, and a works for the manufacture of cement and fire-proof paint, near Parkhead station, on the line of the Grand Trunk Railway. (For description of beds see Owen Sound Portland Cement Co.)

ROCKLAND GOLD MINING AND MILLING CO., Ltd.

Sole Owner:

H. K. Fisher, Isaacs Harbor, N.S.

The property acquired by Mr. Fisher was formerly owned and operated by the Gallahar Gold Mining and Milling Co., and is situate in the Stormont district, Guysboro' Co., in the Province of Nova Scotia. Only prospecting work done lately. The stamp mill, however, does a great deal of crushing for adjacent mines.

ROSEDALE PRESSED BRICK AND TERRA COTTA CO., Ltd.

Incorporated 1892. Authorized Capital, $30,000, in 300 shares of $100 each.

Directors:

L. Hine,

W. P. Jennings, C.E., | D. C. Ridout,
Thos. Parker, | J. D. Edgar.

Head Office: Thos. Parker, Managing Director, Toronto.

No information as to operations obtainable at date of going to press.

SAANICH LIME CO., Ltd.

Incorporated April, 1890. Capital, $50,000, in shares of $100 each.

Trustees:

Joseph Wriglesworth | Wm. Fernie, | Peter C. Fernie.

Head Office: Victoria, B.C.

Formed to acquire by purchase, operate and carry on, and extend the lime-kilns situate on Tod Creek and Highland district, now being carried on at the above named places, and the purchase of other lands on Vancouver Island, or in the Province of British Columbia.

SALISBURY GOLD MINING CO.

Incorporated 1892. Authorized Capital, $10,000.

Directors:

W. R. Butler, | F. W. Borden, M.P., | Barclay Webster, M.P.P.

Head Office: W. D. Sutherland, Secretary, Windsor, N.S.

Formed to acquire and work a porperty containing fifty gold areas, in the Montagu district, county of Halifax, Province of Nova Scotia. *Ross lode*: shaft 70 ft.; at a depth of 50 ft., tunnels driven east and west a distance of 70 ft..; width of lode in the drifts from four to seven inches. *Skerry lode*: shaft 45 ft.; lode from two to five inches in width. *Maynard lode*: shaft 50 ft.; lode from three to eight inches. Equipped with five stamp mill and other plant.

Superintendent: G. H. Nissen, Montagu, Halifax County, N.S.

SALT SPRING ISLAND MINING CO., Ltd.

Incorporated 6th May, 1889. Authorized Capital, $40,000, divided into 8,000 shares of a value of $5 each.

Directors:

John Braden, J. Brethour, | J. L. Stamford, Henry Brethour, | L. Dickinson, Julius Brethour.

Head Office: L. Dickinson, Secretary, 113 Douglas Street, Victoria, B.C.

Formed to work and develop mines, and acquire lands, water rights, etc., on Salt Spring Island and to do all acts and things requisite or convenient for effecting the purposes aforesaid. The property owned consists of some twenty-one acres of mineral land, situate on Salt Spring Island, Province of British Columbia. During 1890 and 1891 a small force (6 men) was at work doing preliminary work. Machinery will be put in in the spring of 1893, when more extended operations will be commenced.

SARNIA SALT CO., Ltd.

Incorporated 28th July, 1892. Authorized Capital, $20,000, in 400 shares of $50 each.

Directors:

Harrison Corey, Petrolia.
Martin J. Woodward, Petrolia, Henry H. Green, Tp. of Moore, | Wm. Kenleyside, Sarnia, J. H. Kittemaster, Tp. of Moore,

Head Office: J. Woodward, Secretary, Sarnia, Ont.

Formed to acquire the plant, premises, business, stock-in-trade, credits and assets of every kind and description of the Sarnia Salt Co., and to carry on the business of the said company in the production and manufacture of salt and all other articles that may be made therefrom. Operates at Sarnia a well 1,600 feet at date.

SAULT STE. MARIE NICKEL MINING AND CONTRACT CO.

Incorporated 1891, under the laws of the Province of Ontario. Authorized Capital, $45,000, in 9,000 shares of $5 each,

Directors:

John McKay, *President*,
J. Dawson, | D. M. Brodie, | E. S. B. Sutton, | L. F. Bedford.

Head Office: D. M. Brodie, Secretary, Sault Ste. Marie, Ont.

Formed to explore, develop and treat nickel and other minerals, and to establish agencies in the United States and Great Britain for the sale of mineral, timber, agricultural and other lands, etc. Have purchased the north-east quarter of Lot 6, Concession 8, in the Township of Drury. Expect to do some mining work in the spring of 1894.

SHAFER GOLD AND SILVER MINING CO.

Registered 16th December, 1892. Authorized Capital, $400,000.

Thomas Johnson, *President and General Manager.* | G. E. Dickson, *Secretary.*

Head Office: Ellensburg, Wash., U.S.A.

Canadian Office: Ainsworth, B.C.

Formed to carry on the business of mining for gold, silver, copper, lead, zinc and other minerals in British Columbia, the State of Washington, and at other places in the United States and in British North America.

SHEBANDOWAN MINING CO.

Incorporated under the Ontario Joint Stock Companies Letters Patent Act, 25th March, 1875. Capital, $1,000,000, in 100,000 shares of $10 each, fully paid up.

Directors:

J. J. Vickers, *President*, Toronto,

Walter McDermott, New York, | M. L. Sibley, Detroit.

Nicol Kingsmill, *Sec.-Treasurer*, Toronto.

Head Office: Toronto, Ont.

The property owned by this Company consists of mineral locations: A1, containing 228 acres; A2, 320 acres; A3, 302 acres; A4 and A5, 462 acres; A6, 379 acres; A7, 300 acres; 26 B, 180 acres; 27 B, 323 acres; 28 and 25 B, 404 acres; 29 B, 321 acres; 30 B, 320 acres; 31 B, 320 acres; 32 B, 320 acres; 33 B, 160 acres; 34 B, 160 acres; 4 H, 160 acres; 5 H, 320 acres; 6 H, 160 acres; 7 H, 320 acres; 8 H, 320 acres; 9 H, 80 acres, containing in all 5,859 acres, situate near Jack Fish Lake, in the township of Moss, in the district of Thunder Bay, Ont. Not in active operation 1893.

SILVER CENTRE MINING CO., OF ONTARIO, Ltd.

Incorporated 20th June, 1890. Nominal Capital Stock, $300,000, in shares of $10 each. Of the $300,000 Capital Stock, $200,000 have been allotted to the owners of the location R 64 in consideration of conveyance of same to the Company.

Directors:

John Flett, *President*,

Lt.-Col. G. A. Shaw, | Henry Lowndes, | S. J. Dawson, | R. Caddick,
S. C. Duncan Clark, | Robert McClain, | O. A. Howland, | W. H. Hunter,
Thomas Claxton,

Head Office: W. H. Hunter, Secrecary, 17 Equity Chambers, Toronto, Ont., Cor. Adelaide and Victoria Streets.

Formed to acquire, work and further develop mineral lands in the Province of Ontario, more particularly mining location R 64, in the Township of Lybster, in the district of Thunder Bay. The property contains 160 acres freehold, situated in the Silver Mountain region of Thunder Bay district, and is within 40 miles of Port Arthur, the head of navigation on Lake Superior.

SILVER LAKE MINING CO.

Incorporated under the laws of the State of Minnesota, 23rd April, 1888. Anthorized Capital, $2,000,000, in shares of $10.

Directors:

H. R. Tinkham, | Emery Tinkham,
A. D. Cummings, | J. H. Hillyer.

Head Office: Emery Tinkham, Secretary, 216 E. 4th Street, Duluth, Minn.

Formed to acquire and develop a property containing eighty acres of mineral land in the district of Thunder Bay, Ontario, on which some prospecting for silver has been done to date.

SILVER QUEEN MINING CO.

Incorporated 1892. Authorized Capital, $1,000,000.

Directors:

G. W. Stephens, Montreal.
Wm. Dalby, Victoria, B.C., | Dr. Lefevre, Vancouver, B.C.,
Wm. Strachan, Montreal, | F. J. Claxton, Victoria, B.C.

Western Office: Fred. J. Claxton, *Secretary*, Victoria, B.C.

Head Office: G. W. Stephens, President, 18 St. Alexis St., Montreal.

Formed to purchase and carry on mining on the Silver Queen mining claim, situate on Toad Mountain, in the Kootenai District, British Columbia. Mine distant by waggon road from the town of Nelson, six miles.

Managing Director: J. E. Boss, Spokane, Wash.

SIMILKAMEEN GOLD GRAVELS EXPLORATION CO., Ltd.

Incorporated under the laws of British Columbia, August, 1893. Authorized Capital, $100,000, in 4,000 shares of $25 each.

Directors:

T. R. Morrow, | Dr. W. H. Kendall, | A. H. Chaldecott, | J. M. Smith,
H. C. Chamberlin, | H. G. Ross, | R. Casement.

SIMILKAMEEN GOLD GRAVELS EXPLORATION CO.—Continued.

Head Office: Chas. E. Hope, Secretary, Hastings St., Vancouver, B.C.

The alluvial ground operated by this company contains 480 acres, under lease, and is situate on the Similkameen River, at a point near the settlement of Princeton, in the Similkameen District, Province of British Columbia. Opened by three shafts of an average depth of 30 ft., and an adit 60 ft. The average value of the gravel is reported to be from 15 cents to 33 cents per yard, and the cost of working 6 cents per yard. Small working force employed.

SIWASH CREEK BEDROCK FLUME CO., Ltd.

Incorporated March, 1893. Authorized Capital, $50,000, in shares of $10.

Directors:

George de Wolff, | Henry T. Ceperley, | Johann Wulffsohn,
J. M. Buxton, | Edward Mahon.

Head Office: Vancouver, B.C.

Formed to take over and acquire three mining leases known as the "Siwash Creek Syndicate Leases," situate on Siwash Creek, Yale District, B.C., granted to J. T. Nelson, B. F. Dunn and W. H. McLaren; to carry on the business of hydraulic or other process or processes of mining; to own and construct ditches, flumes or other systems of water ways; to purchase, own, operate, lease and sell or lease mines, minerals, and water and water ways; to acquire water leases and water rights from the Government, etc.

SIWASH CREEK GOLD MINING COMPANY, Ltd.

Incorporated 1893. Authorized Capital, $500,000 in shares of $10.

Directors:

Chas. T. Dunbar, | E. L. Phillips,
B. T. Rogers, | C. J. Lowean,
C. St. A. Pearce, | M. W. Elphinstone.

Head Office: Vancouver, B.C.

Formed to take over the benefits of three mining leases, dated respectively the 9th day of December, 1891, between George Christie Tunstall, Gold Commissioner, of the one part, and John P. Roddick, of the other part, recorded the 11th December, 1891, 26th January, 1893, and made between G. C. Tunstall, Gold Commissioner of the one part, and Charles T. Dunbar of the other part, recorded 22nd March, 1893, and the 25th day of January, 1893, and made between G. C. Tunstall, Gold Commissioner, of the one part, and J. C. Keith, recorded 22nd March, 1893; all now vested in William Farrel, E. Lindsay Phillips, and Charles T. Dunbar, subject to an agreement dated the 18th day of September, 1893, between the said William Farrel, E. Lindsay Phillips, and Charles T. Dunbar, and C. St. Aubyn Pearse, and Mount Stewart William Elphinstone, to carry on the business of mining and all that pertains thereto, and to procure, by purchase or otherwise, mine and work ores, minerals, and metallic substances, and compounds of all kinds, etc.

SLOUGH CREEK MINING CO.

Incorporated under the laws of the State of Washington, in January, 1892. Authorized Capital, $500,000, divided into 500,000 shares of a value of $1 each.

