Guaranteed Best in the World.

Always Carried in Stock . . .

THOMAS FIRTH & SONS, LIMITED, SHEFFIELD

Tool Steel and Rock Drill Steel for all Mining Purposes.

Forged . Steel . Shoes . and . Dies



Steel Cams,
Crusher Plates,
Tappets,
Bosses,
Crucible Steel Castings



FOR

Railway, Marine, Engineering and Colliery Purposes

JAMES HUTTON & CO.

Agents for Canada. MONTREAL

Electric Blasting

Victor Electric Platinum Fuses

Superior to all others for exploding any make of dynamite or blasting powder. Each fuse folded separately and packed in neat paper boxes of 50 each. All tested and warranted. Single and double strength, with any length of wire.

"Pull-Up" Blasting Machine



The strongest and most powerful machine ever made for Electric Blasting. No. 3 fires 30 holes; No. 4 fires 50 holes; No. 5 fires 100 holes. They are especially adapted for submarine blasting, large railroad quarrying, and mining works.

Victor Blasting Machine

No. 1 fires 5 to 8 holes; weighs only 15 lbs. Adapted for prospecting, stump blasting, well sinking, etc.

Standard Electric Fuse and Blast Tester, Wire Reels (new design), Leading and Connecting Wires.

MANUFACTURED ONLY BY

James Macbeth & Co.

128 MAIDEN LANE, NEW YORK CITY.

Send for Catalogue.

The B. GREENING WIRE CO. (Limited)

MANUFACTURERS OF

Wire Rope

For Hoisting, Tramways, Transmission of Power, etc. Made Standard and Lang's Patent Lay.

Perforated Mining Screens

All kinds and for all purposes.

Wire Cloth

For Mining Screens; made of Steel, Brass and Copper; all meshes; for all descriptions of work.

Catalogue on Application.

The B. Greening Wire Co. (Limited)
HAMILTON and MONTREAL

Polson Iron Works, Toronto.



Hoisting Engines
Steel Boilers
Mine Pumps
Rock and Ore
Breakers

Steam Yachts and Launches The Brown Automatic Engines

Get our Prices before Ordering

Esplanade Foot of Sherbourne Street, Toronto

WM. STAIRS, SON & MORROW

IMPORTERS AND LZALERS

Mining Supplies, Mill & Steam Fittings

000000

MANUFACTURERS' AGENTS FOR

Mining Wire Ropes

Black Diamond Cast Steel

Other Cast Steel

Medal Brand Patent Roofing

Iron Roofing

Boiler Plate and Tubes Girder Beams, Etc.

Brattice Cloth, Railway Spikes

000000

CORRESPONDENCE SOLICITED

of penetry Vietness Coooco Camera Atlanced to

HALIFAX, NOVA SCOTIA

H. H. FULLER & CO.

41-45 UPPER WATER ST., HALIFAX, N.S.

Wholesale and Retail Dealers in

Contractors' & Miners' Supplies

DYNAMITE, FUSE, MINERS' CANDLES

Octogen Drill Steel, Quicksilver

And a Full Stock of Goods for Mining Purposes kept constantly on hand

SOLE AGENTS IN NOVA SCOTIA FOR

BOSTON BELTING CO'S RUBBER GOODS

- AND -

Reeve's Wood Split Pulleys

BELTING AND HOSE A SPECIALTY

Shipments Promptly and Carefully Attended to.

CORRESPONDENCE SOLICITED. - P.O. BOX 178

NOVA SCOTIA STEEL CO. Limited

MANUFACTURERS OF

Hammered and Rolled Steel For Mining Purposes...

PIT RAILS, Tee Rails, Edge Rails, Fish Plates, Bevelled Steel Screen Bars, Forged Steel Stamper Shoes and Dies, Blued Machinery Steel, 3/8 in. to 31/4 in. Diameter, Steel Tub Axles cut to length, Crow Bar Steel, Wedge Steel, Hammer Steel, Pick Steel, Draw Bar Steel, Forgings of all Kinds, Bright Compressed Shafting 5/8 in. to 5 in., true to $\frac{2}{1000}$ part of One Inch.

A FULL STOCK OF

MILD FLAT, RIVET-ROUND AND AXLE STEELS

ALWAYS ON HAND.

SPECIAL ATTENTION PAID TO MINERS' REQUIREMENTS.

CORRESPONDENCE SOLICITED.

OFFICE and NEW GLASGOW, N.S.

TRURO FOUNDRY AND MACHINE CO.

TRURO, N.S.

Gold ___ Mining

Machinery

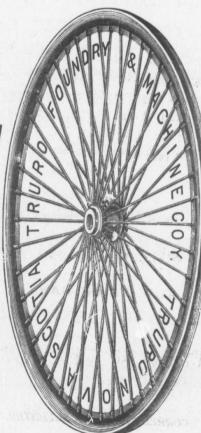
With Latest Improvements

000

SPECIAL MIXTURE

SHOES AND DIES...

With the Best Record In the World.



Engineers

Boiler

Makers

and

Founders

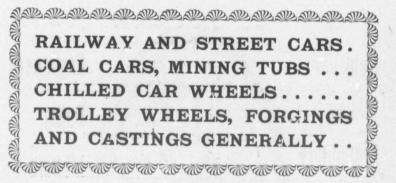
92

Write or Call on us

PULLEY SIZES UP TO 12 FEET DIAMETER.

Rhodes, Curry & Co. Limited

MANUFACTURERS OF .



ALSO

Dimension, Planed and Rough Lumber, Doors and Sashes, and Building Materials generally.

Domestic and Foreign Lumber

Delivered at any point by Rail or Water. Two Million Feet carried in stock at Amherst and Palifax.

WRITE FOR PRICES

AMHERST, N.S.

DOMINION BRIDGE COMPANY, Limited

MONTREAL AND LACHINE LOCKS, P.O. P.O. Address: MONTREAL.

IRON and STEEL STRUCTURES for COLLIERIES

METAL MINES AND SMELTING WORKS

Steel Bridges for Railways and Highways-Steel Piers and Trestles-Steel Water Towers and Tanks-Steel Poofs, Girders, Columns for Buildings.

A LARGE STOCK OF ROLLED STEEL BEAMS, JUISTS, GIRDERS, GHANNELS, ANGLES

TEES, Z BARS AND PLATES

Always on hand, in lengths to Thirty-five Feet.

Tables giving Sizes and Strength of Rolled Eleams on application.

MACDONALD & CO.

(LIMITED)

HALIFAX, Nova Scotia

000000

MANUFACTURERS AND DEALERS IN

PUMPING MACHINERY, IRON PIPES, FITTINGS, &c.

FOR MINERS' USE.

000000

CALL OR WRITE US FOR PRICES.

OLD SYDNEY COAL

S. CUNARD & CO.

HALIFAX, N.S.

SHIPPING, COMMISSION AND COAL MERCHANTS

Agents for Allan, Cunard, White Star, American, Red Star, Hill,
Atlantic Transport, Compagnie Generale TransAtlantique Lines of Steamers; also

GENERAL MINING ASSOCIATION, Limited

COLLIERY: SYDNEY MINES, C.B.

Liverpool, Glasgow, French and Austrian Underwriters

CONSULAR AGENCY OF FRANCE.

BUNKERING STEAMERS ATTENDED TO WITH DESPATCH

DRUMMOND COAL

00000000000

The Intercolonial Coal Mining Co. Limited

JAS. P. CLEGHORN, President CHARLES FERGIE, Vice-Pres. and Man. Dir. WM. J. NELSON, Secretary-Treasurer

Drummond Golliery, Westville, Pictou Co., N.S.

PRODUCERS AND SHIPPERS OF

BEST BITUMINOUS COAL AND COKE

From Pictou Harbor, Halifax and all Points on Intercolonial Railway and Connections.

000000

HEAD OFFICE:

199 COMMISSIONERS STREET, MONTREAL, P. Q.

AGENTS:

HUGH D. MACKENZIE, HALIFAX, N.S. CHARLES W. IVES, PICTOU, N.S. DARROW, MANN & CO., BOSTON, MASS. JOHN LAIRD, QUEBEC.

DOMINION COAL COMPANY, Limited

Owners of the Victoria, International Caledonia, Reserve, Gowrie, Little Glace Bay, Bridgeport and Dominion Collieries

OFFERS FOR SALE

Steam, Gas & Domestic Coals

OF HIGHEST QUALITY

Carefully prepared for market by approved appliances either F. O. B. or delivered.

It is also prepared to enter into Contracts with Consumers covering a term of years. Its facilities for supplying Bunker

Coals with promptness is unequalled.

APPLICATION FOR PRICES, ETC., TO BE MADE TO

J. S. McLENNAN, Treasurer

95 Milk Street, Boston, Mass

HIRAM DONKIN, C.E., Resident Mgr. M. R. MORROW
Glace Bay, Cape Breton. 50 Bedford Row, Halifax

KINGMAN & CO.

Custom House Square, Montreal.

HARVEY & OUTERBRIDGE, Produce Exchange Building, N.Y. Sole Agents for New York and for Export.

WANT BAGS

. FOR .

Packing Asbestos, Ores, Minerals, &c.

SEND TO US FOR SAMPLES AND PRICES.

000000

Specially Strong Sewing for Heavy Materials Lowest Prices compatible with Good Work Every Quality and Size in Stock.

000000

We now supply most of the Mining Companies, and those who have not bought from us would find it to their advantage to do so.

00000

THE CANADA JUTE CO'Y

LIMITED

17, 19 and 21 ST. MARTIN ST.

MONTREAL

ESTABLISHED 1882.

HAMILTON POWDER COMPANY

THE RESERVE THE PROPERTY OF TH

MANUFACTURES

MINING, BLASTING . . . MILITARY AND SPORTING

GUNPOWDER, DYNAMITE, DUALINE

Eclipse Mining Powder

ELECTRIC BLASTING APPARATUS SAFETY FUSE, ETC.

OFFICE:

fo

E

ufa

103 St. Francois Xavier St.

Branch Offices and Magazines at all Chief Distributing Points in Canada. . . .

The Royal Electric Company

MONTREAL, QUE.

Western Office: TORONTO, ONT

Sole Manufacturers for the Dominion of Canada of the

"SKC" Two Phase Alternating Current System for Light and Power.

Particularly well adapted for Long Distance Transmission, as well as for Central Station Lighting. . . .

With this system Water Powers can be delivered economically long distances and made available for local uses, particularly suitable for **MINING PURPOSES**. The system comprises GEN-ERATORS, MOTORS and TRANSFORMERS.

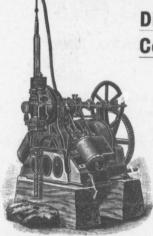
ALSO MANUFACTURERS OF

Arc Dynamos, Railway Generators, Arc Lamps, Railway Motors, Direct Current Generators and Motors, Lighting and Power Supplies, Wire, Switchboards and General Electrical Apparatus.

Correspondence solicited on Electric Lighting, Mining, Manufacturing and Railway work.

M. C. BULLOCK MANUFACTURING CO.

1177 W. Lake Street, CHICAGO, U.S.A.



"DELVER" DIAMOND DRILL Hole, 25%"; Core, 2"; Depth, 2,000 ft.

Diamond Prospecting Core Drills . . .

The only absolutely accurate and correct method of prospecting mineral properties is by systematic borings with these drills.

MACHINES TO FILL ANY REQUIREMENTS
FURNISHED PROMPTLY FROM STOCK

CAN BE OPERATED BY

HAND, HORSE, STEAM COMPRESSED AIR OR ELECTRICITY

CHAMPION MINE VENTILATORS

In use in many of the Collieries of United States and Canada. They are designed with an especial view to efficiency and durability, and are fully guaranteed. Full information furnished upon application.

MONARCH ROCK DRILLS

For use of quarrymen, miners and contractors Seven Sizes. Any styles of mounting required.

HOISTING MACHINERY

One, two, four or more drums, with slide valve or Corliss engines. Plants built to meet special requirements.

HIGH SPEED ENGINES WILLIAMS CENTRAL VALVE

EXTREMELY ECONOMICAL, DURABLE AND SILENT. Furnished in sizes from 60 to 700 I. H. P. Over 215,000 H. P. in use.

DOMINION METAL WORKS

E.W. VANDUZEN COMPANY ...

CINCINNATI, OHIO

rect

per-

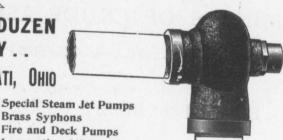
iese

OCK

ıraon

les.

in



Brass Syphons Fire and Deck Pumps Locomotive & RRd. Fire Pumps Steamboat and Steamship Bilge Pumps Dock and Wrecking Pumps for Barges, Etc. ALSO THE

..VANDUZEN STEAM JET BLUWER PUMP

. FOR .

Pumping Gases, Fumes, Foul Air, Vapors, Etc. and creating a Draft under Boilers, and Prevention of Smoke, etc.

THE BRAENDER JET PUMP AND CELLAR DRAINER

> Operated by Steam or Water Pressure



GARTH & CO.

536 to 542 CRAIG STREET - - Agents and Manufacturers

MONTREAL

KING BROS.

MINERS OF CRUDE ASBESTOS

ALL GRADES.

Head Office: BELL'S LANE, QUEBEC

Mines at THETFORD STATION, Quebec Central Railway, QUEBEC.

R. T. HOPPER & CO.

Successors to Irwin, Hopper & Co. (Estab 1878)

MINERS AND SHIPPERS OF MINERALS, Etc.

314 BOARD OF TRADE BUILDING

MONTREAL, CAN.

ASBESTOS CRUDE AND

Mica, Plumbago, Soapstone, &c.

ALSO MANAGING DIRECTORS AND SELLING AGENTS FOR

The Anglo-Canadian Asbestos Company, Ltd. Loughboro Mica Mining Company, Ltd. The English Portland Cement Company, Ltd. Montreal and Kootenay Mining Company, Ltd.

NOVA SCOTIA.

Coal, Iron, Gold, Copper, Lead, Antimony, Talc Barytes, Gypsum, Mica, Plumbago Zinc, Asbestos, Etc.

THE partial mineral development already effected in this Province reaches an annual turn-out of nearly FOUR MILLIONS OF DOLLARS, and large tracts of Coal, Iron and Gold bearing lands are yet unoccupied.

Nova Scotia, from its mineral wealth, climate and position, is destined to be the leading manufacturing State on the Atlantic Coast.

The Iron Ores are being utilized for steel.

C.

The Coals furnish excellent Coke. The Gold fields are over THREE THOUSAND square miles in extent, and have hitherto received little attention.

The ores of Iron, Copper, Lead, Silver, Gold, Tin and Coal are held by the Crown, and are granted on easy terms, on long leases from forty to eighty years. The other minerals are granted in fee with the land at nominal rates.

FOR INFORMATION APPLY TO

The Hon. Commissioner of Public Works and Mines

BRITISH COLUMBIA MINES

000000

GOLD, SILVER, LEAD
COPPER, COAL, COKE
IRON, MERCURY, Etc.

000000

The Mines of British Columbia have Produced over \$112,000,000.

cellent and very cocco Mining Regulations.

Amount and Value of Materials Produced, 1896-97.

	Customary Measures.	1896.		1897.	
en Tribuna		Quantity.	Value.	Quantity.	Value.
Gold, Placer	Oz Oz Lbs Tons . Tons .	27,201 62,259 3,135,343 3,818,556 24,199,977 894,882 615	\$ 544,026 1,244,180 2,100,689 190,926 721,384 2,688,666 3,075 15,000	25,676 106,141 5,472,971 5,325,180 38,841,135 882,854 17,832	\$ 513,520 2,122,820 3,272,836 266,258 1,390,517 2,648,562 89,155 151,600
	58573	1.55	\$7,507,946	CARBINIA.	\$10,455,268

PRODUCTION FOR ...

1890, \$2,608,608; 1896, \$7,146,425; 1897, \$10,452,268.

A LARGE AMOUNT OF CAPITAL

Is now flowing into the Province to develop the mineral resources, and new districts, besides those now established, are proving to be rich in metalliferous deposits . . .

LARGE AREAS OF MINERAL LAND

Are still open to location according to excellent and very liberal Mining Regulations. Facilities for Transport and Communication are being rapidly extended.

00000000000

FOR OFFICIAL REPORTS, MAPS, INFORMATION, ETC., ADDRESS:

Or The HON. THE MINISTER OF MINES
PROVINCIAL MINERALOGIST Col. James Baker,
Department of Mines, VICTORIA, B.C.
VICTORIA, B.C.

ONTARIO'S MINERAL LANDS...

The Mineral-Bearing Lands of Ontario extend from the River St. Lawrence, Northward of the Great Lakes, to the Manitoba Boundary beyond Lake of the Woods.

1,200 Miles Long by 100 Miles Wide—120,000 Square Miles-The Mining Low of Acres, of Transfer Title, and has been

These lands lie upon the shores of the Great Lakes for 1,000 miles, and are easily accessible at many points in the interior by railway and water communication.

Three-fourths of the territory unexplored.

Among the principal minerals are GOLD, SILVER, NICKEL, COPPER, IRON, APATITE, CORUNDUM, MICA, PLUMBAGO and TALC.

Crown lands are sold at \$1.50 to \$3.00 per acre, or leased for long terms at 60 cents to \$1.00 per acre first year, and 15 to 25 cents for

subsequent years, according to location.

A first discoverer of valuable metals, ores or minerals, is entitled to a free grant of one location of 40 acres where the vein or deposit is not less than 10 miles from the nearest known mine, vein or deposit of the same metal, ore or mineral.

Reports and maps free on application.

For further information address:

Commissioner of Crown Lands.

HON. J. M. GIBSON, or ARCHIBALD BLUE,

Director Bureau of Mines, TORONTO, ONTARIO. m

PROVINCE OF QUEBEC.

The attention of Miners and Capitalists in the United States and in Europe is invited to the

Great Mineral Territory

Open for Investment in the Province of Quebec,

d

nd

ng

or

ed

is

of

GOLD, SILVER, COPPER, IRON, ASBESTOS, MICA, PLUMBAGO, PHOSPHATE, CHROMIC IRON, GALENA, Etc., Etc.

ORNAMENTAL and STRUCTURAL MATERIALS in ABUNDANT VARIETY

The Mining Law gives absolute security to Title, and has been specially framed for the encouragement of Mining.

Mining concessions are divided into three classes:-

- 1. In unsurveyed territory (a) the first class contains 400 acres, (b) the second, 200 acres, and (c) the third, 100 acres.
- 2. In surveyed townships the three classes respectively comprise one, two and four lots.

All lands supposed to contain mines or ores belonging to the Crown may be acquired from the Commissioner of Colonization and Mines (a) as a mining concession by purchase, or (b) be occupied and worked under a mining license.

No sale of mining concessions containing more than 400 acres in superficies can be made by the Commissioner to the same person. The Governor-in-Council may, however, grant a larger extent of territory up to 1,000 acres under special circumstances.

The rates charged and to be paid in full at the time of the purchase are \$5 and \$10 per acre for mining lands containing the superior metals*; the first named price being for lands situated more than 12

^{*}The superior metals include the ores of gold, silver, lead, copper, nickel, graphite, asbestos, mica, and phosphate of lime. The words inferior metals include all other mice, as and ores.

miles and the last-named for lands situated less than 12 miles from the railway.

If containing the inferior metal, \$2 and \$4, according to distance from railway.

Unless stipulated to the contrary in the letters patent in concessions for the mining of superior metals, the purchaser has the right to mine for all metals found therein; in concessions for the mining of the inferior metals, those only may be mined for.

Mining lands are sold on the express condition that the purchaser shall commence bona fide to mine within two years from the date of purchase, and shall spend not less than \$500 if mining for the superior metals; and not less than \$200 if for inferior metals. In default, cancellation of sale of mining land.

(b) Licenses may be obtained from the Commissioner on the following terms:—Application for an exploration and prospecting license, if the mine is on private land, \$2 for every 100 acres or fraction of 100; if the mine is on Crown Lands (1) in unsurveyed territory \$5 for every 100 acres, and (2) in unsurveyed territory \$5 for each square mile, the license to be valid for three months and renewable. The holder of such license may afterwards purchase the mine, paying the prices mentioned.

Licenses for mining are of two kinds: Private lands licenses where the mining rights belong to the Crown, and public lands licenses. These licenses are granted on payment of a fee of \$5 and an annual rental of \$1 per acre. Each license is granted for 200 acres or less, but not for more; is valid for one year and is renewable on the same terms as those on which it was originally granted. The Governor-in-Council may at any time require the payment of the royalty in lieu of fees for a mining license and the annual rental—such royalties, unless otherwise determined by letters patent or other title from the Crown, being fixed at a rate not to exceed three per cent. of the value at the mine of the mineral extracted after deducting the cost of mining it.

The fullest information will be cheerfully given on application to

THE HON. THE COMMISSIONER OF COLONIZATION AND MINES

PARLIAMENT BUILDINGS

QUEBEC, - P.Q.

the

nce

es-

to

the

ser

of ior an-

folse, oo; ery the of

ere es. ual out ms cil a

ise

ed of

Canadian General Electric Co. Limited

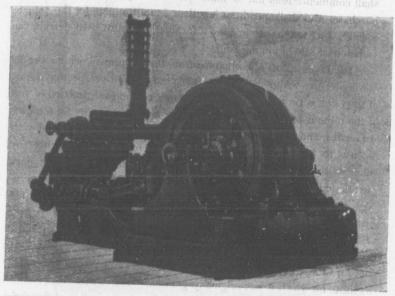
Head Office: 65 FRONT ST. WEST, TORONTO, Ont.

BRANCH OFFICES AND WAREROOMS:

1802 Notre Dame Street, MONTREAL. | Main Street, - WINNIPEG Granville Street, - VANCOUVER

NELSON, B.C.

FACTORIES-PETERBOROUGH, ONT.



INDUCTION MOTOR, geared to 17, Single Acting Horizontal Triplex Pump. Cap. 200 gals. per min., 550 ft. head, Consolidated Gold Fields, Johannesburg, South Africa.

Electric Mining Apparatus

WE MANUFACTURE a complete system of direct-current and alternating machinery for the Transmission and Distribution of Electric Power for Mining Purposes. Our apparatus of this class has been carefully developed in the course of a wide experience in the United States, Mexico, South Africa, Australia, etc., to suit the peculiar and severe conditions of mining service. We are prepared to furnish Generators, Motors and detail appliances specially worked out for operating Pumps, Hoists, Ventilators, Tramways, Stamps, Compressors, Etc. We build Generators up to 2,000 horse power, specially designed for Electrolytic and Electro Chemical work.

Write for Catalogue of Electric Mining Apparatus.

HIGH CLASS TOOLS

Miners, Contractors, Quarrymen and Agriculturalists

OF ALL PATTERNS AND FOR ALL MARKETS.



Picks, Shovels, Forks, Hoes, Axes, Hammers, Wedges, Files, Crowbars, Etc. Hand and Power Boring Machines for all kinds of Rock and Coal. Special Tough Drill Steel.

FOR ALL MATERIALS.

THE HARDY PATENT PICK CO. Limited

SHEFFIELD, ENGLAND.

DYNAMITE AND EXPLOSIVES

FOR MINERS, PIT SINKERS... QUARRYMEN, CONTRACTORS

Manufacturers and Dealers in

Electric Blasting Apparatus

FUSE, CAPS, ETC.

000000

Ontario Powder Works

176 ONTARIO ST.

KINGSTON, ONT.

DAN'L SMITH & C. A. MACPHERSON, Props.

The B.C. Iron Works Co. Limited

VANCOUVER, B.C., CANADA.

MANUFACTURERS OF ALL CLASSES OF

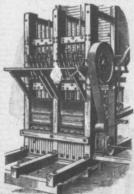
MINING MACHINERY

Hydraulic and Quartz Machinery, River Dredges
Hoists, Engines and Boilers, Water Wheels
Air Compressors and Pumps.

CONTRACTS FOR THE ERECTION OF COMPLETE PLANTS

The Wm. Hamilton Mfg. Co. Ltd.

- MANUFACTURERS OF -



Stamp Mills
Concentrators
... Smelters

GENERAL MINING and SAW-MILL MACHINERY

Peterborough, Ont.

BRANCH OFFICE: VANCOUVER, B.C.

GEO. CRADOCK & Co. WAKEFIELD ENGLAND

Original Makers and Introducers of Lang's Patent.

P

HUMBLE'S PATENT

SAFETY - DETA

ABSOLUTE PROTECTION TO LIFE AND PROPERTY.

WINN & HOLL AND, Montreal

SOLE AGENTS FOR CANADA

Webster Camp & Lane Machine Co.

devill Akron, OHIO, U.S.A. bas silligaby

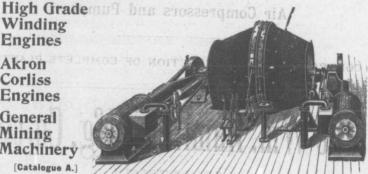
Cable Address, "Webcampco—Akron." Codes A. B. C. 4th Edi. and Liebers Standard
MANUFACTURERS OF

Winding Engines

Akron Corliss Engines General

Mining Machinery

[Catalogue A.]



Also a full line of Electric Hoists, Electric Mine Locomotives, Stationary Motors and Generators (Catalogue B). Catalogues will be mailed free, upon request, to parties interested.

GOULD'S EFFICIENT. POWER PUMPS

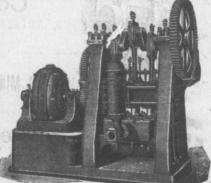
FOR MINES.

Stationa y and Portable. Vertical and Horizon 12. Convenient, Reliable, . . Compact. Medium and Heavy Pres-sures. Arranged for Electrical or other Motive Power. Send for Catalogue.

The GOULDS MFG. Co.

Works and Main Offices, SENECA FALLS, N.Y.

16 Murray St., New York. 8 Oliver St., Boston. The Gould Co., 22 and 24 N. Canal St., Chicago.



Triplex Vertical Mine Pump.

JAMES LEWIS & SON

5 FENWICK STREET, LIVERPOOL, ENGLAND.

Merchants for the sale of Gold, Silver, Copper, Lead, and other Ores, Mattes and Metals.

ORE WHARVES AND ASSAY OFFICE.

Cable Address: Lewisson, Liverpool.

JOHN B. HOBSON, M. E. and Metallurgist. L. F. WARNER, Jr., Hydraulic and M.E.

HOBSON & WARNER

MINING ENGINEERS

Twenty years practical experience in California. Will examine and report on mining properties in Canada and the United States. The equipment and opening of Deep Gravel Drift, Hydraulic and Gold Quartz Mines a Specialty.

QUESNELLE FORKS, BRITISH COLUMBIA

Agents for the Joshua Hendy Machine Works, Hydraulic and Mining Machinery, and the Well's Lights, for use in Hydraulic Mines.

Chemical and Assay Apparatus

AGENTS FOR THE DOMINION FOR THE

MORGAN CRUCIBLE CO., BATTERSEA, &c.

-AND FOR THE -

ANALYTICAL & ASSAY BALANCES & WEIGHTS

Of BECKERS SONS, ROTTERDAM.



Baker & Adamson's C. P. Acids and Chemicals, Brown's Portable Assay Furnace, Hoskin's Gasoline Blowpipes and Furnaces, Dangler Laboratory Lamp Microscopes of E. Leitz, Wetzlar, Kavalier's Bohemian Glassware, Royal Berlin and Meissen Porcelain Platinum Ware, Foll. Crucibles and Dishes, Swedish and Rhenish Filter Paper.

LYMAN, SONS & COMPANY

380, 382, 384 and 386 St. Paul St., MONTREAL.

JOHN E. HARDMAN, S.B.

CONSULTING MINING ENGINEER

Windsor Hotel Room 2

Montreal, Que.

Twenty Years Experience in the Mining and Reduction of Gold, Silver, Lead and Copper.

Thirteen Years as a Specialist in Gold Mining and Milling.

(Honor Graduate in Applied Science, Toronto University)

Member American Institute of Mining Engineers Member Canadian Mining Institute .

87 York Street Rossin Block, Toronto Mining Engineer

CONSULTATION. REPORTS. DEVELOPMENT.

J. BURLEY SMITH BOA

CIVIL AND MINING ENGINEER (30 Years experience)

RAT PORTAGE, ONT.

Undertakes the Prospecting of Mines and Mineral Lands.

Dismond Drill Boring made by contract for all Minerals (earthy and metalliferous) Artesian Wells and Oil Springs; also Deep Soundings for Harbours, Rivers, Canals, Tunnels and Bridge

Foundations.

Quarry Sites and Clay Fields Tested.

Plans and Sections made showing result of Boring—Gold Drills Tested to ledge by the new
Pneumatic and Hydraulic Tube System, and the yield ascertained—Flumes, Ditches, Monitors and
Placer Mining Plant generally designed and constructed.

Properties examined and reported on, and assays made.

GWILLIM & JOHNSON

(McGILL)

Mining Engineers and Assayers

Examinations. Mining Surveys. Draughting and Analysis.

SLOCAN CITY, B.C.

EUSTIS MINING COMPANY

CAPELTON, PROVINCE OF QUEBEC

MINERS OF

COPPER PYRITES ORE

Are prepared to contract with Sulphuric Acid Manufacturers for their supply of Sulphur.

Address: W. E. C. EUSTIS, 55 KILBY STREET, BOSTON, MASS.

ORFORD COPPER COMPANY

ROBERT M. THOMPSON, President.

87 WALL STREET, NEW YORK.

Copper and Nickel Smelters

WORKS AT CONSTABLE'S HOOK, N.J.

Opposite New Brighton, Staten Island.

COPPER ORE, MATTES OR BULLION PURCHASED

Advances made on Consignments for Refining and Sale.

Specialty made of Silver-Bearing Ores and Mattes—Copper Ingots, Wire Bars and Cakes—Ferro Nickel and Ferro-Nickel Oxides for use in preparing Nickel Steel for Armour Plates.

NICKEL AND NICKEL OXIDES.

LEDOUX & COMPANY

98 JOHN STREET, NEW YORK

ENGINEERS, METALLURGISTS AND ASSAYERS

Public Ore Sampling and Storage Works.

All the principal buyers of furnace materials in the world purchase and pay cash against our certificates of assay, through New York Banks.

By special permission of the Secretary of the Treasury of the United States, cars of Ore or Copper Mette passing through in bond can be opened and sampled at our works.

Consignments received and sold to highest bideer. Send for circular giving full particulars.

Mines examined and sampled. Assays and Analyses of all kinds.

EUSTIS MINING COMPANY

Address: W. E. C. E. SOTTO LOASH ET, BOSTON, MASS.

Room 12 Wade Building CLEVELAND, OHIO, U.S.A.



MINERS AND SMELTERS BULLION PURCHASED

NICKEL-COPPER ORES

AT SUDBURY, ONTARIO, CANADA.



Refiners of Pure Nickel for use in German Silver, Nickel Anodes and Nickel Steel.



Cable Address: CUNICKEL, CLEVELAND. Use A B C Code. 4th Edition.

101

We Supply the Goods or Cover by Contract.

HERCULES

CYLINDER

MAJESTIC

ENGINE

O 20 1 1 100 WS

Are not the Lowest Priced, but they are incomparably the BEST VALUE.

Imperial Oil Go. Ltd.

Petrolia, London, Toronto, Hamilton, Brantford, Peterborough, Windsor, Quebec, Kingston, Montreal, Moncton, N.B., Halifax, N.S., St. John, N.B., Winnipeg, Vancouver. We Supply the Goods or Cover by Contract.

Steam Pipes and Boilers

Hot Water, Hot Air, Cold Water, Brine and Ammonia Pipes.



Domes, Tanks, Smoke Stacks, Stills, Heaters etc., etc.

Importers and Dealers in .

ENGINE PACKINGS

Lubricating Oils and Grease, Boiler Compound, Cotton Waste, etc., etc.

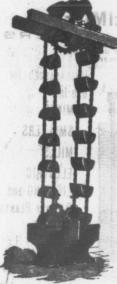
Eureka Mineral, Wool and Asbestos Co., Toronto

Sadler & Haworth

MANUFACTURERS OF

Oak Tanned Leather Belting

MONTREAL and TORONTO.



Elévating and Conveying Machinery.

JEFFREY STANDARD COAL CUTTERS



Made for either Electric or Air Power

ALSO, MANUFACTURE

ELECTRIC DRILLS, ELECTRIC LOCOMOTIVES,
Coal and Ashes Hauling Machinery,
COAL WASHERS,
COAL ELEVATORS,
Tipple and General Mine Supplies.

For Catalogue and Prices

The JEFFREY Mfg. Co.

J. S. MITCHELL & CO.

SHERBROOKE, Que.

IRON AND HARDWARE MERCHANTS

Mining and Mill Supplies, Dynamite, Black Powder,
Electric Fuses, Batteries, etc. Lubricating Oils,
Anthracite & Bituminous Coal (direct shipments from the mines)
Miners' Candles, Asbestos Bags,
Cast and Wrought Iron Pipe and Fittings.

Special Facilities for Supplying Mining Industries south of the St. Lawrence.

BABCOCK & WILCOX, LIMITED

TUBE & STEAM & BOILERS

Over 2,500,000 Horse Power now in use. Average sales exceed 30,000 H. P. monthly.



UNSURPASSED for use in MINES SMELTERS MILLS ELECTRIC LIGHTING and RAILWAY PLANTS

Large book "STEAM" sent free on application.

HEAD OFFICE FOR CANADA: 202 ST. JAMES ST.

MONTREAL

The Canadian Rubber Co. of Montreal

. . MANUFACTURERS OF

STEAM DRILL

ES.

S,

10

h

COTTON and RUBBER FIRE HOSE

BELTING, PACKING, ETC. and MINING BOOTS

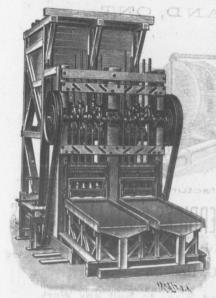
Our Rock Drill Hose is the Best in the market.

Head Office and Factory: Montreal

BRANCHES: TORONTO AND WINNIPEG.

FRIED, KRUPP, GRUSONWERK,

MAGDEBURG BUCKAU (GERMANY.)



COMPLETE

Plant for Dressing Ores

of every kind, especially Gold Ores

COAL WASHING PLANT

Including Separating
Loading
Apparatus.

Rock and Ore Crushers

of especially strong construction and highest capacity. More than 450 at work breaking jaws of Chilled Cast Iron.

Stamp Batteries of Every Size

Shoes and Dies of Special Steel. The wear and tear as small as possible.

Roller Mills. Edge Runner Mills.

Patent Ball Mills

with a continuous feed and discharge for dry crushing ores, etc. More than 1500 at work.

Amalgamating Apparatus,
Settlers, Hydraulic Classifiers,
Jigging Machines,
Percussion Tables,
Rotating Round Tables,
Washing Drums,
Amalgam Clean-up Pans,
Amalgam Distilling and GoldSmelting Furnaces,
Retorts, etc.

Large Experimental Station for Crushing and Ore Dressing Purposes at the Works.

AGENTS:

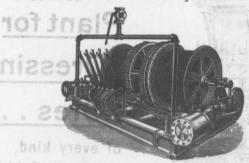
Canada: JAS. W. PYKE & CO., 35 St. Francois Xavier St., Montreal

United States: THOS. PROSSER & SON, 15 Cold Street, New York

Mexico: Officina Tecnica de las fabricas de Fried. Krupp Essen y Fried. Krupp, Grusonwerk, Magdeburg-Buckau, Apartado 549, Mexico.

M. BEATTY & SONS

WELLAND, ONT.



2910 blod visioManufacturers of

DREDGES, DITCHERS, DERRICKS & STEAM SHOVELS

DREDGING, DYKEING, DITCHING GOLD MINING, Etc.

Of Various Styles and Sizes to Suit any Work.

Mine Hoists,
Horse Power Hoisters,
Stone Derricks,
Submarine Rock
Drilling Machinery.
Hoisting Engines,
Suspension Cableways,
Gang Stone Saws,

Centrifugal Pumps for Drainage Works, Pumping Sand, Gold Mining, Contractors' Use, etc.

Wire Rope at Market Prices.

WM. HAMILTON MFG. CO.

Agents, Victoria, B. C.

THE DOMINION WIRE ROPE CO'Y, LIMITED

Montreal, Que.

Constructors of

Bleichert Tramways

Miller and Harris-Miller

Suspension Cableways

COLLIERIES, METAL MINES, BLAST PUR STORENAM

NACES AND SMELTING WORKS Tramway Cables of all kinds

Lang's Patent Wire Ropes for Manager Colliery and Rough Haulage

Wire Rope & &

For Hoisting, Transmission of Power, Towing, Ships' Rigging, Ferry Purposes, Guys, etc.

JAMES COOPER

299 St. James St. WAR STON MONTREAL

"CAMMELL" STEEL RAILS

All sections and weights. Light Mining Rails. Fish-plates, Bolts, Spikes, etc. Car Axles, etc.

"OCTAGON" DRILL STEEL

For Steam Drilling, Tubular Steel Wheel-barrows, Steel Mining Cars, Picks, Shovels, etc.

The Canadian Mining Manual

Aining Companies' HT

Bleichert I ramways

A CAREFUL DIGEST OF INFORMATION RELATING TO THE HISTORY, ORGANIZATION AND OPERATIONS OF ALL CANADIAN Collieries, MFTAL MINES, BLAST FUR-NACES AND SMELTING WORKS

COMPILED FROM THE MOST AUTHENTIC SOURCES olliery and Rough Haulage

ramway Ladies of all kinds

B. T. A. BELL

Editor, Canadian Mining Review; Secretary, Canadian Mining Institute; Hon. Secretary, Mining Society of Nova Scotia: Secretary, General Mining Association of the Province of Quebec, etc.

WITH INTRODUCTORY NOTES AND OFFICIAL STATISTICS

EIGHTH YEAR

OTTAWA:

Slater Building, 177 Sparks Street.

PREFACE.

active social in quantity and value the output of previous years, but that also started in quantity and value the output of previous years, but that nother reported a very substantial increase in our dividend pour of or other and a profit. The figures potential increased Survey of Caunda place the value of our estimate in

NOTICE.

THE CANADIAN MINING MANUAL is compiled and kept posted up from official reports and other equally authoritative sources, and it is requested that Prospectuses, Annual Reports, Statements of Accounts, and other documents bearing upon the scope of the work be promptly mailed to the offices of the CANADIAN MINING REVIEW, Slater Building, Ottawa, Ont.

Managers and Secretaries are respectfully requested to co-operate with the publisher in making the statements respecting the operations of their companies as complete and reliable as possible.

THE CANADIAN MINING MANUAL is published on the 1st of July of each year, and is entered according to Act of the Parliament of Canada, in the year 1891, by B. T. A. Bell, at the Department of Agriculture.

at its

ne

as

h

PREFACE.

It is gratifying to note the continued expansion and prosperity of mining enterprise in Canada, for not only does the production of minerals in 1897 greatly exceed in quantity and value the output of previous years, but there has also to be recorded a very substantial increase in our dividend paying mines and mineral undertakings worked at a profit. The figures published by the Geological Survey of Canada place the value of our output in the calendar year in excess of \$28,000,000, or an increase of over \$6,000,000 compared with the year 1896, but this estimate appears to be liberal, judging from the figures officially reported by the Provincial Governments, and we prefer to believe the actual value to have been within \$26,500,000, distributed among the principal producing provinces approximately as follows:—

D.:4:-1 C 1 11																	
British Columbia. Nova Scotia	*									. ,							. \$10,455,268
Ontario															*		5,000,000
N. W. Territories	9	n	d	,	ċ		i.				٠			•			
- STATE OF TOS	-		u		A	u	ri,	U	11				*				. 3,000,000

\$26,518,534

Inasmuch as many readers of the MANUAL may not have access to Provincial blue books, the following returns of production in the various provinces during the year may be found convenient for reference:

NOVA SCOTIA.

The following figures cover the fiscal year ended 30th September only, and do not include the production of iron and steel, one of the most important industries of the Province. A conservative estimate of the output in 1897 would place the value about \$6,000,000:—

Оптрит.	Year Ending September 30, 1896.	Year Ending September 30, 1897.
Gold Oz. *†Iron Ore Oz. *†Iron Ore tons *†Coal raised ''	26,112 56,334 129 2,235,472 58,741 130,489 30,317 31,171	26,579 44,146 100 2,320,916 45,000 125,000 32,400 25,000

^{*} Not including imported ore ! Amount exported.

[†] Tons of 2,240 lbs. ¿ Value in dollars.

ONTARIO.

The following table, published by the Bureau of Mines, is also incomplete inasmuch as it does not give the values of many important products in structural materials. For the year 1896 the Bureau (including building stone, lime, drain tile and pottery, the values of which are omitted in the statement for 1897) estimated the total mineral production of Ontario at \$5,235,003:—

otal,		
OUTPUT, 1897.	Quantity.	Value.
Cement, natural rock. barrels. Cement, Portland " Pressed brick, plain number. Pressed brick, fancy " Roofing tile Terra Cotta Paving brick Sewer pipe Petroleum imputal gallons. Illuminating oil " Lubricating oil " Benzine and naphtha " Gas and fuel oils and tar Paraffin wax and candles lbs. Natural gas Calcium carbide state Gypsum and products of " Graphite and products of " Iron " Nickel " Copper " Gold Oz.	84,670 96,825 7,148,908 895,000 35,000 4,567,880 25,556,591 10,891,337 1,959,810 949,341 8,021,633 2,139,278 574 54,686 1,729 400 24,011 1,999 2,750 11,412	\$ 76,123 170,302 53,727 9,350 400 35,800 45,670 73,551 1,131,083 199,755 77,340 281,035 88,378 308,448 34,440 249,880 17,950 8,500 288,127 359,651 200,067 190,244
Add structural material, omitted		1,100,179
		5,000,000

QUEBEC.

ize ha

the

Ne

Bri

The tollowing approximate statement has been compiled from returns furnished by Mr. Obalski, the Inspector of Mines, and from figures furnished by the mine owners and managers to the MANUAL:—

Mineral.	Value.
Asbestos and asbestic	. \$ 650,000
Mica	. 125,000
Copper pyrites	159,712
Copper	2,000
Chromite	32,770
Gold	. 1,000
Graphite	2,000
Felspar	5,000

Silver and lead. Ochre Phosphate Charcoal Pig Iron	5,300
Charcoal Pig Iron)	6,084
Charcoal Pig Iron Iron Ores Slate	250,000
Lime, Brick, Cement, Granite and other build	7,000
materials, value	800,000
Total	\$2,108,266

ete ucne, for

3505880007

9

ır-

by

BRITISH COLUMBIA.

The following figures for the calendar year are reported by the Minister of Mines:—

OUTPUT.	18	96.	1897.		
102.02.22	Quantity.	Value.	Quantity.	Value.	
Gold, placer, ounces "lode, " Silver " Copper, pounds Lead " Coal, tons, 2240 lbs Coke " " Other materials	27,201 62,259 3,135,343 3,818,556 24,199,977 894,882 615	\$ 544,026 1,244,180 2,100,689 190,926 721,384 2,688,666 3,075 15,000	25,676 106,141 5,472,971 5,325,180 38,841,135 882,854 17,823	\$ 513,520 2,122,820 3,272,836 266,258 1,399,517 2,648,562 89,155 151,600	
And the second		\$7,507,946		\$10,455,268	

Equally significant was the activity shown in the incorporation and registration of new ventures, no fewer than 590 companies, having a total authorized capital of \$545,698,000, being recorded in British Columbia, while 140, having an authorized capital of \$101,531,000, were chartered in Ontario; a number of important charters were also granted during the same period by the Federal Government and by the Provinces of Nova Scotia, Quebec and New Brunswick.

The following statistics of the Charters of Incorporation, granted in British Columbia, are interesting:—

Total, 1st Jan. to 8th May, 1897—421	\$393,059,000
dets, 303 companies having a capital of	336.747,000
Under the Companies Act 1800 and	17,150,000
Under the Companies Act, Part II, (1878), 14 companies having a capital of.	
Under the Companies Act (Imperial) Part I, 44 companies having a capital of	\$39,162,000
Under the Companies A-t /T	

Under the Companies Act, 1897 (from 8th May to 31st December, 1897), 27 companies having a capital of

10,723,000

Total incorporated, 448, having a capital of \$403,782,000

The following companies were registered: - I The following compani

\$136,866,000

5,050,000

Total companies registered and incorporated in 1897, 590 having a capital of...

\$545,698,000

In Ontario, to the end of 1896, there were issued 146 charters to mining companies, with a total capital of \$62,529,380, one-fourth of which was credited to the 26 companies in that year. In 1897 the number of companies incorporated in this Province was only six less than in the preceding 29 years, but in the amount of authorized capital they exceed all companies formed in the 29 years by \$48,000,000.

Coincident with this remarkable increase in the promotion of mining ventures, it is no small satisfaction to note the very marked expansion of mining as an industry in Canada, and the continued improvement that is apparent in mining methods and in the quality of machinery and appliances. In Nova Scotia the stamping capacity at the more important mines has been considerably increased, and will be still further extended during 1898 by the addition of at least one new 60-stamp battery; new mills have also been installed in western Ontario; while in British Columbia the smelting facilities have been enlarged and improved. Indeed, the growth of our mineral industries is most encouraging, and the present ootlook for mineral discovery and development would seem to indicate a steady advance for many years to come.

OTTAWA, 1st August, 1898.

Occi

Ont

In

D

Pro

Prod

Produ

CONTENTS.