Directors:

W. H. Fife, *President*,

W. J. Magee, Hon. Henry Drum, | Hon. John Grant, J. D. Caughran, | E. N. Ouimette, Chas. Ramos.

Head Office: W. F. Sargent, Secretary, Tacoma, Wash.

Formed for the purpose of acquiring and developing mines, principally the auriferous alluvial deposits in the Cariboo district, Province of British Columbia. The company controls and operated in 1893 a fifteen-year lease of a grant from the local Government, embracing an area three miles in length, by one-half mile in width, of the bed or valley of Slough Creek.

SPOKANE AND GREAT NORTHERN MINING CO.

Incorporated under laws of the State of Washington, 1892. Authorized Capital, $2,000,000; Supplementary articles filed January, 1893, increasing Capital to $5,000,000. Registered in British Columbia.

Directors:

H. C. Walters, *President*,

A. B. Keeler, *Secy.*, and *Treas.*, | H. M. Hoyt, *Vice.-Pres.*,

Chester F. Lee, *Manager.*

Head Office: 319 Rookery, Spokane, Wash.

Branch Offices:

104 Yates St., Victoria, B.C.; 414 Pullman Building, Chicago, Ills.; 105 N. Broadway, St. Louis, Mo.; Hotel Fife, Tacoma, Wash.

Formed to operate in the Pacific North-West. Owns in Boundary Creek camp, Kettle River Division, Yale District of British Columbia:—*Gold Claims:* "Mountain Chief," "Great Northern":—*Silver Claims:* "Providence," "Skylark," "Defiance," "Elkhorn," three-quarters, "Tacoma," one-quarter, the "D. A." and "S. F.":—*Silver-lead:* "American Boy," "Uncle Sam," one-half. Placer ground on Boundary Creek, 160 acres. In Fairview Camp, Osoyoos Division of Yale District, B.C.:—*Gold:* "Valley View," one half.

Work for the season of 1893 consisted in doing assessment on the above claims, and in exploring the Providence and Skylark claims to a considerable extent. On the former, a shaft was sunk to the depth of 75 feet, (will be 100 feet by January 1st, 1894), and drifts run at depth of 60 feet East and West in the ore. The ore struck is from 5 to 12 inches. Shipments have been made to Tacoma smelter, first carload 223 oz. silver, $107 gold per ton. Second carload, 386 ozs. silver, $20 gold per ton. Sorted ore now ready for shipment, goes 500 ozs. per ton.

SPOKANE AND GREAT NORTHERN MINING CO.—Continued.

On the Skylark. "A" shaft was sunk 45 feet, and "B" shaft 20 feet. Some drifting and stoping was done, and a carload of ore shipped, which returned 218 ozs. silver, and $20 gold per ton. The necessary buildings were erected at both these mines, and at the Skylark an assay office and store-house built. On the Providence a shaft house and ore house has been built. A new trail has been cut from Skylark Camp to Grand Prairie, a distance of 12 miles.

STADACONA SILVER-COPPER MINING CO.

Incorporated 1891. Authorized Capital, $100,000.

Directors:

Wm. Wilson, *President*,

J. E. Boss, P. C. Dunlevy, F. J. Claxton, W. H. Ellis,

Head Office: F. J. Claxton, Secy.-Treas., Victoria, B.C.

Manager: J. E. Boss, Nelson, B.C. (resides Spokane, Washington, U.S.A.)

This company owns and operates the "Grizzly Bear" mining claim, located on Toad Mountain in the Kootenay district, Province of British Columbia. The ore is the same in character and value as that of the "Silver King." It is estimated that the first-class ore will run about 200 oz. in silver, and from 18% to 20% in copper; the second class, 80 oz. in silver and from 10% to 15% in copper. The ore bodies average from 4 to 5 ft. of this character of ore.

STANDARD ASBESTOS CO., Ltd.

Incorporated October, 1890. Authorized Capital, $100,000, divided into 100 shares of $100 each.

Directors:

Hon. J. E Campbell, Hamilton, Ohio, F. J. Falding, Cleveland, Ohio, D. Ufford Jennings, New York, R. H. Martin, Brooklyn, N.Y.

Head Office: D. U. Jennings, Secretary, 59 Broadway, New York.

CANADIAN OFFICE:

J. E. Harrison, Supt., Bridgewater, Ont.

Formed to acquire by purchase, lease, location or otherwise, and hold asbestos and other mineral lands, locations, mining rights, limits or any interest therein; or lands supposed to contain minerals or any interest therein. The property acquired contains 200 acres, and is situate in the Township of Elzevir, in the County of Hastings, Province of Ontario. Some development work done in 1893.

STANDARD GOLD CO.

(See also Oldham Gold Company.)

Organized 1891. A private company consisting of the following :

Owners:

John E. Hardman, M.E., Oldham, N.S. | Frederick Taylor, Lowell, Mass.

Head Office: John E. Hardman, M.E., Oldham, Nova Scotia.

This company holds a property containing 384 gold areas, situate in the district of Oldham, Halifax county, Province of Nova Scotia. Mines situate about three miles from Enfield station on the main line of the I. C. Railway. Property operated since 1884. East shaft (Dunbrack lode), 470 feet; main shaft, 480 feet, connected with East shaft by 150 ft., 300 ft., 350 ft. and 450 ft. levels. Levels have been driven for over 4,000 ft. on the vein. Aggregate openings 6,500 ft. Average persons employed 35. Plant comprises: steam winding engine, 15 h.p., cylinder 9 x 8, drum 36 x 30; Rand compressor operating five drills; one pumping engine operating 5 in. Cornish pump. Quartz is crushed by contract with the Oldham Gold Co. at its mill.

STANSTEAD GRANITE CO., Ltd.

Incorporated in 1893 by Dominion Charter. Authorized Capital, $100,000, in shares of $100.

Directors:

Hugh W. Elder, | John W. Elder, | Jean B. Fregeau.

Head Office: Stanstead Junction, Que.

Formed to acquire and work granite or other quarries in Canada. Being organized at date.

STAR GOLD MINES.

E. B. Haycock, Owner, 46 Sparks Street, Ottawa.

Louis Gendreau, *Manager*, Jersey Mills, Beauce Co., Que.

These mines are situate on a property extending over 1,500 acres, on the bank of the River du Loup, and are situate about one mile from the village of Jersey Mills, and twelve miles from St. Francis station, on the line of the Quebec Central Railway. Prospecting in bed of River Du Loup has been very satisfactory, proving the gravel and bed rock rich in gold. There has been built a drainage and power dam 260 ft. long 8 ft. high with a face 24 ft. This dam was in 1893 widened 6 ft. so as to allow of raising 6 ft. higher, making 14 ft. head. There are on this property between 20 and 30 quartz veins, several have been uncovered and equipped with suitable testing plant. The machinery comprises engine and boiler, three stamp prospecting mill, &c. Mill tests of three of the veins have been made, giving from $5 to $15 to the ton.

STRAIGHT LAKE MINING CO.

Incorporated 11th November, 1891. Authorized Capital, $300,000, in shares of $5.

Directors :

W. B. McMurrich, Q.C., *President*,

James Todhunter, W. D. Wilson, | John Bruce, Dr. A. R. Gordon, | Dr. T. H. Graham, W. S. Tennant.

Head Office : Henry Vigeon, Sec.-Treas., 27-29 Wellington St. E., Toronto.

Formed for the purpose of carrying on mining operations in the district of Algoma in the vicinity of Straight Lake and elsewhere, in the Province of Ontario. The property owned is known as lot IX in the 6th concession, township of Moncrieff, 155½ acres in extent. Operations to be commenced in spring of 1894 on an extensive scale.

STRATHROY OIL CO., Ltd.

Incorporated 1894. Authorized Capital, $100,000 in shares of $100.

Directors :

G. A. McGillivray, London, Ont.
D. B. Lindsay, Strathroy, | Chas. Grist, Strathroy.

Formed to carry on the business of producing crude petroleum, oil, etc., in the Township of Enniskillen, County of Lambton, Province of Ontario.

STRATHYRE MINING CO.

Incorporated by Dominion Charter, 1893. Authorized Capital, $125,000, in shares of $100. To be increased to $500,000.

Directors :

E. D. Reynolds, *Managing Director*,

R. B. Angus, | Sir Chas. Tupper, | Duncan McIntyre, | T. D. Shaugnessey.

Head Office : Henry Cutt, Secretary, 157 St. James Street, Montreal.

Mines Office : Geo. Attwood, M.E., F.G.S., Consulting Engineer, Fairview Camp, via Vernon, B.C.

Formed to acquire by purchase, location or otherwise, a tract of mineral lands in the Province of British Columbia and elsewhere, in the Dominion of Canada, and to work and develop the resources of the same. In 1893 owned and operated the claims at Fairview Camp, Osoyoos district, Okanagan Valley, B.C., known as the "Brown Bear," "Rattler," "Ontario," "Wynn M" and "Wide West." The property includes water rights, mill sites, offices, assay office, dwelling houses, etc. Mill building, 75 ft. x 60 ft. ; 10 stamps, each 750 lbs., drop 80 p.m., driven by steam and

equipped with Challenge ore feeders, six frue vanners, etc. "Brown Bear" mine, worked by a cross-cut tunnel, not yet in on all the veins, two of which have been cut and three more on surface to be found. Veins from 3 to 16 feet, carrying gold from $4 to $12 per ton, as ascertained by working tests. "Wide West" mine worked by tunnel driven longitudinally on the vein, which yields gold in value from $7 to $14 per ton.

STYLES MINING CO., Ltd.

Incorporated 1874. Capital Stock, $500,000, divided into shares of $50 each, of which to date $300,000 has been subscribed and paid up.

Directors:

Lt.-Col. Chas. J. Stewart, *President*, Halifax, N.S.,
Hon. Judge Townshend, Halifax, N.S., | J. S. Hickman, Amherst, N.S.
J. Robson Lamy, Amherst, N.S.

Head Office: J. N. Sharpe (Interim Sec.), Amherst, N.S.

This Company holds under lease some five square miles of coal areas at Stanley, Cumberland County, Province of Nova Scotia. Not in operation.

SUDBURY MINING CO., Ltd.

Incorporated 28th December, 1888. Capital Stock, $100,000, in 10,000 shares of $10 each, payable 25 per cent. on allotment, 25 per cent. in thirty days, and balance on call of not less than thirty days.

Directors:

D. George Ross, *President*, | R. McClain, *Vice-President.*

Head Office: Geo. Dunstan, Sec.-Treasurer, 106 Bay Street, Toronto, Ont.

Formed to acquire and work the north half of lot 6, 3rd concession, township o Denison, in the Province of Ontario, consisting of 160 acres. Some prospecting was done in 1891, showing a promising deposit of nickel, but no mining in 1892.

SULTANA GOLD MINE.

John F. Caldwell, Winnipeg, *Owner*, | J. Ralston Bell, *Manager.*

Situated on Sultana Island, Lake of the Woods district, Province of Ontario. Opened by three shafts, of which at date of report the main, or No. 1, was down 150 ft., and the others about 40 ft. Equipped with 10 stamp mill, steam driven, stamps 350 lbs., drop 90 p.m.; Bullock automatic feeder; two improved frue vanners; Blake rock breaker; Jenckes hoisting engine; Rand "Little Giant" rock drills, etc. A force of about 30 men employed in 1893, but no returns of quantity of gold milled obtainable.

SYDENHAM MICA AND MINING CO.

Incorporated 10th May, 1889. Capital Stock, $250,000.

Directors:

Isaiah Smith, Sydenham, Ont., *President*,

J. P. Lacey, Sydenham, Ont., | J. L. Armitage, Newark, N.J.,
Dr. R. L. Burrage, Newark, N.J., | H. S. Dunn, Newark, N.J.

Head Office: Jonathan P. Lacey, Secretary-Treasurer, Sydenham, Ont.

This Company acquired the mineral properties formerly owned and operated by Messrs. Isaiah Smith & Co., of Sydenham, and now carry on the business of miners, shippers and dealers in mica, phosphate and other minerals. The Company operates the Eel Lake and other mines in the township of Loughboro', Ont.

SYDNEY AND LOUISBURG COAL AND RAIL CO., Ltd.

The properties of the company in Cape Breton having been acquired by the Dominion Coal Co., Ltd., it is now being wound up.

SYMON-KAYE SYNDICATE, Ltd.

Incorporated August, 1892. Authorized Capital, £12,000 stg., in £1 shares.

Directors:

C. O. Rogers, | Patrick C. Don, | Alfred Woodhouse.

Head Office: 5 Lawrence, Pounteny Hill, London, E.C., England.

CANADIAN OFFICE: Montagu, N.S.

The company controls 108 gold areas in the Montagu district, Halifax county, Nova Scotia. Mines at Montagu, five miles by road from the city of Halifax. The gold yield 1893 was 216 ounces from 280 tons rock crushed.

TACHE GOLD MINING CO. OF ONTARIO.

Incorporated 1892. Authorized Capital, $500,000, in shares of $1.

Directors:

J. S. Butler, *President*,

S. Barfoot, | S. V. Halstead, | N. H. Stevens, | G. C. Scott,
J. S. Butler, | J. H. Verrall, | G. A. Witherspoon, | C. Northwood.

Head Office: A. F. Falls, Secretary, Chatham, Ont.

Formed to acquire and work mineral lands within the district of Rainy River, Province of Ontario. At present opening up gold claims at a point nine miles from Rat Portage, in the Lake of the Woods district, Province of Ontario.

TEMPLETON AND NORTH OTTAWA MINING CO., Limited.

Registered 14th June, 1888. Authorized Capital, £50,000, in shares of £10 each.

Directors :

A. T. Paterson,

George Moffatt, | J. J. Greenshields, | Wm. Smith, | E. S. Clouston.

Head Office :

Messrs. Wm. Smith & Co., 10 Corn Street, Bristol, England.

CANADIAN OFFICE :

A. T. Paterson, St. Francois-Xavier St., Montreal, Que.

Formed for the purpose of adopting an agreement between Wm. Smith & Co., of the first part, the Bank of Montreal of the third part, and the Templeton and North Ottawa Mining Co. of the fourth part ; for the purpose of acquiring phosphate lands in the Templeton district, Ottawa County, in the Province of Quebec, in all 3,748 acres in extent. The consideration for the property was £25,000, in fully paid shares. In 1886 steam machinery was introduced at the "Sheppard Pit," lot 8, in 10th range, and mining carried on for about 16 months. During that period 574 tons of phosphate were raised, a large proportion of which showed high test, but the want of more efficient management being felt, and the proprietors being engaged in other lines of business which prevented their personal attention to the work, it was deemed advisable to suspend operations. In 1893, certain portions of the company's property were leased and worked on royalty, for mica.

TEMPLETON ASBESTOS MINING CO., Ltd.

Being wound up.

Liquidator : G. J. duCloux, 4 Hercules Passage, Threadneedle Street, London, E.C., Eng.

TENNYCAPE MANGANESE MINE.

Owners :

Shaw & Churchill, Walton, | A. C. Shaw, Windsor, N.S.,
D. W. McVicar, Tenny Cape, N.S.

Head Office : D. W. McVicar, Manager, Tenny Cape, N.S.

The property upon which this mine is situated contains 300 acres, held partly in fee simple and the balance under lease, subject to a royalty of $1 per ton, is located at Tenny Cape, in Hants County, Province of Nova Scotia. It has been worked by different parties since 1862. Acquired by present owners in 1892, during which period to date ore to the value of $25,000 has been raised. Equipped with a suitable plant, including engine and boiler, crushing and jigging machinery, pumps, etc.

TEXADA GOLD AND SILVER MINING CO.

Directors :

Joseph W. Stirton, J.P., *President*, Nanaimo, B.C.

Alfred Raper, Nanaimo, B.C., | E. A. Praeger, M.D., Nanaimo, B.C.
Elijah Priest, C.E., Nanaimo, B.C.

Head Office : Alfred Raper, Secretary, Box 21, Nanaimo, B.C.

This company's property consists of 800 acres of land, on Texada Island, B.C. The property adjoins the well known Puget Sound iron mine, and contains veins of silver, copper, gold and other ores. Limestone and black marble of a superior quality is also found thereon. In 1893 a small force was employed opening up property for copper.

Mine Superintendent : Elijah Priest, C.E., Texada Island, B.C.

TEXADA LIME CO.

Incorporated 9th July, 1889. Authorized Capital, $20,000, divided into 400 shares of a value of $50.

Directors :

Donald Menzies | Thomas H. Lee, | Robt. Mathison, jr.

Head Office : Thos. H. Lee, Vancouver, B.C.

Formed to erect and maintain kilns, wharves and store-houses on Texada Island ; and to quarry lime, stone and the making, composing, preparing, selling and disposing of lime and cement, etc. Property situate on the N.W. end of Texada Island in the Province of British Columbia. The output in 1890 was 6,000 bbls. ; in 1891, 9,000 bbls. ; 1892, 12,000 bbls. ; 1893, 11,000 bbls. An average force of twelve men employed. Estimated value of buildings, $5,000.

THETFORD ASBESTOS MINING CO.

Incorporated March, 1889, under Letters Patent from the Government of the Province of Quebec. Capital Stock, $200,000, in shares of $100 each, fully subscribed and paid up.

Directors :

A. H. Murphy, Montreal, Que.,

W. S. Patterson, Montreal, | George Irvine, Quebec,
J. T. Wilson, Montreal | J. C. Eno, Quebec.

Head Office : Thetford, Que.

The Company owns lots 30 and 31 in range A, lot 32 in Range B, and lot 28 in the 6th range, all in the township of Coleraine, Province of Quebec, in all about 500 acres of mineral bearing lands.

THOMPSON AND QUIRK GOLD CO.

Owners:

Messrs. Thompson & Quirk, South Uniacke, N.S.

A private company, organized to work certain gold areas at South Uniacke, in the County of Hants, Province of Nova Scotia. Official returns of the gold yield from October, 1889, to 31st December, 1891, report 3,201 ounces 15 dwt. gold from 298 tons rock crushed.

GOLD YIELD, 1892 AND 1893.

1892.... 1,803 ozs., 4 dwt., 18 grs., from 180 tons rock crushed.
1893.... 1,175 " 6 " 11 " " 115 " "

THOMPSON RIVER HYDRAULIC MINING CO., Ltd.

Incorporated 1893. Authorized Capital, $100,000, in shares of $10.00.

Directors:

John Hendry, | J. W. Vaughan, | Robert Jardine,
All of New Westminster, B.C.

Head Office: New Westminster, B.C.

Fromed to acquire and work certain placer claims on the Thompson River and its tributaries, Province of British Columbia.

THOS. NIGHTINGALE PRESSED BRICK CO. OF TORONTO.

Incorporated 1892. Authorized Capital, $50,000, in 1,000 shares of $50 each.

Directors:

Wm. V. Cook, Toronto, | M. Nightingale, Toronto, | Charles Henderson.

Head Office: Carson C. Cook, Manager, 67 Adelaide Street East, Toronto.

The operations of the Company are to be carried on in the counties of York and Peel, and the City of Toronto and elsewhere in Ontario. The works are at Port Credit, Ont.; 20 men employed.

THUNDER HILL MINING CO.

Incorporated 2nd February, 1892. Authorized Capital, $500,000, in shares of $10 each.

Directors :

J. Nicholles, Victoria, B.C.

W. J. Taylor, Victoria,	W. F. Bullen, Victoria,
J. S. Bowker, Victoria,	Foster Macgurn, Victoria,
F. T. Childs, Victoria,	D. R. Kerr, Victoria,
J. M. Browning, Vancouver,	Geo. Heywood, Gardner, Mass.

Head Office : W. H. Bainbridge, Secretary, Victoria, B.C.

This company holds seven mineral claims under lease and one freehold containing in all about two hundred acres, near Golden, in the East Kootenay district, Province of British Columbia. Claims carry silver, lead and gold ores. Twenty persons employed in 1892 developing property and erecting concentrating plant. Machinery, plant and buildings at date estimated to be of a value of $30,000.

Superintendent : James Brady, Thunder Hill Mine, Golden, B.C.

TILT COVE COPPER CO., Ltd.

Registered 4th April, 1888. Authorized Capital, £200,000, in shares of £2, £160,000 being ordinary, and the balance 10 per cent. preference. All the ordinary and £13,478 preference, have been issued and paid. There are also 5½ per cent. debentures for £80,000, redeemable only at the option of the company. In 1888-9 there was a deficit, after providing for debenture interest of £15,575, and in 1889-90, this debit was increased to £25,991. In June, 1890, the properties were leased for 99 years to the Cape Copper Company, Limited, at a rental of £4,400 per annum—sufficient to cover the debentures charges—the Cape Copper Co. have power to determine the lease at any time on giving twelve months' notice. The Cape Copper Co. were to advance £15,000 by way of loan to the Tilt Cove Company at 5 per cent. interest, and the whole of this amount has been paid ; the loan is to be repaid out of profits, surplus profits thereafter to be divided equally between the two companies.

Directors :

Thomas Cory,	J. C. Leaver,	John Taylor.
J. R. Francis,	John Reeves,	Col. J. W. Young.

Head Office :

E. C. Leaver, *Secretary*, 9 Queen Street Place, Upper Thames Street, London, E.C.

NEWFOUNDLAND OFFICE :

W. R. Toms, Tilt Cove, Newfoundland.

Formed to acquire certain copper and other mineral properties at Tilt Cove Twillingate district, Newfoundland. Five hundred persons employed 1893. The output to August 1st, 1893, was 70,251 tons and the shipments included 23,966 tons copper ore and 5,629 tons regulus. Equipped with an excellent mining and furnace plant.

The following is excerpted from the annual report presented to the shareholders November 20th 1893 :

"The ore and regulus produced from Tilt Cove contains sulphur, gold and silver in sufficient quantities to give them an additional value beyond that which would in an ordinary market apply to such poor assays of copper as they possess. Their treat-

ment, especially for gold, is somewhat novel, in view of the small quantity of it which the ores contain. The Cape Company has now, however, satisfied itself that the gold can at the present price be profitably extracted, and they have arranged with this company for prices for the ore and regulus which, in the opinion of the committee, meets the case fairly. A copy of the agreement which has been settled can be seen by the shareholders.

Now that the means of valuing the ores between this Company and the Cape Copper Company have been established, there will not be any delay in future in calling the General Meeting.

During the year under review a market for the ores obtained from this company's mines by the Cape Copper Company has been opened up with America. It presents favorable features, and with a very ordinarily good condition of the copper market, would give a fair profit on the ores sent there. Continued efforts will be made to encourage the extension of this outlet.

A copy of the report and accounts presented by the Cape Copper Company at their last general meeting, embracing a description of the progress and result of their operations on this company's property for the year under review, was sent to each registered shareholder of this company. They showed that the mines made a small gross profit, but that this was absorbed by the rents and interests incurred, and left a debit balance of £9,511 3s. 11d. on the profit and loss account. A copy of the account referred to is attached hereto.