Index to Companies 5
List of Stamp Batteries in Canada
Provincial Statistical Summaries, 1897 xliii, xliv, x
Dominion Statistical Summary xliii, xliv, x
and the state of t
PART I.—COAL MINING AND TRADE.
Production and Imports of Coal and Coke. Consumption. Shipments through Welland and St. Lawrence Canals. Exports—Duty. Resources of the Dominion. Cape Breton—Pictou—Cumberland. Nova Scotia Colliery Returns—Markets. St. Lawrence Trade—Prices and Water Freights for Sydney Coal. Nova Scotia Exports to United States. Railway Deliveries. New Brunswick Coal Fields and Output. Manitoba and North-West Territories. British Columbia Coal Fields. B.C. Output of Coal and Coke. B. C. Colliery Returns. B. C. Coal Imported by California. Coal Companies
PART II—IRON AND STEEL.
Ontput of Iron Ore. Coke and Charcoal Pig. Puddled Bars and Steel Billets. Ore Production, 1886-1895. Ore Exports. Bounties Paid on Pig Iron, Bars and Billets, 1884-1897. Ontario Iron Mining Fund. Exports of Iron and Steel. Prices of American and Canadian Iron. Scotch Warrants. Imports—Iron and Steel, 1897. Imports of Pig Iron, 1896-1897. Iron and Steel Companies
PART III.—CHROMITE.
Occurrence in Quebec. Production and Shipments. Market. Uses. Methods of Dressing and Concentration. Typical Analyses of Ore in Bulk. List of Producers 150 to 156
PART IV.—MANGANESE.
Scotia and Output. Exports. Imports. Commercial Value. Prices.
13/ 10 108
PART V.—COPPER, N°CKEL AND PYRITES. roduction of B.C., Ontario and Quebec. Output of Nickeliferous Pyrrhotite. Output of Pyrites. Imports of Copper. Copper Production. Output of
Copper in B.C. Copper Exports. Imports of Brimstone. Canada Nickel Industry Reviewed. Prices for Nickel. Companies 170 to 192

PART VI.-GOLD MINING.

Gold Resources of the Dominion. Nova Scotia—Yields of Nova Scotia Mines, 1861 to 1897—Area of Gold Measures—Geology—N. S. Laws. History, Area, Production and Geology of Quebec Gold Fields. Gold Mining in Ontario—History—Production. British Columbia—History—Production Yield of Placer Gold, 1858–1898—Area and Geology—Laws. North-West Territories. Gold Producing Companies and Mines 196 to 403

PART VII.—SILVER AND LEAD.

th

Sı

Co Go

Iro

Me

Pla

Silv

Chr

Cok Fels

Fire

Grin Gyp Lim Mica Mine

Mine Moul Natu Petro Phos Pyrit Salt. Sund

PART VIII.-GAS AND OIL.

History of Petrolia Oil Field—Geology. Character of Ontario Product.

Methods of Refining. Borings at Gaspé, Que., and at Athabasca, N.W.T.

Occurrence of Natural Gas in Ontario. Duty on Oils. Production of Oil

and Gas, 1897. Producers. 476 to 496

PART IX.-ASBESTOS.

Output of Asbestos and Asbestic. Railway Shipments. Eastern Township Shipments. Output and Value—1880 to 1896 Compared. Exports. Varieties. Occurrence in Canada. Uses. Companies. 498 to 518

PART X.-MICA:

Output. Exports. Occurrence in Canada. Preparation for Market. Prices.

Industrial Uses. Producers. 520 to 526

PART XI.-CORUNDUM.

- Discovery of Important Deposits in Ontario. Uses. Regulations.. 528 to 533
- PART XII.—MISCELLANEOUS MINING COMPANIES.... 534

MINERAL PRODUCTION OF THE DOMINION, 1897.

The following estimate, subject to revision, is excerpted from the Summary of the Mineral Production of Canada, published by the Mines Section of the Geological Survey of Canada, and shows the value of the principal mineral products of the Dominion during the calendar year 1897:—

PRODUCT.	Value.
METALLIC.	\$
Copper (fine in one stall	Φ
Copper (fine, in ore, etc.)	. 1,501,660
Gold	6,190,000
Iron ore. Lead (fine, in ore, etc.)	178,716
Lead (fine, in ore, etc.)	. 1,306.853
Mercury. Nickel (fine, in ore, etc.).	. 324
Silver (fine, in ore, etc.)	6,600
	0.0
Total metallic	13,996,234
Non-Metallic.	
Asbestus and asbestic	
Chromite.	324,700
Chromite	32,474
Coke. Felspar Fire clay	209,920
	3,506
	5,759
Gypsum .	40,000
	244,531
Mica	40,000
	125,000
Baryta	3,060
Mineral water.	23,560
Mineral water. Moulding sand Natural gas.	140,000
Vatural gas	10,031
	325,873
Petroleum	
Petroleum	1,011,546
Petroleum Phosphate (apatitė).	3,984
etroleum Posphate (apatitė). Pyrites alt	
Petroleum. Phosphate (apatite). Pyrites alt undry minerals, partly estimated, including actinolite, graphite,	3,984
Natural gas. Petroleum Phosphate (apatitė). Prites salt sundry minerals, partly estimated, including actinolite, graphite, manganese, soapstone and tripolite. tructural materials.	3,984

CANADIAN STAMP BATTERIES, 1898.

The following returns show the number of stamps dropping, and in place, in Canadian gold mills at 1st July, 1898:—

PROVINCE OF NOVA SCOTIA.

11-11-11-11-11-11-11-11-11-11-11-11-11-	IROVIN	CE OF	NOVA SCOTIA.		
Company.	District.	No. of Stamps.	Company.	District.	No. of Stamps.
Thompson & Quirk C.P.F. Mining Assn. Hy. Archibald et al. Sweet et al. North Star McConnell Oland Casham Cream Pot Napier Oldham	Halifax County Isaac's Harbor Sherbrooke "" "" Moose River Caribou South Uniacke " Mount Uniacke Stormont "" Montague Leipsigate	5 40 20 15 10 15 10 15 10 10 10 10 10 10 12 8	W. C. Tarre & Co Modstock. Tudor. Northup. Old Provincial Brookfield Pictou New Egerton Barrachois Essex W. Yeadon Shangie Irwin et al. Austen Griffin. T. N. Baker Lincoln British American. Golden Group. Oxford Walton & Britton. Guffey Jennings	"Waverley Central Rawdon Killag N. Brookfield Renfrew 15 Mile Stream Wine Harbor Tangier Mooseland Lawrencetown Salmon River Beaver Dam Stormont Gold River " Montague " Lake Catcha Kemptville	30 10 30 10 30 10 10 10 10 10 10 10 10 10 10 10 10 10
PROVINCE O	F ONTARIO.		PROVINCE OF B	RITISH COLUMB	IA.
Company.	District.	No. of Stamps.	Company.	District.	No. of Stamps.
Foley Faw Pill Pominion Gold M. and Reduction I sucky Coon Factors	ake of Woods. Rainy River "" Wahnapitae. ackfish Leewatin Lainy River ake of Woods.	30 40 20 20 10 20 5 10 5 5 10 20 5 4	Forman. Island Mountain Golden Cache Stratheyre Tin Horn Fire Mountain.	Camp M'Kinney Cariboo Nelson Cariboo Cayoosh Creek Fairview in Brit. Columbia	10 10 10 10 10 10 10 16 10

COAL MINING AND TRADE.

COAL MINING AND TRADE.

From returns furnished direct to the Manual by the Collieries, full details of which are given in the appended table and in the notices of the companies, it is estimated that the total output of coal in the Dominion during the year 1897 was 3,528,133 tons, of a value at the mines in excess of \$7,000,000. Returns of the coal imported during the calendar year not being available, the Trade and Navigation Statements for the fiscal year ended 30th June have been summarised and show:—Anthracite 1,457,295 tons, value \$5,695,168; Bituminous 1,543,476 tons, value \$3,254,217; Culm 225,562 tons, value \$59,609, or a total quantity brought in of 3,226,333 tons of a value of \$9,008,994. After deducting the quantities exported from Nova Scotia to the United States along the Atlantic, to Newfoundland, West Indies and other points, the shipments to Montana from the North West Territory, and the quantities sold in San Francisco and other Pacific ports, from British Columbia, the coal consumption of the Dominion during the year will approximate a little short of 6,000,000 tons. The following tables show the production, exports, imports and consumption during 1897:

BRI

N

COAL PRODUCTION 1897.

Operator.	Colliery Output 1897.	Total Output 1897.	Exported From Canada 1897.	
Nova Scotia—				
Acadia Coal Co	219,706 74,504 16,000 302,581 1,251,295 268,000 203,052 10,000	2,345,138	Nil. 714 12,084 125,625 57,567 204	*197,375
New Brunswick— Estimated Manitoba—-	5,000	5,000	Nil.	
Roche-Percee Coal Co, Tons North West Territory—	9,000	9,000	Nil.	
Alberta Ry. & Coal Co Tons H. W. McNeill Co " Edmonton, Knee Hill, etc. " BRITISH COLUMBIA—	160,000 106,700 10,000	276,700	40,555 Nil. Nil.	40,555
New Vancouver Coal Mining & Land Co	319,343 297,611 265,642 6,000 3,375 323	892,295	231,986 211,662 176,212 Nil. Nil.	619,860
Total		3,528,133		857,790

^{*}These figures do not include coal sold to foreign s.eamers.

COKE MADE IN 1897.

(Coal and Iron Companies only.)

The quantity of coke made in 1897 is reported by the Geological Survey of Canada to have been 78,811 tons of an estimated value of \$209,929. The output during 1898 will be considerably increased by the operations of the Crow's Nest Coal Co., at Coal Creek, B.C. The following table shows the quantity made and exported by coal and iron companies in the Provinces of Nova Scotia and British Columbia during the calendar year as reported to the MANUAL:—

Name of Company.	Where Operating.	Made.	Exported.
Acadia Coal Co. Intercolonial Coal Co. Nova Scotia Steel Co People's Light and Hear Co. Union Colliery Co.	Westville, N.S Ferrona, N.S	1,299 977 35,000 4,500 17,831	Nil. Nil. Nil. Nil. Nil.
Total coke made by coal a	and iron companies (tons)	59,607	17,101

IMPORTS OF COAL AND COKE.

(Year ended 30th June.)

Fiscal Year ended 30th June, 1897.		om Britain.		om States.	Total I	mports.
30th June, 1897.	Tons.	Value.	Tons.	Value.	Tons.	Value.
Anthracite Bituminous " Culm. Coke	50,621 33,732 5,681	80,462 18,438 33,365	1,457,262 1,492,773 191,830 75,854	3,173,544	I,457,295 I,543,476 225,562 83,330	3,254,217
Total	90,034	132,265	3,217,719	9,138,515	3,309,663	9,276,534

of c

COAL IMPORTED BY PROVINCES.

(Year ended 30th June.)

ıt

Provinces.	Bitun	ninous.	Bitumino	ous Culm.	Anth	racite.
Trovinces.	Tons.	Value.	Tons.	Value.	Tons.	Value.
Ontario Quebec Nova Scotia New Brunswick Manitoba British Columbia. P. E. Island NW. Territory		130,864 2,669 4,244 31,467 26,988	40,466	20,937	913,724 426,188 44,086 58,528 13,262 136 1,370	1,573,611
Total	1,543,476	3,254,217	225,562	50,609	1,457,295	5,695,168

COKE OUTPUT, EXPORTS AND IMPORTS.

Powerform of	Output.	Exports.	Imports for	Fiscal Year.
Provinces.	Tons.	Tons.	Tons.	Value.
Nova Scotia British Columbia Ontario Quebec New Brunswick Manitoba	17,831		15,350 60,255 7,526 13 186	79,384 160,367 26,496 130 1,163
Total	59,607	17,101	83,330	267,540

CANADIAN COAL CONSUMPTION.

The following may be taken as a fairly approximate estimate of the consumption of coal in Canada during the year 1897:—

C 11 C 1	Tons.
Canadian Coal American:—	2,670,343
Anthracite	 1,457,262
Bituminous	 1,492,773
Culm	191,830
Bituminous	 50,621
Culm	33,732
Total Coal consumption	 5.806.561

COAL passed through the Welland Canal from 1885 to 1896, inclusive.

Year.					Total Tons.	Amount of Tolls Paid.
	Up.	Down.	Up.	Down.		20 cents a ton.
	Tons.	Tons.	Tons.	Tons.		\$ cts.
1885	193,442	4,974	10,321	31,350	240,087	48,017 40
1886	184,564	5,400	22,187	49,742	261,875	52,375 00
1887	81,617	1,163	26,775	25,968	135,523	27,104 60
1888	172,381	878	17,365	27,183	217,807	43,561 40
1889	226,352	1,124	12,036	25,931	265,443	53,188 60
1890	116,616	615	17,280	22,781	202,372	38,222 30
1891,	185,190	1,382	17,374	20,698	224,644	44,928 20
1892	183,244	651	12,391	15,330	211,616	42,284 13
1893	204,704	2,123	8,325	17,944	233,096	46,619 20
1894	187,794	727	1,269	13,947	203,737	40,789 93
1895	148,887	603	1,565	7,807	158,866	31,773 05
1896	206,093	1,255	4,127	11,740	223,445	44,668 20

186

Provi excee procla pound such p notwi

but no fifteen fixes the pounds shall be sevented.

Note.—Tolls on soft coal passed down the Welland Canal, during the season of 1890, were reduced from 20 to 10 cents a ton, per O.C. 11th May, 1800, for the season of 1890 only, the rate for 1891, 1892, 1893, 1894, 1895 and 1896 being 20 cents a ton for passage either eastward or westward.

COAL passed through the whole length of the St. Lawrence Canals during the seasons from 1885 to 1896 inclusive.

Year.	Quantity passed up Free of Tolls.	Quantity passed down to Montreal.	Total Quantity passed up and down.	Amount of Tolls on Quantity passed down to Montreal.
	Tons.	Tons.	Tons.	\$ cts.
1885	5,035	122,829	127,864	18,424 35
1886	3,301	118,802	122,103	17,820 70
1887	7,579	121,618	129,197	18,242 70
1888	8,341	123,050	131,391	18,423 90
889	5,360	124,290	129,650	18,604 90
890	6,538	135,168	141,706	20,275 20
891	7,951	141,701	149,652	21,255 15
892	7,543	157,134	164,677	23.570 10
893	2,285	147,139	149,424	22,070 85
894	16,213	169,552	185,765	25,432 80
895		165,151	165,151	24,772 65
896	689	161,551	162,240	24,232 65

EXPORTS OF CANADIAN COAL, 1868-1897.

Year ended 30th	Exports	of Coal.	Year ended 30th	Exports	of Coal.
June.	Quantity.	Value.	June.	Quantity.	Value.
	Tons.	\$		Tons.	\$
1868 1869 1870 1871 1872 1873 1873 1874 1875 1876 1877 1878 1879 1888 1888 1888	265,335 440,308 286,707 318,287 295,522 404,757 418,357 288,176 277,832 249,536 340,127 315,793 4420,055 421,311	640,708 763,262 588,709 662,451 578,691 951,886 1,343.739 937,923 977,188 855,968 1,210,689 937,268 1,013,899 1,123,091 1,078,704	1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897	444,142 451,631 479,706 493,508 527,004 563,341 645,515 715,364 833,684 945,125 908,232 995,998 1,110,567 1,025,060 1,102,067	1,158,705 1,201,172 1,468,166 1,416,166 1,522,272 1,739,466 2,232,154 2,447,936 2,916,465 3,195,467 3,114,558 3,321,565 3,578,195 3,249,069 3,330,017

COAL DUTY.

The following is excerpted from the Canadian tariff, 1897:-

Coal, bituminous, round and run of mine, and coal, n.e.s., fitty-three cents per ton of 2,000 pounds (being the equivalent of sixty cents per ton of 2,240 pounds): Provided that if the United States Congress fixes the duty on such coal at a rate not exceeding forty cents per ton of 2,240 pounds, the Governor in Council may by proclamation reduce the duty mentioned in this item to forty cents per ton of 2,240 pounds, or the equivalent thereof per ton of 2,000 pounds, and the duty declared by such proclamation shall then be the minimum duty on such coal from all countries, notwithstanding section seventeen of this Act.

Bituminous slack coal, such as will pass through a half-inch screen, subject to regulations to be made by the Controller of Customs, twenty per cent. ad valorem, but not to exceed thirteen cents per ton of 2,000 pounds, (being the equivalent of fifteen cents per ton of 2,240 pounds). Provided that if the United States Congress fixes the duty on such slack coal at a rate not exceeding fifteen cents per ton of 2,240 pounds, then the duty on such coal imported into Canada, as provided in this item, shall be the minimum duty on such coal from all countries, notwithstanding section seventeen of this Act.

RESOURCES.

The coal areas of the Dominion are estimated at 97,200 square miles, not including areas known, but as yet undeveloped, in the far north.

ad

app

gre

oth

ma

cok

coa

arei

und

con

Cale

Old

Res

Vict

Old New

Hali

Stee

There are, first the coal fields of Nova Scotia and New Brunswick; second, those of Manitoba and the Northwest Territory; third, those of the Province of British Columbia.

NOVA SCOTIA.

The coal areas of this province are divided into the Cape Breton, Pictou and Cumberland districts.

The Cape Breton Coal Field.— The coal fields of Cape Breton comprise four large areas, (1) on the coast east and west of Sydney harbor, (2) in Inverness County, between Margaree harbor and Port Hood, including important mines at Broad Cove, (3) a basin on River Inhabitants, near Glendale, and (4) a tract in Richmond County, near the mouth of River Inhabitants. But as all the mines at present worked, producing more than one million tons of coal annually, lie within the Sydney coal field, this alone will be referred to.

The land area occupied by coal bearing rocks in the Sydney coal field has been estimated at two hundred square miles, while an immense submarine area contains large seams of coal in workable condition, easily accessible. The rocks are regular and rest everywhere upon the millstone grit, except where brought by a fault against a mountain of Laurentian rocks at New Campbellton at the western edge of the coal field.

The coal measures have been folded into subordinate basins so as to bring the coal seams to the surface under the most favorable conditions for their extraction and shipment. The whole coast is deeply indented by bays and channels approximately coinciding with the axes of these folds, affording in the sea cliffs numerous natural exposures of the coal seams and accompanying strata and constituting excellent harbors, one of which, Sydney harbor, si uated towards the centre of the district is one of the finest in the world. During the few months of winter, when the more northerly harbors are closed or obstructed by ice, a railway carries coal from the collieries east of Syndney harbor to the fine winter port of Louisburg.

The cliffs are generally from thirty to one hundred feet high, and the country is of a gently rolling character, the highest altitudes seldom exceeding two hundred and fifty feet. Such natural advantages, combined with its highly favorable geographical position, point to this district as probably the most important in the Dominion for the supply of fuel to the numerous steamers navigating the Atlantic.

Taking the average of all the sections, the total number of seams in the productive measures is twenty-four, of which six are three feet or upwards in thickness, and the total average thickness of coal may be stated at forty-six feet. The similarity and persistency of the seams over great areas is very remarkable, although local variations are frequent. There is, therefore, no great uncertainty in regard to the equivalency of the various seams at different points. They generally dip at a very low angle and are little affected by faults and disturbances.

The coal is of the soft, or bituminous variety, with comparatively little diversity in the quality of the different seams, all of which yields a coal exceedingly well adapted for steam and domestic purposes, while that of some of them is especially applicable to the manufacture of gas. Much of it will compare very favorably with the best English coal. As compared with the Pictou coal it is characterized by a greater proportion of combustible matter and a smaller proportion of ash; but on the other hand it usually contains a greater amount of sulphur, although experiments made on a small scale at Ferrona seem to prove that some of the coals will yield a coke as suitable for iron smelting as that made from a mixture of Acadia, Drummond and Springhill coals.

Underclays, charged with roots and innumerable rootlets, occur beneath every coal seam and bed of carbonaceous shale, and their roof shales are for the most part rich in fossil plants. The productive measures contain also beds of argillaceous and arenaceous shale, usually grey; sandstone, limestone, red and green marl. They are underlaid in descending order by the millstone grit, carboniferous limestone and conglomerate.

ANALYSIS OF CAPE BRETON COALS.*

Mine.	Volatile Matter.	Fixed Carbon.	Ash.	Total Sulphur.	Sulphur in Ash.	Calorific Power
Caledonia (Phelan) Dominion (Phelan). Old Bridgeport (Phelan). Reserve (Phelan). Hub. Sterling (Harbour). Victoria (Ross). Old Sydney (Main). New Campbellton.	28.02 25.13 31.81 32.00 29.10 37.96 34.65 34.65 32.07	68.05 71.22 63.86 63.93 65.50 54.84 58.42 57.67 56.86	2.19 2.73 3.09 2.95 4.50 5.60 4.93 6.63 7.46	1.72 1.10 1.33 1.33 3.29 4.03 3.48 4.10 5.90	0.05 0.10 0.12 0.12	7623 7403 7238 7513 7458 7403 7513 7623 7073

Comparative Analysis recently made by the People's Heat and Light Co., Halifax, 1896:—

	Matter	Fixed Carbon.	Ash.
Ordinary Cape Breton Coal	36%	59%	5%

ANALYSIS of washed coal slack, and coke made therefrom by the Nova Scotia Steel Co., 1895: —

HUB:	Ash.	Sulphur.
Washed coal	4.37	2.38
PHELAN:	11.20	1.34
Washed coal	7.05	2.87
Соке	11.30	2.13
HARBOR: Washed coal	F F0	2.10
Coke	5.50	3.12 2.79

^{*}By Mr. F. H. Mason, F.C.S., Trans. Fed. Canadian Mining Institute, Vol. I., 1896

STATEMENT SHOWING WORKABLE SEAMS AND VIELD OF COAL IN THE EASTERN COALFIELD, CAPE BRETON COUNTY.

Total Workable Tons.		112,492,800 28,224,000 43,368,000 6,771,072	193,855,872	22,377,600 46,972,800 40,185,594 75,600,000 88,300,800	79,608,000	
Workable Tons in Sea Area.		72,576,000 16,128,000 40,320,000 6,652.800	135.676,800	21,772,80c 45,158,400 37,564,794 68,040,000 66,528,000	56,448,000	366,473,394
Workable Tons in Land Area.	The state of the s	39,916,800 12,096,000 6,048,000 118,272	58,179,072	604,800 1,814,400 2,620,800 7,560,000 21,772,800	23,160,000	101,078,400 366,473,394
Total Gross Tons.	1	220,416,000 53,760,000 98,560,000 14,915,411	387,651,411	49,280,000 103,040,000 87,359,985 162,400,000 180,096,000	159,640,000	964,019,985
Gross Tons in Sea Area.		161,280,000 35,840,000 89,600,000 14,783,998	301,503,998	48,384,000 100,352,000 83,477,319 151,200,000 147,840,000	125,440,000	814,385,319
Gross Tons in Land Area.		59,136,000 17,920,000 8,960,000 131,413	86,147,413	896,000 2,688,000 3,882,666 11,200,000 32,256,000	34,200,000 64,512,000	149,634,666
Total Square Miles.		41 18 22 4 50 0 4 50 0	7500	134 145 224 29 29 334	352	1901
Land Sea Area Area Square Square Miles Miles.		30 12 20 20 4 ½	661	133 14 27 27 27 27	292	191
		11 6 5 2 2 2 5 5	1925	- +si x - 7 9	72112	293
Thick- ness Ft. In.		0.8.5.8	19.4	0.8 6.3 6.3 6.3	5.0	39.7
SEAM.	OLD SYDNEY MINES	Main Seam Indian Cove Lloyd's Cove Cranberry Head.	Low Point Area.	Carr Paint Crandall. Ross. Frazer. McGillvray or Lin-	gan	

STATEMENT SHOWING WORKABLE SEAMS, ETC, IN CAPE BRETON COUNTY. - (Continued).

SEAM.	Thick- ness. Ft. In.	Thick. Land Sea 7 ness. Square Square Square Miles. Miles.	Sea Area Square Miles.	Total Square Miles.	Total Gross Tons Square in Miles. Land Area.	Gross Tons in Sea Area.	Total Gross Tons.	Workable Tons in Land Area.	Workable Tons in Sea Area.	Total Workable Tons.
GLACE BAY AREA.										
Hub Harbour. Back Pit Phelan. Ross or Emery. Gardner.	8.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	22 22 27 11 13 13 24 24	103 28 29 30 33	11 17 ¹ 35 40 43 57	3,808,000 8,960,000 24,528,000 78,848,000 58,240,000 96,768,000	79,968,000 53,760,000 98,112,000 207,872,000 134,400,000	83,776,000 62,720,000 122,640,000 286,720,000 192,640,000	3,570,400 6,048,000 16,556,400 53,222,400 39,312,000 65,310,400	35,985,600 24,012,000 44,150,400 93,542,400 60,480,000	39,556,000 30,060,000 60,706,800 146,764,800 99,792,000
Cow Bay Area.	35.0	58	1452	2033	271,152,000	707,168,000	978,320,000	184,028,600	37,073,200	125,194,000
Blockhouse McAulay	8.10	C) C2 101 101 4	44 <u>1</u> 6	10 00 sign	3,957,333 11,200,000 14,559,997	35,615,997 26,880,000 23,215,996	39,573,330 38,080,000 37,775,993	2,671,200 5,040,000 9,827,000	16,027,199	18,698,399
	18.2	63	171	241	29,717,330	85,711,993	115,429,323	17,539,199	38,565,307	56.104.506
Total	II2.I 112 ⁹ / ₁₀		3902	403 2 5	536,651,409	536,651,409 1,908,769,310,2,445,420,719 360,825,271	2,445,420,719	360,825,271	848.761.101 1.310 586.463	1 210 E86 46

NOTE.— Beneath the so-called productive measures, and underlying at a considerable depth the coal seams in the Cow Bay basin mentioned above, is the Tracy Seam, about five feet thick, mined in 1866 near False Bay Beach on the shore of Mira Bay and opened in 1896 by Mr. E. T. Mosley of Sydney, six miles westward from the mine at Mira Bay and one mile south of Cochran Lake, where it showed five feet six inches of excellent coal. Its extension as a workable seam has not yet been proved further towards Sydney; but should this thickness be maintained for no more than the six miles stated, it means a valuable additition to the coal producing area of the field.

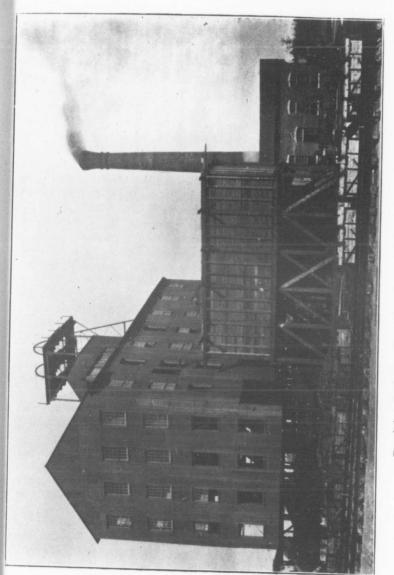
The largest mining companies are the Dominion Coal Company and the General Mining Association, while smaller outputs of coal are shipped from the Cape Breton colliery, worked in conjunction with a large deposit of the finest dolomite at New Campbellton, and from the North Sydney Mining Company at Indian Cove.

The Dominion Coal Company was organized in 1893, and as it is the most extensive coal operator, not only in Nova Scotia, but also in the Dominion, the following notes will serve to illustrate the magnitude of its operations:—

The advent of the company was signalized by a large expenditure of capital, it being the directors' wish to equip their mines with the most improved modern appliances in every department, so that the coal could be produced, transported and shipped at the lowest possible cost. The wisdom of this policy becomes more manifest every day, for since the first requisite for the success of this large corporation was of necessity an increased market, nothing would enable it to achieve this end in the face of the keen competition of American coal, both in Montreal and the New England States, unless the cost of production could be reduced to a minimum.

The expenditure thus incurred may be divided into three main heads, new piers for shipping, a railway from the terminus of the International Railway at Bridgeport to Louisburg, and the equipment of the mines with modern machinery. This programme has been carried out in its entirety, one may say, without regard to cost, but with every consideration for efficiency, and there are few coal corporations so well furnished in all departments. New piers have been erected in Sydney harbor and at Louisburg, the former being reported to be the largest shipping pier on the Atlantic coast. It is equipped with steam cranes and moveable loading towers, which, in connection with a huge bucket, lower the coal into the hold of the vessel before dumping it, and so save breakage. The capacity of this pier is 10,000 tons of shipping in 24 hours, and this can be increased if necessary by adding to the mechanical appliances. There is also a special bunkering pocket, capable of holding 300 tons, by means of which large vessels can be bunkered in one hour. The approaches to the pier are graded for upwards of half a mile, so that both full and empty cars run by gravitation. The pier is lighted by electricity. The pier at Louisburg is a less pretentious but equally efficient structure, the system of loading being by means of pockets and chutes. There is also an ingenious device by means of which the empty cars are lowered to the yard on the drop table principle. This pier has been specially adapted to the requirements of Louisburg as a winter port, and is no doubt destined to bring to ancient Louisburg a commercial prestige which will vie with its military glory of former days, as with the development of New England trade, which is confidently expected, the shipments will no doubt reach a very large figure, and it is not a little singular that the place which was the first in Cape Breton, nearly 200 years ago, to import coal for the use of its garrison, should now, by a turn in the whirligig of time, be preparing for a large export trade.

The railway already reterred to has been constructed from Bridgeport to Louisburg, with branches running into all the mines en route. This is a splendid road of easy grades, well ballasted, and laid with eighty pound rails. It is well equipped with rolling stock, consisting of ten and fifteen ton cars, and locomotives



Dominion Coal Co. Dominion No. 1 Colliery, Cape Breton.

neral eton New

tenving

opliped
very
sity
the

new at ery. to s so bor

the ch, fore of

ing apoty s a ins

en ibt its

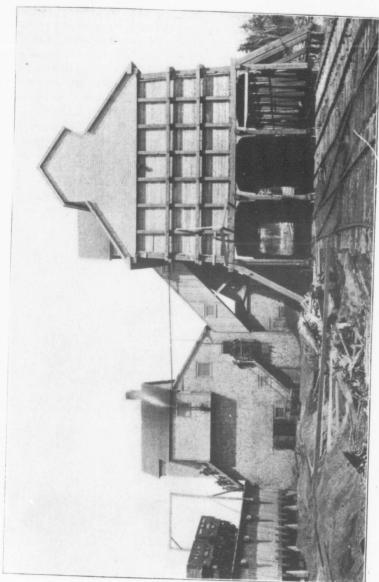
it oo he

to id ell

es

ranging from twenty to one hundred tons in weight. The largest of these, the "Dimock" is capable of hauling 1,000 tons of coal over the whole length of this line. The work at the mines has been of a very diversified character, and is represented mainly by an enormous addition to the mechanical appliances for cutting, hauling, hoisting and screening the coal. It was recognized from the beginning that coal to be cheap must be cut by machinery, and so at Caledonia, Old Bridgeport, Sterling, and Gowrie mines air compressors of the best type have been put down, and a number of coal cutting machines, mostly of the percussion type are at work, whilst the new mine, Dominion No. 1, is laid out entirely for this class of work, and furnished accordingly. Although many initial difficulties had to be overcome, the system is now firmly established, and during 1896 upwards of 300,000 tons were produced by this means, and the percentage is likely to increase in the future. The question of haulage next claimed attention. When the present company took over the mines all the underground haulage was done by horses; to-day there are more than twenty miles of haulage rope running, nearly the whole of this working upon the endless haulage system, which has proved to be the most economic and efficient in moving the large tonnages required from these mines, and ensuring a constant supply of coal at the pit bottom. The system is everywhere operated by the aid of electric signals. Great improvements have been effected in the hoisting arrangements. The old engines at Caledonia and Old Bridgeport having been replaced and powerful modern engines erected at the new mines, Dominion No. 1, and the Hub. By this means the speed of hoisting has been accelerated, and at Caledonia it has reached a maximum delivery of 180 tons an hour. A special feature in connection with the hoisting arrangements, is the use of a self-dumping cage which obviates the necessity for removing the full tub at the pit top. The coal is, by a semi-circular movement of the cage bottom, dumped into a suspended weighing tank, and passes thence over the screens. The latter appliances are of the ordinary longitudinal bar pattern, and are provided with swinging chutes, which lower the coal into the car. An important addition has been made this season at Dominion No. 1 in the shape of two picking belts, each 40 by 5 feet, capable of hauling 2,000 tons per day. By means of these the coal is thoroughly picked and delivered into the cars practically free from impurity. A similar system is to be applied at the other mines. It is generally conceded that during last season the coal was shipped in better condition than ever before and that little more can be done to improve matters in this respect. This has not been achieved without a large expenditure of money and the exercise of much ingenuity and forethought. There is a considerable quantity of "pyrites" and "splint" to be picked out of the Cape Breton coals, and there is a further difficulty to be overcome which was pointed out by Sir Wm. Dawson many years ago, namely, the tendency of these coals to fall to pieces by rough handling or exposure in consequence of numerous films of carbonate of lime running through them. The only cure for this is tender handling, and all the recent appliances in connection with screening and transportation are designed to effect this result.

It only remains to be said that the system of work pursued is that known as "pillar and room," and although there is no doubt that the conditions are favorable



Dominion Coal Co. Coal Washing Plant near Port Morien, Cape Breton,

to "long wall" working, this cannot be resorted to extensively until operations have proceeded farther to the deep, where the greater cover will ensure safety and prevent the breaking in of the surface. It is unfortunate, but by no means peculiar to this district, that crop workings have in the earlier stages of coal mining been the order of the day. The natural consequence is an extensive caving in of the roof, especially where some of the pillars were injudiciously removed. This naturally led to inundations of surface water, much of which has to be pumped from the mines at a heavy cost. There is no doubt that this system of working is responsible for the bulk of the water so dealt with, and whilst it is at present being raised by a large number of pumps, distributed around the mines, there is little doubt that before long some system of concentration will have to be adopted. As illustrating in detail the extent to which pumping is resorted to, a tabulated statement is appended, showing all the pumps in operation in the Dominion Coal Co's mines, as well as Sydney mines, their capacities and the quantity of water raised every twenty-four hours; also a statement giving a complete list of the hoisting and haulage engines working at the end of 1896.

384,000 72,000 18,000 14,000 128,000 3,600

300,000

256,000

1,000

48,000

120,000 70,000 30,000 240,000

pumped daily. Gallons of water 240,000

Lifting... Knowles.

Knowles

Hub....

Gowrie

50,000

Gallons of water pumped daily. 360 720 350 220 250 310 150 250 250 250 250 100 1120 1120 130 80 80 80 80 130 204 125 50 190 ·dund 9 95 95 60 60 60 60 60 60 60 83 83 Steam pressure at 27 . 40 . 70 . 70 . 70 . 50 . 50 . 100 . 100 001 Steam pressure at Strokes per min. 848" 844" 30" 10" 24" Length of Stroke. Water Plunger, dia. in inches. DETAILS OF PUMPING APPLIANCES IN CAPE BRETON. dia. in inches. Steam cylinder, Number of Steam Cylinders. Name and Style of Northey comp'd... Lifting Elliott . Cornish. Knowles Northey. Elliott .. Cameron Northey Cameron Knowles Cameron Number of Pumps. Collieries. Sydney Mine (Queen)..... Sydney (Princess).... Old Bridgeport International Sterling Victoria ... Caledonia. Reserve... Dominion

DETAILS OF HOISTING AND HAULING ENGINES IN CAPE BRETON.

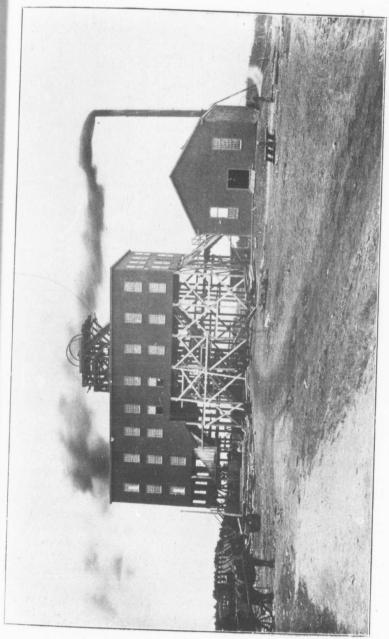
Colliery.	Whether hoisting or hauling.	No. and dia. of cylinders.	Length of Stroke.	Dia. of Drum.	Weight of load.	Dia. of rope.	Length of haul.	Steam pres. in Ibs.	System of haulage.
Sydney mines	Hoisting Hauling	2.36"	60	18'	cwt. 132 792	13/8			Direct
Victoria	11	2.16	24 52	4 4 8'	252 152	7/8	5400 5800	40	Tail
International {	Hoisting Hauling	2.16 1.18	42 36	6' 6'	40	1	2000 100 4000	100	Direct Geared
Reserve	"	1.22	42	6'	2000	1	4000	100	Endless
Caledonia	Hoisting Hoisting men Hauling	2.20 2.10 I.22	48 12 42	8'-6" 4'-6" 6' 6'	120 20 1600 1600	1 ½ 1 ¼ 7/8 3/4	4000 180 180 3000 4000	100	Direct Geared Endless
Sterling	Hoisting	2.18 1.18	24 36	6' 6' 6'	75 1000	14	3000 245 1500		Geared Endless
Old Bridgeport	Hauling	2.14 2.10 2.08	15 12 12	6' 6' 4' 3'-6"	1400 110 500 400	3/4 1 1/4 7/8	2500	70 (70]	" Geared
	Hauling	2.20 2.16 1.18 1.18 2.08	54 36 36 36	6' 6' 6'	130 30 1600 1600	1 3/8 1 3/8 7/8 1 7/8 2	150 150 000	100 I 100 I 100 I	Direct "Endless
Tub	Hoisting men	2.24 2.16	42 8 36	3'-6" 3'-6" 6'	200 130 30	11/4		75 T 100 C 100 D	orliss
Towrie	Hoisting	2.20	14 3 30	8'	200 70 200	11/8	500 264	90 G	eared

The Pictou Coal Field in its relation to the other two most important fields of the Province — Cape Breton and Springhill — is much nearer to the latter, and in its general character bears a striking resemblance to it. It lies inland about 12 miles from Pictou harbor, in the county of the same name.

The true or productive area is about 11 miles long, extending almost from Sutherland's river in the east to some distance beyond the Middle river in the west, and in its broadest part, from the town of New Glasgow in the north to a point a mile southeast of the town of Stellarton, is three miles wide, covering an area of about 22 square miles.

The accompanying map is intended merely to give a general idea of the configuration of the field, and the geological formations which encompass it. A map of the field on a much larger scale, and embodying the results of the most recent investigations is in course of preparation, and it is expected will shortly be published.

In age of discovery the field ranks next to that of Cape Breton, but is contemporary with it in so far as active development of the mines is concerned, for they



Dominion Coal Co. Hub Colliery, Cape Breton.

both became the property of the same great corporation, the General Mining Association of London, in the year 1827; and from that year dates the inception of mining operations on a larger scale than had hitherto obtained.

According to the Rev. Dr. Patterson, historian of the county, coal was first found on a brook near the present town of Stellarton, formerly known as the Albion mines, in 1798, but the main seam was not discovered until some years later. Subsequently a second seam was opened up, and from those two seams—the Main and the Deep—the output of the county was drawn down to the year 1857, when the G.M.A. surrendered, with certain reservations, the exclusive mineral rights of the Province, which had been held by them since 1827. The story of that monopoly has been so often re-told and recorded, that it needs no repetition here.

Little time elapsed, however, before the change in affairs brought about the discovery of valuable seams of coal to the west of Albion mines, and a few years later a seam was found at the Vale, or eastern end of the field, to be followed shortly afterward with the finding of others. At odd intervals in several other parts of the field crops of limited extent, owing to the faulty character of the ground, have been traced and some exploratory work done upon them.

Bands of oil shale, of which several are known to exist, were also exploited about the same time, but for many years nothing has been done upon them. Fuller particulars concerning these seams and bands and other matters of great interest may be found in the following publications:—

Dawson's Acadian Geology.

Geological Survey Report, 1869.

How's Mineralogy of N.S., 1868.

Rutherford's "Coal Fields of Nova Scotia," N.E., Inst. of M.E., 1870.

Gilpin's "Mines and Mineral Lands of N.S.," 1880.

Reports of the Geological Survey by H. Fletcher, and the more recent monograph of Mr. H. S. Poole, in the Transactions of N.S. Inst. of Science, Sec. E. Vol. I., Part 3.

Geologically considered, the field is one of intricate structure, and presents to the student many features of interest and several knotty problems for solution. The remarkable thickness of many of the seams, ranging as high as forty feet; the great deposits of black and brown shale, and the marked changes that both undergo in comparatively short distances; the heavy and ever-changing dip at which the measures lie, and the faults of greater or less magnitude that traverse the field in many directions, are some of the noteable features that afford food for reflection.

Over the larger portion of the field the measures are underlaid conformably by the millstone grit, which is not known to contain any seams of workable thickness, while at other points they come up against the lower carboniferous and rocks of much greater age. Skirting the northern edge of the field is the great bed known as the New Glasgow Conglomerate, the true relation of which to the coal measures was for long a matter of dispute, but is now believed to be the base of a large expanse of Permian strata that stretched from Merigomish in the east to Amherst in the west, and extend many miles northwardly to the waters of the Gulf.

in po district Albio thousa

40 fee some goverly shale a are kn case of of its of the ear McCul

In to be the at the I crops of thickness all occur a simila

the thick the McF shales ar the floo frequence disturbant

but are of in sulphu for steam smelting, feet of fif pany's we repute for

tion's oper that know seams, the sustain the bords, and There are three coal producing districts, the Albion or Central — also the oldest in point of discovery — flanked on the west and east by the Westville and Vale districts respectively. The Westville division is believed to be the equivalent of the Albion, separated from it by a down-throw fault to the west of some two or three thousand feet, while the Vale syncline appears to lie in an upper series of measures.

Four seams have been worked at the Albion, the Main 38 feet thick, Deep 22 to 40 feet, Third, 10 to 13 feet, and the McGregor, 13 to 20 feet thick, all occurring in some 500 feet of strata, and with over one thousand feet of black and brown shales overlying the main or uppermost seam. Several bands of inferior coal and bituminous shale appear in the seams and undergo changes previously referred to. Other seams are known to exist, but the workable thickness has not been proved, except in the case of the Stellar oil-coal, which was worked about thirty-six years ago for the sake of its oil and gas producing properties. The dip of the measures varies from 10° in the eastern end of the syncline to 31° in the western portion approaching the McCulloch brook fault.

In the Westville division one seam only, the Acadia, 20 feet thick, and believed to be the equivalent of the Albion main seam, has been worked extensively, although at the Drummond colliery a second seam 12 feet thick has been exploited. The crops of the other two underlying seams, called the Third and Fourth, and having thicknesses given at six and eight feet respectively, have been proved. These seams all occur in about 380 feet of measures, which vary in dip and change in character in a similar manner to that prevailing in the Albion section.

At the Vale, or eastern end of the field, the order of affairs is transposed, and the thicker and more valuable seams are on the southern outcrop, the lower. Here the McBean, or eight feet and the overlying six feet seams, with about 800 feet of shales and sandstone intervening, have been extensively worked. In the latter seam the floor of the syncline has been reached, and a peculiarity noticeable is the frequency with which masses of compact shale take the place of coal without any disturbance of roof or pavement.

The coals from the different seams vary somewhat in character and composition, but are of the bituminous coking variety; all are comparatively high in ash and low in sulphur, and an excellent coke is made from some. They are chiefly in demand for steam raising and domestic purposes, and have been used in a raw state for iron smelting. Some have been used for gas making, yielding as much as 10,450 cubic feet of fifteen candle power per ton in tests made at the Gas Light and Coke Company's works, London, Eng. The slack coal from some of the seams is held in high repute for blacksmith's purposes.

The system of working, adopted at the inception of the General Mining Association's operations, and with one or two exceptions practised at the present time, is that known as the board and pillar. In the original work along the crops of the seams, the size of the pillars are so regulated as to be of only sufficient strength to sustain the weight of the overlying measures during the process of coal getting in the bords, and in the course of time they collapsed and much coal was lost.

Later, the size was increased with a view to subsequent robbing, and was in a measure successful. In recent years, however, modern methods, despite the physical difficulties of increased depth, higher angle of dip and tenderness of roof metals, have reduced the loss to practically nothing. At two collieries long-wall working has been successfully pursued for some years.

With one exception all the seams are fiery, and require the closest attention in directing the ventilation. Underground furnaces have long since disappeared, and fans of large capacity and modern construction, driven by engines of the most approved type, have taken their place. Safety lamps of the Mueseler, Marsaut, and other patterns have been in use for many years. And, where the coal is got by blasting, explosives of a flameless character are employed and fired by electricity under the direction of a person appointed for the purpose.

The use of compressed air for haulage and pumping underground is employed at the Westville collieries, and an endless rope haulage is in the course of installation at Stellarton.

The surface equipment of the collieries is up to date in all respects — powerful hoisting engines, water tube boilers, etc., and the screening appliances of such a character as enable all grades and classes of coals to be properly prepared for market.

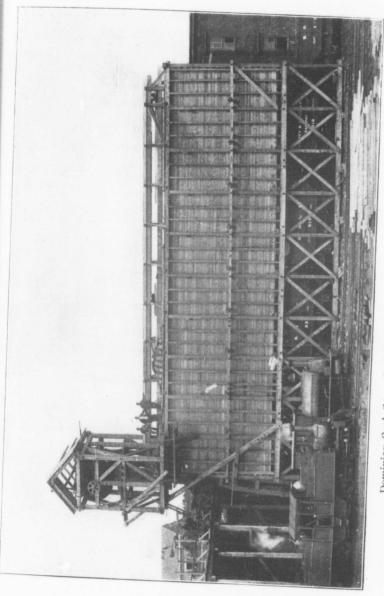
The Cumberland Coal Field, which is the most westerly of the coal districts of the Province, lies, for the most part, adjacent to Chignecto Bay, the more northerly and westerly of the two arms into which the upper part of the Bay of Fundy is divided.

The coal measures outcrop on the shores of Cumberland basin, run eastward into the land for about eighteen miles and outcrop again before they enter upon the return outcrop, running westward to the sea shore. The northern outcrop has been systematically worked on the shore at the Joggins mines with a present annual output of about 80,000 tons on a seam yielding about 6 ft. of coal. The remainder of this side of the basin has not yet received much attention. but will, as the demand for coal increases, become more fully worked. The principal operations in this district are at the apex of the basin; as at Springhill, where the Cumberland Railway & Coal Co. is engaged in mining three valuable seams. The seams dipping at angles of from 10 to 35 degrees, are entered by slopes to a depth of 4,000 feet and worked by shoots and "balances," and, in the case of the thinner parts of the seams, by long wall. The extraction of pillars has been carried on systematically and with unusual success. As a certain amount of gas is evolved in these mines, no explosive is used in getting the coal. The ventilation is provided for by blow-down fans with numerous outlets.

The general composition of the coals of this district is about as follows:-

Moisture	1.46
Volatile combustible matter	33.60
Fixed carbon	59.35
Ash	5.50

They are very extensively used as a locomotive fuel and for coke and domestic purposes.



Dominion Coal Co. Coal Packet at Reserve Colliery, Cape Breton, N.S.