In the accounts of this company presented herewith there is a credit for £3,327 15s. 8d. for stocks of copper ore at mines. From circumstances which have just occurred it is anticipated that when this stock is cleared off it will not be found to produce the value anticipated, but against this difference there exist large quantities of ores produced from old workings from which any such deficiency can be filled up.

The disappointing results of the operations since the work was taken over by the Cape Copper Company are mainly due to the very low prices for copper which have since ruled; the average price for the year embraced by the present accounts, compared with that existing at the date referred to, being equal to a difference of nearly £30,000 on the quantity of copper obtained from the mines during the year.

BALANCE SHEET, 31ST AUGUST, 1892.

Liabilities.

	£ s. d.	£ s. d.
Authorized Share Capital—		
80,000 Ordinary Shares of £2 each	160,000 0 0	
20,000 Preference " "	40,000 0 0	
	£200,000 0 0	
Issued: 80,000 Ordinary Shares, fully paid	160,000 0 0	
" 6,739 Preference " "	13,478 0 0	
		173,478 0 0
Debentures		80,000 0 0
Sundry Creditors—		
In England	3,718 1 2	
In Newfouddland	1,751 8 6	
		5,469 9 8
		£258,947 9 8

Assets.

	£ s. d.
Purchase of Freehold Land, Buildings, Plant and Machinery	220,000 0 0
Stocks of Copper Ore at Mines	3,327 15 8
Sundry Debtors—	
In Newfoundland	640 6 1
Cash in hand	69 15 3
Revenue and Expenditure Account	34,909 12 8
	£258,947 9 8

TILT COVE COPPER CO.—Continued.

REVENUE AND EXPENDITURE FROM 1ST SEPT., 1891, TO 31ST AUG., 1892.

	£	s.	d.	£	s.	d.
To Balance from last Account				34,379	8	5
Insurance				9	7	11
Debenture Interest	4,400	0	0			
Less from Cape Copper Company	4,400	0	0			
Interert and Discount				72	5	0
Rent, Salaries and Management, Cable Messages, Printing and Stamps				448	11	4
				£34,909	12	8
By Balance carried to Balance Sheet				£34,909	12	8

BALANCE SHEET FROM 1ST SEPTEMBER, 1891, TO AUGUST 31ST, 1892.

DR.

	£	s.	d.
To Sundry Creditors	9,482	19	0
Balance due to the Cape Copper Co., Limited	66,860	4	8
	£76,343	3	8

CR.

	£	s.	d.
By Boden's Level—for Expenditure	2,716	16	0
Sundry Debtors	3,200	16	11
Cash Balances	2,069	11	5
Buildings and Machinery	25,477	15	11
Stock of Materials at Mines and other Establishments	21,820	5	0
Stock of Ores and Regulus	11,375	7	6
Cost and Returns Account—for Balance of Account	9,511	3	11
Preliminary Charges	171	7	0
	£76,343	3	8

EAST MINE COSTS AND RETURNS ACCOUNT.

DR.

	£	s.	d.
To Mining Costs	19,480	11	1
Smelting Costs	32,755	0	8
Freight, Insurance and Swansea Charges	6.842	4	0
Balance—Gross Profit	1,034	2	6
	£60,111	18	3

CR.

	£	s.	d.
By Ores and Regulus	60,111	18	3

PROFIT AND LOSS ACCOUNT.

DR.

	£	s.	d.
To Balance from last year	2,005	13	1
Commission and Exchange	1,146	5	0
Interest and Discount—To Cape Copper Company, Limited	2,993	8	4
Rent	4,400	0	0
	£10,545	6	5

CR.

	£	s.	d.
By Balance brought down	1,034	2	6
Balance (to Balance Sheet)	9,511	3	11
	£10,545	6	5

TOAD MOUNTAIN MINING CO.

Incorporated 1892. Authorized Capital, $1,500,000, in shares of $1.00.

Directors:

Aaron H. Kelly, Nelson, B.C.,
C. Van Ness, Nelson,
Frank Fletcher, Nelson,
A. C. Muir, Nelson,
J. N. Glover, Spokane, Wash.,
H. O. Brown, Nelson,
F. B. Morse, Spokane, Wash.,
E. D. Ide, Spokane, Wash.,
N. McLean, Spokane, Wash.

Head Office: Nelson, B.C.

Formed to buy, sell, lease, let, handle, manage and control and prospect for mines and mineral claims of iron, gold, silver and other minerals in British Columbia.

TOBIQUE GYPSUM CO., Ltd.

Incorporated 1893. Authorized Capital, $200,000, consisting of $150,000 of 'A' stock, being ordinary stock of the company divided into 1,500 shares of $100 each, and $50,000 of 'B' stock, divided into 500 shares of $100 each, being preference stock, having preference and priority as respects dividends, at the rate of six per centum per annum thereon, and in the distribution of assets, with the provision that the holders of such preference shares shall have the right to select two directors if the board consist of five directors, and three directors if the board consist of seven directors. The amount of capital stock actually subscribed is $104,000, being $18,000 of preferred and $86,000 of common or ordinary stock.

Directors:

Fred. H. Hall, Woodstock, N.B. | John Connor, St. John, N.B. | J. Stratton, St. John.

Works: Parish of Gordon, Victoria County, N.B.

Formed to operate gypsum properties in the Parish of Gordon, Victoria County, Province of New Brunswick.

TOBIQUE VALLEY GYPSUM MINING AND MANUFACTURING CO., Ltd.

Incorporated 18th August, 1893. Authorized Capital, $50,000, in 500 shares of $100 each.

Directors:

G. P. Brophy, *President*,

Hon. John Costigan, | Hon. H. A. Connell, | John Heney, | J. B. Lynch.

Head Office: John P. Dunne, Secretary-Treasurer, Ottawa.

Formed to acquire and work the Arbuckle Plaster mine. The property contains 150 acres, owned outright, together with a mining lease of an area extending one square mile in the Parish of Gordon, Victoria County, Province of New Brunswick. In 1893 thirty persons employed. Value of machinery, plant and buildings, $14,000.

TORBROOK IRON CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia, assented to 19th May, 1891. Authorized Capital, $100,000, in 10,000 shares of $10, with power to increase the same to $250,000.

Directors:

Hon. Alexander Macfarlane, Wallace, N.S., *President*,

Chas. E. Stayner, Halifax, N.S., | R. G. Leckie, Londonderry, N.S.,
J. Medley Townshend, Amherst, N.S. | R. G. E. Leckie, Torbrook, N.S.

Head Office: R. G. E. Leckie, General Manager, Torbrook, N.S.; J. P. Edwards, Secretary, Londonderry, N.S.

The company holds in fee simple and under lease an area containing 2,000 acres of mineral lands, traversed by beds of iron ore, in Annapolis county, Province of Nova Scotia.

Torbrook Iron Mines: situate at Torbrook; connected by branch line with the Windsor and Annapolis railway at Wilmot station; ninety persons employed 1892, same in 1893; monthly output, 2,700 tons; ore bed of red hematite averages 6 feet; opened by four shafts, each about 200 ft. deep; average of analyses gives 56 per cent. metallic iron.

Machinery equipment comprises two 75 h. p. and one 20 h. p. boilers; one Ingersoll four drill compressor; four drum (2 ft. 2 in. each), friction hoisting plant, and one single drum winding engine, stroke 2 ft., dia. of drum, 3 ft.; Rand and Ingersoll air drills; four Blake pumps, 2 in. water col., discharging 52 gals. per min.; one 6 in. Cornish plunger pump, 4 ft. stroke, 5 in. water col., discharging 100 gals. per min.; one 4 in. Cornish plunger pump, 4 ft. stroke, 5 in. water col.; one 30 h. p. horizontal engine operating pump; and one 20 h.p. horizontal engine operating friction gear; two Cameron steam pumps.

OUTPUT.

1891	10,000 tons.
1892	18,000 "
1893	30,000 "

TORONTO CHEMICAL SMELTING CO., Ltd.

Incorporated 1892. Authorized Capital, $100,000, in shares of $50, of which $40,000 has been subscribed and $30,000 paid at date of distribution.

Directors:

James Scott, Toronto, *President*,
O. B. Shephard, Toronto, | C. G. Richardson, Toronto,
Henry Shephard, Orillia, Ont., | W. H. Russell, Waubaushene, Ont.

Head Office: C. P. Stocking, Secretary, Toronto; C. G. Richardson, Chemical Engineer, 56 Colborne St., Toronto; A. B. English, C.E., General Manager, Port Colborne.

Formed to carry on the business of purchasing and treating all manner of ores, and their by-products, and to carry on in all its details the business of smelting and refining of nickel and copper ores. Works at Port Colborne for the purpose of testing certain processes of refiniug and separating these metals.

TORONTO GRANITE CO.

Incorporated Sept., 1891. Authorized Capital, $45,000, in 900 shares of $50 each, of which, at date of last return, $13,000 had been subscribed and $10,000 paid.

Directors:

N. F. Anderson, | A. W. Anderson, | E. Van Zant,
A. Anderson, | H. Anderson.

Head Office: N. F. Anderson, Secretary, 204 Jarvis Street, Toronto, Ont.

Formed to quarry, manufacture and deal in granite, etc, The property owned by the company consists of two lots (No. 4 and 5), at Oshawa, and one at the village of Flesherton, in the township of East Whitby, Province of Ontario. Small working force employed in 1891. Estimated value of machinery, buildings, etc., at last report $3,000.

TORONTO LIME CO., Ltd.

Incorporated 1885. Authorized Capital, $70,500, in shares of $100.

Directors:

Thos. Gowdy, | John Damp, | Fred. D. Brown,
George Farquhar, | John Moore, | William Bell.

Head Office: W. L. Scott, Secretary, 118 Esplanade St., Toronto.

Owns and operates a property containing 58 acres at Limehouse township, county of Halton, Ontario. Small force employed. Equipped with machinery and buildings of an estimated value of $30,000.

TORONTO LIME CO.—Continued.

Output 1890:—	164,288	Bushels	Gray	Lime	Cement.....	4.771 Bbls.
" 1891:—	152,738	"	"	"	"	3,140 "
" 1892:—	115,850	"	"	"	"	3,738 "
" 1893:—	94,032	"	"	"	"	2,986 "

Superintendent: John Moore, Limehouse, Ont.

TORONTO PRESSED BRICK AND TERRA COTTA CO.

Incorporated 1888. Authorized Capital, $200,000.

Directors:

Huson Murray, Q.C., Toronto, *President*,

R. C. Dancy, | Hon. G. C. McLindsey, | H. N. Dancy, | A. C. Macdonell, C. B. Murray.

Head Office: E. W. Wyatt, Mgr., Room 12, Yonge St. Arcade, Toronto.

This is the oldest company of its kind in Ontario; carries on operations near Milton on the line of the Credit Valley Railway, Ontario. The company has an extensive plant, consisting of an engine and a boiler of 105 h.p., grinding and refining machinery, three power presses, five hand presses for fancy brick and tile, pug mills to prepare clay for terra-cotta work, and seven kilns with a total capacity of 750,000. Tne average capacity of the presses is 30,000 per day of ten hours.

The product of the work is chiefly pressed brick, red, brown, buff and white in colors; but a specialty is also made of moulded and ornamental brick, terra-cotta in pattern for walls and interior decorations, and tile for roofing, including in the latter finals, hips, valleys and angles. 60 men employed.

TORONTO AND ORILLIA STONE QUARRY CO.

Incorporated January, 1893.

Directors:

Wm. Britnall, | Joseph Tait, M.P.P,, Toronto, | E. C. Wainwright, C. A. Masten, | A. Tait.

Head Office: Orillia, Ont.

At date of report was being organized to acquire and work a limestone quarry, situate on the westerly shore of Lake St. Jean, in the township of Ramas, Ont., owned by Mr. A. Tait, of Orillia.

TOUQUOY GOLD MINE.

Estimated capital invested to date, including purchase of property, machinery, erection of buildings, development of mine, labor, etc., $50,000.

Owner:

Damas Touquoy, Moose River Gold Mines, Mid. Musquodoboit Harbor, Halifax County, N.S.

Owns and operates the Touquoy gold mines, in the Caribou district, Halifax Co., Nova Scotia, containing a leasehold from the Crown covering 55 gold areas. Mines worked since 1877; the present owner reports that during the past seven years he has won gold to the value of $110,000. Equipped with 15 stamp mill driven by a Little Giant turbine, 40 h.p.; stamps weigh 675 lbs.; drop, 50 to 60 per m., and other plant.

TREASURE GOLD MINE CO.

Organized 1892. A private company.

Owners:

J. H. Webster, Cleveland, Ohio,
E. A. Angell, Cleveland, | E. W. Gaylord, Rat Portage, Ont.

Canadian Office: E. W. Gaylord, Mine Manager, Rat Portage, Ont.

Formed to acquire and work certain mineral properties in the Lake of the Woods district, Ontario. In 1892 acquired the Trearure gold mine, situate at a point about two miles south of Rossland station, on the line of the Canadian Pacific Railway and nine miles from the town of Rat Portage. The property was being opened at date of writing, a force of ten men being employed. Expect to equip mine with working plant in 1894.

TRURO COAL MINING CO.

Incorporated 1892. Authorized Capital, $49,000, in shares of $50.

Officers:

T. G. McMullen, Truro, *President*,
J. W. Johnson, *Treasurer*, — George Ross, Truro, *Secretary*.

Head Office: George Ross, Secretary, Truro.

This company is a reconstruction of the Colchester Coal Co. (Ltd.), and has been formed to operate certain coal areas, and particularly those situate at North River, near Onslow, in Colchester County, Nova Scotia. In 1893 a good deal of work was done opening up the property. At a depth of 152 ft. has 38 in. seam of coal. The clay overlying the coal is reported to be of superior quality for fire brick.

TULAMEEN HYDRAULIC AND IMPROVEMENT CO., Ltd.

Incorporated 1891. Authorized Capital, $60,000.

Directors:

R. G. Tatlow, Vancouver, B.C.,
J. Armstrong, New Westminster, B.C. | D. McInnes, Victoria, B.C.

Head Office: J. Walker, Secretary, New Westminster, B.C.

Formed for the purpose of acquiring and consolidating certain leases known as the "Tulameen," the "Hines Creek" and the "Eagle Creek," claims situated on

TULAMEEN HYDRAULIC AND IMPROVEMENT CO.—Continued.

the Tulameen River, in the Yale division of British Columbia. The workings are distant from Kamloops station on the line of the C.P.R., about 125 miles by waggon road and trail. The claims owned by the Company extend from Eagle Creek a distance of two and a half miles down the Tulameen River, and contain large benches or alluvial deposits of platinum and gold bearing gravel.

In his report upon the property Mr. G. Attwood, M.E., F.G.S., says: "For cutting timber and making boards, etc., a saw-mill has been erected near the junction of the Tulameen River with Eagle Creek. The power employed consists of an over-shot wheel 20 ft. in diameter with a 4 ft. breast which drives a 40 inch (in diameter) circular saw, having a capacity of making from 1,000 to 4,000 ft. of boards a day. Across the Eagle Creek a dam has been constructed of heavy stones and logs in a deep gorge which forms almost a natural dam, is about 25 to 30 ft. across and is about 10 ft. deep in the centre. A water flume about one mile in length carries the water from the dam to the present point of hydraulic working. The flume is made of 1½ inch plank and is 5 ft. wide in the clear, and 20 inches high, except a short distance at the lower end where it is about 11 in. high. The general grade of the flume is ½ in. in 12 ft., although it is not quite as steep in some places. The foundation of the flume had to be made for some distance, by blasting a bed out of the solid rock around the mountain side and the work has been well done. For saving platinum and gold a bed rock flume has been constructed 160 ft. long, about 43 inches wide at the bottom and 27 inches high, with 8 in. fall in 12 ft. The flume is provided with wood block riffles 5 inches high and three abreast, and with two under currents near end for saving the finer species of metal. At the end of the flume a penstock is in place and to which is attached about 300 feet of steel pipe 10 in. in diameter, No. 14 sheet, and having a monitor and adjustable nozzle which can be moved by hand and by which the stream of water can be directed on the gravel bench at any angle with a nozzle 4 in. in diameter. The pressure of water now being used is about 110 ft. vertical and the quantity about 350 to 400 miner's inches. The Tulameen River has, from all appearances, gradually cut its way through the country rock until its present level is far below what it was in ancient times, and in doing so it has left banks sometimes on one side and sometimes on the other of large benches of gold and platinum bearing gravel. The benches vary in length and width according to location, and out of the four miles on the run of the river, fully one-half (say two miles) is covered with the gravel. The cost of removing one cubic yard of gravel by the use of free water which the Company enjoy should never exceed 10 cents per cubic yard, and with proper management 6 cents a yard should cover all the working expenses. To estimate the quantity of platinum and gold bearing gravel on the benches belonging to the Company is a very difficult matter, but a walk on the ground will soon convince any one that the supply is enormous and that it will take a number of years to exhaust the same."

UNION COLLIERY CO. OF BRITISH COLUMBIA, Limited.

Incorporated 25th July, 1888. Authorized Capital, $1,000,000, divided into 10,000 shares of a value of $100 each.

Directors:

Robert Dunsmuir, | James Dunsmuir, *President*, | John Bryden.

Head Office: Francis D. Little, General Manager, Comox, B.C.

This company owns a property containing 3,000 acres of coal lands and operates the Union colliery, near Comox, on Vancouver Island, British Columbia.

Union Colliery, eleven miles from shipping wharf, connected by standard gauge railway. Rolling stock includes four locomotives (Baldwin), of 45, 30, 25 and 15 tons respectively; 150 25 ton coal cars, etc.; 442 persons employed 1893.

Two seams worked, averaging 3 ft. and 5 ft. respectively; dip, 1 ft. in 6 ft. (north), No. 1 slope, 700 yds.; No. 11 slope, 1,000 yds.; adit level in upper seam, 600 yds.

System of working— Longwall in upper seam; pillar and stall in lower.

Ventilation—No. 1 slope by Murphy fan, 8 ft. dia., 200 rev.; No. 4 slope by Guibal fan, 14 ft. dia.; adit level by Fairman fan. Ventilated on the separate split system, the intake being the slope; the air afterwards is split in two divisions, one for No. 4 level and the other for No. 3; after going around the working places it unites in one volume and goes along the air-way and out at the upcast shaft.

Lamps—Naked lights.

Boilers—No. 1 slope: two, 24 ft. x 48 in. each; return flues, 80 lbs. press.; at No. 2 slope there are four boilers same size and style as No. 1. There are also three upright tubular boilers 7 ft. x 42 in. for prospecting engines.

Winding engines—Three in place, at No. 1 slope, one direct acting, 16 in. cyl. dble., 36 in. stroke, drums 6 ft.; No. 4 slope, tail-rope, four drums, geared, 16 in. cyl., 24 in. stroke, drums 6 ft.; at No. 2 (prospecting) one geared, 8 in. cyl., 12 in. stroke, dia. of drum 4 ft.

Pumps—Six in place; three Worthington; one fly-wheel pump; and one Gould electric pump with Jeffrey motor.

Screens—1 in. main screen 12 feet long. At date of report the company was completing a Shepard Washer having a capacity of 300 tons per day.

Coal cutters—Four Jeffrey electric coal cutting machines.

Other plant—This includes a diamond drill; one steam pile driver; a saw-mill having a capacity of 10,000 feet per day.

Official Returns of Outpnt.

Output at 31st Dec.		Exported.	Home consumption.
1889	31,204 tons.	23,790 tons.	100 tons.
1890	69,537 "	74,048 "	1,481 "
1891	114,792 "	103,960 "	294 "
1892	68,928 "	66,556 "	—
1893	143,927 "	114,356 "	29,478 "

" 262 tons coke made.
" Value of plant $115,000.

UNITED ASBESTOS CO., Ltd.

Registered 1st November, 1880. The Capital is £9,970, in fully paid 10 per cent. non-cumulative preference shares of £10, £30,000 in 6 per cent. cumulative preference shares, £49,875 in fully paid ordinary (A) shares of £5, and £50,000 in fully paid deferred (B) shares of £5. The "B" shares were issued as fully paid up to the subscribers of "A" shares. All the shares were originally of £10, but at the end of 1883 it was decided to write off £5 per share from the ordinary and deferred capital (the preference not having then been issued). After payment of the preference dividend the ordinary shares rank first for a cumulative dividend of 14 per cent. per annum. The deferred shares then take 14 per cent., surplus profits to be divided equally between the ordinary and deferred. There are also loans on mortgages, etc., to the amount of £39,000. In 1888 there was a profit, after providing for interest, of £1,222, and a debit to profit and loss brought forward was thereby reduced to £2,272, while in 1889, there was a profit of £2,501, a credit balance of £229 being thus carried forward. In 1890 this balance was increased £3,879, out of which a dividend of 10 per cent. was paid on the preference shares, and £2,882 was carried forward. For the year 1891, after providing for interest and sinking fund on mortgages, a dividend of 10 per cent. on the preference shares and 5 per cent. on the ordinary shares, leaving a credit balance of £3,068 to be carried forward. For the year 1892 the same dividends were paid as in 1891, including 6 per cent. on the new preference shares. In 1893, 10 per cent. on £5 preference shares, 2½ per cent. on the ordinary shares, carrying forward equal to 5¾ per cent. on the ordinary shares.

UNITED ASBESTOS CO.—Continued.

Directors:

E. Gellatly, *Chairman*,
H. A. Allport, | E. Elias, | J. P. Hurst, | J. R. T. Upton.

Head Office:

J. A. Fisher, General Manager, Dock House, Billiter Street, London, E.C.

CANADIAN OFFICE:

John J. Penhale, Superintendent, Black Lake, Que.

Formed in 1880 to take over the business of the Italo-English Pure Asbestos Company, Limited, the asbestos mines and business of Messrs. Furse Bros. & Co., of Rome, the Patent Asbestos Manufacturing Company, and to acquire and work asbestos estates in Italy, Canada, and elsewhere. In 1889 it purchased the property formerly worked by the Frechette Mining Company, containing some 75 acres of asbestos lands situate in Block A, township of Coleraine, Province of Quebec. Mine located about one quarter of a mile from Black Lake Station, on the line of the Quebec Central Railway. An average force of 150 men and boys employed. Engine and machinery equipment comprises: two 70 h.p. and one 25 h.p. boilers; one 16 x 24 straight line Rand compressor with the necessary equipment; two 7 in. x 10 in. duplex double drum Bacon winding engines; 7 in. x 12 in. x 15 in. duplex double drum Beatty hoisting engine. The Bacon winding engine operates tramway 3,800 feet on the main and tail rope system; tram line was built in 1892 to carry off the dumps to rear of property; Ingersoll and Rand drills; Blake and Cameron pumps, four derricks, etc.

VANCOUVER BRICK AND TILE CO.

Incorporated 15th April, 1887. Authorized Capital, $25,000, divided into 250 shares of a value of $100 each.

Directors:

David Oppenheimer,
George Black, | Isaac Oppenheimer, | Samuel Brighouse, | W. H. Armstrong.

Head Office: M. B. Wilkinson, Secretary, Vancouver, B.C.