Colliery Output.—The output and sales of the various collieries for the past three fiscal years ended 30th September, are given below. The returns for the twelve months will be found in the notices of the operations of the various companies.

Nova Scotia	18	395.	18	896.	18	897.
Colliery Cos.	Output.	Sales.	Output.	Sales.	Output.	Sales.
Acadia Coal Co Broad Cove Coa	206,798	173,962	198,884	170,441	213,050	179,882
Co	1,245	328	613	513	799	402
Co	110.082	95,076	59,125	51,360	73,357	72,537
liery Chignecto Colliery Cumberland Rail'y	10,344	8,694 530	16,483 304	1712-	15,068	11,623
& Coal Co Dominion Coal Co. General Mining As-	381,032 905,671	324,259 809,218	411,320 1,079,198	367,651 1,028,258		
sociation Intercolonial Coal	259,608	221,896	265,142	228,099	267,626	229,849
Co	209,538	194,822	196,373 1,328	181,252	173,818 40 289	160,352 40 289
North Sydney M. & T. Co	672 2,599 996	227 1,359 986	1,414 4,203 1,085	1,005 2,513 1,035	4,809	5,059
Total output & sales	2,089,245	1,831,357	2,235,472	2,047,133	2,320,916	

Markets.—The markets found for the coal under the head of sales have been :—

Markets.	1892.	1893.	1894.	1895.	1896.	1897.
Nova Scotia	623,978 746,037 214,550 94.999 56,638 13,883 2,849	863,744 260,266	877,743 221,844 97,378	740,098 228,525 63,232	795,060 252,293 94,236	875,874 242,043 75,990 62,032
4	1,752.934	1,965,891	2,019,742	1,831,357	2,047,133	2,013,421

ST. LAWRENCE DELIVERIES.—The following shows the quantities of Nova Scotia coal delivered by water to the St. Lawrence ports during the season of navigation in 1897, together with the quantities of coal received from other sources.

	Mon	MONTREAL.	So	SOREL.	RIT	THREE RIVERS.	Qui	QUEBEC.	Toı	Totals.	Еасн	EACH FIELD.
ı	1896.	1896. 1897.	1896.	1897. 1896. 1897.	1896.	1897.	1896.	1896. 1897. 1896. 1897.	1896.	1897.	1896.	1897.
General Mining Assn. 74,610 Dominion Coal Co 485,804 Cape Breton Colliery. 4.750	74,610 485,804 4,750	78,435 1 576,339 3,378	8,808	:	2,144 5,571	8,793 2,144 2.416 7,535 5,571 6,542	33,473 47,345 1,330	3.473 30,740 119,035 120,384 7,345 80,092 547,773 670,508 1,330 6,080 3,378	119,035 547,773 6,080	120,384 670,508 3,378		
Total 565,164 658,152	565,164	658,152	17,861	16,328	7,715	8,958	17,861 16,328 7,715 8,958 82,148 110,832 672,888 704.270 672,888	110,832	672,888	704.270	672 888	70 007
Picrou County: Intercolonial Coal Co	33,569	40,587			:	:		3.762	33.560	44.240	32 560	194,21
FOREIGN: Scotch, English, Welsh									555	33,309 44,349	33,309	44,34
and American 67,434 69,917	67,434	216,69			:	4,550	18,933	18,933 8,377 86,367 82,844 86,367 82.844	86,367	82,844	86,367	82.84
	291,999	768,656	17,861	20,878	7,715	8,958	666,167 768,656 17,861 20,878 7,715 8,958 101,081 122,971 792,824 921,463 702,824 021,465	122,971	792,824	921,463	702.824	021 462

The returns for previous ten years were:-1895, 724,948; 1894, 796,282; 1893, 737,891; 1892, 626,087; 1891, 602,323; 1890, 543,656; 1889, 467,525; 1888, 517,539; 1887, 482,103; 1886, 377,500; 1885, 360,000. Prices and Water Freights.—The following is a comparative statement of the prices of Sydney coal at Montreal from the year 1871:—

Year.	Rate Freight to Montreal.	Price F. O. B	Sales Montreal.	Year.	Rate Freight to Montreal.	Price F. O. B.	Sales Montreal.
1872 1873 1874 1875 1876 1877 1878 1879 1830 1881 1882 1883	\$2.25 to \$2.50 3 50 3 50 3 50 1 50 1 50 to \$2 00 1 40 to 1 50 1 50 to 1 75 1 50 to 1 75 1 50 to 1 75 1 50 1 50 to 52 00 1 50 to 1 75 1 50 to 50 1 50	\$2 00 2 50 to \$3 00 2 50 to 2 50 2 00 to 2 25 2 00 to 2 25 2 co to 2 25 1 80 1 25 to 1 40 1 25 to 1 40 1 25 to 1 40 1 50 1 60 2 00	3 25 to 3 50 3 50 to 3 75 3 75 to 4 00	1886 1887 1888 1889 1890 1891 1892 1894 1895 1896	I 40 I 25 I 40 I 25 I 40 I 65 I 40 I 25 I 00 10 \$1 00 10 I 20 I 15	1 50 to 1 60 1 45 1 50 to 1 60 to 1 70	\$2 95 to \$3 10 2 95 to 3 10 3 95 to 3 10 3 90 to 3 20 3 15 to 3 20 3 20 3 20 3 20 3 20 3 20 3 20 3 20

* By tramps; time boats, 1.25.

In 1873 slack sold at \$5.00 per ton.

Exports to United States.—The following table of exports to the United States is taken from the Report of the Department of Mines:—

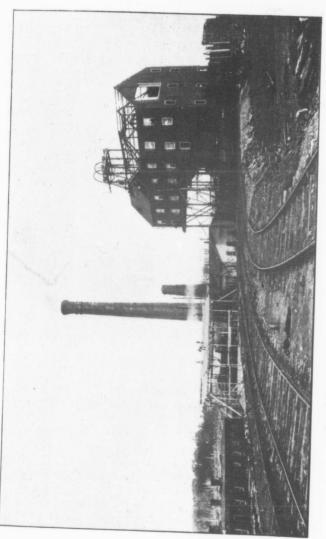
Vears.	Tons.	Duty.	Years.	Tons.	Duty
1850	118,173 116,274 87,542 120,764 139,125 103,222 126,152 123,335 186,743 122,720 149,289 204,457 192,612 282,775 347,594 465,194	24 ad.	1874	138,336 89,746 71,634 118,216 88,495 51,641 123,423 113,728 99,302 102,755 64,515 34,483 66,003 73,892 30,108 29,986	75c.
367	338,492 228,132 257,485	\$1.25	1890 1891 1892 *1893	50,854 25,431 13,883	
70 71 72	168,180 165,431 154,092 264,760	" 75c.	†1894 1895 1896	16,099 79,837 73,097 174,919 106,279	40c.

Note.—The quantities given for the years 1852 to 1872 are on the authority of the Board of Trade, Philadelphia, and are probably under-estimated.

* Nine months only.

† After August 1st, 1894, duty on Round Coal, 40c; on Culm or Slack, 15c.

Fiscal year begins Oct. 1st and ends Sept. 30th.



Dominion Coal Co. Caledonia Colliery, Cape Breton, N.S.

Railway Deliveries.—The following table shows the number of tons of coal carried over the Intercolonial Railway from the Nova Scotia collieries to Chaudiere Junction and St. John for points west thereof, and to local stations, in each year since the commencement of the trade in 1876:—

V	For th	ne West.	To Local	
Year.	Via Chaudiere.	Via St. John.	Stations.	Total.
1876-77 1877-78 1878-79 1879-80 1880-81 1881-82 1882-83 1883-84 884-85 885-86 886-87 887-88 888-89 889-90 890-91 891-92 892-93 893-94 894-95 895-96	300 1,097 6,102 18,015 12,837 22,014 133,440 171,170 192,871 183,704 160,026 164,453 113,996 35,447	4,022 11,779 22,206 19,534 1,773 21,150 27,536 36,228 27,923 25,126 39,213 5,918 3,775 8,028 7,865 9,681 12,305	103,420 97,043 112,232 135,369 174,483 218,364 227,380 252,014 213,791 215,272 233,178 309,727 338,538 366,967 344,829 392,441 402,653 367,390 310,253 369,708 331,469	103,42c 97,043 112,532 136,466 184,607 248,158 262,423 293,562 349,004 407,592 453,585 526,487 556,546 498,038 433,806 543,296 478,691 385,200 432,513 382,172

NEW BRUNSWICK.

The only productive coal area in New Brunswick is that situated in Queen's County, about the head of Grand Lake, and limited quantities are mined here annually for local consumption and on a small scale for export. The product may be described as bituminous coking coal and giving a rather large percentage of ash. It is excellently adapted for blacksmiths' use and is used with Satisfaction to the consumers as a house coal.

The result of a geological survey of the carboniferous area of New Brunswick has been to show that it is extremely probable that the beds referred to, which occupy such a large area in Queen's County, practically constitute the only seams of coal in the Province which can be considered available for practical working. Other beds, it is true, have been found at various points, but where seen they are nowhere of any great thickness, and as they for the most part occur in what we believe to be the limestone grit, there does not seem to be any good reason to hope that thicker beds will be found. Borings, too, though they have not been numerous enough to prove that the lower coal measures may not occur in depression in the underlying rocks, yet

they they lall is

access miner were

worka thickn M with a been i

easily

To cen cents p ing sho

includ

1887 . 1888 . 1889 .

1891 . 1892 . 1893 . 1894 .

1896

by Dr. Carea of t

they do show that these lower beds are certainly wanting over all these areas where they have been made, and we are warranted in believing that their existence here at all is very doubtful, and that if they do occur it can only be in troughs of very limited extent.

The large area covered by the seams which are now worked, and their easy accessibility, render them well worthy of consideration in reckoning up the available mineral resources of the province.

Though the exaggerated reports of the enormous value of these coal beds which were current some years ago have, with our increase in actual knowledge of the facts, been long discredited, yet there remains the knowledge that we have here a coal field easily accessible and capable of yielding a large amount of coal of good quality. The workable beds have been estimated to contain, if they keep about the same average thickness over the area, over 150,000,000 tons of coal.

Mining operations have been continued on a small scale for over thirty years, with an annual output of 4,000 chaldrons. Not more than 125,000 tons have been mined in the district.

With the present limited output the coal costs the miner about 80 cents per ton, including timber, stores, etc.

The cost of teaming the coal to the lake shore, (three to six miles) is from 45 to 70 cents per ton. Cost of shipment to St. John or Fredericton, by wood boats, 70 cents per ton. Total cost in St. John or Fredericton, \$2,20 per ton. The following shows the quantites of coal mined in this Province during the past ten years:—

Calendar Year.	Tons.	Value.
87	10,040 5,730 5,673 7,110 5,422 6,768 6,200 6,469 9,500 7,500	\$33,607 11,750 11,733 13,850 11,030 9,375 9,837 10,264 14,250

MANITOBA AND NORTH-WEST TERRITORY.

The coal fields of Manitoba and of the North-West Territory are thus described by Dr. G. M. Dawson, Director of the Geological Survey of Canada:—"The known area of true and lignite coals of the best quality extends along the base of the Rocky Mountains from the 49th parallel to the vicinity of Peace River, a distance of 500

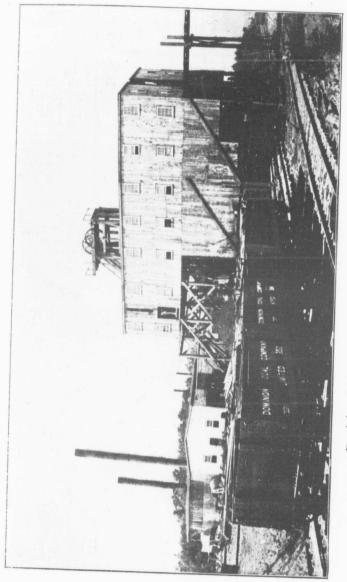
miles, with an average width of, say, 100 miles, giving a total area of 50,000 square miles. It is not intended to affirm that the whole of this area is continuously underlain by coal, but outcrops of coal are so general throughout it, that, taken in connection with the character and the regularity of the strata, it may safely be stated that it is, throughout, a coal field. An additional area, stretching eastward as far as the Souris River and Turtle Mountain, yielding lignites only, but these often of very good quality and well fitted for local uses, may be roughly estimated at 15,000 square miles." These fields, owing to the limited demand of their produce, have hardly been touched as yet; but when the scarcity of timber over a great part of the area in question is considered, it is evident that their existence is of the greatest moment in relation to the future settlement of the North-West.

The areas within the Rocky Mountains, though small as measured by miles, contain much coal of the best quality. One of these areas, on the Bow and Cascade rivers, has been found to hold several good seams of anthracite of good quality. The principal of these are at Marsh Mine, near the south end of the field, 134 miles from the main line of the Canadian Pacific Railway, and 550 feet above its level. Two thick seams of coal are found, one 17 feet (with 151/2 feet coal), and the other 91/2 feet (with 81/2 feet coal) in thickness. About three miles to the north-west of Marsh Mine and about a mile from the railway, there are eight openings into outcrops of workable seams. Six of these are apparently one above the other, containing 30 feet coal. At Canmore, about a mile from the railway station and about 100 feet above it, there are three seams, one 4 feet, another 121/2 feet, and the third 16 feet in thickness. At Anthracite, close to the railway, three seams are being worked, respectively 6 feet (41/2 feet coal), 31/2 feet (3 feet coal), and 51/2 feet (4 feet coal) in thickness; at Moberly, which is near the north-west end of the field, there is a seam of coal $4\frac{1}{2}$ feet thick (3 feet 8 inches coal). Two of these seams near Canmore are vertical, apparently from some disturbance, but with these exceptions they all dip to the southwest at angles ranging from 12 to 60 degrees. The relation of the various outcrops to Canmore mines can best be ascertained by drifting.

These mines were opened first by the Canadian Anthracite Coal Co., Ltd., which leased them in 1891 to the H. W. McNeill Co., Ltd., the present operator, the coal finding a ready market as far east as Winnipeg. The true anthracite eharacter of coal is shown by its yielding, on analysis, 87 per cent. of fixed carbon, by its burning with a clear, smokeless, almost flameless glow and by its ash being white and non-ferruginous.

The late Mr. Ralph Moore, M.E., of Glasgow, at one time Her Majesty's Inspector of Coal Mines for Scotland, says in a report on these mines, which he visited in 1889, that there is coal sufficient for an output of two thousand tons a day for over one hundred years. John R. Hoffman, and R. C. Luther, of Pottsvale, Pa., mining engineers of the Philadelphia and Reading Coal Company, have both minutely examined the property and estimate the contents of coal at one hundred and fifty millions of tons minimum.

The following table shows the production of coal in Manitoba and the North-West Territory from 1887:



Dominion Coal Co. Old Bridgeport Colliery, Cape Breton.

Calendar Year.	Tons.	Value.
887	74,152 115,124 97,364 128,953 174,131 184,370 238,395 199,991 185,654 225,868	\$ 157,577 183,354 179,640 198,498 437.243 469,930 598,745 488,980 414,064 606,891

The output during 1897 is estimated to have been:

Roche-Percee Coal Co., at Estevan, Man Alberta Ry. & Coal Co., at Lethbridge, Alberta R. W. McNeill Co., at Canmore and Anthracite, Alta. Small operators.	160,000	66	
Total output in 1897	285 700	4.6	

BRITISH COLUMBIA,

The principal coal mining district is at Nanaimo, on Vancouver Island. Work was begun here in 1852, and before the close of 1853, 2,000 tons are reported to have been shipped, chiefly to San Francisco. The price of coal at Nanaimo was at this time \$11, and at San Francisco \$28 a ton. The Hudson Bay Company, under the name of the Nanaimo Coal Company, continued to work the mines thus opened until 1861, when they were sold to the Vancouver Coal Mining and Land Co., an English syndicate, by which they are still operated.

The total output of coal from the Province for the year ended 31st December, 1897, was 892,295 tons, of which 619,860 tons were exported. The exports are principally to San Francisco, San Pedro and San Diego in California, and smaller quantities are shipped to the Hawaiian Islands, to China, Japan, and other places. In the various ports of the Pacific Ocean, the coal from British Columbia comes into competition with coal from Puget Sound, in the State of Washington, which because of the high protective duty established by the United States is enabled to achieve a large sale in California, notwithstanding its inferior quality. It has also to compete with shipments from Great Britain, brought out practically as ballast, with the coals of New Castle, in New South Wales, with coal from Japan; nnd in regard to the Pacific ports of the Russian empire, with coal raised by convict labor at Duai, at Saghalien Island in the Okotsk Sea. It is sufficient guarantee for the quality of the coal of British Columbia that it is able to hold its own against all these competitors.

ferior a lands an of Britis position and bro the geol but it m geologic are as ol cretaceou

Be widely

The N Co

In an excellent address to the Royal Colonial Institute, Dr. Dawson summarises the coal areas of British Columbia as follows:—"Though Nanaimo has been from the first the chief point of production of coal, work has been extended within the last few years to the Comox district, also situated on Vanouver Island; while other promising coal bearing tracts have been in part explored and examined on this Island, and on the Queen Charlotte Islands. These particular coal regions, bordering upon the Pacific Ocean, have naturally been the first to be employed, but they by no means exhaust the resources of the province in respect to coal. Deposits of good bituminous coal are known also in the inland region, and some of these in the vicinity of the line of railway are now being opened up, while others, still far from any practical means of transport or convenient market, have been discovered, and lie in reserve. One of the most remarkable of these undeveloped fields is that of the Crow's Nest Pass, in the Rocky Mountains (now being worked by the Crow's Nest Coal Co.), where a large number of superposed beds of exceptional thickness and quality have been defined.

Besides the bituminous coals, there are also in the interior of the province widely extended deposits of lignite coals, of later geological age, which, though inferior as fuels, possess considerable value for local use. In the Queen Charlotte Islands anthracite coal is found, but has not yet been successfully worked. The coals of British Columbia may, in fact, be said to represent in regard to quality and composition, every stage, from hard and smokeless fuels, such as anthracite, to lignites and brown coals like those of Saxony and Bohemia. Many features of interest to the geologist might be mentioned in relation to these coal deposits, did space permit, but it must not be forgotten to note one principal fact of this kind — the very recent geological age to which all the coals belong. None of the coals of British Columbia are as old as those worked in Great Britain; they are in fact all contained in the cretaceous and tertiary rocks.

The same eminent authority estimates the extent of the coal fields to be:-

PRODUCTION OF COAL AND COKE IN BRITISH COLUMBIA.

The following statement in tons of 2,240 lbs., shows the production of coal and coke as officially reported to the Government of British Columbia. The production of coke is small, but will now be rapidly increased when the coke ovens, now being perfected at the Union colliery, Comox, and the coking coal of the Crow's Nest Pass, will have begun the regular supply of this fuel to the Smelting centres.

For the last two years the output of coal has been declining by reason of the increasing competition of British and American coal to the Pacific coast markets of the United States, where most of the coal from British Columbia is sold:—

New
Co.
Wellin
Union
Wellin
Alexan
West
Co.

Th coal to

Vear.	Long Tons.	Value.	Year.	Long Tons.	Value.
1836-52. 1852-59. **1859. 1860. 1861. 1862. 1863. 1864. 1865. 1866. 1867. 1868. 1869. 1870. 1871-2-3. 1874. 1875. 1876. 1877. 1878.	10,000 25,396 1,989 14,246 13,774 18,118 21,345 28,632 32,819 25,115 31,239 44,005 35,802 29,843 148,459 81,547 110,145 139,192 154,052 170,846	\$ 40,000 101,592 7,956 56,988 55,096 72,472 85,380 115,528 131,276 100,460 124,956 176,020 143,208 119,372 493,836 244,641 330,435 417,576 462,156	1879. 1880. 1881. 1882. 1883. 1884. 1885. 1886. 1887. 1888. 1889. 1890. 1891. 1892. 1893. 1894. 1895.	241,301 267,595 228,357 282,139 213,299 394,070 265,596 326,636 413,360 489,301 579,830 678,140 1,029,097 826,335 978,294 1,012,953 939,654 846,235 882,854	\$723,90; 802,78; 685,17; 846,41; 639,89; 1,182,216; 1,096,788; 979,908; 1,240,086; 1,467,903; 1,739,490; 2,034,420; 3,087,291; 2,479,005; 2,934,882; 3,038,859; 2,818,962; 2,327,145; 2,648,562;

or a total production to date of 12,081,687 tons of a value of \$36,626,585.

COKE MADE.

1895-6	,565	tons of	a value	 \$ 7.825
1897 17	,831	66	"	 89,155

Total value of British Columbia coke made to date... \$96,980

^{*}Two months only.

COLLIERY RETURNS, 1896-7.

Colliery.	Out	put.	Ex	ports.	includir	ne Sales ng Colliery amption.
	1896	1897	1896	1897	1896	1897
New Vancouver Coal Co Wellington Coal Co Union Colliery Co Wellington Mine	359,044 380,684 261,643	319,343 297,611 265,642 6,000	260,328 264,226 185,791	231,986 211,662 176,212	102,375 115,504 74,646	85,683 91,246 98,687
Alexandria Colliery West Wellington Coal Co	896	3,375 323			896	14,375
Total	1,002,267	892,294	710,345	619,860	293,421	290,308

B. C. COAL IMPORTED BY CALIFORNIA, 1897.

The following comparative statement shows the relation of British Columbia coal to other sources of supply in the California market: –

British Columbia	anal
	coal 558,372
Australia	
English	201,000
Scotch	
	" 4,081
Eastern	**
Seattle	21,335
Carbon Hill	
Diabolo, Coos Bay	
Japan, Alaska, etc.	"
Japan, Alaska, etc.	" 6,587
	the same and a same

1,601,540

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, I Broadway, New York.

Bryce J. Allan, H. Montague Allan, Hugh Andrew Allan, James W. Clendenin, William Henry Davies,

Thomas H. Hubbard, Johnston Livingston, J. Pierpont Morgan, Jr. Edwards S. Sandford, 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 ft. worked: dip averages 27 degrees; slope, 4,200 ft.; extreme vertical depth, 1,800 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; 3 in. water-gauge, barometer, etc.; Liveing's gas indicator.

Lamps-Mueseler and Marsaut.

Hoisting engines on slope, pair 32 in. cyl., 60 in. stroke direct; drum, 10 ft.

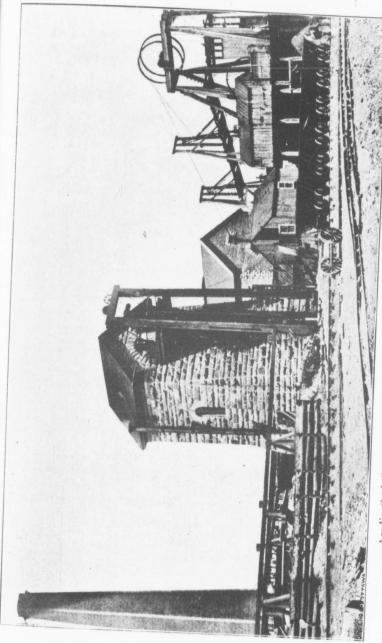
Pumping—Duplex compound condensing, 22 by 11 in x 24 in.; rams 5.5 in.; column length, 2,400 ft.; vertical head, 990 ft.; wrought pipe tarred 6 in. upset ends vanishing threads, metal flanges, no leaks; steam pressure on top, 105 lbs., pipe 4 in. covered; air feeder added to air chamber. Auxiliary direct acting 11 x 12 in. x 4 in. pump driven by compressed air, at bottom of pit head 600 ft.

Two air compressors, 16 in. and 20 in. with receivers at bank and in pit; air pipe, 4 in., length, 4,000 ft.

Boilers-Water-tube; fuel, culm.

Screens, double—Primary 2 in.; secondary ¾ in. apart, curved; 5 sizes of coal; elevator, picking table, shaking screens.

Albion Colliery, at Stellarton on I. C. Railway; J. Dunbar, Manager; A. McDonald, Overman. Railway second built in America; locomotives include "Sam son," built 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 in 1880; loss of life, 44; workings now full of water; machinery massive; hoisting engine, 38 in. 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.; pit head frame 50 ft. high; independent condenser on hoisting engine. Fire has been in the old rise workings for 25 years.



Acadia Coal Co. Limited—Bankhead and Pumping Shaft, Foord Pit, Stellarton, N.S.

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.; fly wheel, 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 ft. wide; a new fan in course of erection at the third seam 18 ft., high speed, rope driven with compound engines; lamps, Mueseler; coal used for coking purposes; 125 ovens; bee-hive, 10 ft. dia.; average pitch of seam, 22 degrees.

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 ft. seam; slope, 2,400 ft.; outcrop for 500 ft. left unworked; a new winning ventilated by compression fan, 16 ft x 6 ft.; engine, 10 in. by 16 in.

PRODUCTION, 1897.

T																	Tons.
Total coal	raised	٠.	٠.														219,706
Total coal	sold	٠.	,						. ,								 188,960
Total coke	made																1.200
Total coke	sold.		. !										*			 . ,	1,451

LABOR, 1896.

Above ground.	 	 			,										21	8
Below ground	 						 								 50	3
Total																_

Coal Disposals, 1891-97.

(As per Returns Furnished by the Company.)

DISTRIBUTION.	1891.	1892,	1893.	1894.
Nova Scotia. Prince Edward Island Quebec. New Brunswick. Newfoundland. United States Other Countries St. Pierre Miquelon Colliery Employees Bunker Steamers	33,577 9,459 18,885 46	123,797 21,354 4,822 16,268	178,429 24,500 9.557 19,329	126,836 25,950 5,129 7,199 270 144 5,514
Engines and Coke Ovens	•••••	73,142	12,954 22,634	55,400
	255,231	252,541	273,206	226,442



Acadia Coal Co. Limited.—Bankhead and Pumping Shaft, Foord Pit, Stellarton, N.S.

COAL DISPOSALS, 1891-97 .- (Continued).

DISTRIBUTION.	1895.	1896.	1897.
Nova Scotia Prince Edward Island. Quebec New Brunswick Newfoundland Colliery Employees Bunker Steamers Engines and Coke Ovens	113,674 18,916 3,152 6,242 92 5,243 7,427 48,458	121,220 23,540 1,020 4,214 138 6,065 12,750 29,059	136,942 25,472 4,658 13,172 181 5,191 6,103 28,405
Total Tons	203,204	198,006	220,124

ALBERTA RAILWAY AND COAL CO.

Incorporated 20th January, 1889.

Authorized Capital:

4% Prior lien debenture stock	£125,000
4% A debenture stock	250,000
5% B debenture stock	750,000
Total	1,125,000
Preference shares \$	000,000
Ordinary Shares	100,000

(The capital issues of the Company were re-arranged by Act of Parliament in 1895.)

Directors:

Elliott T. Galt, President, Lethbridge, N.W.T.

Col. R. R. B. Wodehouse, Vice-President, | Hon. T. C. Farrer, London, Eng. London, Eng. W. Burdett-Coutts, M.P., London, Eng. Edward Crabb, London, Eng. Thos. Davidson, Sir R. W. Cameron, New York, U.S.A.

Edwin Waterhouse, W. M. Ramsay, Montreal, Canada.

CANADIAN OFFICE:

Elliott T. Galt, President, Lethbridge, N.W.T.; W. D. Barclay, Manager; W. D. L. Hardie, Colliery Supt.; C. A. Magrath, Land Commissioner; J. E. Lethbridge, Auditor.

Head Office:

Geo. Edwards, Secretary, 37, Old Jewry, London, Eng.



Acadia Coal Co. Limited.—Heapstead, No II Slope, III Seam, Albion Mines, Pictou County, N.S.

Formed to take over and control the lands, works, mines and railways formerly owned and operated by the North-Western Coal and Navigation Co., Ltd.

The Company owns the railway from Lethbridge to Great Falls, Montana, U.S.A., 200 miles in length, 3 feet gauge, equipped with 21 locomotives and 402 cars.

The railway from Lethbridge to Dunmore, 110 miles in length, likewise narrow gauge, was changed to standard gauge during the summer of 1893 and sold to the C. P. R., and is now being operated as a portion of that Company's system.

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 6 ft. wide, driven parallel, with a pillar of coal of not less than 30 ft. between. Every 400 ft. 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 ft., and driven at right angles to and in the opposite direction from the adjoining entry. At a distance of 30 ft. the room is opened out to a width of about 20 ft., and continued into the coal until it reaches its maximum depth from the entry, viz., 200 ft., 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 fireclay, varying from one to two inches. The lower bench coal has a thickness of 2 ft. 8 in., while the upper bench is 1 ft. 10 in.

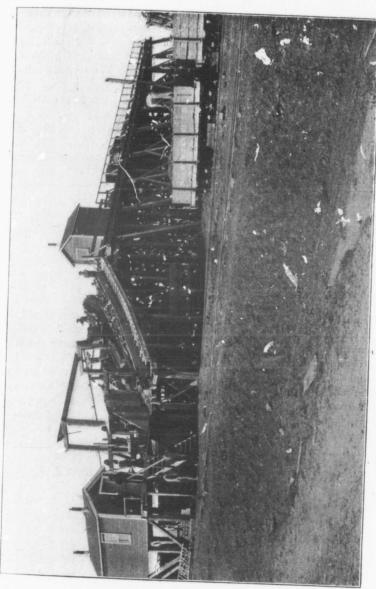
The mode of ventilation is by means of two Murphy fans, 6 ft. in diameter. These fans will either exhaust the air from the shaft or force it down, as required by the state of the weather. The reversing of the current of air is made by opening or closing certain openings. The speed of the fans is usually about 200 revolutions per minute. The winding engines for these shafts are two 20-in. cylinders, direct acting, on a spirally grooved drum and excellent brake connection. The pit head frame, screening and general arrangements are of the most modern type, including a safety clutch on the cage, so that if the wire rope was to break, the cage would only descend a few yards until the clutch acted on the guides of the cage, stopping any further descent.

The Company have recently introduced coal cutting machines in their No. 3 shaft, consisting of fourteen Sergeant and eight Legg coal cutting machines; two compressors, 20 x 24 cylinders.

The workings are sufficiently developed 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 1895, 110,522 tons; in 1896, 116,511 tons; 1897, 120,049 tons.

The Company has extensive machine shops, equipped with machinery suitable for all classes of repairs.



Alberta Railway and Coal Co.—Bankt and at Lethbridge, N.W.T.

The acquirement and development of the properties has caused an expenditure of about \$5,000,000, and in the services of the Company there are on the average about 600 men employed, for whose accommodation the Company has erected dwellings.

The Company markets its coal at no less than 193 points in Manitoba, the Canadian North-West, British Columbia and in the States of Montana and Washington in the United States of America, the most distant selling point being 830 miles from Lethbridge.

The analysis of Galt coal is: -Carbon, 56.20; ash, 6.40; water, 4.90; volatile matter, 32.40.

The Company's landed estate consists of 1,100,000 acres of farm and ranching land, situated in alternate townships in the District of Alberta, N.W.T. Of this, 750,000 acres have been transferred to the Lethbridge Land Company, an affiliated Company, formed to improve, colonize and dispose of them.

ALEXANDRIA COLLIERY.

Owners:

R. Dunsmuir & Sons.

Head Office: - James Dunsmuir, Victoria, B.C.

This colliery is situated on Vancouver Island, Province of British Columbia, and is opened by slope, driven, about 18 years ago, for a distance of 800 yards, when the work was abandoned. In 1896, work was resumed by driving a tunnel off the slope in a northerly direction, likewise for a distance of 800 yards. The greater part of this distance was in good coal, at times not very thick, and at other times the coal reached above the roof. For hauling the loaded cars out of the mine, a large double engine has been erected. A switch and a siding, the greater part of which has been double tracked, have been put in from the E. & N. R. R., to enable the company to carry off their coal, either to Wellington or Victoria, for shipment or sale. The output is about 120 tons per day.

BOSTON AND NOVA SCOTIA COAL CO., Ltd.

Incorporated By 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. Hon. David S. Baker, Jr. Providence, John McKeen, Mabou, C. B. R. P. Fraser, Pictou, N.S.

ties, manu of ma pertie Chim Nova situate Interc and C were a port. the ma it for h new lo posed s intentio Orange

Incorpo Car

includes

railway

\$1, Bor

> Alpl Edg

W. H. M. John Y. Warren I Edgar S.

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, clay, 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 30 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 Straights of Canso. In 1894 the plans of the company were altered so as to make Mabou Harbon, 14 miles from the mines, a shipping port. This will necessitate extensive dredging in Mabou Harbor, for, while inside the main harbor there is ample sea room and plenty of water, the channel leading to it for half a mile has a depth of 14 ft. only. This change has necessitated an entirely new location of the railway, as the old line was some 4 miles from the present proposed shipping pier. The new location was made during the past summer, the intention still being to build the line through to a junction with the I. C. Ry. at Orangedale, a distance by the new route via Mabou of 40 miles. The projecty includes a very extensive and valuable brown free-stone quarry on the line of their railway about 4 miles from tide-water at Whycocomagh.

BROAD COVE COAL CO., Ltd.

Incorporated by the Nova Scotia Legislature, February 12th, 1894. Authorized Capital: Bonds, \$1,500,000; Preferred Stock, \$1,500,000; Common Stock, \$1,500,000. Amount reserved in the treasury for future needs of the Company: Bonds, \$700,000; Preferred stock, \$400,000; Common Stock, \$400,000.

Officers:

John M. Raymond, President.

Alpheus B. Alger, Vice-President. Edgar S. Buffon, Secretary.

Wm. Penn Hussey, Treas & Gen. Man. Warren D. King, Electrical Engineer.

Directors:

W. H. Munro, Martha's Vineyard, Mass. John Y. Payzant, Halifax, N.S. Warren D. King, Peabody, Mass. Edgar S. Buffon, Salem, Mass.

Geo. W. Gale, Boston, Mass. Hon. John M. Raymond, Salem, Mass. Hon. A. B. Alger, Cambridge, Mass. J. R. Naegeli, Zurich, Switzerland.

William Penn Hussey, Danversport, Mass.

Head Office: 70 Kilby Street, Boston. Mines Office: Broad Cove, Cape Breton.

This company controls four square miles of coal lands at Broad Cove, in the county of Inveness, Cape Breton, upon which there are twelve seams, ranging in thickness from two to fourteen feet. All the seams are of the bituminous variety, of superior quality, admirably adapted for steam and domestic purposes. During the past summer the company built two and a half miles of railway, connecting the openings on the different seams with the harbor at McIsaac's Lake. Four levels have been run in on the larger seams, from which a large quantity of coal can be mined daily. The channel between McIsaac's Lake and the Gulf of St. Lawrence has been cut through by the company, and in the spring will be dredged to a sufficient depth to admit large vessels. This harbor, when completed, will be the only deep water harbor on 90 miles of coast line, and will be of immense value as a harbor of refuge.

During 1897 the output was 799 tons, of which 402 tons were sold.

CANADA COALS AND RAILWAY CO., Limited.

Incorporated by Act of the Legislature of Nova Scotia, 1892. Capital Stock, \$750,000. Bonds, \$750,000.

Directors:

S. Finlay, President.

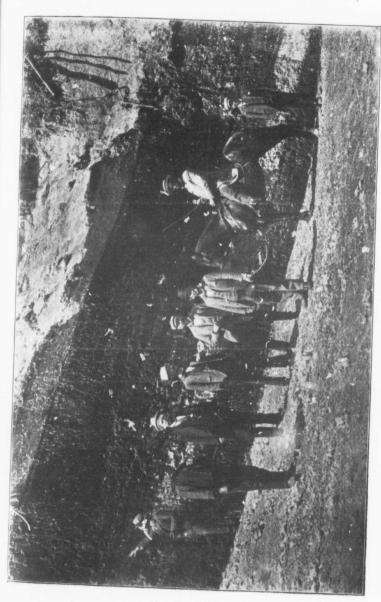
Wm. Hanson. A. F. Gault. S. H. Ewing. E. Hanson. E. W. Wilson. R. Wilson Smith.

Mines Office: Robt. Archibald, General Manager, Joggins Mines, N. S. Head Office: 157 St. James Street, Montreal.

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, etc. The company controls an area of 15 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.	1894.	1895.	1896.	1897.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
New Brunswick	41,553	48,750	56,558	55,435	30,782	45,490
Nova Scotia			11,894		4,638	
Quebec	16,497	23,774	15,800	20,371	13,260	
United States		248	7,347	2,457	555	
P. E. Island			401	418	118	
Colliery Employees, Eng's., etc.	4,905	7,685	10,029	13,381	7,202	4,716
	69,167	91,250	102,031	101,686	56,555	74,080



Broad Cove Coal Co.-Outcrop of Seam at Braad Cove, Cape Breton.

Colliery eleven miles from Maccan Station, on the main line of the Intercolonial Railway, counected by a standard guage 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, etc.

Seam from 6 ft. to 81/2 ft. worked; coal from 4 ft. to 51/2 ft.; clay in centre of seam from 1 ft. to 3 ft; dip, 17°; slope 2,700 ft. and 1900 ft. respectively.

System of working - Longwall.

No. 3 slope—Ventilation by open fan 14 ft. dia. x 3 ft. 2 in. broad; No. 2 slope, furnace.

Lamps - Anton; all open lights.

Winding engines—One double 18 in. x 42 in. geared 3 to 1; one 15 in. x 30 in. operating saw-mill; one 14 in. x 24 in. hauls empty cars from pier to pit; one double 3 in. x 10 in. used in sinking; one 5 in. x 10 in., and one 7 in. x 16 in.; at No. III. slope, one 17 in. cyl. x 36 in. stroke.

Haulage engine (tail rope) 10 in. cyl. and 12 in. stroke.

Pumps—One Burrell-Johnston, one Cameron ϵ ad one Northey ; one Northey on surface.

Screens - Six in use.

Boilers—No. II. slope, 8 double flue 3 ft. x 30 ft long, and two 5 ft. dia. and 30 ft. long; No. III. slope, 2 double flue Lancashire boilers 7 ft. dia. and 30 ft. long.

Employees -- Above ground, 56; below, 147; total, 203.

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, Eau Claire, Wis. L. Crannell, Ottawa, Secretary.

Head Office: The Molson's Bank Chambers, 14 Metcalfe St., Ottawa, Ont.

Formed to mine and extract coal, especially anthracite coal, in the Dominion of Canada, and generalty 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 from, 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. McNeil, Company, Limited, notice of which will be found on another page.

worked Big Br covers

N

Se Underg Sy

> La Ho Pui

> > Boi

Ve

Rai Ing Five

To Queb
" New
" Nova

P. E.

" St. P.

Collie

The c

1,400 tons

4

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 ft. worked; dip, 12°; opened by slope, 1,000 ft. A. Ferguson, Underground Manager.

System of working - Pillar and room.

Ventilation by surface.

Lamps -- Naked.

Hoisting engines—Pair 12 in. x 16 in. cyl., single drum, dia. 5 ft.

Pumps-One Cameron, 15 in. cyl., 9 in. plunger.

Boilers - Two locomotives, 50 h.p., and one tubular, 110 h.p.

Railway—One and a-half miles to shipping wharf, 3 ft. guage, 40 lb. steel rails.

Ingersoll Compressor, 16 x 18.

Five Ingersoll coal cutting machines.

COAL DISPOSALS, 1894-97.

To Ouehec	1894. Tons.	1895. Tons.	1896. Tons.	1897. Tons.
To Quebec	900	1,303	7,391	4,077
" Newfoundland	3,915	68	1,500	138
Hova Scotta	6,036	4,763	5,094	5,892
1. L. Island	2,331	624	535	1,361
new Brunswick	898	368	580	294
St. Fierre		365	131	
Other countries	595		534	576
Colliery consumption	2,098 313	1,680 318	1,474 } 518 }	2,820
Total	17,086	9,489	17,757	15,159

The company also operates a quarry of superior Dolomite, from which in 1897 1,400 tons were shipped to the Nova Scotia Steel Co.

CROW'S NEST PASS COAL COMPANY, Limited.

Incorporated April, 1897. Authorised Capital, \$1,500,000 in shares of a value of \$25.00 each.

Directors:

Hon. Lt.-Col. James Baker, Victoria, President.

Hon. G. A. Cox, Toronto, Vice-Pres. Edward Hanson, Montreal, Treas. Wm. Fernie, Fernie, B. C., Land Com. Robert Jaffray, Toronto. Samuel Finlay, Montreal.

Wm. Hanson, Montreal, Mgr. Dir. J. A. Gemmill, Ottawa, Secy. Hon. Lt.-Col. E. J. Prior, M. P., Victoria. J. D. Chipman, M. P. P., St. Stephens, N. B. David Morrice, Montreal.

Head Office: Wm. Hanson, Managing Director, Canada Life Building, Montreal.

Mines Office: Wm. Blakemore, M.E., General Manager, Coal Creek, B. C.

This company owns 11,169 acres of coal lands, situated near Marten Creek, Coai Creek and Morrissey Creek, in the East Kootenay District, Province of British Columbia. On the easternmost property, near Marten Creek, containing 3,969 acres, there are fifteen seams of coal, four of which are 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 12 miles from the former property, there are 12 superimposed seams of coal cropping out of the side of the mountain, varying from 2 to 30 ft. in thickness. These are partly bituminous and partly semi-anthracite.

Since the commencement of railway construction through the Crow's Nest Pass of a line from Lethbridge to Kootenay Lake, the company has had a force of men at work at Coal Creek preparing the seams for active production as soon as shipping facilities will admit, which it is expected will be in July 1898.

COLLIERY LOCATED AT COAL CREEK, B.C., CONNECTED BY BRANCH LINE WITH CROW'S NEST PASS RAILWAY.

Seams worked—On the north side of Coal Creek a bituminous seam of an an average thickness of 6 ft.: on the south side of Coal Creek a semi-anthracite seam of 7 ft. thick, both coking coals. The former gives a good domestic and blacksmiths' fuel, the latter a good steam coal. Dip averages from 5° to 10°.

Opened at date by 3 drifts in the mountain side; in at date of report about 1,000 ft.

Method of working-Pillar and stall.

Lights-Naked.

Ventilation—Chandler high-speed fan, 15 ft. dia., 6 ft. blade, driven by electric motor developing 100 h.p.

Boilers—Equipment at date comprises 2 temporary locomotives of 100 h.p. each, to be superseded in 1898 by the application of water power to generate electricity for all purposes.

as d

oper Glas

each

pany, Comp Limit filed i weeks Railw provid when Govern and oi B. C. also ag way in

In and soo Mining S. Ram practica the comit up.

six sect

of the con Letters I and the October.

In a have obtained pany to c

Coal Cutting—2 Jeffrey electric, capacity 100 tons per day each; 'be increased as development proceeds.

Haulage — Jeffrey electric locomotive, capable of hauling 100 tons per trip on the level.

Loading and Screening—Automatic shutes, shaking screens and picking belts, operated by a 25 h.p. electric motor, furnished by I. Matheson & Co., New Glasgow, N.S.

Coking Plant—50 bee hive ovens, capacity 2 tons of coke per oven per diem, each supplied by electric motor lorry.

DIRECTORS REPORT, 1898.

The following is excerpted from the Report under date 4th March, 1898, to the shareholders:

This Company was incorporated under the name of the Kootenay Coal Company, Limited, and concurrently with the issue of Letters Patent of Incorporation the Company acquired the assets of the B. C. Coal, Petrolet n and Mineral Company, Limited Liability, upon terms set out in an Agreement between the two companies filed in the office of the Secretary of State of Canada as required by law. Some weeks later an agreement was completed between this company, the B. C. Southern Railway Company and Sir William Van Horne and others, which among other things provided for the payment to this company of \$85,000 in cash, and the conveyance when earned by the B. C. Southern Railway Company of the lands in the First Government Reserve, consisting of about 250,000 acres and about 10,000 acres of coal and oil-bearing lands in the Second Government Reserve for the land grant of the B. C. Southern Railway Company—the said Sir William Van Horne and associates also agreeing to build certain branch lines from the main line of the B. C. Southern Railway into the Coal Mines of this company. This agreement also provided that 50,000 acres of these coal lands shall be conveyed to the Dominion Government, and that six sections of 640 acres each shall be conveyed to the C. P. R. Company.

In the month of August last the payment of \$85,000 was made to this Company and soon after your Directors secured the services of Mr. William Blakemore, lately Mining Engineer for the Dominio Coal Company in Nova Scotia, and Mr. George S. Ramsay, of Denver, Colorado; both men of high professional standing and great practical experience in coal mining, to proceed to the Crow's Nest Pass to examine the company's property and report to your directors on the best method of opening it up. Their reports are on the table for the information of the meeting.

In September last your directors deemed it in your interest to change the name of the company to the Crow's Nest Pass Coal Company, Limited. Supplementary Letters Patent authorizing the change have since been obtained from the Government and the change was confirmed by the shareholders at their special meeting last October.

In accordance with a recently passed law of British Columbia your directors have obtained a license from the authorities of that Province authorizing this company to carry on business there.

The directors have engaged Mr. William Blakemore, M.E., as general manager of the company's mines for the next two years, from 1st January last, and since his engagement he has visited Britain and the United States for the purpose of procuring mining and coking plant and examining the latest systems of coal mining. i.I. report, with particulars of his recent visit to the company's coal mines, is submitted herewith.

The Treasurer's report is also submitted herewith.

The progress of the company's future operations depends so much upon the early completion of the railway that your directors cannot at the present time do more than say that they hope that by midsummer work will be sufficiently advanced to admit of the company beginning to market the production of the mines.

The expenditure necessary for opening up the mines, building houses for the accommodation of the officers and miners of the company, and in providing coke and coal mining machinery and other plant, is very heavy, and your directors beg to call your attention to the necessity of increasing the funds at their disposal for this purpose at an early date. This may be accomplished by obtaining power to increase the capital stock of the company, or by the issue of the debentures of the company, redeemable within a limited number of years."

GENERAL MANAGER'S REPORT.

On the signing of my agreement with you as general manager or October 30th last, I proceeded to Great Britain in accordance winh the terms of our agreement, and spent two weeks there purchasing necessary material and machinery for the coking plant and for the mines to the value of about \$6,800 f.o.b. at British ports.

Returning to New York on December 4th, I spent a fortnight in inspecting some of the principal mines in Pennsylvania and Ohio, and also the extensive coking plant of the H. O. Frick Co. at Connellsville. The result of all I saw, both in South Wales and the United States, was to confirm the opinion that for coking and general purposes there is no coal superior to yours, and this was endorsed by the best experts in both countries to whom I submitted samples.