Formed for the purpose of manufacturing bricks, tiles, vetrified pipes, sewer pipes, drain pipes, lime, cement, etc. Property consists of 20 acres. 750,000 brick made in 1889; but nothing was done in 1890 or 1891.

VANCOUVER ENTERPRISE MINING CO., Ltd.

Incorporated 8th March, 1889. Authorized Capital, $25,000, divided into 250 shares of $100 each.

Directors:

Malcolm McLeod, | John M. Stewart, | A. H. Cameron, | Wm. Cargill,
R. A. Anderson, | J. W. Robinson, | R. E. Palmer, | William Sloan.

Head Office: J. W. Robinson, Secretary, Vancouver, B.C.

Formed to acquire and work lodes and veins of gold and silver bearing quartz, and alluvial deposits of gold and other minerals, except coal, on Cayoosh Creek, in the Province of British Columbia. No report.

VANCOUVER SAN JUAN LIME CO., Ltd.

Incorporated 24th January, 1887. Authorized Capital, $30,000, divided into 600 shares of a value of $50 each.

Directors:

John M. Spinks, | Robert W. Gordon, | Francis L. Carter Cotton.

Head Office: Vancouver, B.C.

Formed to erect and maintain kilns, wharves and storehouses on the shore of False Creek and Burrard Inlet, and for the purpose of manufacturing lime in the city of Vancouver, Province of British Columbia.

VANCOUVER SMELTING AND MINING CO, Ltd.

Incorporated November, 1890. Authorized Capital Stock, $250,000, divided into 10,000 shares of $25 each.

Directors:

David Oppenheimer,
Henry T. Ceperley, | Thomas Dunn,
Henry McKee, | George de Wolff.

Head Office: H. T. Ceperley, Sec.-Treasurer, Vancouver, B.C.

Formed to carry on the business of smelters, refiners, founders, assayers, dealers in bullion, metals and products of smelting of every nature and description; to carry on the business of miners, and to obtain by purchase or otherwise, mine and work ores, minerals and metallic substances and compounds of all kinds. Owns the "Monarch," "Cornucopia," "Mogul" and "Alpha" mines, situate at Field, B.C. A small force is employed. Has a 60-ton smelter at Vancouver, not in operation.

VANCOUVER STONE QUARRYING, MINING AND TRANSPORTATION CO.

Incorporated 1891. Authorized Capital, $25,000, in 2,500 shares of $10 each.

Directors:

J. Wulffsum, | J. T. Carrol, | J. W. Vaughan, | J. A. Green.

Head Office: J. W. Vaughan, Managing Director, Cordova Street, Vancouver, B.C.

Formed with the object of searching for and mining stone, coal and other minerals, etc. The freestone quarries owned and operated by the company are situate at the terminus of the Canadian Pacific Railway, on English Bay, Burrard Island, at a point about two miles distant from the City of Vancouver. Small force employed.

VAN WINKLE CONSOLIDATED HYDRAULIC MINING CO., Ltd.

Incorporated December, 1892, under the Laws of British Columbia. Authorized Capital, $500,000, in 50,000 shares.

Directors :

R. G. Tatlow, | A. T. Ceperley, | J. M. Buxton, | E. Mahon, | G. de Wolff.

Head Office : G. de Wolff, Secretary, Hastings Street, Vancouver, B.C.

Formed to take over the mining leases of the lands known as the Van Winkle Bar, in the Yale district, Province of British Columbia, also certain grants and water rights, dated 27th October, 1892, granted to Frances Helen de Wolff and to William Munro, and to acquire all the rights and interest of all the parties interested in what is known as the Van Winkle Bar, and the water privileges in connection therewith, also to carry on hydraulic or other mining.

The property contains 700 acres and is situated two miles from the town of Lytton, on the opposite side of the Fraser river, and is operated under lease at a yearly rental of $250 per annum. The water is brought from Last Chance creek, a distance of two miles, by 1¾ miles of ditching and a quarter of a mile piping, the gore at the penstock being 36 inches in diameter and tapering from 12 feet to 18 inches ; the balance of the pipe is 18, 16 and 15½ inches in diameter. The sand tank is 375 feet above the flume, near the river, where the monitor is placed. Benches, 110 to 397 feet high. Gravel averages 10 cents per cubic yard and the working cost is estimated at three cents per seven inches.

At the annual meeting of shareholders held at Vancouver on 4th April, 1893, it was reported : " Your manager, Mr. Holland, being on the ground early in February, spent his time in constructing a flume to carry waste water on to the ground to be washed, thus enabling us to commence operations this season with 1,500 inches of running water in addition to the 900 inches carried by the pipe, which Mr. Hobson considers should enable us to handle over 5,000 cubic yards per diem.

The report from Mr. Holland will prove of interest to all, but especially in two particulars :

First.—As to the run last fall of 53 hours and 25 minutes, during which 5,000 cubic yards were handled, viz., over 2,000 yards per diem. When you consider that this was done with 600 inches of water and great care had to be exercised to form a lip where the bench was first opened, there can be little doubt as to the practicability of moving the large bodies of gravel by hydraulic means, on the success of which our enterprise depends.

Second.—The fact of gold having been found in the sluices of last fall's washing (when as you are aware we had hardly penetrated through the under strata to the pay streak) proves that gold exists in that large body of gravel, which, not having reached with our prospecting shafts, we had calculated upon as being non-productive.

With regard to the economy of your works I have only to ask you to remember that the total amount realized from sale of stock to date is $19,000, of which there is still on hand $1,767.04, out of which will have to be paid accounts amounting to some $750, leaving in hand $1,000 to meet the pay sheet for last month. In other words the mine starts the 1st April in perfect working order, equipped in every detail and clear of all debt.

VERMILLION MINING CO.

Incorporated 21st February, 1888. Authorized Capital, $240,000.

Directors:

C. W. Bingham, Henry B. Payne, | Stevenson Burke, *President*, John D. Evans, | H. P. McIntosh, George G. Allan.

Head Office: H. P. McIntosh, Sec.-Treas., Rooms 201 and 202 Perry Payne Building, 103-9 Superior Street, Cleveland, Ohio.

Owns certain mineral lands, covering 2,880 acres in the township of Dension, in the Province of Ontario; not at present worked. Some development work was done in 1887 and 1888.

VICTOR GOLD MINING CO., Ltd.

Incorporated 1894 by an Act of the Legislature of Nova Scotia. Authorized Capital, $200,000.

Directors:

J. T. Burgess, | A. G. Cunningham, | G. S. Campbell, | W. G. Brookfield, A. W. Whitman, all of Halifax.

Head Office: J. T. Burgess, Halifax, N.S.

Formed to acquire and work certain gold mining areas in the Province of Nova Scotia, and particularly a property at Gold River, near Chester, was being opened up at date of report.

VICTORIA GYPSUM MINING AND MANUFACTURING CO., Ltd.

Incorporated by an Act of Nova Scotia Legislature, assented to 15th April, 1890, and amended by an Act dated 19th May, 1891. Authorized Capital, $100,000, divided into 2,000 shares of a value of $50 each.

Directors:

D. C. Fraser, M.P., New Glasgow, *President*,

H. P. Blanchard, Baddeck, C.B., W. F. McCurdy, Baddeck, C.B., Kenneth J. McKay, Baddeck, C.B., | Hon. Gardner G. Hubbard, Wash. Hon. David McCurdy, Baddeck, C.B., H. H. McCurdy, Antigonish, N.S.

Head Office: W. F. McCurdy, Baddeck, Cape Breton, N. S., Managing Director.

Formed to mine and quarry gypsum on the Island of Cape Breton and elsewhere in the Province of Nova Scotia. The properties, a portion of which is held under lease, are all situate in Victoria county, N. S., and comprise the following parcels of land:—

VICTORIA GYPSUM MINING CO.—Continued.

730 acres at North Gut, St. Ann's; 725 acres at South Gut and Munroe's Point: 1,300 acres at Goose Cove; 1,400 acres at Port Bevis; 400 acres at Red Head; 400 acres at Gillies Point; 800 acres at Grand Narrows; 808 acres at Jamesville; 419 acres at Little Narrows; 400 acres at McAskill's Rear; 200 acres at Washabuck River.

In the fall of 1891, the company opened an extensive deposit of gypsum on its Port Bevis property, at a point about eight miles east of the town of Baddeck, and operations were carried on vigorously since. There has been built a line of railway one and one-half miles from the quarries to wharf, equipped with locomotivs, cars, etc., the whole estimated to have cost in the vicinity of $20,000. The wharf at Port Bevis can accommodate vessels drawing 23 feet of water.

The company has also at North Gut, St. Ann's harbor, two fine quarries, almost at the water's edge; two good wharves, at one of which there is a depth of fifteen feet of water at low tide, and at the other twenty-one feet, from which was shipped in the season of 1892 about 2,000 tons for land plaster. These quarries are situate about eight miles from the quarries at Port Bevis. Both the harbours of St. Ann's and Port Bevis are very easy of access and may be called perfect harbours for large or small vessels.

VICTORIA HYDRAULIC MINING CO.

Incorporated October, 1890. Authorized Capital, $100,000, divided into 100,000 shares of $1 each.

Directors:

William Wilson, | D. E. Campbell, | T. J. Jones, | William Dalby.

Head Office: W. D. McGregor, Sec.-Treas., 30 Broad St., Victoria, B.C.

The company owns a property containing 320 acres on Coquette Creek, Quesnelle Forks, in the district of Cariboo, B.C. 1,200 inches of water available for hydraulicing during the whole year. Has expended some $3,000 in opening a second property at Keithly Point in same district, and is prospecting on three claims on Cedar Creek. Has expended to date in permanent improvements, ditch, etc., $4,000. Small force employed. Returns of yield had not been forwarded at date of going to press.

VILLENEUVE MICA MINE.

Owner:

S. P. Franchot, Buckingham, Que.

The property upon which this mine is situate, contains 160 acres, on lots 30 and 31, township of Villeneuve, County of Ottawa. Is three miles distant by road from the mica mine landing on the Lievres River, and about 25 miles from the town of Buckingham, Que. Formerly owned and worked for Muscovite of a superior quality, by the British and Canadian Mica and Mining Company and acquired by the present owner in 1888. Equipped with one 60 h.p. boiler, Ingersoll steam drills, Knowles pump and other plant, and has excellent accommodtaion for a large force. Worked by open cuts and shaft 60 feet.

WALKER MINING CO.

Capital invested to date (acquisition of lands, erection of plant and works, and mining to date), estimated at $300,000.

Principal Owner:

W. H. Walker, Ottawa.

Head Office: 5 Central Chambers, Elgin Street, Ottawa.

Property formerly owned and operated by the Dominion of Canada Plumbago Co., contains 1,250 acres as follows: N½ of lot 19, N½ lot 21, lots 23 and 24, in the VII. range; S¾ of lot 19 and S½ of lots 20 and 21, in the VIII. range; S½ 19 and lot 21, in IX. range; all in the township of Buckingham, County of Ottawa, Province of Quebec. Mines situated one and a half miles from McCullough's Landing on the Lievres River, and six miles by road from the village of Buckingham, 50 men and boys employed. The quality of the graphite mined by the company is excellent. From experiments made in the laboratory of the Geological Survey, Mr. G. S. Hoffmann, F.C.S., considers that in respect to incombustibility it may claim perfect equality with that of Ceylon, and that it is in no wise inferior to the latter as a material for the manufacture of crucibles. Mill building, 120 x 70, 3½ storeys, contains a battery of 20 stamps (weight, 850 lbs., drops to min., 60, to be increased to 90), driven by an engine of 100 h.p. capacity; eight separating and dressing buddles, drying furnace, dryer, 6 runs of stones for grinding, besides blowers, mixers, bolts and accessories, the whole of a capacity of 10 tons per 24 hours. Improvements now being made will greatly increase the capacity. The company owns a saw mill, barrel making shop, etc. At 31st December, 1893, the property was being merged into a joint stock company.

WAVERLEY HYDRAULIC MINING CO., Ltd.

Incorporated 14th July, 1879. Authorized Capital, $100,000, divided into 1,000 shares of a value of $100 each.

Directors:

Wm. Forrest, | J. B. Nason, | W. A. Jones,
John Bibby, | Andrew Kelly.

Head Office: James Stone, Secretary, Barkerville, B.C.

This company owns 110 acres in fee simple, and operates an alluvial claim at Grouse Creek, in the Barkerville division of the Caribou mining district, in the Province of British Columbia. About $50,000 have been expended in preliminary workings.

Superintendent: John Pomeroy, Grouse Creek, Barkerville, B.C.

WEARTS PLUMBAGO MINE.

Owner:

Jacob Wearts, 76 Montgomery Street, Jersey City, N.J.

This mine, which employed a small force in 1893, is situate on lot 27, in the township of Buckingham, County of Ottawa, Que., or seven miles by road and river from the town of Buckingham. Equipped with 50 h.p. and 8 h.p. boilers, Ingersoll drills and hoisting engine, stamp mill, etc. Shipments mainly to works in Jersey City.

WELLINGTON COLLIERY CO.

Owners:

Robert Dunsmuir & Sons, Wellington, B.C.,

General Manager: John Bryden, | *General Overman:* Alexander Sharp.

Head Office: Wellington Colliery, Wellington, B.C.

This company owns and operates the Wellington colliery, situate at Wellington, Vancouver Island, British Columbia.

Name of seam—Wellington. No. I., II., III., IV., V. VI. pits.

Value of plant—$150,000.

Workings—Operated by five shafts with necessary slopes, airways and levels; three air shafts.

Tramway plant and rolling stock—Five miles of railway, with sidings and branches; six locomotives; 250 coal cars; 13 stationary engines; 9 steam pumps; 4 wharves for loading vessels, etc.

Coal Output.

	Output.	Shipment.	Home Sales.
1889	273,383 tons.	197,510 tons.	76,524 tons.
1890	174,496 "	106,281 "	68,769 "
1891	345,182 "	282,452 "	54,724 "
1892	200,370 "	238,400 "	.....
1893	337,334 "	295,212 "	41,121 "

Output of fire clay, 1893, 642 tons; number persons employed, 983.

WENTWORTH GYPSUM CO.

Incorporated by Act of the Nova Scotia Legislature, passed 19th May, 1891. Authorized Capital, $200,000, divided into 2,000 shares of $100 each.

Directors:

Edward W. Dimock, *President*, Windsor, N.S.

Clarence H. Dimock, Windsor, N.S., | E. Norman Dimock, Windsor, N.S.

Head Office: Clarence Dimock, Secretary, Windsor, N.S.

Formed to search and prospect for, to quarry, mine, work, win, manufacture and prepare for use and sale by any process, and carry, move, sell, ship and deal in gypsum, plaster of Paris, lime, limestone, building stone, etc., in the Province of Nova Scotia and Island of Cape Breton. Owns a property containing about 1,000 acres at Wentworth, in the township of Windsor, Hants county, Province of Nova Scotia. Quarries situate one and a half miles from Windsor station, on the Windsor and Annapolis railway. Two hundred and fifty persons employed.

WEST END MINING CO. OF ONTARIO, Ltd.

Incorporated 28th June, 1889. Authorized Capital, $2,000,000, divided into 200,000 shares of a value of $100 each, the whole of which has been subscribed and fully paid.

Directors:

Herbert N. Nichols, *President*,
F. S. Wiley, | S. B. McConell, | C. E. Dickerman.

Head Office: S. B. McConnell, Secretary, Port Arthur, Ont.

This company owns some 240 acres of mineral land situated on the line of the P. A., D. & W. railway, at a point 38 miles distant from the town of Port Arthur. Present workings: shaft 260 feet (sinking); levels, drifts and cross-cuts, 1750 feet. Machinery plant includes steam hoisting and pumping gear. Ore of an estimated value of $32,000 raised to date.

WESTERN CONSOLIDATED MINING CO.

Incorporated under the laws of the State of Washington, U.S.A., February, 1891. Authorized Capital, $1,000,000, in shares of $1.

Directors:

J. B. Sargent, | W. H. Lynch, | C. M. Parker, | N. A. Parent, | A. J. Lynch.

Head Office: A. J. Lynch, Secretary, Spokane, Wash.

Formed to acquire and work certain mineral lands and mines, and particularly the "Club," "Monday," "Della" mining claims, situate at Hot Springs, West Kootenay district, Province of British Columbia. It also controls a one-half interest in the "Kate," and a $\frac{7}{12}$ interest in the "B.B.B." claims at Hot Springs; also a one-half of the "Yakima" on Toad Mountain, near the town of Nelson, B.C. Only development done to date.

WEST KOOTENAY MINING CO.

Incorporated under the laws of the State of Washington, U.S.A., December, 1890. Authorized Capital, $1,000,000, in 100,000 shares of $10.

Directors:

J. H. Spalding, | J. B. Sargent, *President*, | C. M. Parker,
W. H. Lynch, | W. H. Lancaster.

Head Office: W. H. Lancaster, Secretary, Spokane, Wash.

Formed to acquire and work mineral lands and particularly the argentiferous galena mining claims known as the "Thor," "Top" and "Lookout," situate at Warm Springs, in the West Kootenay district, Province of British Columbia. Only development done to date.

WESTMINSTER SLATE CO.

Incorporated 18th March, 1891. Authorized Capital, $100,000 in shares of $100 each. By its charter the company has power to increase the amount to $250,000. At date of report 5,500 shares were fully paid.

Directors:

C. E. Woods, | H. E. Edmonds, *President*, | John H. Webster, A. G. Gamble, | H. Fiennes Clinton.

Head Office: A. G. Gamble, Secretary, 538 Columbia St. New Westminster, B.C.

John J. Jones, *Superintendent.*

The property of the company is situated on Deserted Bay, Jervis Inlet, B.C., and is distant from New Westminster, about 100 miles; from Vancouver, 90 miles; from Victoria, 140 miles. It consists of (a) 340 acres of land under lease from the Superintendent of Indian Affairs of the Dominion Government of Canada for 45 years, at a rental of $234.50 a year, with promise of extension to 99 years on the same terms, a lease for which is now under preparation; (b) a Crown Grant of 144 acres from the Provincial Government of British Columbia adjoining the lease-hold property; (c) one undivided half of 240 acres on the north shore of the bay.

There is a bed about 5,000 feet wide of excellent Argillite Slate on the lease-hold property, and running through to the adjoining free-hold of the company. The Quarry is situated on the Bay, on tide water. Operation was commenced about four feet above high tide level, at the foot of a hill which rises to an elevation of about 300 feet, affording the greatest facilities for quarrying and shipping on the most extensive scale. A track is laid from the work-shops and top of the dump to the bottom of the quarry, obviating the necessity of hoisting and pumping machinery.

The slate is perfectly solid and free from water splits right on the surface, consequently there is no stripping required. This is a decided advantage.

At present the quarry has a face of about 250 feet by an average depth of about 50 feet.

The company so far has only been doing development work, and the output in 1893 was about 300 squares per month, but this will be increased it is expected in 1894 to 1,000 squares. An average force of 20 men is employed.

The company had on March 1st, 1893, when stock was last taken, the following assets (which at present date may be $200 or $300 more):

Assets:		
Manufactured Roofing Slate	$15,000 00	
Machinery	3,970 00	
Plant and Tools	3,000 00	
Buildings	5,720 00	
Store and Office (merchandise, etc.)	1,338 92	
Boarding House (merchandise)	695 90	
		$ 29,724 82
Add to this:		
Estimated value of Quarry		100,000 00
144 acres Freehold at $10.00 per acre		1,440 00
4,500 Shares at $10.00 each		45,000 00
Total value		$176,164 82
Liabilities		33,600 00
Assets over Liabilities		$142,564 82

WEST WAVERLEY GOLD CO.

Incorporated 1891. Authorized Capital, $60,000, divided into 6,000 shares of a value of $10 each.

Directors:

James C. Ayer, *President*, New York,
John E. Hardman, Oldham, N.S., | Hector McInnes, Halifax, N.S.

Head Office: John E. Hardman, M.E., Managing Director, Waverley, N.S.

This company controls under lease from the local government, a property containing 43 gold areas, situate in the Waverley district, Halifax county, Province of Nova Scotia. Mine ten miles from the city of Halifax. 175 men employed. 20 stamp mill, driven by compound condensing steam engine; one compound condensing duplex 10 drill Rand compressor; one double cylindered, double drum winding engine built by the Jenckes Machine Co. (cyl. 8 in. x 12 in., drum 42 in. x 36 in.); one 12 in. x 24 in. Forster ore breaker, with a capacity of 120 tons in 10 hours; two 50 h.p. horizontal tubular boilers, and one upright 25 h.p. boiler; stamp mill equipped with Golden Gate concentrator.

The company commenced milling in May, 1892, since when (to the end of December, 1893), there have been crushed 12,065 tons, producing 3,226 oz. 5 dwts. of gold as per returns made to Mines Office.

WHITEWATER MINING CO.

W. J. Gollpel, Managing Director, Victoria, B.C.

This company owns and operates the Whitewater mine, situated at the head waters of Rover Creek, in the West Kootenay district, Province of British Columbia. Mine seven miles from Wardville and twenty-one miles from Nelson. The returns of the yield in 1891, give $1,540 in free gold, and $1,625 sulphurets (estimated). Machinery plant valued at $5,000.

Mine Superintendent: M. S. Davys, Nelson, B.C.

WYCOTT HYDRAULIC MINING CO.

Incorporated 1893. Authorized Capital, $500,000, in 50,000 shares of $10 each.

Directors:

S. K. Twigge, John Twigge, J. M. Spinks, M. M. Hirschberg, all of Vancouver, B.C.; T. J. Trapp, New Westminster, B.C.

Head Office: Vancouver, B.C.

Formed to take over, purchase and acquire a mining lease or leases, dated 4th July, 1892, granted to J. M. Harvey and Thos. J. Trapp of New Westminster, B.C., and the water privileges in connection therewith.

Y-ONE MINING CO.

Incorporated under the laws of the State of Illinois, 18th April, 1872. Authorized Capital, $5,000,000, in shares of a value of $10 each.

Directors:

J. T. Huntingdon, | Col. J. S. Morgan, *President*, | H. S. Sprague,
P. M. Taylor, | J. M. Lewis.

Head Office: J. W. Lewis, Secy.-Treas., Room 28, Benedict Block, 29 Euclid Ave., Cleveland, Ohio.

Formed to acquire and work mineral lands more particularly a property containing 135 acres, known as the Y-One and Silver Creek mines, and situate in the township of O'Connor, Province of Ontario. The property adjoins the well known Beaver and Badger silver mines, and is distant from the town of Port Arthur about 26 miles. At the annual meeting held on 9th November, the President reported that a tunnel had been started in the fall to cut the five ore veins that are known to exist on the property. The tunnel has now reached 120 feet from its entrance with a backing of 75 feet. The main edge on the property is exposed in the bed of Silver Creek for a distance of 80 feet x 20 feet wide, and assays from $143 to $223 per ton silver. The company intend erecting a concentrating plant of machinery on the property early in the coming spring, when concentrates and ore of a very high grade will be shipped to the United States for treatment.

SUPPLEMENTARY LIST OF CANADIAN WORKING MINES AND QUARRIES

Of which Reports were received too late for insertion in their proper order.