The most important conclusion I arrived at, after carefully looking into the various modern systems of mechanical equipment in operation, was to recommend the installation of an electric plant at your mines for all available purposes. Both on the grounds of economy and efficiency this is the best system now in vogue, and the fact that you have abundant water power makes it still more suitable at Coal Creek. On your subsequently approving of this recommendation contracts were entered into for the purchase of the necessary plant to the value of \$12,000, partly in Canada and partly in the United States. In addition to this a screening and loading plant has been purchased in Canada at a cost of \$3,150, and sundry appliances of the value of \$2,000. All these will be shipped to the mine as soon as railway connection is established, and erected forthwith.

On the 12th January I proceeded to Coal Creek, reaching there on the 22nd. I found that a second seam of coal 6 ft. 6 in. thick, of good quality, had been discovered

on the care is be go serve work efficient work in make coal vision of Mr

than v This coal b

establi tons a months conditi day by If the a market

near the junction weather menced consider of an ab

To developi followin

This by the en

on the south side of the creek and development was proceeding satisfactorily. After careful examination of this coal, and giving it a thorough test, I decided that it would be good policy to continue the operations and to locate the plant so that it would serve both seams. This will involve an additional outlay of about \$3,000 for trestle work and adits, but will give you control of two seams and generally increase the efficiency of the mine. The quality of No. 2 coal is very good, scarcely inferior to No. 1, and possibly a better coal for steam purposes, being "drier"—it will also make a good coke, and being mixed with No. 1 produce a better article than either coal alone. I have arranged to have a thorough test of this under my own supervision at the Intercoionial Coal Co's Works, Nova Scotia, but meanwhile the analysis of Mr. Hersey, analytical chemist, of Montreal, fully justifies the above conclusions.

I am pleased to report that the angle of inclination of both seams is much less than was anticipated, varying now from 5 to 10, instead of 23 as in my last report. This will make the mining easier and will, I believe, enable us to cut almost all the coal by machinery.

The general outlook at the mines is very favorable, and but for the delay in establishing railway communication we should be ready to ship coal at the rate of 200 tons a day by April 1st. I fear, however, we shall not have an outlet for several months later; meanwhile I have regulated the strength with due regard to the costly conditions now existing; on these lines the capacity of the mine will be 500 tons a day by the end of summer, and 1,000 tons a day by the end of the year if required. If the railway is completed not later than June we shall be able to place coke on the market next autumn.

It will not be practicable to erect a miners' village or town up Coal Creek at or near the mines, and with your approval a good site has been decided upon at the junction of Coal Creek and the Elk River, to be named Fernie. As soon as the weather permits, the necessary survey and clearing will be made and building commenced. There are already numerous applications for lots and I have no doubt a considerat own can be built up there. I would recommend a long lease in place of an absolute sale of the lots as enabling you to retain some control over the place.

To my original estimate of approximately \$150,000 as the capital required for developing and equipping and furnishing 50 coke ovens must now be added the following items:—

- Additional cost of obtaining supplier and extended capital outlay through 4 months delay in completing railway . . . \$20,000
- 2. Electrical plant and machinery sanctioned by directors but not in original estimate.
- 3. Cost of connecting No. 2 seam with the screening plant.. 3,000
 \$30,000

This brings the capital outlay to \$180,000, the whole of which will be required by the end of the present year at the rate of about \$15,000 a month after April; for the next two months 2bout \$10,000 will be required for all purposes.

This total capital outlay will have an offset in the stock of coal now being produced from the opening up of the seams. I estimated the quantity at 10,000 tons by the time the railway reaches the mine, and at the low value of \$1.50 a ton this would give \$15,000. There should also be a yield of say \$5,000 from the sale of lands, this season.

I would impress upon you the urgency of railway completion, and also of making some arrangement whereby we can ship coal and coke into Montana as soon as possible, as the delay in establishing railway communication with West Kootenay will render us more dependent than ever on the former market.

W. BLAKEMORE, General Manager.

TREASURER'S STATEMENT TO FEBRUARY 28TH, 1898.

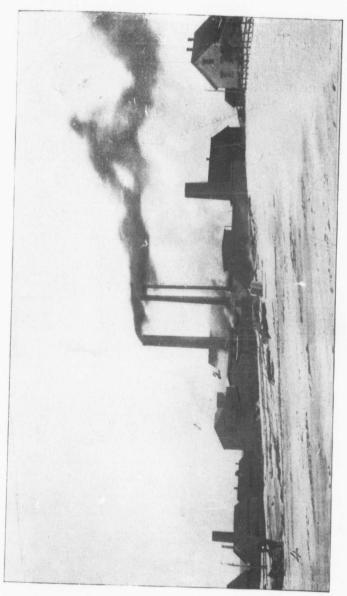
RECEIPTS.

Received f	from the (Canad	lian Pacific	c Rai	lway	Co.	un	der agree-
ment	between	that	company	and	the	В.	C.	Southern

\$85,000 00

DISBURSEMENTS.

Paid for	Machinery and Plant		\$2,526 86	0	
"	Salaries		1.540 00	0	
6.6	Crown fees on Charter and advertising		-,540 0.		
	Notices of Application	\$700 00			
6.6	Discount on temporary loan (Government				
	deposit for Charter)	476 70			
6.	Business Tax in Province of Quebec	63 79	1,176 70)	
"	License to carry on business in British	-3 77			
	Columbia	550 00			
"			613 79)	
	Wages	1,484 16			
66	Board of Workmen at Mine	1,334 96			
66	General supplies, on hand	861 29	2,819 12		
"	Freight on supplies	322 54			
			1,183 83		
66	Travelling expenses		1,161 40		
"	Experts for reports on property, etc		1,048 60		
	Taxes on property		1,089 84		
66	Stationery, postage, telegrams, etc				
66 1	Wm Fernie for aurent did		261 67		
	Wm. Fernie, for current disbursements		1,168 02		
				14,589	77
	Balance Cash on hand			Φ	-
				\$70,410	23



Cumberland Railway and Coal Co.—No. I Slope, Springhill, N.S.

GENERAL STATEMENT, FEBRUARY 28TH, 1898.

ASSETS.

LIABILITIES.		ψ*,500,000 00
Organization, development and operating expenses to date	1,489,966	0.1
In Bank	71,578	25
Cash—In hands of company's agent at Coal Creek for current disbursements 1,168 02		09
properties now being earned under agreement be tween Canadian Pacific Railway Co. and B. C. Southern Railway Co. and assigned to this company. Machinery and Plant	\$1,415,000	000
Real Estate—Coal Mines and other property in Crow' Nest Pass and district, owned in fee simple, and other	r	

CUMBERLAND RAILWAY AND COAL CO., Ltd.

.....\$1,500,000 00

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.

H. R. Drummond.

J. R. Cowans.
W. J. Morrice.

Capital Stock, paid up

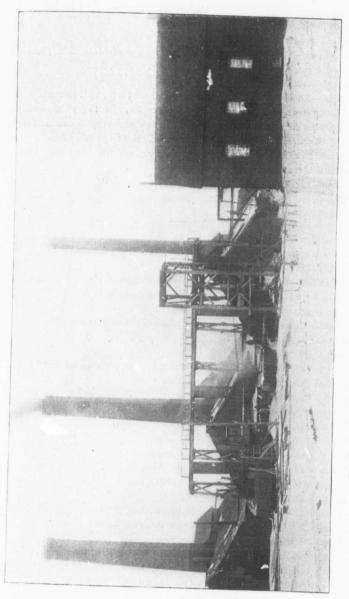
Head Office: H. R. Drummond, Secretary, Imperlal Building, Place d'Armes, Montreal.

Mines Office: J. R. Cowans, General Manager, Springhill, N.S.

C. Hargraves, Manager, Colliery Department,
W. D. Matthews, Assistant to Manager, Colliery Department,
G. Hall, Mechanical Foreman,
R. H. Cooper, Cashier,

J. G. Aikman, Superintendent, Railway Department, Parrsboro, 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.



Cumberland Railway and Coal Co.-No. II Slope, Springhill, N.S.

No. 1 Slope-W. D. Matthews, Underground Manager.

Seam of 8 ft. worked; dip, 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 in.

Lamps-Marsaut.

Boilers-6 double flue, 45 h.p. each; 4 tubular, 25 h.p., loco. pattern.

Hoisting engines—I double-geared winding engine, cyls. 18 x 36 in., drum 9 ft dia.; I elevator engine, cyl. 9 x 18 in.; I electric light engine, cyl. 8 x 12 in., I engine driving slack conveyors, elevator and rotary screen, cyl. 12 x 30 in.; I fan engine, cyl. 15 x 30 in.; I pr. Link reversing geared haulage engines, cyls. 16 x 20 in.; with four 5 ft drums to operate underground haulage system.

Pumps-1 boiler feed, Jeanesville, duplex, 8 x 4 x 8 ins.

Screens-Straight steel bars, 15 ft. long; rotary screen, 20 x 5 ft., with conveyors and elevators.

No. 2 Slope-W. Lorimer, Underground Manager.

Seam of 10 ft. 6 in. worked; dip 30°; length of slope, 3,000 ft.

System of working - Pillar and bord.

Ventilation - By blown-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 - 4 double flue, 40 h.p. each; 2 Lancashire flue, 70 h.p. each.

Hoisting engines—I double-geared winding engine, cyls. 22 x 36 in.; drum dia., 9 ft. 10 in.

Pumps — I Jeanesville duplex $28 \times 9 \times 36$ in.; I Jeanesville duplex $22 \times 7 \times 24$ in.; 2 boiler feed (Jeanesville), duplex, $8 \times 4 \times 8$ in.

I pr. Link reversing-geared haulage engines, cyl. 16 x 20 in., with four 5 ft. drums to operate underground haulage system.

I direct acting fan engine, cyl. 12 x 30 in.

No. 3 Slope. - M. Blue, Underground Manager.

Seams of 10 ft. worked; dip 28°; slope, 2,600 ft.

System of working - Bord and pillar and longwall.

Lamps -- Marsaut.

Ventilation — By blown-down fan, 14 tt. dia; length of blade, 3 ft. 6 in.; width, 6 ft. dia.; shaft, $7\frac{1}{2}$ in., direct acting engine, cyl. 12 x 30 in.

Boilers - 8 double flue, 40 h.p. each.

Hoisting engines—I double-geared winding engine, cyl. 18 x 36 in.; dia. of drum, 9 ft.; I engine, cyl. 6 x 12 in., for hoisting timber to bank, and empty boxes up incline. I Robb-Armstrong, II x 12 in., for driving rotary screen.

1 pr. Link reversing-geared haulage engines, cyl. 16×20 in., with four 5 ft. drums to operate underground haulage.

I direct acting fan engine, cyl. 12 x 24 in.



Cumberland Railway and Coal Co.-No. III Slope, Springhill, N.S.

Pumps—I Jeanesville compound duplex cyls. 38 in. and 25 in., 10 in. plungers, 36 in. stroke; I Blake, II ½ x 28 x 36 in.; I Jeanesville duplex 14 x 5½ x 12 in.; I Jeanesville boiler feed, duplex, 8 x 48 in.

Screens — Straight steel bars 15 ft. long; rotary screen 20 x 5 ft., with conveyors and elevators.

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 SALES.

	1889.	1890.	1891.	1892.	1893.	1894.
Nova Scotia	99,847 93,527 172,406 9,986	89,525 107,047 173,277 7,734	109,783 123,652 163,956 8,815	118,884 105,472 129,271 8,374	129,515 133,290 119,284 9,050	123,795 126,057 98,914 36,205
	375,766	377,583	406,206	362,001	391,139	384,991

COAL DISPOSALS.

	1895.	1896.	1897.
Nova ScotiaQuebec New Brunswick United States.	123,848\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	107,048 58,182 172,188 18,469	83,788 18,528 130,105 12,084
Total	328,666	355,887	244,505

DOMINION COAL CO., Limited.

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, first mortgage bonds at 6 per cent. Issued, \$3,000,000.

Directors:

Henry M. Whitney, Boston.

Sir Donald A. Smith, Montreal, Henry F. Dimock, New York. Hugh McLennan, Montreal. F. S. Pearson, Boston.

Sir W. C. Van Horne, Montreal. Robert Winsor, Boston. W. B. Ross, Q.C., Halifax. Alfred Winsor, Boston. Henry Alfred

Hiram J. R. B

Kingm

and sell ates und the roya maximu paid on in the ne At coal land

(formerly (formerly by Burch Co., Ltd.); Railway "Victori Ltd.); the steamers,

Undergro
Pheli
185 ft.; 1
Syste
Vent
giving 100
Nake

Cale

Boile Pump

gallons pe

General Offices: 95 Milk St., Boston.

Henry M. Whitney, President. Alfred Windsor, 1st Vice-President.

John S. McLennan, Treasurer. F. S. Pearson, Chief Engineer.

Hon. David McKeen, 2nd Vice-President.

CANADIAN OFFICE:

Glace Bay, Cape Breton, Nova Scotia.

Hiram Donkin, C.E., Resident Man. J. R. Blackett, Cashier.

John Johnston, Assistant to Man. B. F. Pearson, Halifax, Secretary.

CANADIAN SELLING AGENTS:

Kingman & Co., 14 Place Royale, Montreal, and M. R. Morrow, 171 Lower Water St., 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 ton with 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 and 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.

Caledonia Colliery—One mile from Little Glace Bay. Manager, John Johnston; Underground Manager, Thomas Johnston.

Phelan seam of 7 ft. worked; dip averages 1 ft. in 12; vertical depth of shaft, 185 ft.; length of east slope, 2,300 ft.; west slope, 2,500 ft.; west level, 4,000 ft. System of working—Pillar and bord, and longwall.

Ventilation by Murphy fan, 12 x 6 ft., running 120 revolutions per minute and giving 100,000 cubic ft. of air.

Naked lights.

Boilers-3 Babcock.

Pumps—I No. 7 Blake; I Northey Compound Duplex, capable of raising 1,000 gallons per minute to the surface.

Hoisting engines—I 20-in. double cylinder, 3 ft. 6 in. stroke, with 8-ft. drum; I double engine for hauling coal from deep, having 12-in. cylinder, 15-in. stroke.

Air compressor — I 20 x 30 piston inlet, Ingersoll make, with a capacity for 12 coal mining machines; one Rand compressor, 48 x 30, with Corliss valves; 28 coal mining machines, I longwall undercutter, 2 Stanley headers, 6 Jeffrey borers.

Coal heading machines: 2 Stanley.

Endless haulage, driven by one 22 x 54 in. horizontal engine, with friction gear. Patent dumping cages 2nd self-weighing tanks.

Steam water heater.

Electric lighting above and below ground.

Elevator for producing Nut and Duff

International Colliery at Bridgeport, 12 miles from the town of Sydney; Peter Christianson, Superintendent; J. McEachren, Underground Manager.

Harbor seam worked averages 5 ft. 10 in.; dip, 1 in 12; length of slope, 4,000 ft.; vertical depth shaft, 90 ft.

System of working-Pillar and room.

Ventilation-Murphy fan, 8 ft. dia.

Naked lights.

Winding engines (on surface)—Pair 16 x 36 in. and 14 x 30 in.; 8 ft, drum.

Pumps—I Knowles, 160 ft. suction, vertical 320 ft. through bore hole.

Boilers—I Babcock, 210 h.p.; 2 plain cylindrical, 30 x 5 ft.; and I Monarch tubular.

Haulage—One 18 x 36 for driving endless haulage, fixed on surface.

Reserve Colliery, situated at Bridgeport Basin, two and one-half miles from Glace Bay; James McVey, Superintendent; Norman McKenzie, Underground Manager.

Phelan seam, averages 8 ft. 8 in.; dip, I in 13; worked by two slopes, of which the "Main" is 5,000 ft., and the "French" 5,000 ft. long; vertical depth about 380 feet.

System of working - Pillar and room.

Ventilation by fan, about 200,000 cubic ft. of air per minute; Chandler fan, engine coupled direct.

Naked lights.

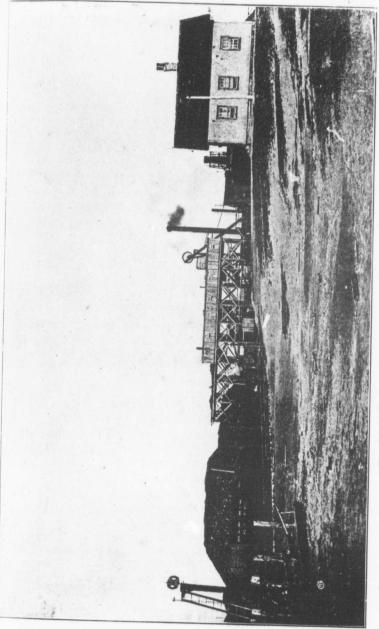
Hoisting engines — One winding engine, 22 in. cyl., $4\frac{1}{2}$ ft. stroke; geared 5 to 1, working endless haulage.

Pumps — One pumping engine, 15 in. cyl., 8 in. water cyl., 24 in. stroke; one Cameron pump, 14 in. steam cyl., 8 in. water cyl., 18 in. stroke.

Boilers - Two Babcock, each 210 h.p.

Screens in use, 20 ft. long. Two shaking screens, each 18 ft. long; 2 picking belts, each 33 x 5 ft.

Ingersoll-Sergeant coal cutters.



Dominion Coal Co. International Colliery, Cape Breton.

Mitchell's patent tippler.

Slack pocket, elevator and conveyor.

I Rand compressor.

Old Bridgeport Colliery, situate on the south side of Lingan Bay, ten miles from town of Sydney; Robert Robson, Superintendent; George Greenwell, Underground Manager.

Phalen seam, 8 ft. worked; dip averages I in II; shaft 120 ft.; system of working pillar and bord.

Naked lights.

Ventilation by 8 ft. Murphy fan; 70,000 cubic ft. of air per minute.

Two air compressors, one 20 x 20 x 24 in. stroke; one 24 x 24 x 30 in. stroke. Hoisting engines — One double drum 8 ft. dia., cyl., 18 x 24 in.; made by Matheson.

Boilers - Five 40 h.p. water bottom, tubular loco. type fire.

Pumps - None. (Level to sea, natural drainage).

Screens - Two 1/4 mesh, 20 x 6 ft.

Patent self-dumping cages and self-weighing tanks.

Ingersoll-Sergeant coal cutters.

Haulage — One Lidgerwood below, 10 x 12 in., geared 5 to 1, and 1 endless haulage engine 18 x 36 in.; and 1 engine 10 x 12 in., geared 5 to 1.

One elevator to produce nut and duff.

Victoria Colliery, situate at Low Point, on the south side of Sydney Harbour; T. J. Brown, Superintendent; John Connors, Underground Manager.

Ross seam, 6 ft. 7 in. worked; dip averages 25°; length of slope, 1,740 ft. Naked lights.

Ventilation by 8 ft. Murphy fan; 70,000 cubic ft. of air per minute.

Hoisting engines — One pair hoisting engines 24 x 48 in.; 7 ft. drum.

Pumps — One Blake 18 x 48 in.; I Knowles, 12 x 15 in.; I Elliott, 24 x 18 in.; I Northey duplex, 24 x 18 in.

Boilers -- Five tubular boilers, 50 h.p. each.

Screens - Four, each 5 ft. wide and 20 ft. long.

Locomotives, 2; wagons, 120.

System of working - Pillar and room.

Dominion No. 1 — Situated about 10 miles from town of Sydney; J. C. Mitchell, Manager; A. Scott, Underground Manager.

Ir

Phalen seam, 8 ft. thick; dip, 1 in 14.

Naked lights.

System of working -- Pillar and room.

Ventilation — 12 ft. Murphy fan, coupled direct; 120,000 cubic feet of air per minute.

Boilers — Four Babcock, each 210 h.p.; working pressure, 100 lbs.

Hoisting engines — One pair 24 x 54 in. cyl.; 8 ft. drums. I man-hoisting pair 16 x 30 in. cylinders.

Air compressors — Two Ingersoll-Sergeant compound steam, 48 x 30 in.; Corliss valves.

Pumps - One Cameron, 18 x 24 in.; 2 Cameron.

Two Stanley headers.

Undercutting machines - Yoch, Ingersoll-Sergeant and Harrison.

Endless haulage engines — One pair 18 x 36 in.

One Mitchell long wall machine.

One steam heater.

One slack pocket, elevator and conveyor; self-dumping cages and weighing tanks; steel pit frame 85 ft. high; engine and boiler house built of brick.

One brick stack 125 ft. high.

Two shaking screens 18 x 6 ft.

Two picking belts 40 x 5 ft.

One Cameron pump, 18 x 24 x 8, below, raises all the water to the surface.

Carpenters' and smiths' shops, engine, boiler and compressor house erected, and commodious railway sidings, standard gauge, connect this mine with the company's general Sydney and Louisburg system.

A large coal washing plant capable of handling 500 tons per day has been erected at a convenient place adjacent to the Sydney and Louisburg Railway, about three miles west of Morien Junction. The water supply is obtained by gravitation from Morrison lakes, and it is hoped that this important plant will be kept running to supply gas fuel for the Nova Scotia and Eastern States trade. The cost is about \$53,000.

OUTPUT AND SHIPMENTS OF COLLIERIES.

COLLIERY.	18	95.	1896.		1897.	
	Raised.	Shipped.	Raised.	Shipped.	Raised.	Shipped
Gowrie	54,138 199,553 107,202 49,795 96,931 163,423 96,605 73,167 33,617	41,052 192,887 99,329 44,143 83,051 145,227 86,041 63,109 29,960	50,166 269,802 140,539 62,810 231,515 98,721 161,528 137,721	39,183 243,458 133,922 52,310 212,985 91,280 151,796 133,821	41,873 266,384 129,913 104,321 261,378 112,092 234,977 100,357	30,436 234,092 126,904 91,295 218,455 97,822 219,746 87,218
	874,431	784,799	1,152,802	1,058,755	1,251,295	1,105,968

COAL DISPOSALS, 1895-6-7.

	1895.	1896.	1897.
Nova Scotia (including land sales)	148,938	:83,079	194,587
Prince Edward Island	12,101	16,359	16,223
Newfoundland	38,907	42,598	38,721
Quebec.	459,124	556,306	672,041
New Brunswick	25,739	41,940	43,542
St. Pierre	4,662	4,598	7,741
West Indies.	266		
United States	56,534	162,489	79,163
Steamers	38,528	51,386	55,357
Colliery consumption	44,469	51,711	46,593
Company's railways.	7,146	4,628	6,039
Colliery employees	18,738	18,237	20,551
RECAPITULATION.	855,152	1,133,331	1,180,558
Shipped	784,241	1,057,595	1,105,968
Land Saics	558	1,160	1,407
Collieries and railway	51,615	56,339	52,632
Employees	18,738	18,237	20,551
	,7,50	-5,23/	20,551
	855,152	1,133,331	1,180,558

DIRECTORS REPORT 1897.

The annual report submitted to the shareholders, for the year ended 28th February, 1897, is:—

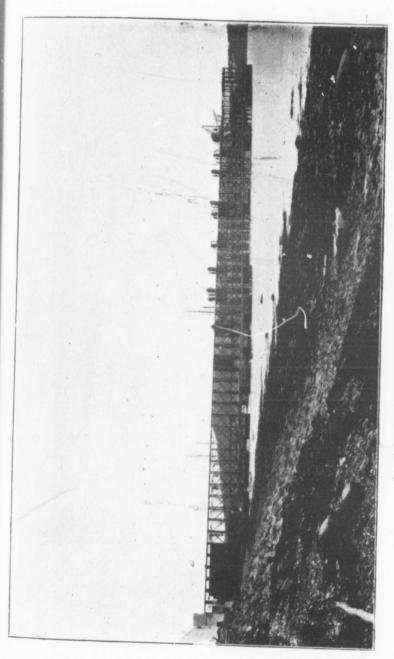
"As will appear from the Treasurer's statement, the output for 1896 was 1,169,785 tons. This is larger by 284,881 tons than for the previous year.

During the latter part of the year it was found desirable to erect a coal-washing plant. This was proceeded with, and is now in operation. It has proved economical and effective in increasing the market value of the smaller grades of coal.

Since the close of the year the sum of \$54,172.65 for the sinking fund has been paid to The New England Trust Company. This, with previous payments and interest, amounting in all to \$136,318.19, was in excess of the sum required as special deposit for sinking fund (\$125,000) by \$11,318.19, which has been used to the extent of \$11,275 for the purchase and cancellation of twelve bonds. Hereafter all amounts paid into the sinking fund (five cents per ton on all sales) will be available for purchase and cancellation of the bonds."

The accounts contain the following particulars:-

Proceeds 1,169,785 tons, less mining, transporation, royalty, etc	\$303,037 76
Net income from steamships, railways, barges, real estate, etc	286,263 45



Dominion Coal Co.-Shipping Pier at Louisburg, C.B.

Less—		
General expenses	\$46,071 66	
Accounts payable	24.476	00
	34,476 42	80,548 0
Less—		\$508,753 1
Interest on bonds	¢.0-	
Other interest paid and accrued		
Sinking fund	55.7 5	
	54,172 65	267,937 8
Less—		\$240,815 2
Dividend preferred stock paid and accrued		
Two months' dividend preferred stock, \$500,000,		
referred to previous year	6,666 67	166,666 67
Add—		\$74,148 58
Surplus from 1895		18,214 73
1		
BALANCES FEBRUARY 28TH	1807	\$92,363 31
	, 1097.	
ASSETS:		
Property accounts	\$	20,180,274 33
ash assets—		
Cash in banks and offices	\$14,794 30	
Balances due from agents and coal at distribute	70,059 05	
ing points	203,929 94	
New supplies in warehouse and stores. Cash in New England Trust Company for outstanding coupons.	103,076 45	
Cash in New England Trust Company sinking	90,915 00	
fund and special deposit	81,123 30	
uncalled-for dividends	988 00	564,886 04
	\$2	0,745,160 37
LIABILITIES:		-1743,100 37
apital stock, common\$	15 000 000 00	
preferred	2,000,000 00	
ust mortgage bonds	3,000,000 00	
ills payable	282,896 70	
dividencs	90,915 00	
nking lund, 1800	988 oo 54,172 65	
ridend two months	26,666 67	
oyally	36,977 62	
sterest accrued	704 00	
anway suspense account	34,476 42	
alance to general suplus	125,000 00 92,363 31	
		,745,160 37
	-	11731-00 31

1,221

a con and year last y

Fund celled still 1 \$125,

of Ja full c prese

Net p

Less-

Assets.

Cash A

N

DOMINION COAL COMPANY, Limited.

DIRECTORS' REPORT, 1897-8.

The Directors report for the year ended 28th February as follows:-

"As will appear from the Treasurer's statement, the output for 1897 was 1,221,471 tons, larger by 51,686 tons than for the previous year.

"All the construction work, both ordinary and extraordinary, of which a considerable amount has been done, has been charged to operating expenses and depreciation account, so that the property account, as compared with a year ago, stands reduced by \$12,000, being the amount of bonds purchased last year under the sinking fund.

"Since the close of the fiscal year, under the operation of the Sinking Fund, \$53,000 of the bonds of the company have been purchased and cancelled, reducing the bonded indebtedness to the sum of \$2,935,000. There still remains in the hands of the New England Trust Company the sum of \$125,000 as a special deposit under the terms of the deed of trust.

"It is expected that the company will begin delivering coal on its contract with the New England Gas and Coke Company by or before the first of January. Requirements under the contract, if the works are run to their full capacity, will call for an increase of about seventy-five per cent. of the present output of the company."

The annual statement shows :-

Carried to general surplus.	\$79,547 41 39,768 96	119,316 37
Balance	erty in 1897	\$119,316 37
Less—Dividend preferred stock paid and accrue		\$279,316 37 160,000 00
Sinking fund	54,680 35	261,537 07
Net proceeds 1,221,471 tons, and net income ships, railways, barges, real estate, etc	from steam- \$179,280 00 27,576 72	\$540,853 44

BALANCES FEBRUARY 28, 1898.

Assets:

3

Property accounts	\$20.168.274.22
Cash Assets:	\$20,200,274 33
Cash in banks and offices	\$46.241.70

Accounts and bills receivable. Balances due from agents, and coal at dis-	\$46,341 102,741	
New supplies in warehouse and stores Cash in New England Trust Co. for out-	235,381 122,826	
standing coupons	90,420	00

					The state of the s	
Cash in New Englar	nd Trust Co.	for sink-				
ing fund			125, 138	95		
Cash in American L uncalled-for div	oan and Trus idends	t Co. for	1,512	00	724,362	17
Total					\$20,892,636	50
Liabilities:						0
Capital stock, comm	ion	4	15,000,000	00		
" " prefe	rred		2,000,000			
First mortgage bond	ls		2,988,000			
Bills payable			123,812			
Unpaid coupons			90,420			
			1,512			
Sinking fund, 1897.			54,680			
Dividend 2 months.			26,666	-		
Royalty			34,214			
Interest accrued			5,175			
Accounts payable			268,124			
Railway suspense ac	count		125,000			
Balance, general sur					\$20,892,636	50
						-
G	ENERAL SUR	PLUS ACC	DUNT.			
Surplus from 1897 balance	ce				. \$92,363	31
Net contribution to perr	nanent sinkir	o fund i	896 (\$54,1	72.6	SE	0-
less \$11,275 used for	purchase of h	onds)			42,897	65
Surplus from 1897 as abo	ove				. 39,768	96
Total genera	al surplus car	ried forwa	rd		\$175,029	92
Railroad suspense accoun	nt, subsidy hel	d for depre	eciation of	R.F	R. \$125,000	00
Sir	NKING FUND,	APRIL I	, 1898.			
\$111,800 U.S. Reg. 4s @		Used for	retiremen	ıt 4	52	
1.08½					. \$55,250	84
Uninvested funds	4,267 49				#33,230	04
From 1897 business	54,680 35	Balance o	carried for	war	d 125,000	00
	\$180,250 84				\$180,250	84
Brought forward	\$125,000 00				- , 0	=

Registe

a i

£1 sul

4s wit

15s

Head O

Min

In the coal mine of the pre Cape Bret to Messrs, and as the it at a heat took the lead out of wor

deep, was from the p to this date second sha put into op works adva

GENERAL MINING ASSOCIATION, Ltd.

Registered 1825. The capital was £274,690 in fully paid shares of £10, but in 1874 a return of £1 per share was made, in 1880 a further £1 per share was repaid, and in 1894 a return of £2 10s. was made. There is now, therefore, a capital of £151,079 10s. in shares of £5 10s. fully paid. 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.; 1888 and 1890, 6s.; 1891, 8s.; 1892, 10s.; 1893, 15s.; 1894, 14s.; 1895, 12s.; 1896, £5s. Reserve Fund, £31,400 sterling; carried forward 31st Dec., 1896, £1,840.

Directors:

J. D. Hill, Chairmon.

E. D. Brenton.

W. S. Cunard.

Col. W. C. Western.

Head Office: E. E. Bigge, Secretary, Dashwood House, 9 New Broad Street,
London, E.C., England.

Mines Office: R. H. Brown, General Manager, Sydney Mines, C.B.

CANADIAN AGENTS:

Messrs. Cunard & Company, Halifax, N.S.

In the year 1825 this company purchased the Duke of York's right to all the coal mines in Nova Scotia. In 1826 it sent out the late Mr. Richard Brown, father of the present manager, to survey and report upon the coal fields of \mathbf{Nova} Scotia and Cape Breton. He found that the Sydney Mines, first opened in 1785 and under lease to Messrs. T. S. and W. R. Bown, was not included in the lease to the Duke of York, and as their lease expired on the 31st December, 1826, and they did not care to renew it at a heavy royalty of 4s. 3d. per ton, which they had been paying, Mr. Brown took the lease from the Government for the General Mining Association. The opening out of works was commenced at the beginning of 1830, when the first shaft, 200 ft. deep, was sunk. Iron foundry and fitting up shops were then erected and a railway from the pits to North Sydney for a shipping port was completed in 1834. Previous second shaft further to the dip was sunk. In 1854 a third shaft 400 ft. in depth was put into operation. A still further move to the dip was made as the underground works advanced in that direction, and the fourth winning was got into operation in 1876. This last is known as the Princess Pit. In addition to their works at Sydney

Mines, the G. M. Association opened a colliery at Bridgeport in 1830, which was closed in 1849; they also operated a small colliery at Bras d'Or from the year 1833 to 1849. They opened a colliery at Lingan in 1854, which worked until 1886, while they opened the Victoria Colliery (now owned by the Dominion Coal Co., Ltd.) in 1882.

Sydney Mines Colliery—Situated in the town of Sydney Mines, on the north side of Sydney Harbor, about three miles from the town of North Sydney. Edward Wilkinson, Underground Manager. Av. age persons employed: Below ground, 492; above ground, 243. The average output during the past three years has been 267,000 tons per annum. For the calendar year 1897 the quantity of coal mined was 268,000 tons.

Main seam, 5 ft 4 in., thick; dip averages 1 in 12.

Opened by shaft, 13 ft. dia. by 690 ft. deep.

System of working -Bord and pillar, the bords being 17 ft. wide.

Lamps—All Marsaut safety lamps.

Ventilation by Guibal fan, 30 ft. dia., by 10 ft. wide, and by a Murphy fan, 10 ft. dia. by 4 ft. wide.

Hoisting engines having two horizontal cylinders, each 36 in dia. by 5 ft. stroke, drum 18 ft. dia., draws two tubs of coal in a cage at once, and can hoist 126 tons coal per hour.

Pumps—One Cornish pump, steam cylinder, vertical, 68 in. dia. by 9 ft. stroke, pumps about 550 imperial gallons water per minute and works for 9 hours per day. Pumps are in two lifts, each 20 in. dia. by 336 ft. in height. One forcing set, steam cylinder, horizontal, 30 in. dia. by 4 ft. stroke, pumps about 42 galls. per minute, in one column of pumps, which are 8 in. dia. by 360 ft. in height. The water from the faces of the workings at the dip is pumped to the shaft bottom by two duplex pumps; one Northey $4\frac{1}{2} \times 2\frac{3}{4} \times 4$ in., forces the water to a distance of 2,960 ft. back from the working faces and to a vertical height of 280 ft.; the other, a Northey, $7\frac{1}{2} \times 4\frac{1}{2} \times 10$ in., forces the water thence to the pit bottom, a distance of 3,194 ft., and to a vertical height of 209 ft. 9 in. These two pumps are actuated by compressed ir produced on the surface and carried to the pumps in malleable iron pipes.

Boilers—Four Lancashire 7 ft. diam. x 28 ft. long; five egg-ended cylindrical from 5 ft. to 6 ft. diam., by 30 ft. to 35 ft. long; three steel tubular, each 5 ft. diam. y 14 ft. long, with 62 tubes of $3\frac{1}{2}$ in. dia.; three steel tubular each 4 ft. 6 in. dia. by 14 ft. long, with 54 tubes of $3\frac{1}{2}$ in. dia.

Air compressors — One duplex, cylinders 14¼ x 18 in.; one single air compressor, cylinder 14¼ x 18 in.; two winches placed in the workings at more than a mile from the pit-bottom are operated by compressed air and used to assist at the econdary haulage.

Screens-Five, each 5 ft. wide by 24 ft. long.

Railroad is $4\frac{8}{10}$ miles in length to the shipping piers of North Sydney; also connected with the main line of the Intercolonial Railway at North Sydney station. There are four locomotives and 220 coal cars of the capacity of from 4 to 6 tons each. They have two commodious shipping piers at their loading ground at North Sydney.

1890. 1891.

1893..

Th account The

The proa

Out of w

fr

The

Breton co

shipment The safety lan

believed t

More tion has in greatly in outlay.

Work made at la are met w

COAL SALES.

1890	Round. . 143,365½ tons.	Slack. 9,316 tons.
1891	. 136,552 "	6,740 "
1892	. 151,884 "	7,631 "
1893	. 186,615 "	8,994 "
1804	. 211,000 "	12,000 "
	_	

Large, Run of Mine

- 0	will Ditter.
1895	218,808 tons.
1896	234,616 "
1897	235,226 "

Directors' Report, 1897.

YEAR ENDED 31st DECEMBER.

The Directors present to the proprietors their annual report, together with the accounts for the year ending 31st December, 1897.

The sales of coal were as follows:

The

Broug

Sydney mines	Tons. 241,327	1896 Tons. 240,393	Tons. 934		
profit on the year's trading, as set amounts to.			(10 125	19	I
ght forward from 1896			840	6	0
of which the directors propose a dividen	d of 12s. 6	d ner share	(20,276	5	I

1897

Out o free of income tax, viz...... 17,168 Leaving balance to carry forward£ 3,108

The regular shipping season, owing to the prevalence of ice round the Cape Breton coast, opened a good deal later than usual, and the effect of this delay on shipments was to some extent apparent throughout the year.

The output at first also showed some diminution, owing to the introduction of safety lamps, but now that the workmen have become accustomed to their use, it is believed that any difficulty in this respect may be considered at an end.

Moreover, it should be stated with reference to these lamps that their introduction has involved some increase in wages and other expenditure, but it is felt that the greatly increased security obtained from their use more than justifies the additional

Work in connection with the sinking of the new shaft, to which reference was made at last year's meeting, is progressing quite satisfactorily, and, if no difficulties are met with, it is hoped that the coal may be reached in the course of a few months,

though the shaft cannot be developed sufficiently to form any reliable opinion as to the quality of the coal until some time after that.

In view of the extra expenditure involved in the new sinking, the board have deemed it advisable to carry forward a larger balance than usual.

Manager's Report, 1897.

"The average number of colliers employed during the season was 324 men; the pit worked 276½ full days drawing coal; and the total quantity of 268,629 tons of coal was raised. The best month's output during the season was made in November, when 28,304 tons were raised.

"Owing chiefly to the introduction of safety lamps in the colliery the output banked out during the winter and spring months was 5,000 tons short in quantity of that banked out during the preceding winter and spring. Some 3,600 tons of coal were shipped in January and 5,000 tons in April; but the drift ice remaining on the coast much later than usual delayed the regular commencement of the season's shipments until the 12th of May.

"The best month's shipment was made in July, when 33,251 tons of coal were put on board vessels. The total shipments for the year were 221,688 tons, and the local sales of all kinds were 19,639 tons of screened, large, run of mine, and slack coal.

"As the working faces have advanced underground, the 'deeps' have been extended, and new landings, or stations, from which the trains of tubs are drawn by the two main haulage engines, have been laid at No. 1 and No. 4 districts south and No. 2 district north, while the self-acting inclines of the old angle district south and the Dilly north have both been extended to the rise. The secondary haulage has been improved by the addition of a new winch, having two cylinders of 7 inches diameter by 10 inch stroke, and operated by our compressed air system. Two coal cutting machines have been working on trial during the last three months of the year. New horse stables have been erected in the workings on the north side, at a distance of a mile from the shaft bottom, for the accommodation of half of our horses; and pipes have been laid from these stables to the shaft, for the purpose of supplying the horses with pure drinking water from the surface. The compressed air pipes have been extended 200 yards further to the dip to meet the requirements of the coal cutting machines.

"On the surface we have replaced two more of our old egg-ended cylindrical boilers by Lancashire boilers, for a working pressure of 80 lbs. to the square inch.

"We have fitted up, at the old Queen Pit, a double cylinder horizontal engine (the cylinders of which were formerly used on our north side haulage engine) to replace the old winding engine recently pulled down. The work of this engine is at present confined to lowering and drawing the pumpmen to and from the 8 inch set of pumps working at that pit bottom. It was necessary, however, to have a good engine there, for, in case of accidents in the Princess pit workings, most of the men therefrom might have to come up at the Queen pit.



General Mining Association, Limited. Old Sydney Mines, Cape Breton.

"The small engine, commenced last year, to replace the antiquated condensing engine at our foundry and fitting shops, has been completed and put into operation, and a small Duke engine has been set up to work the Sturtevant blower for the foundry cupola. To provide steam for these, as also for our steam hammer, a multitubular boiler has been substituted for the two old cylindrical boilers hitherto in use there.

"A new Duplex air compressor, 14½ inch cylinders by 18 inches stroke; an air receiver; a multitubular boiler, 14 feet long by 60 inches diameter; and a brick chimney, 61 feet high, have been added to our air compressing plant, as the single-cylinder compressor hitherto in use was insufficent alone to supply the air required for our haulage winches, coal cutting machines and dip pumps.

"An improved Pooley's turntable weighing machine was set up in June, taking the place of one that had got worn out. This machine is used to weigh all the tubs of coal (nearly 400,000 tubs per annum) as they come out of the pit.

"Fifteen new coal cars, of 6 tons capacity each were purchased from Rhodes, Curry & Co., Amherst, in June. All our locomotives were placed in proper repair for the season's work. Part of our railway was re-laid with 1,810 yards of steel rails of 65 lbs. to the yard, and 2,550 new sleepers, or crossties, were put in.

"A large proportion of the pitch-pine sliding spears which guide the cage in the shaft, became worn, and were replaced by new, and a number of new coal tubs, or boxes, were made, as well as constant repairs being done on the older tubs in use.

"Six new large and commodious cottages for our workmen were built during the season, and extensive repairs were done on many of our older workmen's houses. A new colliery office has been built in the vicinity of our workshops, foundry and stores, which is found a great convenience, as our old office was so far away from any other portion of the establishment.

"In December, 1896, the board authorized the sinking of a pit to test our reserve," or No. 3 pit, seam of coal, which is 4 ft. 8 inches thick and underlies the whole of our coal area to the extent of many millions of tons. It was therefore arranged to commence the sinking of a single shaft at a point near our workshops, and on the north side of our railway leading to North Sydney. This shaft is to be 13 feet in diameter, and probably about 520 feet in depth to the seam of coal.

"A branch railway was laid from our present line to the site of the pit, making about 600 yards of roadway and sidings. The necessary machinery, consisting of winding engines, winches, boilers, sinking pump, air compressor and air drill, with pulley frames, pulleys, heapstead, wire ropes, tools, etc., were provided. A sinker's cabin and blacksmiths' shops, as well as buildings over the several engines, were erected. The actual sinking was commenced in July. Some 68 feet 6 inches in depth, where the shaft passed through our main seam, had to be lined with cast iron tubbing, cast by ourselves. The sinking was then resumed, and by the end of the year the total depth of 174 feet from the surface was reached."

[Signed]. R. H. BROWN

To sh

" Re

" Pro

(A)

" Sund

A

A

Ir

" Bills

Gove

BALANCE SHEET, 31ST DECEMBER, 1897.

LIABILITIES.

LIABILITIES.						
To share capital, viz., 27,469 shares of £5 10s. od						
each			£	(151,079	IO	0
" Sundry creditors—						
At the mines	4,646	15	10			
At Halifax	2,711		3			
In England	943	6	-			
Unclaimed dividends	398	5	-			
return of capital	149					
" Reserve—			_	8,848	7	6
Per last account						
Maintenance and renewal account—	3-1400	0	0			
From 1896 43,250 o o						
Sydney Mines, for current						
year 1,500 o o						
	44,750	0	0			
" Profit and Loss—			_	76,150	0	0
Balance from 1896	0					
Profit this year, per account "B"	840	6	0			
, and per account of	19,435	19	I	20,276		
			_		5	I
(A)			£:	256,354	2	7
ASSETS.						
By property of the Association, viz:						
Pits, Railways, Engines, Wharves, Polldings,						
machinery, &c	6,126,280	11	_			
other property, including real estate, stores,	,,		3			
mining implements, &c., valued per						
inventory	46,840 I	5 (9			
				73,130	7	2
" Sundry Debtors—						
At Halifax	19,902 10	0 0)			
At the Mines	6,618 10					
" Bills Receivable—				26,521)	4
In England						
In Halifay	2,352					
	11,589 13	I I C				
Government and Indian securities	38,365 8	2	1	3,941 17		5
Accrued interest thereon	438 10					
-				8,803 18	2	2

By Cash—			
A. II UC			
At the Mines	2		
A (T) TO 1 1 0 00			
At London Bankers and Office	6		
the state of the s	3,95	5 19	6
	£256,35	4 2	
	2230,33	+ -	1
(D) P			
(B) PROFIT AND LOSS, ENDING 31ST DECEMBER, 18	97.		
Dr.			
To coal stock on hand 1st January, 1897	£1,642	2	2
" Sydney Colliery general working expenses, rail-	2-104=		~
road expenses, shipping charges, royalty, &c.	69,290	12	4
" Maintenance and renewal of plant, railroad,	- /1-/-		4
wharves, &c	1,500	0	0
" Management expenses at Sydney Mines	1,962		7
"Income tax (average of three years)	618		0
" Expenses of management in London—			
Directors' salaries 900 o	0		
Secretary, clerks, and auditors' salaries 735 o	0		
Office rent, printing, advertising, stationery,			
telegrams, postages, travelling and petty ex-			
penses 391 18	4		
	- 2,026	18	4
" Legal expenses	. 12	3	2
" Balance—Profit carried to Account " A"	. 19,435	19	I
			-
	£96,488	14	8
CR.			
By proceeds of sale of 241,327 tons of coal and mis-			
cellaneous receipts at Sydney Colliery			
"Rents of cottages and lands	£91,983		
"Interest and exchange	1,384	10	9
"Interest and exchange			
Less interest paid			
"Transfer and other fees	1,238	3	8
" Transfer and other fees Profit on real estate sales	5	0	0
"Recovered on bad debts account	391	7	5
" Stock of coal 31st December, 1897	154		7
Jist Detelliber, 109/	1,330	16	2
	(06.00		0
	£96,488	14	8



H. W. McNeill Co.—Mines at Canmore, Alta.

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. | Will. F. Little, Anthracite, N. W. T.

Head Office: H. W. McNeill, President, Anthracite.

W. A. McNeill, Vice-President., Oskaloosa, Iowa,

W. F. Little, Manager. O. E. S. Whiteside, Ba. Sc., Mining Eng.

Formed to mine and extract coal in the Dominion of Canada. It operates mines under a ten years' lease, from June 1st, 1891, on the property of the Canadian Anthracite Coal Co., Ltd., on the line of the Canadian Pacific Railway at Anthracite and Canmore, Province of Alberta.

Mining capacity at Antifracite, for house use exclusively, 150 tons per day. Mining capacity at Canmore, for locomotive use, 600 tons per day.

Business year ends June 1st. Production averages per annum, 120,000 tons. Mueseler safety lamps used. Fan ventilation. Pillar and room system. Three hundred men employed. The output in 1897 was: Anthracite Colliery, 11,700 tons; Canmore, 95,000 tons.