Name of Company or Mine.	District and Province.	Mineral.	Remarks.
Danville Slate Co.	Danville, Que.	Slate	Owned by Moritz Boas, St. Hyacinthe; Feodor Boas, Montreal, and J. N. Greenshield, Montreal. 100 persons employed. Output '93, 5,000 sq. and 2,000 cases school slate.
Le Roi Mining and Smelting Co.	Trail Creek, B.C.	Argentiferous Galena.	E. J. Kelly, *Superintendent*. Authorized Capital, $150,000.
Bonanza Nickel Mine Co. of Sudbury.	Wahnapitae, Ont.	Nickel and Gold	J. G. Reimer, *President*, Berlin, Ont. Opening property in 1893.
Payne Group	Slocan District, B.C.	Argentiferous Galena.	Owners: Scott, McDonald and S. S. Bailey. A shipment in 1893 of 100 tons sampled 225 oz. silver, .70 per cent. lead.
Noble Five Group	" "	" "	Owned by W. M. Hennessey, *et al.* In winter '93, 350 tons shipped which gave 150 oz. silver, .69 p. c. lead. 20 men employed.
Mountain Chief	" "	" "	Owned by Geo. W. Hughes. Output 1,000 tons; shipment sampling 130 oz. silver and 70 per cent. lead.
Dardanelles Group	" "	" "	Shipment of 50 tons gave 99 oz. silver and 51 per cent. lead.
Washington Mining Co.	" "	" "	*Principals:* J. L. Montgomery, T. E. Jefferson, and Ralph L. Clarke. 38 persons employed in 1893.
Idaho and St. John Mines	" "	" "	*Owners:* H. H. St. John, A. Belne, and E. C. Gore. 20 persons employed.
Lucky Jim Group	Bear Lake, Slocan, B.C.	" "	Dr. E. C. Kilbourne, Seattle. Wash., owns one half. Shipments gave 67 oz. silver and 60 per cent. lead.
Ruecan Group	Slocan, B.C.	" "	*Owners:* J. M. Harris, F. T. Kelly and S. M. Wharton. 40 tons shipped in 1893 averaged from 167 to 261 ounces silver and 65 per cent. lead.
Vancouver Group	Near Silverton, Slocan, B.C.	" "	Mahon Bros., *Owners*. Two carloads shipped in '93 gave 250 oz. silver, one carrying 40 per cent. lead, and the other 55 per cent.

Supplementary List—*Continued.*

Name of Company or Mine.	District and Province.	Mineral.	Remarks.
Grady Group	Four Mile Creek, Slocan, B.C.	Argentiferous Galena	Held under bond by the McNaught Land & Invest. Co. of Seattle.
Cumberland	Slocan, B.C.	" "	500 tons valued at $125 per ton ready to ship at last report. *Owners:* Martin Clair, C. M. Gething and F. F. Macnaughton.
Alamo Group	Twin Lake Basin, Slocan, B.C.	" "	60 tons ready to ship at last report.
Chambers Group	Carpenter Creek, Slocan, B.C.	" "	Opened by tunnels, 250 and 165 ft. Small force employed.
Eureka	Slocan, B.C.	" "	Owned by G. J. Atkins & Co., *et al.* Assay returns give 120 oz. silver and from 60 to 80 per cent. lead.
Eureka Group	Kaslo River, Slocan, B.C.	" "	G. J. Atkins & Co., owners. Small force. Assays return 169 oz. silver and 70, 72 and 74 per cent. lead.
Montezuma	Near Kaslo, Slocan, B.C.	" "	Owned by McDonald Bros. *et al.* "Eureka," "Yosemite," "Homestake," "Scottish Chief" and "Parrot" claims.
East Kootenay Exploration Syndicate	Wild Horse Creek, East Kootenay, B.C.	" "	Owned by T. McLeod and E. Becker. Opened by cross-cut tunnel 70 ft. Ore assays 80 oz. silver and 60 per cent. lead.
North Star Mine	St. Mary's River, near Fort Steel, East Kootenay, B.C.	Alluvial gold	Equipped with plant in 1893 but no returns obtainable.
		Carbonate, &c.	Owned by D. D. Mann, Montreal, *et al.* Sampling gave: Silver, 47.43 oz.; lead, 67.50; iron, 6.33; zinc, 190. A considerable amount of development work done.
Gold Queen Mining Co.	Siwash Creek, B.C.	Alluvial gold	Considerable work done in 1893, the results being encouraging.

Supplementary List—*Continued.*

Horsefly Hydraulic Mining Co	Horsefly River, Cariboo District, B.C.	Alluvial Gold	H. Abbott, Vancouver, *Principal.* Did considerable work driving tunnels, and report satisfactorily.
Whittier Gold Concessions Syndicate	Williams Creek, Cariboo, B.C	"	Just organized.
Lillooet Hydraulic Mining Co	Fraser River, at Lillooet, B.C.	"	Auth. capital, $20,000. A. McDonald, *Supt.* Small force employed.
Lac Pied des Monts Mine	Murray Bay, Que.	Mica	Owned by Mr. F. B. Hayes, Ottawa. Developed in 1893 and shipments made to Germany.
Dugas Mica Mine	Templeton Dist., Que.	"	Owned by Judge Dugas, Montreal. Opened in 1893 and several thousand pounds sold.
Wallingford Mica Mine	" "	"	Wallingford Bros., Templeton, owners. Had a force of men working during the greater portion of 1893, and about 50 tons marketted.
Russell Silver Mine	Calumet Island, Que.	Zinc blende	Owned by J. & C. Russell, Renfrew, Ont. A force of men employed in 1893, opening out property.
Albert Manufacturing Co.	Hillsboro, N.B.	Gypsum	
W. Donaldson & Co.	Mount Healy, Ont.	"	
McQueen & Stewart	Andover, N.B.	"	
James Stratton	St. John, N.B.	"	
E. W. Lyndes	Hopewell Hill, N.B.	"	
Imperial Oil Co.	Petrolia, Ont	Oil	
Gray, Young & Sparling	Wingham, Ont	Salt	

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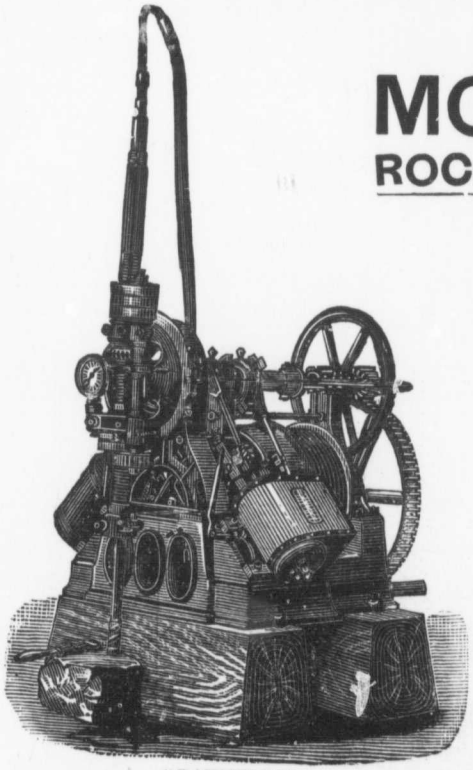

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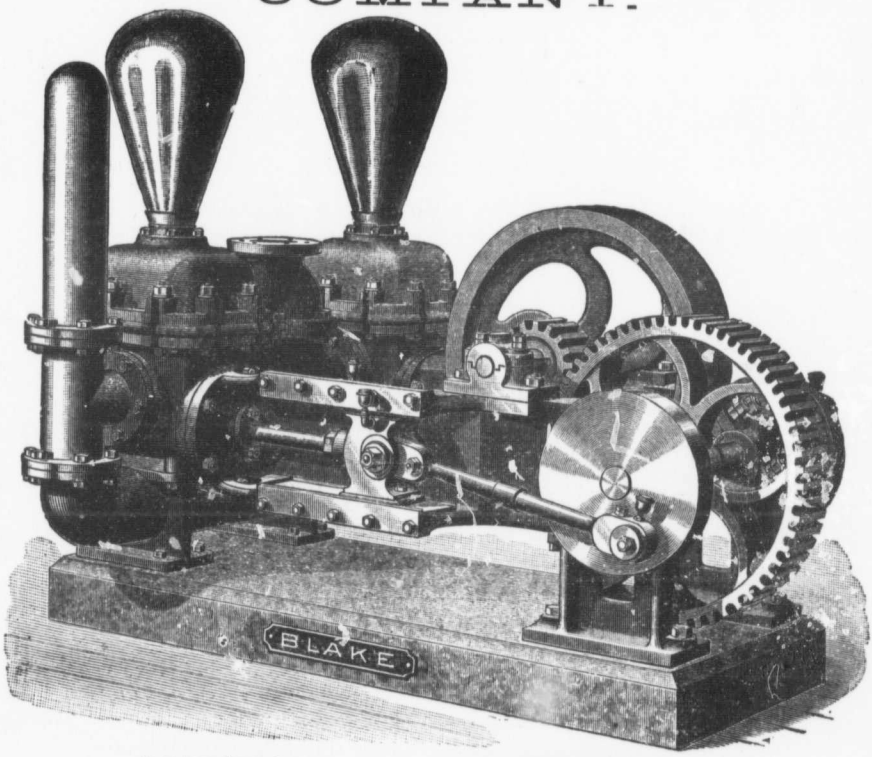

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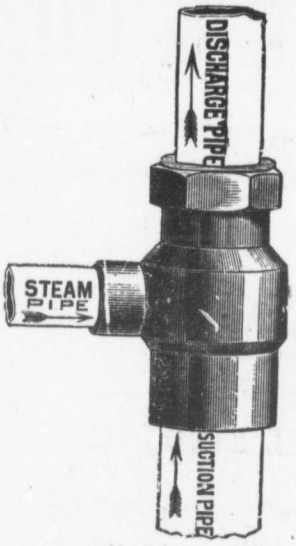

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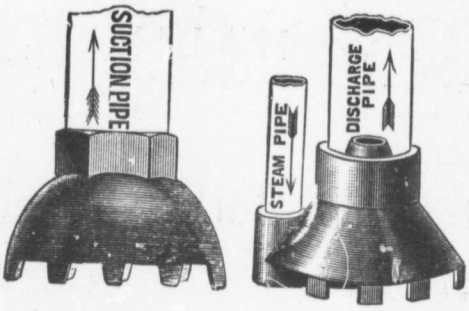

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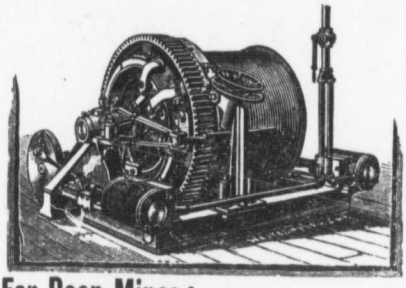

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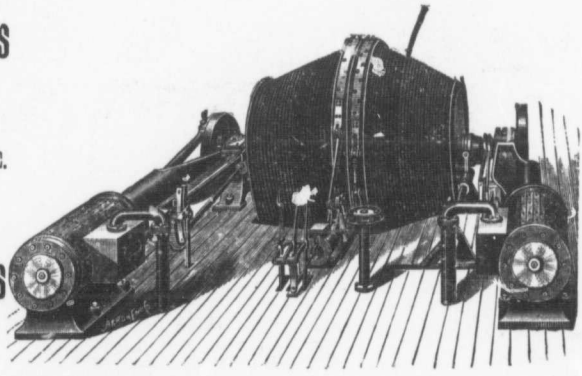

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