INTERCOLONIAL COAL MINING CO., Ltd.

Incorporated 1867 by Act of the Legislature of Nova Scotia.

Capital.	Authorized	Issued.
Common stock	 \$500,000	\$500,000
Preferred stock	 250,000	219,700
First mortgage bonds	 250,000	250,000

Directors:

James P. Cleghorn, President.

Charles Fergie.	G. Goff Penny.
Hartland S. Macdougall.	W. J. Nelson.
W. M. Ramsay.	Thos. Wilson.
A. W. Hooper.	
A. W. Hooper.	R. McD. Paterson.

Head Office: Wm. J. Nelson, Secretary, 199 Commissioner St., Montreal,

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.



H. W. McNeill Co.—Anthracite Colliery.

The main and second seams are worked, the third and fourth being intact. The econd 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 5,000 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 excellent coke. The No. I slope is used exclusively for hoisting coal, the No. 2 for lowering and raising men, also for dropping down timbers, materials, etc.

Mode of working — The seam is worked on the bord and pillar system; each llft is 450 ft.; the levels are S.E. and N.W. 20 degrees; the dip is 24 degress on the north and 19 degrees on the south side; counterbalance planes are driven every 450 to 500 ft.; the bords are 10 ft. wide by 9 ft. high on the south, and 10 ft. wide by 7 ft. 6 in. high on the north side; heads are driven 100 ft. apart 6 x 6 ft.; the pillars average 80 x 40 ft. The main levels of every lit are driven out to the extreme boundary before the work of opening out by-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, 34; on cost, 90; boys, 50; total, 350. Surface, 118 men and boys. Total, underground and surface, 468. The average daily output is 1,000 tons in summer and 600 tons during winter months when working.

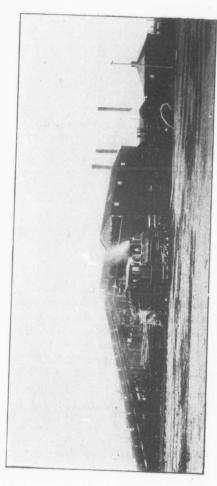
Lamps — To further increase the already many precautions taken with safety lamps, and principally to protect them in very high currents, a new small air compressor has been erected in the lamp room; to this compressor a ½-inch pipe is connected, arranged so that by opening a foot valve the glass and joints are subjected to a pressure of 30 lbs. per square inch. In the case of any defect the lamp is immediately extinguished. The same compressor also supplies air for cleansing the gauzes of dust.

Ventilation — The ventilation of the mine is produced by a Walker "Indestructible" fan of the Guibal type. It is 18 ft. dia. by 6 ft., driven by 6 cotton ropes, and geared 2 to 1. Engines for driving the fan are of the compound expansive cut-off type. High pressure cylinder, 17 in. dia.; low pressure cylinder 27 in. dia. The engines are constructed to work independently of each other if necessary.

There is also an alternative fan of the Guibal type, built 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 45 revolutions per minute produce 100,000 cubic ft. of air per minute.

A steam jet is also provided in case of accident, and is capable of producing 25,000 cubic ft. per minute.

Winding — The winding and hauling engines are set back in a dtrect line with the slopes. No. 1 winding engine has two horizontal cylinders, 28 x 60 in. stroke; balanced piston valves; pair of plain drums 10 ft. dia. by 3 ft. 6 in. wide, with independent action. The Lane friction gear is used; hauls 16 boxes, each containing 1,344 lbs. of coal.



Intercolonial Coal Co.-Tipple and Mouth of Slopes, Drummond Colliery.

No. 2 winding engines are a pair of 16 x 36 in. V friction, geared 2 to 1; drums 8 ft. diameter; work singly or connected. The rope used is 1/8 in. of crucible steel.

Hauling ropes — These are of plough steel 11/8 in. dia., Latch & Batchelor's patent flattened strand.

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. dia., fast to the axle, which is 15% in. dia., and also steel; the bearings are inside; the gauge is 2 ft. 8½ in.; 500 boxes are used in and about the mine, and the greasing is done on the surface.

Boilers — There are three egg-end steel boilers, each 30 ft. x 3 ft. 6 in.; the working pressure is 80 lbs.; two Cornish steel boilers, 30 ft. by 5 ft, 6 in., flues, 1 ft. 10 in. dia., working in conjunction with two "Heine" boilers of 200 h.p. each; the working pressure of these is 100 lbs.; the boilers in connection with the Walker fan engines and air compressors are of the Stirling water tube type of 300 h.p., and are built for a working pressure of 150 lbs.

Pumping — One steam pump (No. 1) is employed under ground, placed at the bottom of the fan shaft and is a "Knowles" direct-acting compound plunger, pump cylinders 8 in. and 14 in., plunger 6 in., stroke 24 in.; independent condenser; vertical lift 347 ft.; columns 10 in. cast iron. The other pumps are all driven by compressed air and are as follows:—No. 2 is a Northey compound duplex plunger pump, cylinders 8 x 16 in. by 18 in., plungers 4½ in. No. 3 and 4 are the Halsey pneumatic pumps with a capacity of 4,000 gallons each per hour. No. 5 is a "Northey" improved steam pump, cylinder 14 in., plunger 5 in., stroke 12 in.; vertical lift 150 ft.; column 4 in. cast iron.

Coke Ovens — There are twenty bee-hive ovens, each 12 ft. dia. by 6 ft. high; a charge consists of 5 tons of washed coal, and which has passed over a half-inch square mesh screen; ovens are drawn every 60 to 70 hours; the average yield of coke is three tons per oven per charge. A Sheppard deadweight crusher reduces the coal to the required size. The coal is washed by a "Robinson" coal washer, capable of washing 100 tons in 10 hours.

Lighting — All workshops, engine houses and bankhead are lighted by the incandescent electric light. No open lights are allowed in any part of the mine, the lamps used are of the Marsaut type.

Screens — Two shaker screens receive all the coal produced. The screens are fed by revolving tipplers which deposit the coal gently on the screen, which is delivered on to a picking belt 40 ft. long by 4 ft. wide, to allow of the thorough picking and cleaning of the coal.

Workshops — These consist of a carpenters', blacksmiths', car, machine shops and sawmill. The machine shops contain lathes, drilling and screwing machines. The sawmill contains travelling rotary saw and cross-cut, drilling and notching machine for cutting grooves 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.



Intercolonial Coal Co.—No. 1 Engine House and Surface Works, Drummond Colliery.

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 3,000 tonnage and over load here. Two locomotives and some 200 hopper cars are employed during the shipping season.

A compound air compressor, 14 in. by 22 in., made by the Rand Drill Co., supplies air to the underground pumps.

COAL DISPOSALS.

SOLD TO.		1892.			1893.		
3010 10.	Round.	Slack.	Total.	Round.	Slack.	Total.	
Nova Scotia. New Brunswick. Prince Edward Island. Quebec Ontario. Newfoundland Coke ovens. Colliery employees Colliery engines	39,367 5,388 2,213 83,439 38 2,854 3,540	37,744 2,701 3,654 9,073 2,312 62 5,263	77,111 8,089 5.867 92,512 2,350 2,916 8,803	53,613 2,912 8,812 79,794 23 880 143 3,402 8,111	47,038 653 7,133 6,101 10 987 18 2,755	100,651 3,565 15,945 85,895 33 880 1,130 3,420 10,866	
Totals	136,839	60,809	197,648	157,690	64,695	222,385	

COAL DISPOSALS-Continued.

Soun ma		1894.			1895.		
SOLD TO.	Round.	Slack.	Total.	Round.	Slack.	Total.	
Nova Scotia	57,043 6,995 8,480 73,193 2,050 1,052 536	43,465 245 6,859 7,494 1,009	100,508 7,240 15,339 80,687 3,059 1,052 536	52,219 3,886 10,270 70,086	39,865 312 6,046 5,548	92,084 4,198 16,316 75,634	
local	4,503 2,152 156,004	9,297 68,739	4,873 11,449 224,743	4,140 3,011	8,473 60,319	4,215 11,484 204,244	



Intercolonial Coal Co.—Coal Washing Plant and Coke Ovens, looking West, Drummond Colliery.

COAL DISPOSALS. - Continued.

SOLD TO.	1896.			
	1890.	Round.	Slack.	Total.
Nova Scotia New Brunswick P. E. Island Quebec United States Colliery employees and local Colliery engines Coke making	1,903 15,832 39,801 3,976	53,575 13,150 9,143 51,408 204 3,791 1,198	40,555 201 6,798 6,670 	94,130 13,351 15,941 58,078 204 4,053 9,528 2,111
	180,410	132,480	64,916	197,396

COKE MADE.

1896	2,708 tons.
1897	977 "

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 £53,650. The bonds are registered, and are secured on the whole of the properties as a floating security, the interest being payable half yearly on the 31st March and 30th September.

Dividends:

June, 1889 2½ per cent. Dec., 1889 2½ "	June, 18943 Dec., 1894 2	per cent.
June, 18902 " Dec., 18903 "	May, 18952	66
June, 18913 "	Dec., 1896 1 May, 18972	"
Dec., 1891 2½ " June, 1892 1½ "	Nov., 18972	"

At the 31st December, 1890, a credit to profit and loss of £7,699 12s. Id. 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 18s. 3d. was carried forward. For the half year ending the 30th June,



Intercolonial Coal Co.—Shipping Pier, Granton, from the Railway, Drummond Colliery.

1892, a loss of £4,691 7s. 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 5s. 10d. was shown, making a credit to profit and loss of £22,387 16s. 9d., which was carried forward. Reserve fund, £20,000. At the 31st Dec., 1896, a credit to profit and oss of £11,997 19s. 9d. was carried forward after payment of a dividend, and the reserve funds were increased to £41,234 2s. 10d.

Directors:

John Galsworthy, Chairman,

Thos. Blair Reynolds. William Needham.

Frederick Tendron. Edwin Andrew.

Head Office:

Joseph Ramsden, Secretary, 12 Old Jewry Chambers, Old Jewry, London, E.C.

CANADIAN OFFICE:

Samuel M. Robins, Superintendent, Nanaimo, B.C.

Agents at San Francisco: - Messrs. John Rosenfeld Sons.

Formed to acquire the properties of the Vancouver Coal Mining and Land Company, 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. Work at this mine has been suspended.

Wellington seam, averages from 3 to 5 ft.; dip, 6 degs., or about 1 in 10; vertical depth of shaft, 440 ft.; length of slope at foot of shaft, 700 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, 41/2 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. cylinder, 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 stationary 3/8 in. x 3/4 in. mesh, length, 16 ft.

Other plant -An air compressor on surface supplying power for running small pumps below. Fire pumps 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,



New Vancouver Coal Mining and Land Co.-No. 1 Shaft from Harbor.

Douglas seam, averages from 5 to 10 ft; dip, 6 degs.; hoisting and ventilating shaft, 650 ft.

System of working-Pillar and stall.

Ventilation-Guibal fan, 36 ft. dia. 12 ft. wide, giving 119,000 ft. per minute.

Lamps-Naked lights.

Boilers—Six plain cylindrical, 5 x 30 ft., and four double flue Lancaster, 5 x 30 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, 16 x 6 x 36, and one Blake 12 x 6 x 12, for pumping water from dip workings to shaft bottom; water hauled from shaft in tanks under cage.

Screens—Two fixed; length, 16 ft.; ½ in. x 5% in. mesh, with tipplers for placing coal on screen; 3 chutes with tipplers for supplying town coal.

Electric haulage—In hauling the coal from levels, which are in from foot of shaft a distance of two miles, the company utilises four 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, $4\frac{1}{2} \times 25$ 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 Colliery, No. 5--Situated five miles from Nanaimo; 200 persons employed. Richard Gibson, Underground Manager.

Douglas seam (South Field coal), averages from 6 ft. to 18 ft. ; dip. 6 deg. ; vertical depth of shaft 508 ft.

System of working-Pillar and stall.

Ventilation—Double fan (Murphy) 8 ft. dia., circulating 50,000 ft. per minute.

Lamps -- Naked lights.

Boilers—Two double flue Lancaster, 4½ ft. dia., 25 ft. long, 100 h. p., and one tubular boiler.

Winding engines—Pair of 16 x 36 engines, drum 6 ft. dia., and one underground at head of slope, 7 in. cyl., 10 in. stroke, 2 ft. 10 in. drum.

Pumps-One Cameron, 3 in. col. discharging 40 galls. per minute.

Screens-One stationary, 5% 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 a mile from town of Nanaimo; 200 persons employed; Thos. Morgan, Underground 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 to 4½ ft.; dip 6°; vertical depth of shaft to seam, 740 ft. Upper seam, two slopes, main and diagonal; main slope, 900 yds.; diagonal, 600 yds.



New Vancouver Coal Mining and Land Co.-No. 1 Shaft, Nanaimo, B.C.

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-Six double flue Lancaster, 41/2 ft. x 25 ft., 300 h. p.

Winding engines—Two, one for shaft and the other for operating slopes by endless ropes; one pair 26 in cyl., 42 in. stroke, drum 10 ft. and 10 ft. 11 in., so as to adjust ropes in hauling from both seams.

Pumps—One Cameron, 30 by 36, 2 in col. discharging 20 galls. per minute.

Screens-Not yet in place, but it is intended to put in shaking screens and travelling belts.

Bunkers to hold 1,200 tons have been erected, and hydraulic lifts for elevating coal into bunkers.

Wharf accommodation for loading vessels of largest size, and appliances for lowering coal into ship hold so as to avoid breakage.

Harewood Estate—Several bores and trial shafts have been put down and a prospect tunnel has been driven in near the croppings where there is 5 ft. of good hard coal.

In addition to railway and plant at mines there are five locomotives, 237 coal cars (6 tons), besides lumber and ballast cars; bunkers with a capacity of 4,700 tons; fitting shops with turning lathes, boring, drilling, planing, screw cutting machines, hydraulic pressure, steam hammer, etc., etc.; diamond boring machinery (bores to 4.000 ft.); wharves, 2,000 ft. frontage, at which ships of the largest size can load at all stages of the tide. Estimated value of the plant \$350,000.

	OUTPUT.			SHIPMENTS.		
YEAR.		Ton	s.	YEAR.	Ton	S.
		т.	C.		т.	C.
1890		389,505	12	1890	391,149) 5
1891		527,457	15	1891	524,647	
1892		433,386	7	1892	437,652	
1893		469,311	15	1893	468,578	
1894		393,772	17	1894	344,645	
1895		339,704		1895	286,675	
1896		320,575	13	1896	272,943	
1897		319,343	14	1897	265,878	

The following is excerpted from the accounts presented 12th October, 1897, covering the half year ended 30th June:—

To 215,

" Debe

" Insur

" Reser

" Profit

To Sundi

By estate

By Goods
" Coal in
" Sundry

" Sundry

" Nanaim

" Cash in

PROFIT

To amount

. ..

" Directors
" Auditor's

" Office ren

" Salaries..

" Printing, inci

" Law charg

" Travelling

DR.

BALANCE SHEET — 30th June,	1897				
To 215,000 shares, of £1 each, fully paid Debenture capital Insurance fund account			£ 215,00		
Hand sales reserve fund account. 20,21 Reserve fund account. £ 20,000 0 0 Profit on sale of Met. stock. 459 18 6	7 16	5 8			
20,45	9 18	6			
To Sundry creditors			42,377 31,084 15,133	13	2
CR.			£357,246	2	10
By estates, buildings, collieries, railway, plant, rolling stock and wharves£ 303,30. Less estate fund account for half-year 6,100					
By Goods depot and reserve stores	_		€297,199	1	2
" Coal in bin and in transit			4,218	19	4
" Sundry debtors for land	0	7 1	39,022	16	I
Nanaimo Gas Company's shares, and Union Steamship Co'y. of Nanaimo debentures		-	13,858	3	8
			500		
" Cash in London and colony			300	0	0
" Cash in London and colony			2,447	360	

PROFIT AND LOSS ACCOUNT FOR SIX MONTHS ENDED 30th JUNE, 1897.

DR.

" " Land sales reserve fund account " " Estate fund account	583 13 10 6,104 15 10	
" Directors' fees	450 0 0 £ 6,788 9 8	
" Auditor's fees " Office rent	15 15 0	
" Salaries.	35 0 0	
Printing, stationery, postages, telegrams and incidental expenses	275 O O	
"Law charges and commission on placing debnt.	111 14 8	
"Travelling expenses	239 13 6	
" Travelling expenses	50 0 0	
	I,177 3 2	

To Debenture interest	1,78	7 5	
" Income tax		2 10	
" Balance, being profit carried down	7,43		
	£ 17,471	2	7
To balance as per balance sheet	£15,133		
CR.			
By Nanaimo profit, including £1,167 7 8 realized from land sales after making provisions for depreciation and maintenance Dividend on Metropolitan stock (since sold) Registration fees		18	
	£17,471	2	7
By balance from last account			
By profit brought down this half year	- £ 7,697 7,435		-
	£15,133	14	6

NORTH SYDNEY MINING & TRANSPORTATION CO., Limited.

Incorporated 1895. Authorized Capital, \$200,000, in shares of \$100.

Directors:

John Greener, M. Maury. W. Maury.

Head Office:

John Greener, Manager, North Sydney, Cape Breton.

Operates the North Sydney Colliery, at North Sydney, Cape Breton. Opened by adit in at date of last report 950 ft. During the fiscal year ended 30th September, 1897, the output amounted to 4,809 tons, and the sales 5,059 tons.

PEOPLES' LIGHT & HEAT CO., Ltd.

Incorporated 1895. Authorized Capital, \$700,000, in shares of \$100.

Directors:

H. M. Whitney, President.

W. B. Ross, | B. F. Pearson, | John Dull, | E. Hanson, Frank Paul, | T. E. Kenny, | Geo. E. Boak, Geoffrey Morrow.

NE

for t

year

in produced in pro

the y

past 1 this n

the m
So half y
It

the pa

the pa

To 215,

" Land " Rese

" Sund " Profi

By Estate in Less

NEW VANCOUVER COAL MINING & LAND CO., Ltd.

DIRECTORS' REPORT, 1898.

(Submitted 17th May, 1898.)

The following is excerpted from the thirteenth report of the Directors presented at the annual meeting of shareholders on 17th May, 1898:—

The net output for the past half year was 121,037 tons, making a total for the year 1897 of 267,552 tons, as against 269,676 tons for the year 1896.

The sales for the past half year were 123,031 tons, making a total for the year 1897 of 265,878 tons, against 272,943 tons for the year 1896.

The market continued in a depressed condition until nearly the close of the year, when there was a little better demand, but there was no increase in prices.

East Field Mine.—The net output during the last half year from this mine was 84,269 tons, making the total for the year 156,779 tons.

Protection Island Shaft.—The net output from the upper seam for the past half year was 9,848 tons, making a total for the year of 59,015 tons, but this mine has been closed since July last in consequence of the dullness of the market.

South Field, No. 5 Shaft.—The net output from this mine for the past half year was 26,920 tons, making a total of 51,758 tons for the year.

It will be seen from the accounts that there is an available balance for the past half year of £5,969 8s. 9d., out of which the Directors recommend the payment of a £2 per cent. dividend, free of income tax, making (with the interim dividend paid in November last) £4 per cent. for the year 1897; this will absorb £4,300; the balance will be carried forward.

BALANCE SHEET, 31ST DECEMBER, 1897.

Dr.

	Dr.							
١,	o 215,000 shares of £1 each, fully paid up	1,800	0 2		215,		0	d.
	Sundry creditors				28,0 16,8	092	18	1
	Cr.				£356,1	17	2	_3
Ву	Estates, buildings, collieries, railway plant, rolling stock, and wharves	295,297		d.	£		s.	d.
				-	290,2	54	II	0

			-		-	
By Goods depot and reserve stores				7,082	14	2
" Coal in bin and in transit				44,137	3919	
" Sundry debtors for land	5,387	18	1	771-37	-1	
" " Coal and general	5,478					
, Nanaimo Gas Company's shares and Union				10,866	9	II
Steamship Company of Nanaimo debentures				500	0	0
Cash in London and colony				3,275	9	8
				6356,117	2	3
PROFIT AND LOSS ACCOUNT FOR THE SIX MONTHS E	ENDING 3	IST	D	ECEMBER.	, 18	97.
Dr.						
	£	S.	d.	£	s.	d.
To amount carried to insurance fund account	100	0	0			
Land sales reserve fund account	93	5	8			
" Estate fund account	5,043	0	.9	E 226	6	
" Directors' fees	450	0	0	5,236	0	5
" Auditor's fees	15	15	0			
" Office rent	35	0	0			
Salaries	348	0	0			
Printing, stationery, postage, telegrams, and						
incidental expenses	62	10	9	903		0
Debenture interest				1,609		
" Income tax				269	2	
Balance, being profit carried down				5,969	8	
						_
				£13,987	13	7
To Balance, as per balance sheet				£16,803	3	3
				£16,803	2	3
			:	210,003	3	
Cr.				£	s.	d.
By Nanaimo profit, including £112 1s. 9d. realized from after making provision for depreciation and making provision and making provision for depreciation and depreciatin						
Registration fees		e		13,986	3	
seguitation recommendation of the second				1	10	0
				₺13.987	13	7
	£	s.	d.	£	S.	d.
By Balance from last account	15,133	14	6			
Less dividend paid 11th November	4,300	0	0			
	70-1	M	-	10,833		
DC-1				5,969	8	9
" Profit brought down this half-year				3,909		
" Profit brought down this half-year				£16,803	3	3

Head Wo

Th crushed ovens, be incre

Incorpor

T

Hei

Owns 6, west of worked. months wa

UNIO

Incorporate

Alex Dunsn

Head

This cor the Union co Union (guage railway

15 tons respe

Head Office: B. F. Pearson, Secretary, 45 Sackville Streeet, Halifax, N.S. Works: North West Arm, Halifax, N.S. Henry W. True, Manager.

This company carries on business at Halifax, Nova Scotia, as manufacturers of crushed coke and certain bye products of Cape Breton coal. The plant comprises 10 ovens, and the output in 1897 was about 4,500 tons. The output during 1898 is to be increased to 12,000 tons.

ROCHE-PERCEE COLLIERY CO., Ltd.

Incorporated 1897. Authorized Capital, £16,000 stg., in 6,000 shares of £1.

Directors:

Thos. Gocher,

Leonard Gocher,

Gilbert Gocher.

Head Office:

83 Colmore Row, Birmingham, England.

CANADIAN OFFICE:

Herbert W. Gocher, Manager, 433 Main Street, Wlnnipeg, Man.

Owns and operates an area of lignite coal land on Sec. 34, Township I, Range 6, west of the 2nd meridian, near Estevan, Province of Manitoba. Seam of 9 feet worked. About 9,000 tons were mined in 1897. The working force in the summer months was fifteen, and during the winter forty.

UNION COLLIERY CO. OF BRITISH COLUMBIA, Limited.

Incorporated 25th July, 1888. Authorized Capital, \$1,000,000, divided into 10,000 shares of \$100 each.

Directors:

Alex Dunsmuir.

James Dunsmuir, President.

John Bryden.

Head Office: Francis D. Little, General Manager, Comox, B. C.

This company owns 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 guage railway. Rolling stock includes four locomotives (Baldwin), of 45, 30, 25 and 15 tons respectively; 150 25 ton coal cars, etc.

Two seams worked, averaging 3 ft. and 5 ft. respectively; dip 1 ft. in 6 ft. (north); opened by two slopes 2,200 yards and 700 yards respectively, and by one shaft 600 ft. deep, with levels 900 yards apart.

System of working - Longwall in upper seam; pillar and stall in lower.

Ventilation—No. 2 slope by Murphy fan, 8 ft. dia., 200 revolutions per minute; No. 4 slope by Guibal fan, 14 ft. dia., adit level by furnace. Ventilation on the separate split system, the intake being the slope; the air afterwards is split in four divisions, two for main slope and the others for diagonal slope; 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. pressure; at No. 4 slope there are six boilers same style and size as No. 1. There are also three upright tubular boilers 7 ft. x 42 in., for prospecting engines. No. 2 slope, two locomotive boilers; No. 5 shaft, four boilers same as No. 4.

Winding engines — Three in place at No. 1 slope, one direct acting, 16 in.; cyl. dbl., 36 in. stroke; drums 6 ft.; No. 4 slope, tail-rope, 4 drums, geared, 16 in.; cyl. 24 in. stroke, drums, 6 ft.; at No. 2 (prospecting) one geared, 12 in. cyl., 16 in. stroke, dia. of drum 4 ft.; No. 5 shafe, direct acting winding engine, two 30 in. cyl., 5 ft. stroke, 14 ft. drum.

Pumps — Ten in place; three Worthington; one fly wheel pump and 6 Gould electric pumps with Jeffrey motors.

Screens — One inch main screen 12 ft. long. At date of report the company was completing a Sheppard washer having a capacity of 300 tons per day.

Washing plant - Sheppard, 300 tons; Luhrig, 600 tons per day.

Coke Ovens — 100 Bee-hive. Coke made 1895-6, 1,565 tons; 1897, 17,813 tons, of which 17,101 tons were sold.

Other plant — This includes a diamond drill; one steam pile driver; two sawmills, having a capacity of 10,000 ft. per day each; and surface incandescent electric light plant.

Value of plant estimated at \$125,000.

OFFICIAL RETURNS OF OUTPUT.

																						Output at 31st Dec.	Exported.	Home Consumpt'n.
																						Tons.	Tons.	Tons.
1889																 						31,204	23,790	100
1890					*							÷				 						69,537	74,048	1,481
1891						1																114,792	103,960	294
1892	٠			٠	٠																٠	68,928	66,556	
1893	٠				٠	٠					 ,		×				c					143,927	114,356	29,478
1894		٠	٠		٠						*			×	è			,				241,372	233,660	7,222
1895	٠	٠	ń	 ,	٠			,		×			,								*	264,550	227,134	36,116
1896		٠		 *	٠	٠			٠										٠		×	233,610	165,885	66,648
1897		٠			٠						٠	٠			٠			,	٠	٠		265,642	176,212	96,687

General

The Vancouv Nat Val Wood three air Trai

branches

four wha

286 tons;

Numb

1889

1890

1891

Edward

Formed lately owned lands in Briup and open Name of Wooder Value o

of 323 tons,

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.

The company owns and operates the Wellington Colliery, situate at Wellington, Vancouver Island, B.C.

Name of seam — Wellington. No. I, II, III, IV, V, VI.

Value of plant -\$150,000.

Workings-Operated by seven shafts with necessary slopes, airways and levels; three air shafts.

Tramways, plant and rolling stock — Five miles of railway with sidings and branches; six locomottves; 250 coal cars; 13 stationery engines; 9 steam pumps; four wharves for loading vessels, etc.

OFFICIAL RETURNS OF OUTPUT.

es.

Output of fire clay 1893, 642 tons; 1894, 145% tons; 1895, 664 tons; 1896, tons; 1897, $405\frac{1}{2}\frac{4}{0}$ tons.

Number of persons employed 1897, 797.

WEST WELLINGTON COAL CO., LTD.

Incorporated 1896. Authorized capital, \$500,000.

Directors :

Edward H. Heaps, William Sulley, David E. Marshall.

Head Office: 506 Cordova St. Vancouver, B.C.

Formed to purchase the coal property known as the West Wellington Coal Mine tately owned and operated by Mr. D. Jordan, and also to buy, sell or lease other coal lands in British Columbia; prospect for coal with diamond drills or otherwise; open up and operate coal mines, etc.

Name of seam, West Wellington; 5 to 6 ft. worked; opened by slope; 2 levels. Wooden tramway 61/2 miles to Nanoose Bay

Value of plant, \$2,000. Official returns of the colliery for 1898 show an output of 323 tons, 10 cwt., of which 317 tons, 10 cwt., were sold for home consumption.



IRON AND STEEL.

IRON AND STEEL.

Uncertainty as to the tariff of the new Liberal Administration had the effect of restricting the production of pig iron in 1897, a number of the furnaces being out of blast until mid-summer. The following returns furnished to the Manual will give an idea of the industry in comparison with former years:

OUTPUT OF IRON ORE, 1896-97.

Company.	Canadi	an Ore.	Ore Imported.		
	1896.	1897.	1896.	1897.	
Canada Iron Furnace Co. Bristol Iron Mining Co. Glen Iron Mining Co. Hamilton Blast Furnace Co. Londonderry Iron Co. Macdougall & Co. Nova Scotia Steel Co. Pictou Charcoal Iron Co. Torbrook Iron Co.	Nil. 196 11,876	20,041 298 2,000 2,500 213 No Ret. 25,570 11,620 Nil.	Nil. Nil. Nil. 35,868 Nil. Nil. 3,224 Nil. Nil.	Nil. Nil. Nil. 34,722 Nil. Nil. 29,056 Nil. Nil.	
Total tons	112,914	62,242	39,092	63,778	

COKE AND CHARCOAL PIG IRON, 1896-97. (Returns furnished to Manual.)

FURNACE.	Location.	Pig Iron Made.			
	Zocation,	1896.	1897.		
Charcoal Iron:					
Canada Iron Furnace Co	Radnor, Que Drummondville, Que	5,602	8,512 †2,000		
Coke Iron:					
Hamilton Blast Furnace Co. Londonderry Iron Co Nova Scotia Steel Co	I and and army M C	28,302 10,497 17,891	*24,011 Nil. 20,090		
Total tons pig		62,292	54,613		

†Estimated,

*Furnace out of blast until June 28th, 1897.

Puddle

Lo

Steel B

No

The

YEA

1886 1887 . . . 1888 1889

† Ton=

The fo

PUDDLED BARS AND STEEL BILLETS, 1897.

	LOCATION.	Tons.
Puddled Bars :		
Londonderry Iron Co	Londonderry, N.S Hamilton, Ont	914 373
Total Puddled Bars		1,287
Steel Billets:		
Nova Scotia Steel Co	New Glasgow, N.S	17,000

ORE PRODUCTION, 1886-1895.

The following table shows the output of Canadian Iron Mines from 1886 to 1895 :

YEAR.	†Tons.	Value.	YEAR.	†Tons.	Value.
1886	69,708 76,330 78,587 84,181 76,511	\$ 126,982 146,197 152,068 151,640 155,380	1891 1892 1893 1894	68,979 103,248 125,602 109,991 102,797	\$ 142,005 263,866 299,368 226,611 238,070

[†]Ton=2,000 lbs.

ORE EXPORTED.

The following table gives the quantity and value of Iron Ore exported from Canada since 1867:—

YEAR ENDED 30TH JUNE.	Quantity.	Value.	YEAR.	Quantity.	Value.
	Tons.	\$		Tons.	\$
1868	25,312	54,723	1883	44,944	138,775
1869	27,848	60,298	1884	25,308	66,549
1870	15,232	34,927	1885	54,367	132,074
1871	26,825	58,068	1886	7,542	23,039
1872	26,165	64,904	1887	23,387	71,944
1873	47,200	112,336	1888	13,544	39,945
1874	44,278	97,740	1889	24,752	60,280
1875	32,443	75,917	1890	13,811	31,366
1876	14,286	30,702	1891	14,648	32,582
1877	7,755	14,854	1892	7,707	*36,935
1878	5,421	13,405	1893	7,811	26,114
1879	3,562	7,530	1894	1,859	9,026
1880	50,524	76,474	1895	4,729	43,088
881	44,677	114,850	1896	2,948	39,999
882	43,835	135,463	1897	1,320	2,492

^{&#}x27;This value is apparently incorrectly given in the Trade and Navigation Returns.

BOUNTIES ON CANADIAN IRON AND STEEL.

For the purpose of stimulating the manufacture of iron and steel in Canada, the Dominion Government in 1883 authorized the payment of a bounty of \$1.50 per ton on all pig iron manufactured in Canada. This bounty was continued until July, 1889, when the rate was made \$1.00 per ton. A further change was made on 1st July, 1892, when the rate was increased to \$2.00 per ton. The following regulations were enacted in June, 1897, and are now in force:

On steel ingots manufactured from ingredients of which not less than fifty per cent of the weight thereof consists of pig iron made in Canada, a bounty of three dollars per ton.

On puddled iron bars manufactured from pig iron made in Canada, a bounty of three dollars per ton.

On pig iron manufactured from ore, a bounty of three dollars per ton on the proportion produced from the Canadian ore, and two dollars per ton on the proportion produced from foreign ore.

2. The said bounties shall be applicable only to steel ingots, puddled iron bars and pig iron made in Canada prior to the twenty-third day of April, one thousand nine hundred and two.

3. The Governor in Council may make regulations in relation to the said bounties in order to carry out the intention of this Act.

And whereas it is expedient to make regulations for carrying out the intention of the said Act, pursuant to the provisions thereof, it is hereby ordered that the following regulations be established for the payment of the said bounties, that is to say:—

Canada
A. D. 1
of cons
2
until he
ingots
cent. of
be take
be in t
hereto.
Fu

made by works, a or in cas company accounta

his opin

tiated to

I,

make oat
That
in the Pro
That
since the

day of That were used

of other in

of which no in Canada,

That r

First. - Regulations for the payment of bounty on steel ingots, as follows:-

I. A bounty of \$3.00 per ton shall be paid on all steel ingots manufactured in Canada after the 28th day of June, A.D. 1897, and prior to the 23rd day of April, A.D. 1902, from ingredients of which not less than fifty per cent. of the weight thereof consists of pig iron made in Canada.

2. The manufacturer shall not be entitled to receive such bounty unless and until he has furnished to the Minister of Customs satisfactory evidence that such steel ingots were manufactured in Canada from ingredients of which not less than fifty per cent. of the weight thereof consisted of pig iron made in Canada; such evidence shall be taken upon oath before a Collector of Customs or Justice of the Peace, and may be in the form and to the effect set forth in the form of affidavit in the schedule hereto.

Further corroborative evidence may be required by the Minister of Customs if in his opinion it appears requisite.

3. The affidavit, the form of which is given in the schedule hereto, shall be made by the proprietor or one of the proprietors operating the furnace (or smelting works, as the case may be) at which such steel ingots shall have been manufactured, or in case such furnaces or smelting works are being operated by an incorporated company, then the affidavit shall be made by the manager or a director, and by the accountant of such incorporated company.

4. The claim for bounty upon all such steel ingots shall be made and substantiated to the satisfaction of the Minister of Customs within four months after the completion of the manufacture of the steel ingots on which such bounty is claimed.

FORM OF AFFIDAVIT.

	- ORM OF TIFFIDAY	
situate at us us been manufactured therea prior to the tons of steel ingots there	of in the follows:— of , and know wn personal knowledge there	day of That in the m
l tons	of pig iron made in Canada,	of other ingredient
gots so manufactured the said ounty of \$3.00 per ton upon proportion entitled to bounty nufactured from ingredients	is entitled to receive	That of the sa

in Canada, and the sum of \$\\$ is hereby claimed.

That no part of the said tons of steel ingots upon which claim for bounty is hereby made has been included in any claim for bounty heretofore made.

of which not less than fifty per cent. of the weight thereof consisted of pig iron made

Subscribed and sworn to at in the County of this day of Before me

Second. — Regulations for the payment of bounty on puddled iron bars as follows:

I. A bounty of three dollars (\$3.00) per ton shall be paid on all puddled iron bars manufactured in Canada after the 28th day of June, A.D. 1897, and prior to the 23rd day of April, A.D. 1902, from pig iron made in Canada.

2. The manufacturer shall not be entitled to receive such bounty unless and until he has furnished to the Minister of Customs satisfactory evidence that such puddled iron bars were manufactured in Canada from pig iron made in Canada; such evidence shall be taken upon oath before a Collector of Customs or a Justice of the Peace, and may be in the form and to the effect set forth in the form of affidavit in the schedule hereto appended. Further corroborative evidence may be required by the Minister of Customs if in his opinion it appears requisite.

3. The affidavit, the form of which is given in the schedule hereto, shall be made by the proprietor or one of the proprietors operating the furnaces (or smelting works, as the case may be) at which such puddled iron bars shall have been manufactured, or in case such furnaces or smelting works are being operated by an incorporated company, then the affidavit shall be made by the manager, or a director, and by the accountant of such incorporated company.

4. The claim for bounty upon all such puddled iron bars shall be made and substantiated to the satisfaction of the Minister of Customs, within four months after the completion of the manufacture of the puddled iron bars on which such bounty is claimed.

FORM OF AFFIDAVIT.

I, of , in the Province of , make oath and say as follows:—

That I am , of , situate at , in the Province of , and known as

That within my own personal knowledge there has been manufactured thereat since the day 18, and prior to the

That in the manufacture of the said tons of puddled iron bars.

That in the manufacture of the said tons of puddled iron bars there were used tons of pig iron made in Canada, and tons of imported pig iron.

That of the said tons of puddled iron bars so manfactured the said is entitled to receive a bounty of three dollars per ton upon net tons thereof, being the true proportion entitled to bounty after excluding the weight of all imported pig iron, and the sum of \$\$ is hereby claimed.

which hereton Subscr to at the Co

day of 189 .
Before

1. 1897, an \$3.00 for from for 2.

he has for was man a Collect effect set

his opinion 3. The made by works, as in case supany, the accountary

4. To the sati

I,
make oath
That
in the Prov

That since the day of

That were used foreign ore.

That e

That no part of the said tons of puddled iron bars upon which claim for bounty is hereby made has been included in any claim for bounty heretofore made.

Subscribed and sworn

to at

the County of

this

day of

189 .

Before me

Third.—Regulations for the payment of bounty on pig iron, as follows:—

- I. On pig iron manufactured in Canada from ore after the 28th day of June, A.D. 1897, and prior to the 23rd day of April, A.D. 1902, there shall be paid a bounty of \$3.00 for each ton produced from Canadan ore, and \$2.00 for each ton produced from foreign ore.
- 2. The manufacturer shall not be entitled to receive such bounty unless and until he has furnished to the Minister of Customs satisfactory evidence that such pig iron was manufactured in Canada from ore; such evidence shall be taken upon oath before a Collector of Customs or a Justice of the Peace, and may be in the form and to the effect set forth in the form of affidavit in the schedule hereto.

Further corroborative evidence may be required by the Minister of Customs if in his opinion it appears requisite.

- 3. The affidavit, the form of which is given in the schedule hereto, shall be made by the proprietor or one of the proprietors operating the furnace (or smelting works, as the case may be) at which such pig iron shall have been manufactured, or in case such furnaces or smelting works are being operated by an incorporated company, then the affidavit shall be made by the manager, or a director, and by the accountant of such incorporated company.
- 4. The claim for bounty upon all such pig iron shall be made and substantiated to the satisfaction of the Minister of Customs within four months after the completion of the manufacture of the pig iron on which such bounty is claimed.

FORM OF AFFIDAVIT.

I, of , in the Province of make oath and say as follows:--

That I am

in the Province of

situate at

and known as That within my own personal knowledge there has been manufactured thereat since the 18, and prior to the day of , from ore

tons of pig iron. That in the manufacture of the said tons of pig iron there were used tons of Canadian ore, and tons of foreign ore.

That of the said tons of pig iron so manufactured the said is entitled to receive a bounty of \$3.00 per ton

upon net tons thereof and a bounty of \$2.00 per ton upon net tons thereof, being the true proportion produced from Canadian ore and from foreign ore respectively, and the sum of \$ is hereby claimed.

That no part of the said tons of pig iron upon which claim for bounty is hereby made, has been included in any claim for bounty heretofore made. Subscribed and sworn

to at

in the County of

this

day of

18

Before me

BOUNTIES PAID ON PIG IRON.

The following are the amounts paid to the companies under this authorization:

1884		 ,											 	 										\$44,090
1005.						43																		28 600
1000.	 ×			×	٠	* 0				,	٠		,				,		,					39,270

	1887.	1888.	1889.	1890.	1891.
Steel Co. of Canada Steel Co. of Canada, withheld pending set-		\$ 18,642.62			
George Macdougall Londonderry Iron Co. John Macdougall & Co.	22,033.09 1,139.87	7,701.53		21,585.64	\$ 1,376.66 15,849.81 2,926.58
	\$ 59,576.16	\$ 33,314.41	\$ 37,233.62	\$ 25,697.27	\$ 20,153.05

BOUNTY PAID ON PIG IRON, 1892-96.

	1892.	1893.	1894.	1895.	1896.
Londonderry Iron Co Can. Iron Furnace Co Nova Scotia Steel Co New Glasgow Iron, Coal and Ry. Co Pictou Charcoal Iron Co. Hamilton Blast Fur. Co. Macdougall & Co	2,150.71	25,871.28 1,420.00	55,269.00	33,695.00 3,440.00	11,215.24 42,470.50 7,201.97
	\$ 30,294.37	\$ 93,896.48	125,044.49	\$ 63,383.95	\$109,716.0

Canada Hamilt Londor Nova S

By granted Canadia per ton.

1896

1897.

By O Government from Cana this approp

1

0

18

To 30th JUNE, 1897.

Canada Iron Furnace Co Hamilton Blast Furnace Co Londonderry Iron Co Nova Scotia Steel Co	Londonderry, N.S	14,211.27 7,575.68 7,070.85 37,650.89
Total to 30th June, 1897		\$ 66,508.69

BOUNTIES PAID ON STEEL BILLETS.

By order in Council under date of 22nd June, 1895, the Dominion Government granted a bounty of \$2.00 per ton on all steel billets manufactured in Canada from Canadian ore. As already stated this bounty was increased in April, 1897, to \$3.00 per ton. The following amounts have been paid to the 30th June, 1897:

NOVA SCOTIA STEEL CO.

th March, 1894, to \$ 56,925.26 April to June 1st,'96. 4,393.26	1896.
oduct of 1,218 tons,	
6\$ 59,498.52	
2,714.75 1 23rd, 1897 14,651.41	1897. I
30th June, 1897. \$ 76,864.68	

BOUNTIES PAID ON PUDDLED BARS.

By Order in Council under date of the 24th February, 1896, the Dominion Government granted a bounty of \$2.00 per ton on all puddled bars made in Canada from Canadian ore. As stated this was increased in 1897 to \$3.00 per ton. Under this appropriation the following amounts have been paid to 30th June, 1897:—

1896, on puddled bars	\$ 8,352 32 2,914 36
Total to 30th June, 1897	\$11,266 68
June, 1896, on puddled bars	\$172 00
Ontario Rolling Mills Co.—Received prior to 30th June, 1896, on puddled bars	\$ 183 23 104 46
Total to 30th June, 1897	287 69

ONTARIO IRON MINING FUND.

In 1894 the Ontario Legislature, having in view the encouragement of iron mining and smelting in that Province, enacted as follows:

"That a sum not exceeding \$125,000 shall be and is hereby appropriated and set apart from and out of the surplus moneys forming a part of the Consolidated Revenue Fund of this Province, for the purpose of encouraging miners to open up and work the iron ore deposits of the Province; and such sum of \$125,000 shall be designated and known as the Iron Mining Fund.

"The Treasurer of the Province may, with the authority of and under such regulations as may be made from time to time by the Lieutenant-Governor in Council, pay out of the said fund to the miners or producers of ore upon all iron ores which shall be raised or mined or smelted in the Province for a period of five years from the 1st day of July, 1894, the equivalent of one dollar per ton of the pig metal product of such ores; but no sum or part of said moneys shall be so paid until the said regulations governing payments shall be approved by the Legislative Assembly.

"Should a larger quantity of ore be raised or mined or smelted in any one year than the sum of \$25,000 will be sufficient to meet the payments at the rate and as provided in the foregoing sections, then payments to the miners or producers thereof shall be made on a *pro rata* basis, so that no more than \$25,000 shall be paid for the produce of ores in any one year.

"It is declared and provided that payments out of the foregoing appropriation of \$125,000 shall cease and determine with the payments of any sum or sums which shall have been earned during the said period of five years, and any part or balance of said sum remaining thereafter shall be returned to and become part of the Consolidated Revenue Fund of the Province."

From this fund there has been paid up up to 1st May, the sum of \$4,000. Other payments were, however, due at that date but had not passed the Treasury.

AN ACT TO ENCOURAGE THE MANUFACTURE OF RAILWAY STEEL AND IRON IN ONTARIO.

In April, 1897 the Ontario Legislature enacted:

I.—(1) Where the Legislature has heretofore authorized or shall hereafter authorize the payment of money to any railway company by way of subsidy, there may be delivered to the company, at the discretion of the Lieutenant-Governor in Council as an equivalent for and in lieu of the bonus (wholly where so provided by the terms of the subsidy or agreed to by the company, and in other cases in part not exceeding fifty per cent. of such subsidy), railway steel or iron manufactured in Ontario from ore of which at least two thirds has been obtained from Ontario mines; and Provincial scrip or certificates in payment of the steel or iron so delivered may be issued payable to the manufacturer, by whom the same has been delivered in lieu of the railway company.

(2) The word "railway" in this Act means a railway operated by steam or other motive power.

member and su

or iron places the Lie

3. price at differen Govern

steel or Provinc nor in C any time or iron i

The

Scrap iro Iron stov " cast " and Steel and Sewing machin

*Pig

To

Pig Sto Cas Ma Sev Scr Ha The expression "railway steel or iron" includes rails, girders, bridges, and all members or parts thereof, and such other manufactures of steel or iron as are requisite and suitable for the construction of the permanent way.

- 2. Tenders shall be invited by public advertisement for supplies of railway steel or iron of such dimensions, weight and quality, and to be delivered at such times and places and upon such conditions as are specified and as have been determined on by the Lieutenant-Governor in Council.
- 3. Where the tenders are unsatisfactory, or where there is but one tender and the price at which the steel or iron is to be delivered to the railway company is matter of difference between the railway company and the manufacturer, the Lieutenant-Governor in Council shall determine the same.
- 4. Unless and until properly applied and fixed as part of the permanent way such steel or iron, though delivered to the railway company, shall remain the property of the Province, and if not so applied and fixed to the satisfaction of the Lieutenant-Governor in Council within the period limited by the Order in Council, the province may at any time after the expiration of that period enter, and resume possession of such steel or iron not then so applied and fixed, and may make other disposition of the same.

EXPORTS OF IRON AND STEEL.

The value of the exports of iron and steel goods manufactured in Canada during the last six years respectively, was :—

	1891.	1892.	1893.	1894.	1895.	1896.
Scrap iron. Iron stoves castings. and hardware. Steel and manufactures of Sewing machines and machinery.	\$ 12,285 4,030 4,407 64,803 33,968 137,690	2,562 6,583 74,943	3,447	2,964 10,495	*12,212 3,649 25,713 105,834 42,050	*54,349 2,903 103,491 65,998 51,856
Totals	257,461	243,762	316,124	295,924	308,711	506,946

^{*}Pig iron included.

YEAR ENDED 30th JUNE, 1897.

Pig iron	Tons No.	2,627	 of a value	of\$65,555
Custings			**	3,585
Machinery Sewing machines.	NO.	602		14,354
Hardware.			 	5,030
Steel and manufactures			 4.6	38,522
70				

Total exports 1897 \$522,988

PRICES OF AMERICAN AND CANADIAN IRON

Year.	Canadian Iron at the Furnace in Nova Scotia.	American Iron in Chicago.
1888	\$16.00 to \$18.00	\$17.20
1889	17.00 to 18.00	15.80
1890	18.00 to 19.00	16.75
891	16.00 to 17.00	15.00
892	15.00 to 16.00	14.00
893	13.00 to 14.00	13.00
894	12.90 to 13.00	10.50
895	11.00 to 15.00	9.50 (lowest.
896	14.00 to 13.00	10.50
897	13.00 to 12.00	10.70

The figures given for American iron are the average of the monthly prices, except in the year 1895, when the lowest price only is given.

PRICES OF SCOTCH WARRANTS 1888-97.

The following average prices are official for Scotch "warrants," in store at Glasgow :-

188839 11=\$ 9.71)	
188947/ 9= 11.60	
189049' 6= 12.04	Note.—The price of
189147/ 1= 11.45	warrants is usually about \$1.25 to
189241 10= 10.18	\$1.50 under the
$1893 \dots 42^{7} 3 = 10.28$	price of shipping
189442 8= 10.38	bands, such as "Summerlee,"
1895 44/ 5= 10.80	"Gartsherrie," etc.
189647/ 6= 11.56	
189745/ 4= 00.00	

During the first quarter in 1898 prices have improved, ranging from 46/ to 46 6.

PRICES OF SUMMERLEE PIG, 1889-97.

The following prices of No 1 "Summerlee" pig iron, delivered on dock, Montreal, duty paid, will also be of interest. They are of course approximate, but will be found near the mark :-

1889.	,							. ,							. ,													 	\$20.5	0	to	, 5	\$24.00	
1090.					*			 						 															25.5	0	to		21.00	
1891.						*						·																	21.0	0	to		21.50	
1092.	4			٠	٠	٠																							10.0	0	to		18.25	
1893.						٠			٠		٠		٠								٠			6	,				19.0	0	to		18.00	
1894.		•	•		٠	•					*					٠			٠				٠						19.0	0	to		20.00	
1895.		•	*	*		•				٠	٠					*		٠		٠		٠							18.5	0	to		20.00	
1896. 1897.		•	•	*				•		*	•				٠	*		٠			+								18.5	0	to		20.00	
1097.	•		•	•	*	•			. 0	٠				 *	•		*		٠	*									17.0	0	to		18.50	

T year ei \$12,62 in 1896 T compile

Agricult Angles, tions per lin Angles, section than 3 Axles, c Axles, c Bars and Bar iron. Bars pud Bars, rai Bars, ro rolled, Bars stee Beams, section other b less tha Beams, w Beams, sl Boiler pla Bolts and Bolts, less Bridges ar Butts and Canada pl Cast iron I

Chains, N. Cutlery, a Chrome st Engines, 66

IMPORTS OF IRON AND STEEL.

The value of the imports of iron and steel and their manufactures, for the fiscal year ended 20th June, 1897, are valued at \$8,666,497. The value in 1892 was \$12,625,422; in 1893, \$13,199,523; in 1894, \$11,310,771; in 1895, \$9,249,749; in 1896, \$10,952,607.

The following are the quantities and values of the principal imports during 1897, compiled from Trade and Navigation returns:—

IMPORTS, 1897.	Great	rom Britain.	United	rom l States.	Val. from
	Quantity	Value.	Quantity	Value.	Sources.
Agricultural implements Angles, channels and other sections weighing less than 35 lbs		\$ 6,032		\$570,063	\$576,108
per lin. yard	9,337	9,904	43,643	48,469	60,960
Axles, car	27,668 4,228	29,864 9,086	81,610	91,124	156,671
Axles, others	153,363	2,745 112	304,270	9,339 18,179 135	18,446 22,610
Bars, railway, (tons)	26,604 33,055 1,182	54,310 28,874 27,702	45,752 23,505 2,351	81,320 20,080 52,763	247 139,212 48,954
Bars, rods and strips, cold rolled, hammered or polished Bars steel cwt.	36,707	218		1,135	82,354
Beams, joists, girders, column sections, trough sections and other building or bridge structural sections weighing not less than 25 lbs. per lin. yd. cwt.			142,424	215,981	320,704
Beams, weighing cwt.	14,590	15,872 2,139	55,025	67,579 20,922	120,508
Boiler plate	6,366 9,894	13,413	25,288 546	29,129	24,037 42,542
Bridges and structural iron	52,907 19,053	2,093 966	850,676 258,006	31,676	7,375 33,771 13,717
anada plates.		275 .	670,525	19,317	19,317
astings, malleable iron	12,924	12,954	15,458	21,149	810,175
hains, N.E.S.	144 17,620 1,149	34,193	29,679 8,095	96,210	97,721 55,667
hrome steel		4,333 154,703 840	4,183	7,810	12,357 234,354
fire, parts of		827	853	4,301	5,141 118,463
marine and boilers	79	879	3,669	63,989	250 65,282
" other boilers		2		7,550 40,924	7,550 44,841

IMPORTS OF IRON AND STEEL - Continued.

IMPORTS.		rom Britain.	· United		Value from all
	Quantity	Value.	Quantity	Value.	Sources,
Ferro-silicon, speigeleisen and					
ferro-manganese tons	366	7,685	60	1,548	9,233
		123		5,840	5,963
Fish plates	849	16,432	2,377	51,079	67,511
Forgings, iron and steel lbs.	11,832	971	750,641	34,601	35,572
Forks (table) cast iron No.	77,982	408	25,500	454	
Hardware		23,244		260,955	289,435
and less in width, No. 18				7,55	27433
guage and thicker	3,951	6,747	11,299	17,069	23,816
guage or thinner	26				
guage or thinner cwt.	20	240	52	76	
Ingots cwt.			18,041		42,588
Mining and smelting machinery		4,845		54,148	
Nails, spikes & sheathing nails,				134,119	148,660
composition lbs.	10,300	2,313	38,005	2,015	4,377
Nails and spikes, cut	4,048	101	463,830 387,023 741,279	9,436	9,537
" wire	120,302	4.309	387,023	14,147	18,634
Mandles sewing machine	7,840	272	741,279	14,405	14,705
" lenitting		21,075		12,535	34,376
Pig iron chargosl tons		711		1,192	1,922
tig iron, charcoar tons			2,936	35,373	35,373
" wire " Needles, sewing machine " knitting Pig iron, charcoal tons " other "	4,104	40,731	21,054	244,984	291,715
Pipe fittings wrought iron lbs. Plates, cast iron	12,603	778	1,457,996	68,027	68,861
Plates, cast iron		343		9,493	8,836
Plates, ploughcwt.			7,387	37,134	37,134
30" wide and plates or					
sheets 30" wide and					
over and ¼" and over	0-				
in thickness cwt.	25,585	32.090	112,007	135,567	174,131
Pumps, (steam)	10,022	20,883	25,326	41,720	69,360
16	2	694	181	24,128	24,860
Printing presses		391	297	61,824	62,548
Pails steel	666 735	798	297	90,545	91,382
Rails, steel	000,539	075,598	1,157,350	768,259	
			1,202	3,770	3,770
Rolls, chilled cwt.		23,775		51,668	93,015
- 6 -	60	304	453	1,542	1,846
crap, cast tons.	6			5,434	5,643
" wrought cwt.		84		633	1,362
" from wrecked vessels . "	74,771 8,662	47,050	62,515	34,382	82,113
Skates, pairs		4,030	30 5,556	17	4,053
teel, sheet, crucible, 11 to 16	2,193	2,040	5,550	2,071	25,455
guage 21/2 to 18 inches wide. cwt.	6,365	24,002	950	2,244	26,246
steel bowls for cream separa-		.0			
tors		18,253		16,693	35,435

Steel for

Steel roll dia., o. Steel, 20 than 30 Steel, 12 than 30 Steel shee 63" long wide ... Steel stri fencing Steel wire guage a

Tubes, boil
" not
" lapy
" wro
" wro

Wire, fencir buckt cover crucil 13 an

riggin
rods t
rope.
Other

MACHINES A

Windmills. Fanning m Portable h

8

IMPORTS OF IRON AND STEEL - Continued.

IMPORTS.		From Britain	. Uni	From ted States.	Value
	Quality	Valu	e Quali	ty Value	From al Sources.
Steel for files	30: 1,890 2,420 218	4,1 5 15,6		49 1,99	08 6,121 00 59,884
" car wheels, loco. tires " Steel rolled rods under ½ in. dia., or ½ in. sq	449		- , -		
Steel, 20 guage, but not thinner than 30 guage	******		. 2:	25 67	4 746
Steel, 12 guage, but not thinner than 30 guage.	2,476	7,6.	26 63	5,76	1 15,263
63" long and from 18" to 22"	332	1,2	79 13	544	1,823
Steel strip and flat steel for	6,768	8,29	56	6 1,08;	9,380
guage and homo steel spring			. 1,41	3 2,095	2,095
wire, Nos. 11 and 12 guage. " stoves surgical instruments	226	8 ₂		4,229 67,406	3, 17
Vail rods, Swedish rolled, under ½" diameter		8,44		34,343	
ail rods, Swedish, not less than 34 c. per lb. value	2,800	4,93	, , ,	846	29,971
acks, shoe M.	8,675	86c 94	01		1,048
exceeding 16 oz to 1 ooo	1,181	62	53,024	2,544	744 2,545
ubes, boiler feet "not welded" lapwelded"	104,096	10,432	1,429,587 78,937	1,171 82,082 79 858	1,233 92,605 103,865
" wrought, other lbs	39,915		355,632 1,930,914 5,758,621	21,919 163,513	21,919 169,066
" covered	12,292	462	5,034,499 20,798	80,467 406	135,323 80,467 868
" 13 and 14 gauge	27,967 291,859	7,139 15,158	554.133 28,268	54,545 5,073	62,106 22,694
rods under 36 in in dia	2 614 36,520	10,771	43,374	5,106 1,745	5,106 12,548
Other N. E. S	2,922 7,808	41,460	350,362 5,263	613,078	667,828
Gaivanized "	3,696	6,453	72,2,6	62,219	133,762 68,672
CHINES AND MACHINERY:					
Vindmills			369	16,148	16,148
ortable horse-powers			5 53	148	148

IMPORTS OF IRON AND STEEL - Continued.

IMPORTS.		om Britain.	Fr United	om States.	Value from all
	Quantity	Value.	Quantity	Value.	Sources.
Portable steam engines	I	63	47		26,608 1,811
"threshers and separators	1	74	112	28,839	28,913
Parts of above	125	1,002 2,129	3,855		25,136 103,644 60,657
Other machines of iron or steel. Screws, 2 in. and over lbs.		188,040	21,713	1,112,113 2,411	1,336,517 2,411
" I in. and less lbs. Screws, less than I in Stamped tinware	209	12		2,384	
Ware enamelled of iron & steel Tools and Implements:				39,272	53,606
Axes, N. E.S		18,050 9,349 319 7,149 31	7,753	33,021 72,158 165,489 42,695 8,793 54,613 5,182 637	33,021 77,363 199,439 52,688 9,217 66,561 8,213 11,226

Onta
All Ot

Onta Queb Nova New Manit Britis

Charcoal

Ontario Quebec

All Other

Ontario . Quebec . Nova Sco New Bru Manitoba British C

IMPORTS OF PIG IRON, 1896-1897.

	Ву Р	rovinces.	1		
1896.	Tons.	Value.	From	Tons.	Value.
Charcoal Pig: Ontario	917	\$ 11,726	United States	917	\$ 11,726
Ontario Quebec. Nova Scotia New Brunswick Manitoba British Columbia	27,736 6,845 1,170 29 17	290,933 81,743 17,514 343 195	Great Britain United States	5,242 3 ⁰ ,774	60,907 332,780
	36,016	393,687		36,016	393,687

	By F	rovinces.			
1897.	Tons.	Value.	From	Tons.	Value.
Charcoal Pig: Ontario Quebec	2,934	\$ 35,352 21	United States	2,936	\$ 35,373
Total	2,936	35,373			
Ontario Quebec Nova Scotia New Brunswick Manitoba British Columbia	18,558 5,948 504 263 17 468	207,440 68,996 6,383 2,870 170 5,856	Great Britain United States	4,104 21,654	46,731 244,984
	25,758	291,715			

STERL RAIL IMPORTS, 1891-7.

Vent	Great F	Britain.	United States	States.	Be'gium.	ium.	Cern	Jermany.	Total	al.
1 cal.	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.
891 892 893 894 895 896 896	2,234,375 1,495,963 1,911,170 1,643,050 947,809 691,283 666 539	2,767,468 1,539,449 1,846,750 1,608,967 813,078 627,995 675,598	286,935 158,972 103,358 72,468 14,157 279,805 1,157,350	\$ 429,812 199,212 138,445 109,029 15,093 330,487 768,259	8,440 24,825 10,612 12,403	\$,024 23.052 9.973 19,216	9,005	\$ 7.612 56,880	2,521,310 1,654,935 2,022,968 1,749,348 972,578 1,043,511 1,823,889	3,197,280 1,738,661 1,993,219 1,748,660 838,144 1,034,578 1,443,857

STEEL RAIL IMPORTS BY PROVINCES, 1893-7.

	18	1893.	18	1894.	186	1895.	1896,	.96	18	.1897.
rovinces.	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.
Ontario. Quebec Nova Scotia Manitoba New Brunswick British Columbia P. E. Island N. W. Territories.	209,832 1,677,164 127,184 8,788	\$ 226,299 1,639,229 118,978 8,713	109,765 1,438,102 52,939 129,706 17,900 412	\$ 146,120 50,031 50,031 248,149 19,200 800	8,722 864,294 64,215 1,000 13,547 20,800	\$,644 728,577 63,166 810 16,263 20,684	241,370 683,774 36,043 12,754 58,167 12,403	\$ 278,964 617,345 35,906 9,734 73,413 19,216	1,130,530 604,350 46,020 1,070 19,519 22,400	\$ 726,940 604,390 49,364 1,087 37,621 24,455
Total	2,022,968	2,022,968 1,993.219	1,749,348	1,748.660	972.578	838,144	1,043,511	1,034,578	I 823,889	1,433,857

Inco

Work

rights in

a-la-To

La
capacity
some of
phospho
The
light col

to be for plentiful rounded in diame excremer a great s extensive derived for charged action of ing quant worked or and the do and the do

CANADA IRON FURNACE CO. Ltd.

Incorporated by Dominion charter under date 29th November, 1889. Authorized Capital, \$200,000. Increased 13th August, 1893, to \$300,000.

Directors :

P. H. Griffin, Buffalo, N.Y., President.

G. E. Drummond, Montreal, T. J. Drummond, Montreal, A. F. Gault, Montreal,

J. T. McCall, Montreal, Robert Schott, Sheffield, Eng. George Gudewill, New York.

Hon. T. Guilford Smith, Buffalo, Vice-President.

Head Office: G. E. Drummond, Managing Director and Treasurer, Canada Life Building, St. James St., Montreal.

Works: John J. Drummond, M.E., General Supt., Radnor Forges, Que.

Formed to acquire and work mineral and wood lands in the Province of Quebec and elsewhere in the Dominion of Canada, and to manufacture special high class charcoal iron, similar to and competitive in quality to that of Sweden.

Ore Deposits.—The company at present owns an area of 100,000 acres of bog ore rights in the district of Champlain, St. Maurice, Three Rivers, Vaudreuil, Joliette, St. Ambrose de Kildare, Point du Lac, Gentilly and Becancour, including the important deposits, (supposed to be the largest of like nature in the world) of lake ore in Lacala-Tortue and Lac-au-Sables.

Lake ore is raised principally at Lac-a-la-Tortue, where a steam dredge of a capacity of 50 tons a 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 much 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 much. It occurs in the form of porous, flat rounded concretions, very irregular in color. The concretions vary from ½ to 12 in. in diameter, and from ½ to 2 in in thickness, and closely resemble the dried excrement of cattle. The country surrounding Lac-a-la-Tortue is almost as 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 aworked 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. The dredge is of the endless chain pattern, with four 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 is 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 Stack (at Radnor Forges, Que.)—Height, 40 ft.; bosh, 8 ft. diameter; crucible 5 ft. dia.; height of bosh line from hearth, 11 ft.; 4 tuyeres of 3 ½ in. dia.; 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 twenty-five bushels.

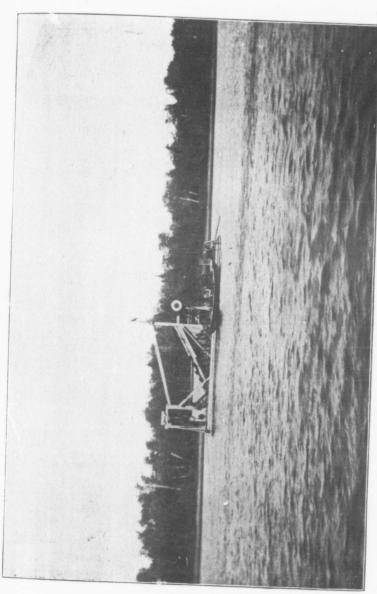
Hot Blast Stove—This is of the pipe pattern with a combustion chamber below. Dimensions are: length, 24 ft.; height, 18 ft.: width, 9 ft. 6 in.; 68 openings between combustion chamber and pipe chamber above.

Steam Power—Consists of four steam boilers, each four ft. dia. by 25 ft. long, with two 18-inch flues; shells are of 3/8-inch plate and double rivetted; all boilers connected with a brick chimney 75 ft. 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—The River Au Lard, which flows through the property, affords the company a most valuable developed water power directly at the furnace. At this point there is a fall of 27 feet, and here the company use a "New America" wheel, affording power, and also keeping the water jackets constantly supplied. In addition to this fall there are three other separate falls situated within 300 yards of the furnace, giving an additional aggregate of 30 feet fall.

Blowing Engines—New Weimer blowing engine, size 16x48x30, 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 14x20 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.



Canada Iron Furnace Co.—Dredging for Bog Ore on Lac-a-la-Tortue, Champlain Co., Que.

Steam Pumps—One Blake Duplex pump, 12x7x12; one Holly boiler feed pump, one Niagara boiler feed pump, one Northey volume pump.

Force Pumps—One horizontal force pump, one double-acting plunger force pump. All the above steam and force pumps are so connected that they can be used either on the furnace water jackets, tuyers, 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; seven beehive pattern kilns, capacity, 55 cords each. Grande Piles battery consists of: Fourteen beehive pattern kilns, capacity, 55 cords each; Lac Au Sable, six beehive kilns, capacity, 50 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.

Wood Lands—Freehold and royalty rights on hardwood lands extending throughout the country north of Radnor Forges, and comprising some thousands of acres. The supply of wood is practically inexhaustible. The company's location for charcoal kilns at Grandes Piles securing to them the "key" of the St. Maurice river, and practical control of most valuable hardwood lands on either bank of the river for 70 miles of the navigable waters of the St. Maurice. The wood is principally hard maple, birch and beech. Assembly Bill No. 21, session 1895, Quebec Legislature, entitled: "An Act respecting Colonization in certain parts of this Province, and for promoting the Mining Industry therein," reserves for the sole purposes of the Canada Iron Furnace Co., Ltd., 30,000 acres (part of a township) of hardwood lands, thus further guaranteeing the company a sure constant supply of fuel.

Limestone—The furnace is built upon one of the best limestone quarries in the Province of Quebec (the property of the company), and from this the necessary flux is quarried at a distance of not more than 60 yards from the furnace stack. The company is therefore assured of a constant supply of this necessary material at the minimum cost.

Blue Clay—On the east side of the limestone quarry, and about 150 yards from the furnace, is a magnificent bed of blue clay, averaging about 12 feet in depth.

Sand—Directly in the rear of the furnace, and on the property, is a large bank of sand, suitable for use on the cast house floor.

OUTPUT IN 1893.

To	tal	ore raised
6	6	charges! 2,000 lbs.
6	6	charcoal
		" iron man'f'd (value at furnace \$185,575) 7,422 $\frac{1430}{2000}$ tons.
6		fuel charged
6	6	persons employed

CANA

Works 140 cut nai ship and ra nails. Ann

OUTPUT IN 1894.

Total	ore raised 20,648	
66	charcoal made	tons (short
	charcoal made	
66	ore charged (value \$190,000) 7,900	tons
66	ore charged	tons
66	flux charged	tons
	600	

OUTPUT IN 1895.

Total	ore raised	
6.6	charcoal made	og net tons
66	charcoal made	61 bushels
66	flux charged (value \$150,357.04) 6,5	$98 \frac{420}{2000}$ tons
66	flux charged	$00 \frac{417}{2000} tons$
		00

OUTPUT IN 1896.

Total	ore raised	 	. 24,713 r	net tons
66	charcoal made	 	630,000 l	oushels
66	charcoal iron made	 	5,602 n	et tons
66	ore consumedlimestone consumed	 	13,725 n	et tons
	The consumed	 	I AIF n	of tone

OUTPUT IN 1897.

Total	ore raised		 							 20,041	5.6.0 2 0 0 0 bush	net	tons
66	limestone mined charcoal iron made.	. ,			٠	*	 ٠	٠,		2,229	$\begin{array}{c} 1 & 8 & 4 & 0 \\ 2 & 0 & 0 & 0 \end{array}$	net	tons
	The state of the s									8.512	7.5.0	not	tona

CANADA ROLLING MILLS AND HORSE-SHOE WORKS.

Owners:

Peck, Benney & Co.

Head Office:

319-21 Board of Trade Building, Montreal.

Works:

Mill Street, Montreal.

Works built about 1828; water power; 5 heating furnaces; 3 trains of rolls; 140 cut nail machines, and 27 wire-nail machines; product iron and steel cut nails; ship and railroad spikes; tacks, brads, wire-nails, bar iron, horse-shoes and horse-nails. Annual capacity about 10,000 tons. Fuel, Nova Scotia bituminous coal.

COLD BROOK ROLLING MILLS.

Built in 1864; remodelled and enlarged 1874. Invested capital to date, \$85,000.

Owners:

I. and E. R. Burpee, St. John, N.B.

Head Office: 5-11 Dock Street, St. John, N.B.

Works: Cold Brook, G. W. Ketchum, Superintendent.

Employ from 150 to 175 persons. Built in 1864 and remodelled and enlarged in 1874; one forge fire, 7 scrap furnaces, 3 trains of rolls, (one 10 and two 18-inch,) and 2 spike machines; product, bar iron, iron and steel nail plate, ship and railway spikes, mine rails, and bridge bolts; annual capacity of rolled iron and steel, 5,500 gross tons. Fuel used, bituminous and anthracite coal.

GLEN IRON MINING CO., Ltd.

Incorporated 1891. Authorized Capital, \$50,000, in 500 shares of a value of \$100.

Directors:

E. A. Nash, President.

J. A. Mara. J. O. Grahame.

J. W. Mackay. 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. Ore worked is magnetite, and the works, which are situated contiguous to the line of the C.P.R., are supplied by a chute 300 ft. long and a Pickett aerial tramway of a length of 1,300 ft. During 1897 about 2,000 tons of ore were mined and shipped to American smelters.

HAMILTON BLAST FURNACE CO., Ltd.

Incorporated under Ontario Statute, 1893. Authorized Capital, \$1,000,000.

Directors:

J. H. Tilden, *President*. J. Milne, *Vice-President*. C. A. Birge.

G. Hope.

W. A. Woode. W. Southam.

R. R. Morgan. A. E. Carpenter. of \$75,00 to the cit provision of turning shall have agrees to a cash boo

On:

the city li the right t estimated an excelle

On the was given Work

until Octo during the Exten

December,
December,

These also possib 1895. Wo completion. Furnac

The for "Cont substantial, ore and Cor fuel consum

Starting in bridge bo hearth capped high, 16 ft.

in diameter and all perp

The furn

Top con

Head Office and Works: Hamilton, Ont.

On 24th of July, 1894, the city of Hamilton passed a by-law granting a bonus of \$75,000 for the establishment of iron smelting works in or immediately adjacent to the city, and a further bonus of \$60,000 for the erection of steel works. The provisions demanded that the plant be in operation by December 31st, 1894, capable of turning out at least 150 tons of pig iron per day, and that the sum of \$400,000 shall have been expended on the plant (bonus to be arranged as follows): The city agrees to purchase lands to the value of \$35,000 for the erection of plant, and to give a cash bonus of \$40,000 in city debentures payable on completion of plant.

The lands transferred to the company contain 75 acres, and immediately adjoin the city limits, on Burlington Bay, in the Township of Barton. The company has the right to fill in and occupy the water front out to a line of 8 ft. of water. It is estimated that this will add at least 75 acres more to the property and will also make an excellent cinder dump.

On the 28th of October, 1893, the contract for the erection of a complete plant was given to the Philadelphia Engineering Company, of Philadelphia, Pa.

Work on the foundations was started in November. 1893, but was not completed until October, 1894. Cast house, walls, shell of furnace, and stoves, were erected during the winter.

Extensions of time to complete plant were given to the company from 31st December, 1894, to 1st July, 1895, from then until October 1st, and again to 31st December, 1895.

These extensions were necessitated by many unfortunate and unavoidable delays, also possibly by the extreme depression in the iron trade during 1894 and part of 1895. Work was again resumed during the summer of 1895 and pushed through to completion. The fires to dry out stack and stoves were lit on December 30th, 1895.

Furnace was blown in February, 1896, and is now making iron daily.

The following description will be of interest:

"Contract calls for a furnace and plant to be in all respects thoroughly good and substantial, with all modern improvements, capable of turning out 200 tons with 60% ore and Connellsville coke, constructed in all respects to obtain very best economy in fuel consumption and handling of materials."

Starting with the furnace, the foundations consist of:—(1) Limestone blocks laid in bridge bond, upper portion 5 ft. fr m hearth of well-burned bricks, underneath hearth capped with hand-burned fire brick. Constructed on this the furnace is 75 ft. high, 16 ft. in the boshes, and 10 ft. hearth.

Seven cast-iron columns support the upper portion of the furnace. Shell is 21 ft. in diameter at bottom, and 19 ft. at top; thickness of plates range from $_{70}^{7}$ to $_{10}^{5}$ in.

The furnace is built and lined with best hard-burned fire brick, made to proper sizes for different portions of furnace.

Top consists of regular plate platform and bridge to hoist tower, with guard rail 3 \pm 6 in, high.

Hopper is 11 ft. 6 in. in dia. and 3 ft. deep. Bell, 8 ft. 4 in., swung by two links attached to a lever with counterweight box, operated by a 12 in. steam cylinder, piston steam-cushioned top and bottom to guard against rough and careless handling of lever.

Downtake is 5 ft. in dia., lined with 3½ in. fire brick; has one bleeder 20 ft. high and 2 ft. in dia., lined with 2½ in. brick.

Dustcatcher at foot of downtake is 12 ft. x 11 ft., provided with bottom and side cleaning and explosion doors.

The general piping, bustle, waste and feed water trough are very well arranged so as to allow quick work to be done in removing tuyeres, also any other repairs to and around bottom portion of furnace. Water fittings are all brass, inlets to tuyeres are fitted with brass elbows and ball unions. Feed water connections have 3-way cocks, with attachments for cleaning out and where hose may be connected for convenience in cooling furnace.

Bustle pipe 33 in. in dia., lined with 7 in. brick, connections for 6 tuyere pipes; these pipes have a clear diameter of 8 in. when lined, and are provided with Gordon patent ball joints.

There are 6 bronze tuyeres and blocks. Blocks are 26½ in. long, 26¼ in. at butt and 19 in. at nose. Tuyeres are 6 in. Hearth jacket, steel, 1 in. thick, 6 ft. 4 in. high, and 16 ft. in dia. Strengthened at cinder arches.

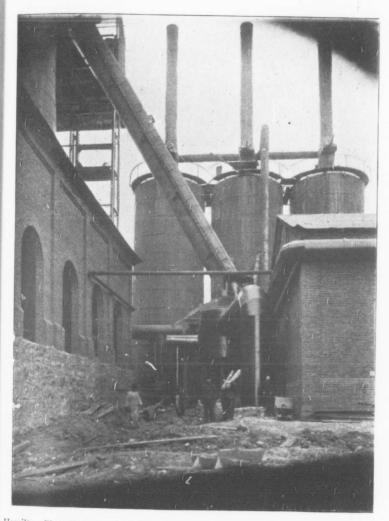
Cinder arches 22 in. long, 13¼ in. at butt, and 11 in. at nose. Monkey is 4¼ in. long, 1¾ in. diameter. Hearth wall is 3 ft. thick and 4 ft. 4 in. high; from this bosh wall is 27 inches thick and contains 5 complete circles, double thick 1 in pipe cooling plates. There are also two coolers between each tuyere arch. Bosh is strengthened by 5 bands 8 in. by 1 in., with two 2½ in. expansion bolts at each joint.

Stock is raised to top in wrought-iron trestle lattice work hoist tower, supported on solid stone foundations; roof is covered with corrugated iron to bridge floor level; automatic safety cages, double 1 in. wire rope, operated by an automatic hoist engine, cylinders 12 x 12 in., built by Crane Mnfg. Co. Engine is placed in a brick building situated at foot of hoist tower.

Cast house is 50 ft. x 160 ft. from centre of furnace to end-wall and surrounds back of furnace in octagonal form. Foundations are solid limestone, walls red brick, roof corrugated iron and fits furnace casing, has ventilator running full length on apex of roof, is 6 ft. wide, 4 ft. high. Roof frame is strong enough to support two overhead trolleys, running over pig beds to remove the iron. The hot blast arrangements consist of three stoves constructed after the Gordon Cowper Whitwell patents, a 3-pass stove which has been well recommended by all furnace masters who have had experience in their use.

They are capable of sustaining a regular blast temperature up to 1600° F. Each stove is 60 ft. x 19 ft., surmounted by a conical casing, topped by a 40 ft. chimney 36 in. diameter in the clear. A circular platform 24 in. wide with hand rail at convenient height surrounds top of each stove, these coming together form a bridge from stove to stove. Valves are all of the gate type (except air valve), and worked with rack and pinion.

Hamilton Bla



Hamilton Blast Furnace Co.—Showing portion of Cast House, Down Take, Dust Catcher, Stoves, Gas Main to Boilers, and Cold Blast Main.

Gas valves and hot blast valves are water cooled. In chimney valve the arrangement of valve and seat is such that the draft of the chimney induces passage of a strong current of air through them, protecting them from the heated gases.

These chimney valves are operated from the ground level by means of a ½ inch wire rope with the necessary mechanical connections.

Flues in checker work 9 x 9 in. clear. To a certain extent the stoves are self-cleaning, as every time stoves are released, compressed air will carry out a certain amount of dust with it. As to arrangements for general cleaning, a small crane pivo ed on a truck travels around platform at head of stoves; jib of crane is long enough to reach the cleaning doors on conical top. These six holes are 12 x 20 in. Chain on crane has scraping weight at one end and counter-weight at other end. At bottom of stove are a set of steam blowers and three 20 in. cleaning doors. From dust catcher a 40 in. gas main runs across the face of the stoves; and from this main are three down pipes 30 in. diameter, ending in conical balanced explosion and cleaning doors; attached to these down pipes are 18 in. gas connections (provided with expansion and ball joints) which extend to gas valve of each stove.

Hot blast main is 60 ft., long, 40 in. diameter, and lined to 24 in.

Cold blast main is 24 in. diameter, thickness of plate $\frac{3}{16}$ in.

Boilers built by Brownell & Co., Dayton, Ohio, are 12 in number, situated in a brick building 50 x 80 x 18 ft. to the square. Thirteen and a half in brick wall (and corrugated iron roof) provided with the necessary doors, ventilating arrangements, etc. They are 59 in by 24 ft., with five 12 ft. lap welded flues. Running across each pair of boilers is a 30 in by 9 ft. steam drum, connected with two 12 in legs 3 ft. long. Each pair of boilers constitute a battery, and are set in one setting so that any two may be thrown out while the rest are working.

A down pipe from dust catcher goes to underground flue running across face of boilers. Flue has an area of 14 sq. ft., lined with 9 in. fire brick, sustained by retaining walls and provided with necessary cleaning and explosion doors.

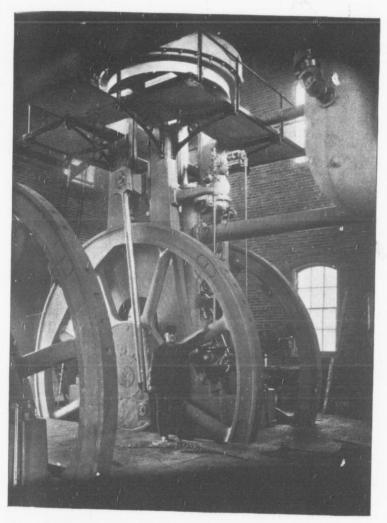
Gas from flue enters burner of the Gordon, Strobel, and Laura patents, that are situated to one side of the front of boilers. There is only one firing arrangement for each pair of boilers.

Discharge main for gases from boilers runs along top and front. It is 48 in. in diameter, lined with 2 in. circular fire brick. At either end is a 60 in. connection to draft stack, lined in same manner. Draft stack is steel, brick lined, 125 ft. high and 7 ft. in the clear.

The blowing engines, manufactured by the Phila-lelphia Engineering Company, consist of two vertical poppet valve engines, steam cylinders 42 in, blast cylinders 84 in. with a common stroke of 60 in. They are independent of each other and can be operated singly or together. Each engine has two fly wheels 18 ft. in diameter. Total weight of each engine is 100 tons, horse power each, 1,200.

H

Foundations for engines are of hard burned brick, laid in hydraulic cement and flushed solid.



Hamilton Blast Furnace Co.—One of the Blowing Engines.

Engine house, brick with corrugated iron roof. In the same building are the circulating and boiler feed pumps. Circulating pumps consist of two duplex steam pumps, steam cylinders 14 in., water 14 in., stroke 18 in. Water comes from lake through a 700 ft. line of cast iron pipe, well out in the lake and will be free from all shore troubles. From pumps water is discharged to stand pipe 60 ft. high by 12 ft. diameter, plates $\frac{1}{10}$ and $\frac{1}{10}$ in., well sustained by angle iron bracings. From here water is distributed to all parts of plant, and all waste water is returned to lake by special connections.

Boiler feed pumps (two in number), duplex steam plunger, steam cylinder 8 in., water plunger 5 in., stroke 10 in.; and they are so arranged that either can be taken out while the other is working. Feed water heater contains 500 square ft. solid drawn brass tubing.

Blacksmith shop and tool room in a brick building to the south of boiler house. Consists of one building, but solid wall separates tool room from shops.

Stock house is a good substantial building, but is already proving rather small and will have to be enlarged. It is 70 ft. span by 232 ft.; posts are 10 x 10 in., and 30 ft. high, strongly framed; main rafters are 8 x 8 in., trussed together and bound by iron bolts; 4 in. purlins ½ ft. 8 in. apart are fastened to rafters; sheeted with 1 in. board and all covered with corrugated iron.

Flooring is 21/2 inches pine, laid on 5 x 5 in. stringers.

Charging scales are Fairbanks latest locked beams, four posts, with clear way to hoist tower. The track scales are Burrow, Stewart & Milne's Imperial Standard. There are two railway trestles of easy grade in stock house for dumping supplies.

The length of the company's tracks, including that connecting with the Grand Trunk Railway, is about two and a half miles. The company has erected a substantial dock about 1,200 ft. long, which is designed to carry machinery for discharging ore from vessels; also a brick office building, in which is provided accommodation for the Superintendent, Secretary-Treasurer, clerks and chemist.

FURNACE OUTPUT IN 1896-7.

	1896.	1897.
Ore smelted tons Scale and mill cinder ' Limestone for flux ' Coke for fuel ' Pig iron product ' Value of product \$ Wages for labor ' Average workmen. ' tons ' tons ' Average workmen. ' tons ' Automatic to	51,138 5,883 8,657 30,348 28,302 353,780 47,000	37,492 5,350 9,473 27,810 24,011 288,128 40,000

Incorpor

Sir C A. S J. J.

Work

Forn materials \$300,000 shares, to pany, as payment of Canada ar the compa authority of acquisition required for as a means procuring others who and genera preliminary a further i also to con way and tel they may I and operate products of meeting hel of the com property co \$150,000.

in 1853, wh

LONDONDERRY IRON CO., Ltd.

Incorporated in 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. S. McClelland, Glasgow. J. J. Greenshields, London. A. T. Paterson, Montreal. John Turnbull, Montreal. R. McD. Paterson, Montreal.

Head Office: 35 St. Francois Xavier Street, Montreal.

Works Office: C. A. Meissner, 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 \$300,000 of preferential shares, and such amount, not exceeding \$400,000 of ordinary shares, to be used in paying off the bond holders 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 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 lines, 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 in February of each year, at which the affairs of the company are submitted to the 31st December preceding. 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. At date the plant consists of :-

The blast furnace, calcining kilns, coke ovens, ore sheds and the various engines, boilers and pumps necessary to their operation.

2nd. The rolling mill, machine shop and foundry, with the various furnaces, tools and appliances.

3rd. Rail connections, tramways and rolling stock.

4th. The four ore mines, Cumberland, West, Old Mountain, and East mines.

5th. The right of way to and shipping facilities at Great Village.

6th. The Maccan coal areas.

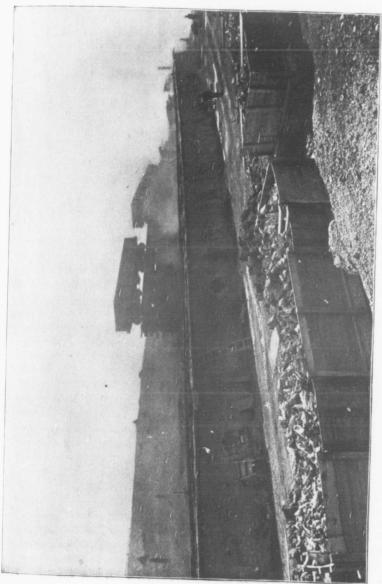
7th. Various timber lands and other real estate.

I Blast Furnace, etc.-In 1876, when the change was made from charcoal to coke as fuel, furnace Nos. I and 2 were built on high land close to the main road of the village; these furnaces were 65 ft. in height, 16 ft. bosh and 14 ft. stock line, and 10 feet dia. of hearth. They were built by the Truro firm of Brown & Pitblado from English plans. Three Cowper stoves were built at the same time, and both furnaces were put in blast. The furnace was relined early in 1895, and blown on March 10th of the same year. The present dimensions of No. 1 furnace are 75 ft. high, 14 ft. stock line, 18 ft. bosh and 9 ft. hearth; the inside of the furnace is in comparatively good condition. No. 2 furnace has not been altered and has been idle for a number of years. It has been proposed to convert it into a Cowper stove at an expense of about \$6,000 (mainly for fire brick.) The blowing engines are two in number, built by D. Adamson & Co., of Manchester, England, in 1876. They are of the condensing, vertical, direct inverted type, with the air cylinder and the crank and steam cylinder, the air pump being worked from the cross head. Diameter of steam cylinder, 34 in.; air cylinder, 72 in., with 60 in. stroke; the valve is a single cylindrical one of Corliss type. These engines take steam at 55 pounds, and run from 22 to 30 revolutions, the larger amount of air being required for the company's brown ore. The blast is heated by the stoves to about 1,200° centigrade, and is furnished to the furnace at from 5 to 6 pounds pressure. Steam is supplied from 6 Galloway boilers, of Galloway's own manufacture, and have been in use since 1876; they are fired from the waste gases from the furnace, and just enough fine coal on the grates to fire the gas; they are 7 ft. in dia. and 30 ft. long, and the whole six are set in one setting; they are fed from the small Cameron pump. Water for the furnace is pumped by a duplex Worthington pump, with an auxiliary Cameron in case of break down.

The furnace charges are hoisted to the top in a double elevator, power being furnished by a fairly good hoisting engine of Londonderry make. The ore sheds are just behind the furnace, and are in fairly good repair, being capable of storing a four month's supply of ore, although large quantities of this are stored outside.

The coke ovens are 67 in number, of the ordinary bee-hive type, 11 ft. in diameter and are built in one battery. The time of coking with Drummond or Springhill slack is about 40 hours, and they furnish about 70 tons of furnace coke per day. They were built in 1876.

The rolling mill includes the rolling mill proper, the axle and car-wheel plant, the machine shop with pattern shop and foundry, and pipe foundry. In the rolling mill are three double and one single, and one scrap furnace of standard form and



Londonderry Iron Co.-Coke Ovens.

dimension. These furnaces have been idle for about five years, but were repaired and started running about the 1st of January, 1895. One heating furnace for finished iron is also in a workable condition, and the two other heating furnaces can be put into good condition at small expense. There are three trains of rolls, a 16 in. puddle bar train, an 18 in. finisted bar train, and a 9 in. train for small sections. The plant also contains a medium sized steam hammer for shingling the blooms, a rotary squeezer, a hot saw, two pairs of shears—one for puddle bar and one for smaller sizes, an ore crusher for the ore used for fettling, with a set of tumbles and an ordinary rock breaker. Steam for this plant is furnished by boilers heated by the waste gases from the puddling and heating furnaces.

The air blast for the furnace is furnished by a small engine and blower, with an almost new auxiliary vertical boiler. There are two or three other small engines in the mill, used for driving various parts of the machinery. The capacity is about 700 tons per month.

There are also rolls and complete fittings for a plate mill for rolling nail plate, and the company at one time did considerable work in this line.

In the machine shop are three long bed lathes swinging about 60 in., one wheel lathe, double-ended, which is good for 72 in. A good sized slotting machine, a boring mill for car wheels, a radial drill, a four ft. planer and a two ft. planer, a 10 in. railroad shaper, all of English make. There are also two lathes for turning rolls, a hydraulic wheel press and two small machine lathes of American make, a pair of eight in. shears and a power punch complete the list of tools. Power is furnished by Rider cut-off automatic engine. In the foundry are two melting cupolas, a large one for the pipe shop, and a small one for use when the pipe shop is not run. The shafting is also in good shape; a new main shaft has been purchased and will be put in place soon. There are also two furnaces for melting brass, two core overs for ordinary work and two large ones for the pipe shop. There are three large hand cranes in the moulding shop, and three hand and one steam crane in the pipe shop. The capacity of the pipe shop is about 20 tons per day, and in the matter of flasks and patterns the plant is very well provided. The plant also includes a mixer, two hay rope machines, a heating furnace and kettle for tarring pipe and an hydraulic testing machine. There is a 50 x 80 storage building for patterns. Steam is furnished for this plant from two horizontal, single flue boilers, 5 ft. in diameter and 27 ft. long.

Railroads, Tramways, and Rolling Stock.—The company owns a broad gauge branch line, from the Londonderry station of the I.C.R., to the plant, about 3 miles in length and about a mile of sidings. All of the sidings and the broad guage tracks around the furnace and plant are provided with the third rail for the three-footsix narrow gauge road which connects the plant with the mines. There is a broad gauge branch which connects East Mines station on the I.C.R. with East Mines, a distance of about four miles and a quarter. There is a narrow gauge line from the plant to the West Mines, 3 ft. 6 in. gauge and about 2½ miles long, with about half a mile of sidings at Old Mountain and Martin's Brook. From West Mines to Cum-

berla rails

1879

The locor and about

east a throu which zero i has be name ing. genera where consid third i working village tain n Slack's There from w high as This is This re little ex calcined and pa varying veins in at Corey the mine

years.
of the letwo or the on a con when me

berland, a distance of a mile and three quarters, a 30 in. tramway laid with the pit rails is in use. There is also about two miles of tramway around East Mines.

Locomotives. — The company owns a broad gauge Baldwin locomotive, but in 1879 with 17 x 24 in. cylinders, and 48 in. drivers. There is also a broad gauge Scotch locomotive built about 1876, with 14 x 24 in. cylinders and 48 in. drivers. The company also own two narrow gauge locomotives, a Baldwin and a Scotch locomotive. For rolling stock there are eight platform cars for handling pig iron, and 17 coke cars, all of the 30 ft. standard pattern. The ore cars, of which there are about 40, are all narrow gauge, and are of the side dumping type.

Iron Mines. -The iron mines are all in the same belt or seam, which runs in an east and west direction about half a mile north of the base line road, which runs through the centre of the village. The company owns about 12 miles of this vein, which varies in width from five or six hundred feet from the widest portion down to zero in others. The general dip of the vein is from 75 to 80 degrees south. The mine has been worked in various places along the whole length, the principal section being named from the brooks which flow across the outcrop at the principal points of working. From these brooks the various levels have been driven in to the seams in a general east and west direction, while in some places open quarries have been used where the outcrop is on the summit of the hill. In most cases the outcrop may be considered as the top of the second set of foot hills north of the Minas Basin; the third range of hills dividing the isthmus into northern and southern slopes. The main workings are the Cumberland Mines at Cumberland Brook, four mlles west of the village; West mines at Martin's Brook, 21/2 miles west from the village; Old Mountain mines on the top of west bank of the ravine at the village; and East mines at Slack's Coreys, Weatherbys and Pine Brook, about seven miles east of the village. There are about 100 adits in all of these localities, and at least 30 open quarries, from which ore has been taken. The main body of ore is a limonite, which yields as high as 57 per cent. of metallic iron, and will probably average 53 or 54 per cent. This is mixed in greater or less degree with the ochre, or paint, as they call it here. This reduces the yield of iron at times materially. Spathic ores are found to some little extent, and run about 40 per cent. in metallic iron. Formerly these ores were calcined in the calcining furnaces, but to-day they are charged into the furnace direct and partially supply the place of limestone fluxes. A great deal of specular ore of varying compositions is also obtained. This specular is generally found in small veins in spathic ore, but frequently large pocket shaped deposits are struck, notably at Corey's Brook in the East mines. Ankerite is found in large quantites at all of the mines and is frequently used as a limestone flux.

Cumberland Mines. — These mines have been opened about sixteen or eighteen years. At present only two levels are worked, No. 7, intermediate on the east side of the brook and No. 12 on the west side. No. 7 and 8 are under water, and the two or three levels above No. 7 are crushed. At present the mine is being worked on a contract. There is known to be good bodies of ore in all of these levels, and when money can be obtained to keep them open and clear of water much more can be expected of this mine.

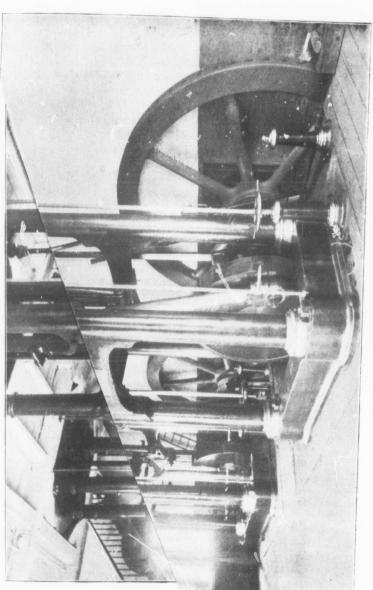
West Mines.—At least five main levels have been worked here, but the main part of the working, including about 300 ft. of the hoisting shaft, are under water, and a good deal of it probably crushed, as very little work has been done there for the last five years. Some of the best ore the company has ever worked has come from these mines. The old miners that worked there formerly say that when the crush took place there was probably three years' ore in sight.

Old Mountain Mines. — Here the vein of ore runs largely to ankerite, with veins of white ore and brown hematite intermingling. A great deal of ochre is also met with. The company works this mine on the ordinary system, paying the men various prices for the ore as determined by the analysis. An inclined plane worked on the gravity system takes the cars from the mouth of the main entrance down to the railroad level in the bed of the canon. This whole section, covering probably ¾ of a mile on the top of the hill, has been duly gone over, searching for ore, and a great many tons have been taken off the top. There are a number of open ankerite quarries of considerable extent also.

The first working at East mines was in the neighborhood of Coreys Brook. Early a tramway was built from Corey's Brook to Slack's Brook and beyond nearly to Folly river, where an outcrop of the vein occurs. These workings from Corey's Brook west to Folly river have been nearly all worked out and the entries and adits allowed to crush, very little high grade ore being obtained. At Corey's Brook the big ankerite quarry is located. This has not been worked for a long time as enough ankerite has been obtained mixed with good ore in the other workings. Here, also, was the largest pocket shaped deposit of specular ore, which was about 40 ft. thick, and covered a space of 300 ft. by 50 or 60. At Corey's Brook is situated the end of the East mines branch railway, and from here the tramway lines 10 Weatherby's Brook and the ankerite quarry radiate. A gravity inclined plane runs from the mouth of Corey's Brook to this terminus.

At Weatherby's Brook is the best body of ore at present worked. The mine consists of an adit about half a mile long, at a level about 100 ft. higher than the terminus of the branch railway. From this level two shafts sloping at an angle of 75° are sunk along the bed wall of the vein to the other level about 70 ft. below. At the foot of these shafts four short levels have been started, and the men are at work on the brown ore, which seems to grow better as they get down. Two upright boilers which are placed underground on the adit level, furnish the steam for the pump and the hoisting engine, and the old workings above the level furnish an exit for the smoke. This brown ore is the best which the company mines now, and is used for fettling in the puddling furnaces. At Totten Hill, about ½ mile further east, there are open quarries of white ore and ankerite. The hanging wall of the vein in almost every case is ankerite. The company uses in the furnaces generally a mixture of about half Torbrook ore and half of their own ore, the Torbrook ore containing about 1½ per cent. phosphorous. The company owns a limestone quarry at Brookfield, about 8 miles from Truro, but this has not been worked.

The company owns a very fair wharf site at Great Village and Cobequid Bay, and a survey for a line of railway connecting Londonderry with that place has been made



Londonderry Iron Co.—Blowing Egines.

and some little grading done. The company owns the right of way. The company also owns a wagon road along the line of the river.

Maccan Coal Properties—This property consists of about 2,200 acres of land, 52 miles from Londonderry, and within easy distance of Amherst. The seam of coal which has been worked consists of about 6 ft. of bottom coal, 3 in. of slate, and about 12 in. of top coal. There are 4 or 5 thin unworked seams lying above this on the company's property. They do not increase to a workable thickness; the coal lies at an angle of about 50 degrees. It has been worked at a number of places along the lights were used. About 50,000 tons of coal have been taken out.

Other Property—The company owns a great deal of land in the neighborhood of Londonderry, some of which contains hardwood lumber. Around the plant and the various mines are a collection of company houses, probably from 100 to 150 in all, some of which are in good repair.

FURNACE OUTPUT IN 1896.

	1090.	
	27,055 8,882 1,256 18,290	Value at furnace. \$136,197 54,110 8,654 2,288 48,935
employees at furnace, 75.	9,062	

ROLLING MILLS AND FORGES 1896.

3 train rolls. Iron: all sorts made Puddled bars consumed at many	1	Value at mill. \$13,040	
Scrap and other iron consumed. Total fuel consumed. Average men employed, 50.	ed at works	10,328 879	

IRON AND STEEL WORKS 1896.

I single "	Quantity in 1896	
Production of iron. Consumption of pig Consumption of fettling ore. Consumption of fuel. Average persons employed, 60.	Long tons. 3,800 4,198	Value at works. \$94,358 50,422 5,933 12,808

of rolls carriage Bitumin

Н

plant, a capacity the man

ROLLING MILLS AND FORGES 1897.

No. trains. rolls, 2.	Ian'f'd in 1897. Long tons.	value at mill.
Iron: all sorts made Puddled bars consumed at works Scrap and other iron consumed	1,595°	\$29,680 00 38,280 00
works	IO2 ¹⁹	1,236 00 3,144 00

IRON AND STEEL WORKS 1897.

No. double pud. furna	ces in fire, 4.	Quantity in 1897.	
No. single "	" None.	Long tons.	Value at works.
Production of iron		8962	\$21,504 00
Consumption of pig			9,555 00
Consumption of fett			1,149 00
Consumption of fue	1	I,40516	2,810 00

Average persons employed, 25.

McDONELL ROLLING MILL CO.

Works built in 1893, and put in operation in the same year.

Owners:

A. A. McDone	11.	R. McDonell.

Head Office and Works: Sunnyside Toronto, Out. Richard McDonell, Manager.

Employ 50 persons. Equipped with three coal heating furnaces and two trains of rolls (9 and 20 inch); product, merchant bar iron, agricultural implements and carriage iron, channels, angles, beveled-edge, flats, etc. Annual capacity 6,000 tons. Bituminous coal from the United States.

McDOUGALL & 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 ft. high; capacity about 6 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.

METROPOLITAN ROLLING MILLS.

Built, August, 1883.

Owners:

A. E. Abbott,

'Vm. Abbott.

Office and Works: 219 De Lorimer Avenue, Montreal.

Employ 100 persons. Equipped with heating furnaces, trains of rolls, and all the necessary machinery for producing bar iron, cut nails, railroad spikes, and horse shoes. Fuel consumption from three to four thousand tons bituminous from Nova Scotia.

MONTREAL ROLLING MILLS CO. Limited.

Incorporated 1867. Authorized capital, \$500,000.

Directors:

Hon. G. A. Drummond.

Andrew Allan. Wm. McMaster. H. Montague Allan. Henry Archibald.

E. S. Clouston. Hugh McLennan.

Head Office: V.m. McMaster, Managing Director, 3080 Notre Dame St.,
Montreal. A. F. MacPherson, Secretary-Treasurer.

Works: St. Cunigonde, Montreal. M. F. Derrick, Superintendent.

Works built about 1857; 4 coal and 3 gas heating furnaces; 3 trains of rolls (9 inch, 12 inch and 18 inch); 75 cut nail machines and 40 wire nail machines; product: bar and horse-shoe iron, nail plate, skelp, horse-shoes, horse-shoe nails, cut nails, and iron and steel wire nails; annual capacity, 9,000 gross tons of bar and horse-shoe iron, 3,500 tons of skelp, 9,000 tons of nail plate, 25,000 kegs of horse-shoes, 25,000 boxes of horse-shoe nails, 125,000 kegs of cut nails, and 60,000 kegs of wire nails. Fuel used, producer gas and bituminous coal. (About 20,000 tons Nova Scotia, annually).

NOVA SCOTIA STEEL CO., Limited.

Reconstructed in 1895, being an amalgamation of the New Glasgow Iron, Coal and Railway Co., Limited, and the Nova Scotia Steel and Forge Co., Limited. Authorized Capital, \$5,000,000 in shares of \$100; issued, \$2,030,000.

Directors:

John F. Stairs, Halifax, President.

Graham Fraser, Vice-President. John McNab, Halifax. J. W. Allison, Halifax. J. D. McGregor, New Glasgow.

E. F. McKay, New Glasgow. Frank Ross, Quebec. George Stairs, Halifax. Henry S. Poole, Stellarton. Head

Formed to

Blast Intercolor of 13 mile The clear cible dian casting ho comers (g boilers. each stove There is al fire brick. tons, havin a 4 ft. stro 35 by 60 ft and design long, and from the 6 in. in dia pumped fr

Coal wifirst of its licroshed. The inch, one of two comparemoved by place. The of work ret the services

There is a

The co of sulphur. cent. more showing, at sulphur is r tially fixed washed cos put at 7½ of

Head Office and Works: T. Cantley, Secretary, New Glasgow, N. S. Mine Manager: R. E. Chambers, M.E.

Formed to take over the business, franchises, undertaking, property rights, privileges, and assets of the Nova Scotia Steel and Forge Co., Limited, and the New Glasgow Iron, Coal and Railway Co., Limited.

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 ft.; bcsh diameter, 15 ft.; crucible diameter, 9 ft. 6 in. There are eight tuyeres and two cinder notches. The casting house is 50 ft. by 153 ft., constructed of iron. The furnace has two downcomers (gas flues), one carrying gas to the hot blast stoves, the other leading to the boilers. There are three hot blast stoves, of the 3-pass Massick and Crook type, each stove being 16 ft. 6 in. 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 brick. The blast is produced by two blowing engines, each weighing about 90 tons, having steam cylinders 36 in. in diameter, air cylinders 84 in. 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 41/2 in. in diameter. The fuel used is waste gas from the furnace, the draft being produced by an iron chimney 125 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, hoist, scales, etc.

Coal washing plant was put into successful operation in May, 1892, and is the first of its kind erected in Canada. The coal is clevated, screened, and the large coal crushed. The resulting fine coal is separated into three sizes: Nothing to one-eighth inch, one-eighth to 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, besides 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 Copée), of the following dimensions: Length, 33 ft.; height, 6 ft. 6 in. (under roof); medium width, 231/2 inches. oven is charged with about 7 tons of washed coal (all below 3% in. mesh), every 40 or 48 hours; the 54 ovens produce every 24 hours between 115 and 120 tons of firstclass large coke, which is all used in the blast furnace of the company. The coal used yields 73 or 74 per cent. of large coke right along; the same coal only yields 60 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 re-closed and sealed air-tight with ordinary clay; the coal to be charged is now dumped into the ovens through the charging holes 15, 15, 15, and levelled in the usua! 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 (braise).
 - 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 ft.) 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.

The amount of ore mined is about 4,000 tons per month, including both brown and red hematites.

During 1894 this company acquired, and now operates, a mine of iron on Bell Island, Conception Bay, Newfoundland.

Ore Washing Plant—The principal impurity in the 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, of the drui

Steel naces; two tons. The 50 ton stea hoisting m beratory he hydraulic in in. plate n pair shears. crane; fou travelling c a 9 ft. radia and 8 ft. x other lathe hydraulic c Output 150 axles and supplied to

> Pig Or Fu

St

Iro

Iro

Fl

Lin*Imported for

In

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.

Steel Works at New Glasgow-The plant comprises three Siemens melting furnaces; two of these have a capacity of 20 tons each and the other a capacity of 35 tons. These three melting furnaces are served by one of Chaplin's pat. 3-cylinder 50 ton steam cranes, having a clear span of 50 ft. with traverse, longitudinal, and hoisting motions, and will lift 50 gross tons; three gas heating furnaces; five reverberatory heating furnaces; 26 in. reversing cogging mill, with train of live rolls and hydraulic ingot manipulators; 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; 12 pair 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 30 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 ft. x to feet in the gap, will take 37 ft. between centres; also 6 large gap and other lathes, 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 150 tons of steel ingots per day, all of which are worked up into bars, sheets, axles and other forgings. Over 100,000 axles of this company's make have been supplied to Canadian railways.

On	CELENK		1807
UU	1 1	7.1	1207

Steel Inner 1	Gross tons.
Steel Ingots made	 17,000
Pig iron made	 20,090
Ore charged	 30.200
Fuel charged	 31.065
Flux charged	 16,965

MINES OUTPUT, 1897.

	Iron ore r	nined	by company	y in Newfoundland	Gross tons.
	Iron ore	output	mined by c	company in Canada	13,600
	"		purchased i	n Canada	11,970
	"	4.6	"	Europe	
*Imported	Limestone for own use	e mine	d		14,950

LABOR EMPLOYED.

T	are and desired as	Persons.
1	pre production in Canada.	120
	Turnace and Works	130
	iteel Works	125

ONTARIO ROLLING MILL CO.

Incorporated 1879. Authorized Capital, \$100,000.

Directors:

P. M. Hitchcock, A. M. Wilcox, C. E. Doolittle, C. S. Wilcox.

Head Office: Hamilton, Ontario. W. A. Child, Secretary.
L. T. Constable, Superintendent.

The company owns and operates three mills, two at Hamtlton, and one at Swangea. The Hamilton mills were built in 1861 and contain one single and 3 double bushling furnaces, 9 coal heating furnaces, 5 trains of rolls, (14-inch muck, 9 and 10 inch guide, 20-inch bar, and 20-inch plate) 3 hammers (5-ton and 2-ton upright and one helve), and 45 cut-nail machines: Product bar and band iron and steel, fish plates, nail plate, forgings, cut nails, rivets and washers. Annual capacity, 100,000 kegs of cut nails, and 27,000 gross tons of other finished products. The Swansea mill was built in 1888, and contains one coal and three 8-inch gas heating furnaces, one 10-inch train of rolls, and one 5,000 lbs. upright hammer. Product bar iron. Annual capacity, 10,800 gross tons. Fuel used, Pennsylvania bituminous coal in all works, about 25,000 tons annually.

PICTOU CHARCOAL IRON CO., Ltd.

Incorporated under the laws of Nova Scotia, in November, 1891. Authorized Capital, \$200,000, divided into 2,000 shares of \$100 each.

Directors:

M. H. Fitzpatrick, New Glasgow, N.S., President.

Jus. D. McGregor, New Glasgow.
A. C. McDonald, Pictou.

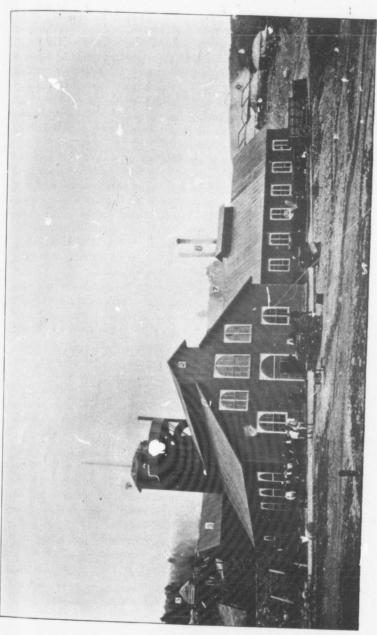
W. B. Moore, New Glasgow.
Alf Markham, St. John, N.B.

Head Office: A. C. McDonald, Sec.-Treas., Pictou, N.S.

Works: W. B. Moore, 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 bushel), casting house, stock house, engine house and puddling-mill. The shops and furnace buildings are all



Pictou Charcoal Iron Co.—Furnace at Bridgeville, N.S.

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 an 11 ft. bosh and 7 ft. diameter under the bell. The conventional iron shell has been dispensed with and substituted by a crinoline strapping and red brick shell. This, together with the 15 in. fire brick lining, is supported by six cast iron columns, and the bosh is surrounded by a boiler plate mantel, and the hearth by a water cooling cast iron jacket. The tuyeres, 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. 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 16 Dalziel 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 Riehlé'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 ($7\frac{1}{2}$ in. s. c. x $4\frac{1}{2}$ 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, 22 brick kilns have been erected at different places. Six of these are of the bee-hive type, each holding 50 cords of wood, and capable of carbonizing 1,200 cords per aunum, which will produce 5,000 bushels of coal. The balance are of the Plattsburg (conical) type, each holding about 25 cords each, with an annual capacity of 600 cords of wood, or 2,500 bushels of coal. The present coaling capacity is, therefore, about 600,000 bushels per annum, requiring

about 1

The and ma Sunny I is taken with a 6 engine a including of the coteams.

The in severa the community deposits consist of the older and mass themselves specular of the several thresholds.

The from the mining ar driven, or No. 1 tun in width. at an incl a large bo

The compact, manganess displayed and three company lore, beside

The tioned ores

about 15,000 cords of wood, which is the estimated requirement for producing 5,000 tons of pig iron a year.

The wood used for the charcoal making in principally yellow birch, also beech and maple, and is hauled by teams, wintertime, to all the kilns, except to those at Sunny Brae, where a pole road about $2\frac{1}{2}$ miles long has been built, and on which it is taken during the dry summer season from the woods to the kilns by a locomotive with a 6×3 ft. upright tubular boiler and double 6×8 in. steam cylinders. With this engine a load of 4 cars is hauled, each car holding 2 cords of wood; and a round trip, including loading and unloading, is made in a little over 2 hours. The transportation of the charcoal to the furnace is done partly by rail (from Sunny Brae), partly by teams.

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. They are contact deposits between the carboniferous limestones and the upper silurian measures, and consist of brown hematites, "residual precipitates formed from the disintegration of the older silurian rocks above, more or less mixed with pyrolusite in form of nodules and masses, 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 on 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 No. 1 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 per cent. metallic iron, and three to four thousand tons were removed. About 150 ft. below this cut the company has now driven a tunnel about 600 ft. in this limestone to the same kind of ore, beside a 100 ft. air shaft and different levels, all in ore from 10 to 15 ft. wide.

The following analysis will serve to give an intelligent idea of the above mentioned ores:

	No. I	ore from Tunnel.		ore from
Insoluble matter	12.80	6.75	 8.58	5.58
Metallic iron	45.02	53.41	 54.83	
Metallic manganese	1.56	1.88	 0.20	0.20
Sulphur	9.45	11.02	 10.00	10.90
Sulphur	0.05	0-04	 0.41	0.09
a nosphorous	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. Before using it in the furnace, part of the ore is treated in a Newbold & Son washer (a revolving cone), but part of it is clean enough to be used or shipped from the mine direct to furnace.

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 per cent. carbonate of lime; 2.5 per cent. carbonate of magnesia; 2.0 per cent insoluble matter.

OUTPUT 1895-96-97.

The quantity of ore mined in 1895 amounted to 8,506 tons; and in the year ending October 1st, 1896, 12,099 gross tons; 1897, 11,620 tons.

During the winter of 1896 a puddle mill was added to the plant consisting of two puddling furnaces, a steam hammer (with cylinder 16 in. diameter and 27 in. stroke), an 18 in. roll train, two tubular boilers (16 ft. long, 5 ft. diameter, and with 52 4 in. tubes), steam engine with 18 in. steam cylinder, and 3 ft. stroke, and with an 18 ton fly wheel for the manufacturing of billets and muck bars.

In 1897 the furnace plant was leased to the Mineral Products Co., of Hillsboro, N. B.

DESERONTO IRON COMPANY, Limited.

Incorporated under Ontario Statutes, 27th April, 1898. Authorized Capital, \$99,900, in shares of \$100.

Directors:

F. B. Gaylord. | Wm. Gerhouser. | F. A. Goodrich. E. W. Rathbun. | F. S. Rathbun.

Head Office and Works: Deseronto, Ont.

At date of going to press this company was constructing a charcoal iron furnace at Deseronto, Ontario, having a capacity of from 35 to 40 tons per day.

PILLOW & HERSEY MANUFACTURING CO., Limited.

Incorporated 1887. Authorized Capital \$800,000. Paid in \$600,000. Par value of shares \$100.

Directors:

John A. Pillow, C. R. Hosmer. | John R. Hersey, John McDonald.

Head Office: W. W. Near, Secretary, 520 Board of Trade Building, Montreal. We 12 and product tacks, to 25,000 anthrac

Incor

P

Ja

For products, including and goods of burned a trains of 5-ton hel and shape mine rail

Fuel used

Works: 104 St. Patrick Street, Montreal.

Works built in 1859. Eight heating furnaces, four trains of rolls, (9-inch guide, 12 and 18 inch bar and 18 inch plate) 96 cut nail machines and 26 wire-nail machines; product: cut nails, wire nails, bar-iron, railway and pressed spikes, horse-shoes, tacks, bolts and nuts; annual capacity for cut nails, 118,000 kegs; for wire-nails, 25,000 tons. Fuel used, bituminous and anthracite coal and fuel oil (700 tons anthracite and about 11,000 tons Nova Scotia bituminous).

PORTLAND ROLLING MILLS CO., Limited.

Incorporated 1894. Authorized Capital \$200,000, in 2,000 shares of \$100 each.

Directors :

Ias. C. Robertson. W. H. Murray.

James Mowatt. G. F. Baird. S. Hayward. Joseph A. Likely.

Head Office: Jas. Mowatt, Secretary, St. John, N. B.

Works: Strait Shore, St. John, N.B. John H. Poole, Supt.

Formed to buy, manufacture and deal in all classes of metals and their products, and to purchase, lease or otherwise acquire real and personal property, including mills and factories, and the merchandise, stock-in-trade, plant, machinery and good will of any manufacturing business for the manufacture of metal or wood goods of any kind. The works were built in 1856 and folling mill added in 1860; burned and rebuilt in 1889; one single puddling furnace; 5 heating furnaces; 3 trains of rolls (12 and 18 in. bar and 18 in. nail plate); 2 spike machines, and one 5-ton helve hammer; product, batton of all kinds, hammered shafting, car axles, and shapes, iron and steel nail-plate, cut nails, ship and railway spikes, street and mine rails, etc. Employ in rolling mill 100 persons; in tack factory 50 persons. Fuel used, 5,500 tons Nova Scotia bituminous.



CHROMITE.

CHROMITE.

This valuable mineral is found at many points throughout the serpentine belt of the eastern townships of the Province of Quebec, from the boundary of the State of Vermont to the Shickshock mountain in Gaspé. It was first described in the report of the Geological Survey of Canada, 1847-8, as occurring in the Township of Bolton, on Lot 26 VII Range, in a vein said to be 1 ft. thick, a sample of which gave Dr. Sterry Hunt an assay 45.90 oxide of chromium. In 1863, Sir William Logan mentions a shipment to Glasgow of 11 tons of over 50 per cent. chromic oxide, which realized \$52.00 per ton.

PRODUCTION.

Mining is principally carried on in the Township of Coleraine, near Black Lake station on the line of the Quebec Central Railway. The following statistics are official.

omeiai.		
Shipped before 1894 from Leeds	Tons.	Tons.
Shipped in 1894 to United States (Baltimore and Philadelphia)		915
In 1895 to Philadelphia	807	2-3
" Baltimore	725	
" Pittsburg	810	
" Liverpool (England)	400	
"Glasgow (Scotland)		
" Nova Scotia.	41	
_	54	2,837
In 1896 to Philadelphia	750	2,037
66 Pittshurg and vicinity	1,232	
" other points	55	
		2,037
In 1897 to the United States and chiefly to Pittsburg		2,340
Total shipped	-	8 182
On the 1st January, 1898 there were also on hand ready for shipment		8,183
more than one-half being high grade		2,000
Total yield		0 192
Or in round figures over	1	0,183
- tolis.		

MARKET.

A few years ago chromic iron of 50 per cent. was worth \$20 to \$21 per gross ton f.o.b. Q. C. R., but current prices are lower and \$18 may be considered the maximum actually paid for that quality. with an ascending scale of 50 cents per unit. There is hardly any sale for poor ores, but \$8 to \$10 may be taken as the basis of the price of 40 per cent. ore. There is more demand for ores grading about 45 per cent. at the prices ranging between the two above extremes.

physic chron

(

this ir demon mercia oxide metal carbid with I

pierci

safes a chrom tensifi passed the pla A. Ab ment formid tools, ceedin more t

purpos and ire war, w

prove railway of chroharden of burg

Dana, 4.32 to exhibit sub-me

^{*}Joi †En

USES OF CHROMITE.

Before discussing the uses of chromite it will be useful to briefly note its physicial characteristics and chemical composition. The metal chromium (of which chromite is an oxide), according to R. A. Hadfield*, has an atomic weight of 52.40, and a specific gravity of 6.8-7.3, with a high melting point not yet determined.

Chromium is used in the metallic state only in making chrome steel, and even in this instance it is used as ferro chromium. Quite recently M. Henri Moissan† has demonstrated the possibility of manufacturing pure chromium and tungsten in commercial quantities. His latest method is to take a carbon pipe filled with the metallic oxide mixed with carbon, inclining it, and subjecting it to the electric current; the metal contaminated with carbon readily flows off as the result of the reaction. Two carbides of chromium have been identified. The carbides are purified by remelting with lime.

Chrome steel is used chiefly in the manufacture of armour plates and armourpiercing projectiles, for shoes and dies in stamper batteries, and for burglar-proof safes and edge tools. Professor Garrison states that the "extreme hardness of the chromium steel face is dependent upon the content of carbon, whose action is intensified by the presence of the chromium, and is only developed after the steel has passed through a system of hardening. This tempering consists essentially in heating the plate to a red heat, and quenching it with sprays of ice water." Sir Frederick A. Abel, in his presidentia' address before the British Association for the advancement of science, Leeds, 1890, stated that chrome steel has for some time been a formidable rival of the very highest qualities ot carbon steel produced for cutting tools, and of the valuable tungsten steel. The great hardness, high tenacity, and exceeding closeness of structure possessed by suitably tempered steel containing not more than from 0.8 to 1 per cent. of carbon, renders this material invaluable for war purposes. Cast projectiles, when suitably tempered, have penetrated compound steel and iron plates over 9 inches in thickness, such as are used upon armoured ships of war, without even sustaining an important change of form."

The presence of a small percentage of chromium in gun-metal is also likely to prove beneficial. Chromium is used in the production of first quality steel rails for railway purposes. Steel with I to I.5 per cent. of carbon and from 2.5 to 4 per cent. of chromium is stated to be so hard that it cannot be worked with the ordinary hardened tools; consequently it has been called into requisition for the construction of burglar-proof safes. For this purpose it is welded and rolled with iron plates.

Chromite is the most common ore of chromium. Its composition, according to Dana, is—chromium sesquioxide, 68.0; iron protoxide, 32.0=100. Specific gravity, 4.32 to 4.57 hardness, 5.5; color, between iron-black and brownish-black, generally exhibiting emerald-green encrustations on smooth semi-conchoidal faces; lustre, sub-metallic to metallic, sometimes feebly magnetic.

^{*}Journal Iron and Steel Institute, 1892, ii, page 53.

Engineering and Mining Journal, Nov. 6th, 1897, p. 550.

Ann. Rept. U.S. Geo'. Survey, 1894-95, xvi., pt. iii., pp. 610-14,

Tests — Before blowpipe in oxidising flame, infusible; in reducing flame, slightly rounded on the edges and becomes magnetic.

With borax and salt of phosphorus, gives beads which while hot show only reaction for iron, but on cooling become chrome-green. Not acted on by acids, but decomposed by fusion with potassium or sodium bisulphate.

Chromite is reported as not uncommon in meteoric iron.

Other ores of chromium occur, the chief of which is crocoisite — chromate of lead — in which the metal was first discovered.

Serpentine, in which the chrome deposits occur, owes its color to chromium salts. The beautiful color of the emerald and of ouvarovite (chrome-garnet) is due to the presence of chromium, and probably also that of the ruby and sapphire; for it has been demonstrated that if the formation of crystallised alumina is accomplished in the presence of chromium compound, crystall having the colors of ruby and sapphire, as well as their composition, may be produced.*

The other varieties of the chromium ores are of mineralogical interest only, and call for no special mention.

Chromite, or chromic iron ore, is used in the arts for the manufacture of potassium and sodium bichromates, for the preparation of basic furnace hearths, and for reduction to ferro-chromium for the production of chrome steel. By far the most part of the mineral produced is employed for the first purpose, for which only that of high grade can be economically used; while for furnace hearths, and for manufacture of ferro-chromium, ore of lower grade suffices. ("Mineral Industry," vol. ii, 1893, p. 158.)

Chromite is coming largely into use as a refractory lining for basic furnaces. The latest particulars available of its use in this direction are given in the last volume of "Mineral Industry,"† from which the following extracts are taken:—"At present the mineral is employed in reverberatory copper-smelting furnaces, and in open hearth steel furnaces, in both with very satisfactory results. Concerning the former, Herbert Lang writes: The Selby Smelting and Lead Company has used it quite extensively in the matting reverberatories at Vallejo Junction, California. The hearth is composed of large fragments of chrome ore, with the interstices well filled with smaller pieces, and the material is built up around the sides to the slag line. The protection is such that fettling is almost done away with; in fact they have not to fettle but once a week or so. The chrome ore is acted on but slightly, if at all.' Alfred von der Rupp, superintendent of the works, states § 'that the life of the furnace is more than doubled by the use of chromite.'"

In the "Mineral Industry," 1893, vol. ii, it is stated that chromite has been used instead of magnesite and dolomite in basic furnace hearths, the method of preparation of which is given as follows:—"In preparing basic furnaces with chromite

linings, laid wit volume) possible mortar. to 45 pe

In reference lows:—been sur and wal cement free from under the alone is molten condition picking composition per cent and at mercent lower than the surface of the surface

the state and Yor make th with tar lining of

The States are quoted (Province chromius ore is us found far

Acc factured roof.

In c lining, th an impo increasin a remune which ar

^{*}Precious Stones and their Artificial Production; by Prof. J. W. Judd, C.B., L.L.D., F.R.S.—Roy. Coll. of Science Magazine, No. 74, vol. viii, pt. 9, p. 268.

[†]The Mineral Industry, etc., 1896, vol. v, pp. 120-3.

[‡]Engineering and Mining Journal, January 23rd, 1897, p. 89.

[§]Mining and Scientific Press, Sept. 26th, 1896, p. 257.

linings, all parts of the walls with which the metal bath and slags come in contact are laid with pieces of chromite, cemented with a mortar consisting of two parts (by volume) of finely ground chromite, and one part of lime, burned as free from silica as possible. The hearth is made of stamped chromite ore, mixed with same kind of mortar. The ore should be as rich as possible in chromic acid, containing from 40 to 45 per cent."

In Vol. ii, 1895, p. 506, of the "Journal of the Iron and Steel Institute," reference is made to an article in "L'Echo des Mines," vol. xxi, page 548, as follows:—"According to P. Speier, chrome ore linings for reverberatory furnaces have been successfully adopted in French, German, and Russian steel works. The bottom and walls of the furnace are lined with chrome ore in large blocks, united by a cement formed by two parts of chrome ore finely ground, and one part of lime, as free from silica as possible . . . The iron chromate is decomposed only under the influence exerted by the reagents and oxidising alkaline substances. Heat alone is insufficient to decompose chromate of iron, which may float in a bath of molten steel covered with basic slag without dissolving. One of the principal conditions of success in the employment of the chrome ore lining consists in carefully picking the pieces of ore used, which should be of uniform composition; and the best composition of ore used for lining reverberatory furnaces is found to be from 36 to 40 per cent. of chromic oxide, 18 to 22 per cent. of clay, 9 to 10 per cent. of magnesia, and at most 5 per cent. of silica."

Messrs. G. R. Blackwell, Sons & Co., of Liverpool, England, are quoted for the statement that chrome ore had been used by steel manufacturers in Lancashire and Yorkshire for about fifteen years. They also remark that it is not necessary to make the chrome ore into bricks, a better method being to crush it to a pea size, mix with tar and line the furnace as if with mortar. The tar burns away, leaving a solid lining of chrome ore, which has been found to give satisfactory results.

The consumption of chrome ore in open hearth basic furnaces in the United States amounts to about 1,800 to 2,000 tons annually, according to the publication quoted ("Mineral Industry"), the Pittsburg supply being for the most part from the Province of Quebec. The requirement is for an ore of not less than 45 per cent. chromium sesquioxide, but the shipments are reported to rarely average so high. The ore is used in lump form for patching the sides of the basic lined furnaces, and is found far more convenient and durable than a slurry of dolomite.

According to the same authority, very hard and lasting chrome bricks are manufactured at Pittsburg for use as a neutral parting between the basic earth and silica roof.

In connection with the rapidly increasing use of chromite as a refractory furnace lining, the comparatively low grade of material suitable for this purpose should have an important bearing in the near future on our chrome mining industry, for increasing demand the natural correlative of increasing use is almost certain to give a remunerative value to ore at present below the minimum market grade, deposits of which are already known to exist in our chrome fields.

Buyers still stipulate for high grades of 50 per cent., or more; probably 47 per cent. is about the lowest local grade for which a price would be quoted at the present time. It will, however, be noted in the quotations and extracts embodied in this paper that the stipulated grade of chrome ore for furnace lining at Pittsburg, U.S., is 45 per cent., and even this comparatively low-grade percentage is reported to be rarely reached. The average percentage of chromic-acid in furnace lining may be taken as about 40 to 45. In chrome steel manufacture, or more correctly, in the preparation of its preliminury stage of ferro-chromium, low-grade ores of the above character are reported to be suitable.

Attention is also directed to another bearing which the successful use of chromite as a refractory furnace lining may have on local industry, viz., the possibility of local consumption in connection with copper and matting furnaces, to say nothing of our iron smelting furnaces.

The chief use of chromite at the present time is in the preparation of chemical salts for use in the arts, in painting, calico printing, dyeing, and tanning. Chrome pigments embrace various shades of red, yellow, green, buff, and black. Green oxide of chromium is used extensively as an enamel color for porcelain.

A new use for chromite is reported from France, where a compound known as Silichromite is manufactured. According to "Mineral Industry" (vol. v, 1896, p. 123) "it is an extremely hard, crystallized substance, but easy to pulverize, and is used for moulding and polishing purposes. It is prepared by treating chrome ore, sand, and coal, in an electric furnace, wherein a molten mass, in which chromium silicate predominates, is obtained."

DRESSING AND CONCENTRATION OF CHROMITE.

The necessity of concentration is a question which is forcing itself on the attention of those interested in chrome mining. In California where much of the ore at present accessible is of low grade, concentration has already been adopted; for, as pointed out in the valuable work already freely quoted ("Mineral Industry"), "the future of the chrome industry in California seems to depend upon more careful dressing of the ore, either by hand or mechanically." There can be no question that, apart from utilising deposits of low-grade ores in this way, the great market desideratum, viz., uniformity of grade, would be secured by dressing and concentration.

Where the ore is rich the usual practice of cobbing and hand-picking is sufficient to secure a high grade, but generally the richest ores are the most friable; hence considerable loss is entailed as smalls during the present process of mining and hand-dressing. The rich fragments which thus become mixed with the waste could be recovered by concentration machinery. Hard, compact ore of low grade, in which the impurities are finely and intimately mixed, may not prove as amenable to concentrating treatment as comparatively lower grade ores roughly mixed with serpentinous impurities. The latter, in cases where the serpentine has decomposed into magnesium clays, would probably afford special facilities for concentration. The hard ore in question might be utilized in two ways: after coarsely crushing and washing it might be mixed in carefully ascertained proportion with the rich concentrates to ensure an

uniform market i

rouning now in Hunting settling t is capable cost about is crused. The pulp settling t shipment.

The per ton fo

The (2,000 lb yielded a 50 per ce

The ore †:—

Owing chromite, careful an ores for tr

Of lating special their own 263) gives

^{*} Miner

uniform grade of good quality; or it might be made available for furnace lining if the market rate afforded a margin of profit.

Touching the method of concentration, the following description of a plant running in California is valuable as a guide*:—"One of the chrome dressing works now in active operation in California is equipped as follows:—Rockbreaker, 6 ft. Huntington mill, and four Woodbury vanners with corrugated belts, together with settling tanks, drying floors, and the usual driving machinery, &c. The plant, which is capable of turning out from 20 to 25 tons of dry concentrates per twenty-four hours, cost about 12,000 dollars. The process is carried out as follows;—The ore is crused by the breaker and the Huntingdon mill so as to pass a 40-mesh sieve. The pulp is separated on the Woodbury vanners. The concentrates are collected in settling tanks, whence they are removed to the drying floors, and finally packed for shipment in strong jute bags."

The fuel used is wood. The crude ore does not cost more than 7 dollars per ton for best grades, delivered at the mill.

The result of a month's run of the above mill is stated to have been 700 tons (2,000 lb. per ton) of 50 per cent. concentrates, which at the then market rates (1893) yielded a profit of 3 dollars per ton, and I dollar per ton for each I per cent. above 50 per cent produced.

The following analyses give the results of the concentration of Californian crude ore \dagger :—

	Crude ore.	Concentrates
Sesquioxide of chromium	43'70	52.86
Protoxide of iron		15.45
Alumina	15.96	11.20
Magnesia	16.49	16.26
Silica	7.96	3.00
Lime	.66	.76
Water	'49	,10
	100.06	100.03

Owing to the varying percentages of sesquioxide of chromium contained in chromite, it is recommended that preliminary panning or hand-jigging tests, with careful analysis of results, should first be made to ascetain the suitability of the various ores for treatment on a large scale of concentration.

TYPICAL ANALYSES OF CHROME ORE IN BULK.

Of late there has grown up among metallurgists some demand for chromite having special qualities as to constituents. To those who have not results obtained in their own laboratories, Dr. Glenn (Mineral Industry of the United States, '95-6, p. 263) gives the following analyses as what may be expected in consignments of ore:—

^{*} Mineral Industry, 1893, ii, pp. 153-4-

[†] Mineral Industry, 1893, ii, p. 153.

	No. I.	No. 2.	No. 3.
Silica	Per cent.	Per cent.	Per cen
Chromic oxide	7.00	5.22	53.07
Ferrous oxide	27.12 16.11	13.06 16.32	15.27
Calcium oxide	3.41	2.61	I.20
Aluminum oxide	7.00	12.16	8.01
Total	99.79	100.40	100.07

PRODUCERS OF CHROME IN QUEBEC.

OPERATOR.	Location.	Output.
Anglo-Canadian Asbestos Co. Blondeau & Roberge Beaudoin Mine	Black Lake Tp. of Coleraine.	Being opened by L. Beaudoin. (Owns about 5,000 acres
Coleraine Mining Co	46	mineral lands, mainly leased to small operators on royalty. The various openings on the property have produced since 1894 about 7,000 tons, of which about 5,500 tons have been shipped.
Frechette Mine	Black Lake	Opened 1895, output to date 1,000 tons high grade. Operates the Victoria mine near Black Lake; worked by contract; Output in 1896 600 tons, and 534
Hall, P. P	"	tons in 1897; the shipments in 1897 were 1,066 tons of No. 1 and 32 tons No. 2 grade; also on lease from Ward & Ross, Coleraine B. 26,near Black Lake station, from which 200 tons were
Lake Caribou Chrome Co	Lake Caribon	produced in 1897.
Lemieux Mine		Output in 1894-5, about 800 tons. Owned by P. A. Vaillancourt, 70 tons shipped to date. Owned by Dr. Jas. Reed of
Lemelin Mine	Chrome Siding	Reedsdale, Que. The output and shipments to date are about 524 tons, of which 500 tons were about 50 per cent.
Leonard et al		Owned by H. & J. Leonard, D. Morin and A. Labrecque. Output 2,500 tons, of which 1,700 tons have been shipped.
Nadeau & Others		Operate Coleraine B. 6, 7 and Coleraine IV 9 and 10.
Reed, Dr. Jas	Reedsdale, Oue	Owns lot X 19½ n. w. comprising 250 acres which he has divided into 11 claims leased to operators on a royalty of \$5.00 per ton for 50 per cent. and \$3.00 on lower grade.

MANGANESE.

MANGANESE.

Manganese ores have been found in many parts of Canada, but the workable deposits so far as yet known, exist only in the Provinces of New Brunswick and Nova Scotia.

According to statistics published by the Geological Survey, the total output of this mineral in the Dominion from 1886 to 1896, was as follows.—

Year.	Tons.	Value.	Year.	Tons.	Value.
1886 1887 1888 1889 1890	1,789 1,245 1,801 1,455 1,328 255	\$41,499 43,658 47,944 32,737 32,550 6,694	1892 1893 1894 1895 1896 (Exports)	115 213 74 125 123½	\$10,250 14,578 4,180 8,464 3,975

NEW BRUNSWICK.

The ores of manganese worked in New Brunswick are chiefly pyrolusite and and manganite which occur in limestones near the base of the lower carboniferous formation. The ore is not found in veins, but in irregular beds and pockets, many of which are of considerable extent, as many as 4,000 tons have been extracted from one of these. Attention was first called to the value of these deposits in 1896, when Mr. Davidson, of St. John, commenced work in King's county, about 11 miles south of the town of Sussex. The ore up to a very recent date has been extracted entirely by open cuts and by drifting into the side of the hill. Analyses of the Markhamville high class ore gave for three samples tested the following results:—

		No. 2.	No. 3.
manganese peroxide		97.21	96 62
with very small percentages of iron, barium, baryta	and silv	er.	

At Jordan Mountain about five miles north of Sussex a very similar deposit has been worked to a similar extent by open cutting and several hundred tons of ore has been extracted.

At Quaco Head near St. Martin on the Bay of Fundy, a tunnel has been driven into the perpendicular face of a bluff of calcareous shale, charged with manganite in scattered masses and pockets and a mill is in operation from which the ore after treatment can be readily shipped by water.

Analyses of the ore gave for the pure compact ore 58.20 per cent. of metallic manganese and of the porous ore 57.15 per cent.

In the parish of Elgin, Albert county, a decomposed quantity of supposed pre-Cambrian age has been found to hold manganite and pyrolusite, though whence it has been de

county, lower ca lying ol In

now we wad, w area of five feet foreign and silic \$13 or 5 \$70 to \$ tion of a into sol to the for the p railway Intercol in conne now und Dawson to have

PRODU

1868.... 1869.... 1870.... 1871....

1873.... 1874.... 1875.... 1876....

1878.... 1879.... 1880.... been derived has not been determined. Work has been done on the property and and an analysis of a specimen of psilomelane gave of manganese dioxide 50.21 per cent.

Operations were carried on for some years at Shepody Mountain, in Albert county, on a deposit of pyrolusite and psilomelane occurring at the contact of the lower carboniferous strata which make up the mass of the mountain with the underlying older schists, but the works have been long abandoned.

In 1897 the Mineral Products Co., an American syndicate, acquired and are now working on an extensive scale at Hillsboro, Albert county, large deposits of wad, which it proposes to manufacture into ferro-manganese. The deposits cover an area of about seventeen acres with a thickness varying from a few inches to thirtyfive feet. The material is a fine, jet-black powder, quite free from pebbles or other foreign matter, and carrying about 45 per cent. of the manganese, with a little iron and silica, and only a trace of phosphorus. The average value of the ore is about \$13 or \$14 per ton (while that of Markhamville ranged, in its higher grades, from \$70 to \$80 per ton) but would not possess even this value except through the operation of a special process whereby the incoherent powder is cemented and compressed into solid briquettes, capable of ready transportation and of direct addition to the iron of the Bessemer furnace. A large plant has been erected for the production of these briquettes, which are loaded directly on a short branch railway connecting with the Harvey and Sailsbury Railway, by which and by the Intercolonial Railway, they are to be forwarded to Bridgeville, N.S., to be there used in connection with the plant of the Pictou Charcoal Iron Company, both plants being now under the control of the Mineral Products Company. The cost of the plant at Dawson settlement, including the branch railway of about one mile and a half, is said to have been about \$30,000.

PRODUCTION OF MANGANESE ORES IN NEW BRUNSWICK, 1868 TO 1895

AND VALUE OF SAME.

YEAR.	Product.	Value.	YEAR.	Product.	Value.
	Long Tons.			Long Tons.	
868	861	\$19,019	1882	771	\$14,227
869	332	6,174	1883	1,013	16,708
870	140	3,580	1884	469	9,035
871	954	8,180	1885	1,607	29,59
872	1,075	24,495	1886	1,377	27,484
873	1,031	20,192	1887	837	20,572
874	776	16,961	1888	1,094	16,073
875	194	5,314	1889	1,377	26,326
876	391	7,316	1890	1,729	34,248
877	785	12,210	1891	233	6,131
878	520	5,971	1892	-33	0,131
879	1.732	20,016	1893	IO	112
880	2,100	31,707	1894	0	0
1881	1,504	22,532	1895	45	2,400

NOVA SCOTIA.

Manganese was mined in Hants county as early as 1861, but the first systematic work was done at Tennycape in that county in 1862. The manganese ores, as in New Brunswick, are found mostly in the marine limestone formation of the lower carboniferous series. The nature of the ore-bearing limestone, however, differs considerably in different places, being sometimes in a highly brecciated condition as in Hants county and at other times highly crystalline as at Loch Lomond in Cape Breton. The production to date has been mainly from the Tennycape mine, where the ore occurs both in the breccia and in the large masses of solid rock, in the form of flat nodules, seams and pockets, the last being either isolated or connected by thin eads of ore. The seams vary in thickness, sometimes thinning to less than an inch and at other times widening out to six inches or more. The pockets are from one inch to several feet in diameter, Some of them have produced as much as three hundreds tons of ore, and occasionally more.

Dr. Penrose says "the most beautifully crystallized pyrolusite found in America is that from Tennyc spe mine, Nova Scotia."

The following analysis by Mr. II. S. Poole, shows the analyses of a sample from Tennycape:

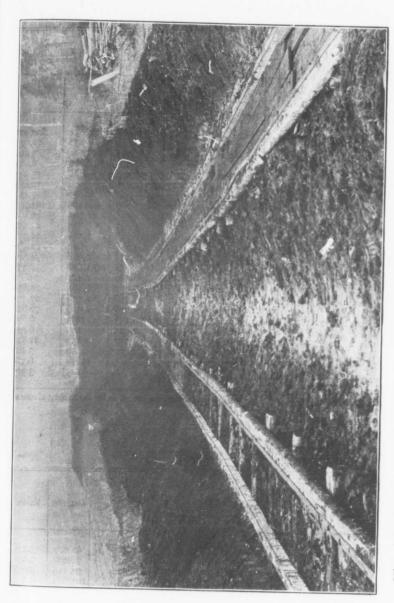
			84.620
		,	0.724
			T MaC
			3.630
			1.660
			92.965

The production of manganese in Nova Scotia since 1861, so far as figures have been ascertained, is given in the following table:

PRODUCTION OF MANGANESE IN NOVA SCOTIA FROM 1861 TO 1897.

YEAR.	Product.	Value.	YEAR.	Product.	Value.
	Tons.			Tons.	
1861 to 1871	1,500	\$10,500	1884	202	C-2 92
1872	40	1,400	1885	302	\$23,830
873	131		1886	354	
874	6	12	1887	465	13,84
875	7		1887	665	21,68
876	21		1888	106	6,46
877	97	723	1889	200	
878	127	5,335	1890	112	
879		6,505	1891	41	
880	145	7,170	1892	III	8,691
88.	283	14,831	1893	1231	12,400
881	231	18,022	1894	65	4,87
882	209	11,520	1895	83	5,293
883	150	12,462	*1896	129	.5,~93
			*1897	100	

^{*}Fiscal year ended 30th September.



Mineral Products Co., Hillsboro, N.B.—Cut into Deposit showing the Manganese Ore from Grass Roots down to the clay and a face 3o feet deep.

EXPORTS OF MANGANESE ORE.

CALENDAR YEAR.	Nova	SCOTIA.	NEW B	RUNSWICK.	Ton	ral.
I EAR.	Tons.	Value.	Tons.	Value.	Tons.	Value.
1873 1874	6	\$ 12	1,031	\$20,192	1,031	\$20,192
1875		200	194	5,314	203	16,973 5,514
1876	106	723 3,699	391 785	7,316	412	8,039
1878	106	4,889	520	5,971	891 626	15,909
1879	79	7,420 3,090	1,732 2,100	20,016	1,886	27,436
1881	200	18,022	1,504	31,707	2,179 1,704	34,797 40,554
1882	313	8,635	771	14,227	894	25,747
1884	134	1,054	1,013	16,708	1,326	25,343 20,089
1885	(a) 441	5,054	1,607	29,595	1,684	34,649
1887	578	854	837	27,484 20,562	(a) 1,818 1,415	58,338
1888	87	5,759	1,094	16,073	1,181	34,802 21,832
1890	59	3,024 2,583	I,377 I,729	26,326 34,248	1,436	29,350
1891	22	563	233	6,131	1,906 255	36,831 6,694
1892	84	6,180	59	2,025	143	8,205
[894	11	720	45	2,400	133	3,120
1895	108 123½	6,348 3,975	10	3	108_{10}^{3} 123_{2}^{1}	6,351 3,975

(a) 250 tons from Cornwallis should more correctly be classed under the heading of mineral pigments.

IMPORTS: OXIDE OF MANGANESE.

YEAR ENDED 30TH JUNE.	Pounds.	Value.	YEAR ENDED 30TH JUNE.	Pounds.	Value.
1884 1885 1886 1887 1888 1889	3,989 36,778 44,967 59,655 65,014 52,241 67,452	\$258 1,794 1,753 2,933 3,022 2,182 3,192	1891 1892 1893 1894 1895 1896	94,116 101,863 64,151 108,500	3,743 3,530 3,696 4,522 2,781 4,075 2,741



Mineral Products Co., Hillsboro, N.B.—Manganese Mill, looking from the north, showing branch of Salisbury and Harvey Railway.

COMMERCIAL VALUE.

Dr. R. A. F. Penrose states that the uses of the manganese ores of New Brunswick and Nova Scotia differ from the uses of the larger part of the manganese ores of the United States, in that the former are devoted mostly to chemical purposes, while the latter are largely consumed in the manufacture of spiegeleisen and ferromanganese.

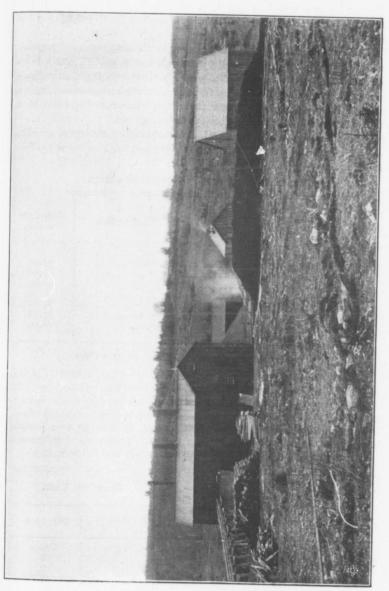
The manganese ore used for chemical purposes has a much greater value than that used for spiegeleisen and ferro-manganese. It sells for from 2 to 5 cents per pound, or from \$40 to \$100 per ton, according to the quality, while that used for the latter purposes rarely brings over \$15 per ton. The applicability of an ore for either use depends on its composition: its value for chemical purposes is based largely on its oxidizing power, that is, on the amount of oxygen, known as "available oxygen," that can be obtained from it in the ordinary processes of manufacture. The available oxygen depends upon the amount of manganese peroxide in it, and therefore the market price of an ore for chemical purposes is determined by the percentage of this constituent. Pyrolusite contains a larger percentage of peroxide than any of the other manganese ores, in fact being, when pure, composed entirely of it, and therefore the value of the Canadian ores is due mostly to the large proportion of this mineral found in them. Pyrolusite is never found in a perfectly pure state in nature, however, and the very best picked ore rarely contains more than from 70 to 95 per cent of peroxide, equal to about 13 to 17 per cent. of available oxygen.

Psilomelane also contains a considerable proportion of peroxide, but on account of its hardness and other peculiarities it is not so desirable as pyrolusite for most chemical purposes. Manganite, on the other hand, has only a small percentage of peroxide;* while wad, though it frequently contains a considerable amount, is too impure to be desirable for chemical purposes.

In the manufacture of spiegeleisen and ferro-manganese, the amount of available oxygen is not an item in the valuation of the ore. For these purposes, the three main requisites are a high percentage of manganese and a low percentage of silica and of phosphorus. Hence the manganese ores of the United States, which usually contain a smaller proportion of pyrolusite than the New Brunswick and Nova Scotia ores, but often fill all the requirements for spiegeleisen and ferro-manganese, are used for the manufacture of these materials. Small quantities, however, are sorted out and sold for chemical purposes.

At present most of the Canadian ore is used as a re-agent in glass-making, in electric batteries, in the manufacture of chlorine and disinfectants, as a dryer in varnishes, and for other chemical purposes. The use as a re-agent in the manufacture of chlorine is one of the largest chemical sources of consumption of manganese, but the best grades of Canadian ores are too high priced to be employed for this purpose,

^{*} Manganite is a hydrous sesquioxide of manganese, and accurately speaking contains no manganese peroxide; but what is meant here is simply the amount of available oxygen expressed in a commercial sense in terms of "pe.oxide." Manganite when perfectly pure contains about 9 per cent. of available oxygen, equal to about 49 per cent. of peroxide, but it is never found in large quantities in this degree of purity.



Mineral Products Co., Hillsboro, N.B.—Buildings and Ore Pits in the foreground.

their greatest value being in glass-making. For this purpose the freedom of the ore from iron is a necessary quality, and the purity of much of the Canadian manganese renders it especially well adapted for this use.

It is the adaptability of the Canadian ores for the above mentioned purposes, and consequently their high price, that permits them to be worked, as they do not occur in quantities sufficient to be profitably mined as a source of spiegeleisen and ferromanganese alone. The poorer grades of ores, however, which are mined in connection with the better ones, are shipped under the name of "furnace ore" and are sold at the regular price of ores for spiegeleisen and ferro-manganese.

The following table by Professor H. How + shows the percentage of peroxide, and hence the value for chemical purposes, of manganese ores from various localities in Nova Scotia:—

MANGANESE PEROXIDE IN NOVA SCOTIA ORES.

No.		Loc	ality	/·		Kind	Manganese Peroxide.					
3 4 5 6	Douglas, Cheverie,	Hants C							•••	Manganite		97.04 95.00 92.69 88.01 84.62 47.73 56.00

PRICES OF MANGANESE AND MANGANIFEROUS ORES.

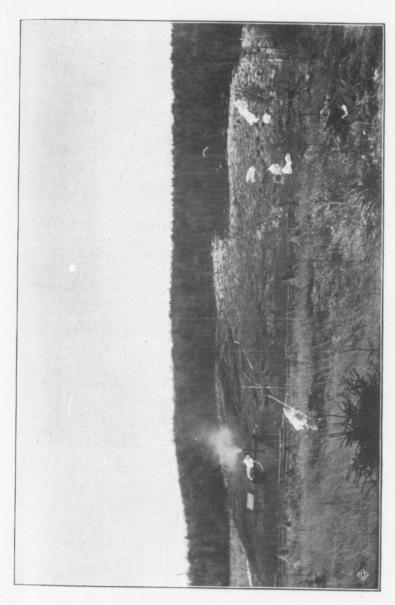
The following memorandum of the prices paid by the Carnegie Steel Co., Ltd., is given in the last report of the "Mineral Industries of the United States," page 191.

Prices are based on ores containing not more than 8 per cent. of silica and not more than 0.10 per cent. of phosphorus and are subject to deductions, as follows:—

For each 1 per cent. of silica in excess of 8 per cent., 15 cents per ton; for each 0.02 per cent. of phosphorus in excess of 0.1 per cent., 1 cent per unit of manganese.

Prices paid for manganese ores delivered at Bessemer, near Pittsburg, Pa .:-

	Manganese.	PRICE PER UNIT.				
	and the second s	Iron.	Manganese			
 "	49 per cent	Cents.	Cents. 28 27 26			
 4.6	40 to 43 per cent	6	25			



Mineral Products Co., Hillsboro, N.B.-Manganese Deposit 30 ft. deep over an area of 17 acres.

Settlements are based on analyses of samples dried at 212 F., the percentage of moisture in samples when taken being deducted from the weight.

These prices are subject to change without notice, unless otherwise specially agreed upon.

The above prices ruled in 1894 as well as in 1896.

The unit of manganeae or iron is I per cent. of either of these metals in the metallic state contained in the ore at 212 F. For instance, if an ore contain 49 per cent. manganese and 5 per cent. of iron, there would be 49 units of manganese and 5 units of iron. The price of such an ore, according to the above table, would be 6 cents a unit for the iron and 28 cents a unit of manganese, provided the silica and phosphorus were within the limits named. This would make the iron in the ore worth 30 cents and the manganese \$13.72; the total value of the ore being therefore \$14.02 delivered at Bessemer, which is practically a Pittsburg delivery.

THE MINERAL PRODUCTS CO.

Organized under the laws of the State of New York, 1897.

Directors:

Hon. F. C. Sayles, Pawntucket, R.I.

F. C. Sayles, Jr., Providence. | Dr. E. F. Ward, New York. Russell P. Hoyt, General Manager.

N. M. Langdon, Superintendent.

Canadian Office: Hillsboro, N.B.

Owns and operates an area of manganese deposits near Hillsboro, New Brunswick. It is the intention to manufacture, in 1898, ferro-manganese, and a lease has been entered upon for the use of the charcoal furnace plant of the Pictou Charcoal Iron Co. at Bridgeville, Nova Scotia.

TENNYCAPE MANGANESE CO., Ltd.

Incorporated 1894. Authorized Capital, \$300,000.

Directors:

D. C. Fraser, M.P. | W. A. French. | Geo. E. Boak. J. T. Burgess. | W. F. Jennison.

Head Office: Windsor, Nova Scotia.

Formed to acquire and work all the properties formerly owned by the Tennycape Manganese Co. and the Provincial Manganese Co. at Tennycape, Hants County, Province of Nova Scotia.

COPPER, NICKEL AND PYRITES.

COPPER, NICKEL AND PYRITES.

The following returns approximately represent the quantity and value of these minerals produced in Canada during 1897:—

	ONTA	RIO.*	BRITISH C	OLUMBIA†	QUE	BEC.‡	TOTAL
	Quantity	Value.	Quantity.	Value.	Quantity	VALUE	
Copper Pyrites, Nickel	Tons. 2,750 Nil 1,999	\$ 200,067 Nil 359,651	lbs. 5,325,180 Nil Nil	\$ 266,258 Nil Nil	Tons. 20 39,928 Nil	\$ 2,000 159,712 Nil	\$ 468,325 159,712 359,651
	4,749	559,718	5,325,180	266,258	39,948	161,712	987,688

^{*}Figures given by the Ontario Bureau of Mines.

OUTPUT OF NICKELIFEROUS PYRRHOTITE IN ONTARIO.

We are indebted to the Ontario Bureau of Mines for the following comparative statement showing the production of nickeliferous pyrrhotite in the Province of Ontario from 1892:—

	1892.	1893.	1894.	1895.	1896.	1897.
Ore raised tons Ore smelted	72,349 61,924 6,278 1,880 2,082 1,936 8½ 590,902 232,135 3,713 339,821 690	64,043 63,944 7,176 452 1,653 1,431 19 454,702 115,200 9,400 252,516 495	112,037 87,916 10,410 1,470 2,570½ 2,748 3¼ 612,724 195,750 1,500 311,719 655	75,439 86,546 12,525 103½ 2,315½ 2,365½ 404,861 160,913 209,960 444	109,097 73,505 9,733 1,948½ 1,868 357,000 130,660 247,151 485	93,153 96,094 13,706 328 1,999 2,750 359,651 200,067

EXPORTS OF NICKEL FROM ONTARIO.

The following figures, from Trade and Navigation Returns, show the exports of Nickel from Ontario, during the fiscal years from 1891:—

Year 30tl

1891... 1892... 1893.

1894 . .

Cal

Th

1886.. 1887.. 1888.. 1889..

1891. .

We being fo

Copper

66 66

66

[†]Mines Report, B.C., 1897.

[‡]Figures furnished to MANUAL.

Year Ended 30th June.	Pounds.	Value.	Year Ended 30th June.	Pounds.	Value.
1891	15,233,028	\$240,499 617,639 427,557 808,799	1895	6,996,540	\$599,568 486,651 498,515

PRODUCTION OF COPPER PYRITES IN QUEBEC.

The following figures are reported by the Geological Survey of Canada :—

Calendar Year.	Tons 2,000 lbs.	Value.	Calendar Year.	Tons 2,000 lbs.	Value.
886 887 888 889	42,906 38,043 63,479 72,225 49,227	\$193,077 171,194 285,656 307,292 123,067	1892 1893 1894 1895	59,770 58,542 40,527 34,198 33,715	\$179,310 175,626 121,581 102,594

IMPORTS OF COPPER AND ITS MANUFACTURES, 1896-7.

We are indebted to the Trade and Navigation returns for the following figures, being for the fiscal year ended 30th June :—

	18	396.	1897.		
	Quantity.	Value.	Quantity.	Value.	
Copper, Pig	205 346,942	\$ 5,784 3,406 24,282 168,421 13,662 286 118 2,132 36 46,902 4,540 24,995 57,380 \$\$351,944\$	69 421 2,309 17,251 59,345 228,415 1,136,727	\$ 884 4,565 30,030 160,321 14,027 2 53 3,023 29,330 1,326 26,528 40,469 \$\$310,558\$	

COPPER PRODUCTION, 1886-1896.

Fiscal

*In

Th

1868. 1869. 1870. 1871. 1872. 1873. 1874. 1875. 1876. 1877. 1878.

1880. 1881. 1882.

The Cobalt, States, Pra produce region a manufac

The following comparative statement is reported by the Geological Survey of

| Year. | Lbs. | Incre
or
Decre | | Value. | Incr.
O
Decr. | Average
Price
per | |
|-------|---|--|---|---|--|--|--|
| | | Lbs. | % | | \$ | % | Pound. |
| 1895 | 3,505,000
3.260,424
5,562,864
6,809,752
6,013,671
8,928,921
7,087,275
8,109,856
7,737,016
8,789,162
9,393,012 | 244,576
2,302,440
1,246,888
796,081
2,915,250
1,841,646
1,022,384
372,840
1,052,146
603,850 | 6.99
70.60
22.40
11.69
48.40
20.62
14.40
4.81
13.59
6.87 | \$385,550
366,798
927,107
936,341
947,153
1,149,598
818,580
871,809
739,659
945,714
1,021,960 | 18,752
560,309
9,234
10,812
202,445
331,018
53,229
132,150
206,055
76,246 | 4.86
152.70
0.99
1.15
21.37
28.79
6.50
15.15
27.85
8.06 | 11.00
11.25
16.65
13.75
15.75
12.87
11.55
10.75
9.56
10.76
10.88 |

Note. - In the above table increases are shown in heavy type and decreases in ordinary type.

The production is altogether represented by the copper contained in ore, matte, &e., produced and shipped, valued at the average market price for the year for fine copper in New York.

COPPER PRODUCTION OF BRITISH COLUMBIA.

The Report of the Minister of Mines gives the following figures of the production of copper in that Province:—

| | Year. | | | | | | | | | Quantity. | Value. | | | | | | | | | | | |
|------|-------|--|---|--|--|--|---|--|--|-----------|--------|---|-----|---|-------|--|--|--|--|--|-----------------|--------------------|
| 1894 | | | | | | | | | | | | | | | | | | | | | Lbs.
324,680 | 4.6 |
| 093 | | | | | | | | | | | | | | | | | | | | | 952,840 | \$16,234
47,642 |
| 1090 | | | | | | | | | | | | | 4 1 | | | | | | | | 3,818,556 | |
| 1897 | | | ٠ | | | | ٠ | | | ž |
٠ | ٠ | ÷ | × |
٠ | | | | | | 5,325,180 | 190,926
266,258 |

COPPER EXPORTS BY PROVINCES.

| Fiscal Year ended | 186 | 97- | 18 | 96. | 1895. | | |
|---------------------------------------|--------------------------------|----------------------------|---------------------------------|-----------------------------|-----------------------------------|-----------------------------|--|
| 30th June. | Pounds. | Value. | Pounds. | Value. | Pounds. | Value. | |
| Ontario
Quebec
British Columbia | 13,970
359,096
6,093,461 | 9,142
11,947
519,350 | 330,184
368,404
2,876,894 | 23,242
14,737
156,792 | 1,281,333
417,674
1,744,451 | 122,377
16,510
83,770 | |
| Total | 6,466,527 | 540,439 | 3,575,482 | 194,771 | 3,443,458 | 222,657 | |

IMPORTS.—BRIMSTONE OR CRUDE SULPHUR.

| Fiscal Year. | Pounds. | Value. | Fiscal Year. | Pounds. | Value. |
|--------------|------------------------|----------------------------|--------------|-------------------------------------|----------------------------|
| 1880 | 1,775,489 | \$27,401 | 1889 | 2,427,510 | \$34,006 |
| 1882 | 2,375,821
2,336,085 | 33,956
40,329
36,737 | 1890
1891 | 4,440,799
3,601,748
4,769,759 | 44,276
46,351
67.095 |
| 1884 | 2,195.735
2,248,986 | 37,463
35,043 | 1893 | 6,381,203
5,845,463 | 77,216 |
| 1886 | 2,922,043
3,103,644 | 43,651
38,750 | 1895 | 4,900,225
6.934,190 | 56,965
63,973 |
| 1888 | 2,048,812 | 25,318 | 1897 | 8,672,751 | 87,71 |

^{*}Included in copper, fine.

COPPER EXPORTS, 1868-1897.

The following table gives the exports of copper since Confederation:-

| ended
June. | Copp | per, fine. | Copp | er Ore. | ended
June. | Copp | er, fine. | Coppe | r Ore. |
|-------------------|----------------|------------|----------------|---------|-------------------|-------|-----------|-----------------|---------|
| Year el
30th J | Quan-
tity. | Value. | Quan-
tity. | Value. | Year er
30th J | Quan- | Value. | Quan-
tity. | Value. |
| | Tons. | \$ | Tons. | \$ | | Tons. | \$ | Tons. | \$ |
| 1868. | | 17,922 | 5,440 | 376,298 | 1883 | | | 4,402 | 150,479 |
| 1869. | 0/0 | | 9,513 | 482,520 | 1884 | | | 1,677 | 214,044 |
| 1870. | 225 | 21,062 | 5,227 | 250,159 | 1885 | | | 1,257 | 246,230 |
| 1871. | | | 3,123 | 120,121 | 1886 | | | 5,224 | 291,397 |
| 1872. | | | 4,461 | 103,990 | 1887 | | | 5,267 | 181,545 |
| 1873. | | | 2,588 | 166,525 | 1888 | 509 | 50,900 | 1,509 | 95,585 |
| 1874. | | | 3,148 | 135,077 | 1889 | 76 | 7,602 | 1,267 1/2 | 195,182 |
| 1875. | | 02.0 | 2,300 | 103,697 | 1890 | | 133,251 | 1,406 | 111,086 |
| 1876. | | | 2,230 | 352,035 | 1891 | | 236,027 | 3.079 | 269,160 |
| 1877. | | | 1,313 | 264,442 | 1892 | | 185,848 | 340 | 30,755 |
| 1878. | | | 654 | 119,629 | 1893 | | 391,969 | _* 70 | 3.850 |
| 1879. | | | 98 | 19,762 | 1894 | | 88,352 | | * |
| 1880. | | | 5,883 | 150,799 | 1895 | | 222,657 | * | * |
| 1881. | | | 19,802 | 150,412 | 1896 | 1,788 | 194,771 | * | * |
| 1882. | | | 44,744 | 139,245 | 1897 | 3,233 | 540,439 | * | * |

THE CANADIAN NICKEL INDUSTRY.

The following is excerpted from an excellent monograph on "Nickel and Cobalt," contributed to the last volume of "The Mineral Industry of the United States," by Joseph Wharton, the well known nickel refiner of Camden, N.J.:

Practically all the nickel now made in the United States is derived from matte produced in Canada by roasting and smelting the nickeliferous pyrrhotite of the region about Sudbury, in the Province of Ontario. The chief part of this matte is manufactured into nickel oxide and metallic nickel by the Orford Copper Company,

at Constable Hook, New Jersey. Smaller quantities of both, together with nickel-ammonia sulphate for nickel plating, are made from Canadian matte at the American Nickel Works, Camden, New Jersey. The nickel mining of this Sudbury region, though still a new industry, is so firmly established that this region, in effect, divides the world's nickel production with the island of New Caledonia; for all other sources combined are insignificant in comparison with either of these.

Disregarding the numerous mere explorations in the Sudbury nickel region of approximately 100 square miles, and also those mines which have been more seriously attacked but have not been systematically prosecuted, let us review, briefly, those only which have been supplemented by smelting furnaces, and which have therefore produced and shipped nickel matte. First of these operations, both in order of time and of magnitude, come those of the Canadian Copper Company, which is working three important mines called Copper Cliff, Stobie and Evans, and which owns sundry other mining properties that only await the call for larger output. Among those now dormant properties may be named the Vermillion mine, where the new mineral "sperrylite" was discovered, and where specimens of nickel pyrrhotite have been found containing the extraordinary quantity of 40 per cent. nickel. A notable quantity of palladium is said to have been recently detected here in connection with sperrylite, which mineral may possibly be accompanied by arsenide of palladium corresponding to the arsenide of platinum.

The Copper Cliff mine, now working at a depth of nearly 1,000 feet, excels all others in Canada for the quantity and uniform excellence of its ore, which now carries approximately 5 per cent. nickel and 7 per cent. copper. After appearing to pinch as if approaching exhaustion, this great vein has opened at the increased depth of recent working, now about 800 feet vertical, to larger dimensions and greater richness than before, while back of the hill at whose foot the shaft goes down, and in the same vicinity, the company owns other promising veins that assure an indefinite continuance of the life of this mine.

The Stobie mine, though carrying ore much lower in nickel than that of the Copper Cliff (about 1½ to 2 per cent.), is valuable on account of the great magnitude of the deposit and for its copper, which about equals the nickel; also on account of its gangue serving well as flux in the smelting furnaces, where it is mixed with the nickel ore of the Copper Cliff. The Stobie mine, which was first operated by stoping the whole width of the vein, about 50 feet, straight into the face of the hill, is now worked in the usual way by sinking, and looks remarkably well.

The Evans mine differs from the two last named, in carrying a smaller proportion of copper. The nickel is about 2½ per cent. in a very large mass of remarkably clean pyrrhotite; that is, clean ore nearly free from gangue. But this large mass had been at last accounts pretty well worked out, so that until other masses are developed this mine can not produce ore so largely as hitherto.

The other, undeveloped, properties of the Canadian Copper Company it is unnecessary now to mention in detail.

The ores mined by the Canadian Copper Company are dressed, to the degree that is found by experience with the various ores or mixtures of ores to be best

adapted no slag

capable the ore of the f least 3, cent. of greatly adian C Compa mer could twice a expedie and the for the

United and ver tured f Bayonn Europe

operation afterwar about 2 cent. In mine. exhaust holder leveins,

cut whe several compan

resource

consider be a cop about 1

Ad ing wor Manhes adapted for advantageous smelting, since absolutely clean ore would of course yield no slag-making material to carry off the iron oxide formed in roasting.

The Canadian Copper Company has three large water-jacket smelting furnaces capable collectively of smelting over 300 short tons of roasted ore daily. If we allow the ore to average 2 per cent. nickel, which is doubtless below the truth, and each of the furnaces to run 300 days in the year, we find an annual smelting capacity of at least 3,600,000 pounds of nickel in the form of matte, carrying approximately 20 per cent. of nickel and nearly as much copper, a very large product, which yet can be greatly increased if the demand should arise. Though the staple product of the Canadian Copper Company is this matte of 20 per cent. nickel and as much copper, that Company's handsome smelting establishment near Sudbury is provided with Bessemer concentrators fitted to convert this staple matte into a richer grade, carrying twice as much nickel and copper, but after sufficient experience it has not been found expedient to continue this practice. Some loss of the valuable metals is inevitable, and the price obtainable for the richer matte has not compensated for that loss and for the expense of fuel, labor, etc., incurred in the concentration.

Nearly all the nickel consumed in making nickel-steel armor plates for the United States navy has been derived from the Canadian Copper Company's mines, and very large quantities in the forms of nickel oxide and metallic nickel manufactured from its matte by the Orford Copper Company, at Constable Hook, near Bayonne, New Jersey, have been since 1890 exported by the latter company to Europe.

The Dominion Mineral Company, with headquarters at Montreal, Canada, operating at first a mine in Blezard Township, three miles north from Sudbury, and afterwards a mine adjoining Worthington Station, on the Canadian Pacific Railroad, about 20 miles west from Sudbury, has produced several thousand tons of 20 per cent. matte at its smelting works, with one water-jacket furnace near the Blezard mine. Its mines and works have been idle about three years, the Blezard mine being exhausted unless ore could be found again at greater depth, and the principal share-holder having died. Its Worthington mine, though carrying rather thin and irregular veins, yields ore of superior richness, and is supposed to possess considerable resources of such ore.

The Murray mine, the pioneer of the Sudbury region, was discovered by a rock cut when the Canadian Pacific railroad was being constructed. It is owned and for several years was operated by the Vivian Company, of Swansea, Wales, to which company the matte produced from its ore was shipped for refining.

This ore is not of the highest grade, and is so scattered in the rock as to be rather costly to produce in quality suitable for smelting, yet is supposed to exist in considerable quantity. When discovered, as has been stated, this was supposed to be a copper mine, and the ore carries, in fact, nearly as much copper as nickel—say about 1½ per cent. of each metal.

Adjacent to this mine, and belonging to the same company, is an efficient smelting works with one water-jacket furnace (no longer in very good condition), and Manhes converters for concentrating the matte. It is understood that the matte pro-

duced here has cost more than it was worth in the prevailing low prices for nickel. The whole establishment has been standing idle for several years, with the mine full of water, and several thousand tons of ore on the surface dressed for smelting—part of it roasted.

The Violet mine, belonging to the same company, at a distance of 3 miles shows richer ore, but has been too little developed to justify any explicit statement of its value.

The Drury Mining Co., operating a mine and one water-jacket furnace of rather inferior capacity, about 20 miles westward from Sudbury and about 4 miles northward from Worthington, produced nearly 1,500 tons of good matte, carrying about 20 per cent. nickel with two per cent. copper, but at a cost so high. compared with its selling value, that the company became bankrupt in 1894, and its property in 1896 passed into the hands of a new company, the Trill Mining and Manufacturing Company, which in that year commenced operations under a contract to supply a large quantity of concentrated, or Manhes matte. To lessen the disadvantage of 4 miles distance from the railroad an overhead tram road has lately been constructed.

The openings upon which costly exploring work has been done, besides those above named, are not numerous and need not here be specified, since neither of them is now in work, but very many explorations and prospectings have been made. It is quite beyond doubt that the nickel resources of the Sudbury region are capable of supplying not only all the wants of this country but also a large part of those of Europe for many years to come; indeed, even now the chief obstacle in the way of their further development is the difficulty of finding sale for any increased production.

Another hindrance is the excessively high freight charged by the Canadian Pacific Railroad, which is at present the sole means of transportation, but it is probable that those high charges will cause the construction of a short railroad line to Georgian Bay on Lake Huron to connect with a long and cheap water-carriage to Chicago, Buffalo, and other lake ports.

It is conceivable that the intimations of an export duty upon nickel ore and matte which from time to time appear in the Canadian journals may some day be realized, and cause serious search to be made in this country for the deposits of nickel ore which doubtless exist and of which the now dormant gap mine is an instance. Such an export duty would, no doubt, direct attention afresh to the great deposits of nickel-iferous pyrrhotite in Norway and Sweden which have been for several years neglected. Barring such a contingency the Sudbury region seems destined to remain for a long time one of the two chief sources of nickel for the world, the only rival to meet it upon equal terms being the island of New Caledonia with its unlimited resources of nickel silicate, only a part of which are controlled by the French Company "Le Nickel."

PRICES FOR NICKEL.

We are indebted to Mr. Robert M. Thompson, President of the Orford Copper Co., for the following comparative statement of prices from 1889 to date:

1889 1890 1891

1892

1893. 1894. 1895. 1896.

1898

chased

Regist

Ov "Prim Division Anacon

Sir

mainly

to only claim.
mous.
ore body
and risin
25 degree
surface r

they ran work wa

surface p

| | UNITED STATES.
Cents per Pound. | EUROPE.
Francs per Kilo |
|-----|------------------------------------|----------------------------|
| 00_ | | |
| 889 | 62 | 5 50 |
| 890 | 65 | 5.75 |
| 891 | 60 | 0 , 0 |
| 892 | | 5.50 |
| 893 | 55 | 5.50 |
| 804 | 47 1/2 | 4.75 |
| 894 | 42 | 4.50 |
| 895 | 36 | 3.25 |
| 890 | 33 | 2 |
| 897 | 33 | 3 |
| 898 | | 3 |
| | 33 | 3 |

These are prices for wholesale lots, and when very small lots have been purchased, for instance, 50 or 100 lbs., somewhat higher prices have been asked.

BRITISH COLUMBIA COPPER CO. Limited.

Registered 26th April, 1898. Authorized Capital, \$1,000,000, in shares of \$5.00.

Head Office:

Wm. L. Garey, Secretary, 31 Nassau St., New York.

Mines Office:

Frederic Keffer, Mine Manager, Anaconda, B.C.

Owns and operates the "Mother Lode," "Offspring," and (under bond) the "Primrose," mineral claims, situated at Deadwood Camp, Kettle River Mining Division, of the Province of British Columbia, about 3½ miles N.W. of the town of Anacouda. The following particulars have been furnished by the mine manager:—

Since taking hold of the property the owners have spent to date about \$12,000, mainly in the development work, the outlay on buildings, etc., having been restricted to only what was necessary for the comfortable housing of the men employed on the claim. The surface showing of the Mother Lode may be rightly described as enormous. It is, perhaps, the most striking in the district, the outcroppings of the large ore body standing out prominently for 1,050 feet along the hill in which it occurs, and rising to a height of nearly 300 feet. The lode has a strike approximately north, 25 degrees east, and it lies between lime and porphyry formations. Its width on the surface naturally is not so well defined as it is in the tunnel below, but it appears to cover a distance of nearly 200 feet. The work done by the locators was chiefly surface prospecting, of which they did a great deal. Low down the side of the hill they ran a tunnel through the lime formation, but at 12 feet they were in ore, so this work was not continued. On top of the hill a shaft was put down 20 feet in the lode

near the point of contact with the lime. Numerous cuts were also made and holes sunk, ore showing in nearly all of these. In September, 1896, or soon after Col. Weir obtained possession, work in a more systematic manner was begun, and it has been continued almost without interruption up to the present time. The shaft was sunk five feet deeper, and a fair quantity of ore was taken out of it, but as it entered the lime wall at 25 feet it was decided to stop sinking and to put in a crosscut tunnel, to test the value of the ore body at a greater depth.
The tunnel was commenced at a point 100 feet above the level of the base of the hill, near the west line of the claim, and about 600 feet from the lower end line. The hill rises directly above the tunnel 100 feet higher, and the highest point of the ore body farther back is 86 feet higher still, so that if a tunnel were run in at the lowest practical level along the ore body it would give a maximum depth of 286 feet. The dimensions of the tunnel are six feet six inches by five feet. The first 42 feet from the mouth of the tunnel was driven in white limestone. The footwall side of the ore body was then encountered, and from this time until the other side of the lode was reached, 245 feet from the tunnel mouth, the work was continually in ore-that is, the length of crosscut in the ore is 203 feet. Allowing for the somewhat diagonal course of the first part of the tunnel, the distance across the lode, measured a right angles, is 185 feet. The porphyry encountered at 245 feet is separated from the lode by gouge matter, which is perfectly free, not being "frozen" to the hanging wall as is frequently the case.

The ore found immediately next to the limestone footwall was of equal quality, but beyond this up to 146 feet from the mouth of the tunnel the grade was low. At 146 feet ore having much higher values was found, and this ore continued for a distance of about 80 feet, or to within 20 feet of the hanging wall. From here to the hanging wall the ore was very poor. The gangue of the lode matter met with in the tunnel in to about 146 feet is mostly silicates of iron, lime, alumina and magnesium, with more or less crystallised carbonate of lime. Thence to 185 feet it is chiefly oxide of iron, with some silicates. For the remaining distance it resumes its former character. In the main the ore is of such a nature as to be self-fluxing, or would require the addition of but little flux for smelting.

Although not much of the ore found in this tunnel would pay to smelt directly without preliminary treatment, still the improvement over the surface showings was so marked that it was decided to sink a winze 100 feet and then crosscut again. This work was soon begun, but water came in so freely as to make sinking a slow and very expensive task. However, the 100 foot level was reached, and crosscutting was then begun. The first crosscut was run toward the footwall, and it was continued 12 feet, or until a stratum of poor ore was encountered. (It should be mentioned that the winze was begun 152 feet in from the mouth of the tunnel, or six feet inside the line of good ore mentioned above as occurring in the tunnel at 146 feet). The mean assay values of the first six feet of the ore in the crosscut, taking all rock, good and bad, gave \$18.50 per ton. Of the first nine feet it was \$15.50 per ton, and of the whole twelve feet it was \$12 per ton. Assorted ore—that is, ore with the waste taken out—assayed on an average \$30 per ton for the twelve feet. The best ore ran \$45 per ton, and the copper values in it were about twice the gold values.

crosso ore (avera The o place " hor right : and o taperi the or replac which proved taken with w in the and us sample mine a piece v

future, facilitie of explended enough surate waggon mile dis

represe

At Ingerso wood he light pl mining

Organize

C. W. B Geo. G.

crosscut was next run toward the hanging wall. For 38 feet the mean value of the ore (good and bad) obtained here was \$8.50 per ton. With waste taken out it averaged \$12 to \$13 per ton, while more carefully sorted ore ran nearly \$17 per ton. The ore was fairly uniform here, atthough there were five to six feet of it in one place which, roughly sorted, assayed \$16 to \$17 per ton. At the end of the 38 feet a "horse" of barren rock was found running diagonally through the ore body, at nearly right angles to the hanging wall. This "horse" was about four feet in thickness, and owing to its inclined position the crosscut was in it for some 12 or 15 feet, the ore tapering out above and in below the barren rock. Immediately beyond the "horse's the ore was not very good, although well mineralised, for the copper pyrites was replaced by iron pyrites with but little gold. From 60 feet to the hanging wall, which was found 11 feet further on, or 71 feet from the winze, the ore greatly improved. From 60 to 65 feet the mean value was \$10.50 per ton, and with waste taken out was \$18 per ton. From 65 to 71 feet the mean value was \$16 per ton, and with waste taken out was \$25 per ton. None of the assays given include the silver in the ore, as there was seldom more than two or three ounces of this metal present, and usually the amount was not over one ounce. The assays are all "wheel-barrow samples," that is from every barrow and from every bucket of ore taken out of the mine a few pieces were placed in a box, and from each piece in the box a smaller piece was broken for the sample. In this way it is believed that the samples truly represent the mine, and are not merely "show assays."

The company intends to commence to sink a 500-foot working shaft in the near future, and to otherwise get the mine into shape to produce as soon as transportation facilities shall have been provided. All the work done so far has been of the nature of exploratory work only, but the company believes that it has been proved that enough ore exists to warrant permanent work being undertaken on a scale commensurate with the great promise of the property. A site for the main working shaft has been selected and levels have been taken, and the line marked out for a tram or waggon road from this shaft site down to the company's mill site, situate about half a mile distant on Mother Lode Creek.

At date of report the company was installing the following plant:—One 10 drill Ingersoll-Sergeant air compressor, with drills, etc.; two 60 H.P. boilers; one Lidgerwood hoist; one mine pump; one water line pump and 300 feet pipe; one electric light plant, together with all necessary minor parts for completion of plant; also mining cars, buckets, tanks, etc. Cost set up ready for work, \$15,000.

CANADIAN COPPER COMPANY.

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, Geo. G. Allen, Akron, O.

A. H. Paget, New York, H. P. McIntosh, Cleveland.

CANADIAN OFFICE:

James McArthur, General Manager, Copper Cliff, Ont.

Mine Captain: Henry Davis.

Head Office:

Room 12 Wade Building, 108 Superior Street, Cleveland, O. H. P. McIntosh, Secretary-Treasurer.

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 ore are known to exist, five deposits being at the present time developed and worked as producing mines, and five having been explored by diamond drilling, will be worked as soon as the nickel market warrants such development. At present the five working mines supply enough ore to keep the smelters in constant operation.

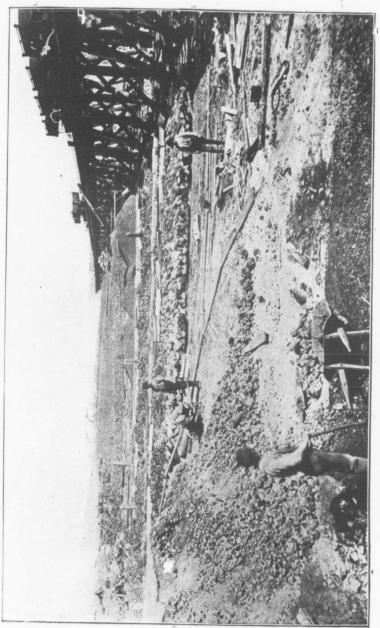
All the mines, smelters, general office, etc., are connected by telephone lines to facilitate the transaction of business.

The working mines are known as the Evans, Stobie, Copper Cliff, McArthur No. 1, and McArthur No. 2. The ore in each of these is practically the same mixture of minerals, though varying widely in their general appearance and richness.

The ores may be described as 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 per cent. copper. The pentlandite, which occurs in spots throughout the nickeliferous pyranotite, is a pure nickel mineral containing about 35 per cent. nickel, 35 per cent. sulphur and 30 per cent iron. The nickeliferous pyrrohitite, which is the usual nickel ore, may be said to contain 60 per cent. iron and 40 per cent. sulphur, with a portion of the iron varying from 2 per cent. to 10 per cent. replaced by nickel.

The Vermillion ore contains about 25 per cent. copper-nickel and some platinum and palladium, but unfortunately there is little or no market for palladium. The yellow surface sand, which is a product of the decomposition of the underlying ore, assays about 6 ounces platinum and 7 ounces palladium per ton.

The Evans mine is situated in the south-east corner of Snider. It is fully equipped with stockhouse, crusher, sorting tables, hoisting engines 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.



Canadian Copper Co.-Roasting Nickel Ore at Copper Cliff, Sudbury, Ont.

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 34 in. circular holes, and is from this delivered into its respective bins. The medium grade, or "raggings," falls through openings 13/4 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 towards 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," accordance to the predominance of one mineral over the other in the specimens.

The Evans mine ore, taking the mine as a whole, will average 2.88 per cent. copper and 3.06 per cent. 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 of globular concretions like waterworn 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 800 ft. deep. The ore, which, on the surface, was almost pure chalcopyrite has gradually given place to the nickeliferous pyrrhotite, of which the seventh level was 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 Copper Cliff ore may be recognized by its coarse grain and the flattened appearance of the pyrrhotite crystals. The average Copper Cliff ore contains 5.98 per cent. copper and 4.40 per cent. 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 $3\frac{1}{2}$ 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 1.84 per cent. copper and 2.13 per cent. nickel. The crushing



Canadian Copper Co.—Pile of Nickel Matte at Copper Cliff, Sudbury, Ont.

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 flat 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 ft. 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 8 or 10 ft. on an 18-inch bed of soft wood, each pile being of rectangular oblong shape, and containing from 600 to 2,500 tons of ore. The wood being fired each heap burns from four to six months, 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 Herreshoff pattern, of boiler iron, water-jacketed, about 9 ft. in height, of oval section, 6 ft. 6 in. by 3 ft. 3 in. at the tuyeres, and completely surrounded by a 3-in water jacket. Four furnaces are in continuous operation. Each furnace uses 100 tons of ore and produces 15 tons matte per day. This matte passes from the furnace into an iron-cased, brick-lined, water-jacketed 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 20 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 for greater convenience in breaking up.

The average grade of standard matte contains copper, 20 to 25 per cent.; nickel, 15 to 18 per cent.; iron, 25 to 35 per cent., and sulphur, 20 to 30 per cent.

CAPE BRETON COPPER CO., Limited.

Incorporated 15th January, 1896. Authorized Capital, \$2,000,000 in shares of \$10

Directors :

Captain Isaac P. Gragg, President.

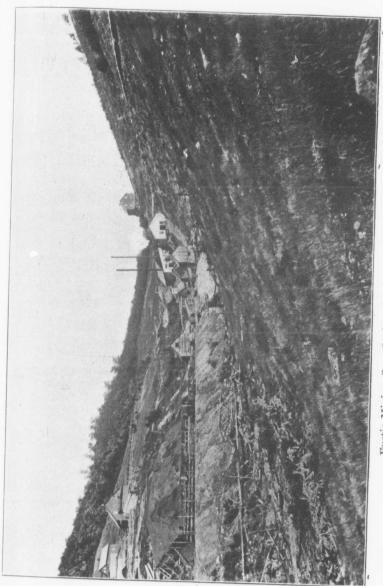
Col. Albert A. Pope. Henry W. Richards.

G. T. W. Braman. M. F. Dickinson, Jr.

Head Office: 53 State Street, Boston. Mines Office: Cowheath, C.B., N.S.

Formed to acquire and work the copper mining leases and other property in Cape Breton County, N.S., formerly owned by the Eastern Development Co., Limited. After purchase of the property \$1,348,000 worth of stock at par remain in the Treasury for working capital.

Plans and estimates for further development of the mines, erection of concentration, smelting and refining works, and building of seven miles of railroad have been completed by Dr. Edward D. Peters, Jr., Copper Metallurgist of Boston, Horace F. Brown, Mining Construction Engineer, of Chicago, and Charles M. Odell, C.E., of North Sydney, and the company expects to be able to commence operations durin



Eustis Mining Co.—Surface Works at Eustis Pyrites Mine.

the present year. Owing to the very favorable conditions in Cape Breton of cheap fuel and direct water communication to all parts of the world, the company expects to produce refined copper and market it at a very low cost per pound. Present developments at the mine include four shafts sunk 325 feet, 176 feet, 100 feet, and 40 feet respectively, which have developed two strong veins. 50,000 tons of copper ore have been placed in mining sight, which is estimated to average from five to six per cent. copper, with a little gold and silver. The property has been reported upon by George Grant Francis, M.E., Dr. Edward D. Peters, Jr., Metallurgist, and examined by Edwin Gilpin, Jr., Inspector of Mines of Nova Scotia, Mr. Elfric Drew Ingall, of the Dominion Geological Survey, and other well known mining men and experts.

DOMINION MINERAL CO., Limited.

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 directiors 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.

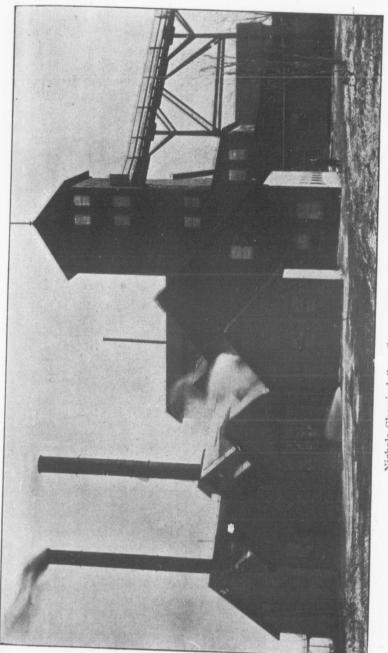
James Worthington, Toronto. Wm. C. McIntyre, Montreal.

D. L. Lockerby, Montreal. John Ferguson, North Bay.

Head Office: Sudbury, Ontario.

Henry Cutt, Secretary, 157 St. James Street, Montreal.

This Company owns 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 was begun in the fall of 1889. One hundred and fifty 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 Edision Electric Co. Herreshoff smelters (2), of a 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. These works, owing to the death of one of the principal shareholders, have been closed for four years.



Nichols Chemical Co -- Concentrating Mill, Capelton.

DRURY NICKEL MINING AND MANUFACTURING CO., Limited.

Incorporated 1896. Authorized Capital, \$1,000,000 in shares of \$10.

Directors:

Thos. Kiely. John Lawson. Wm. Fennel. Moffatt Lawson. R. P. Travers.

Thos. Travers. John Dewyer.

Mines Office: Worthington, Ontario.

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 inch 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 an air compressor, hoisting and other working plant.

EUSTIS MINING CO.

Directors:

W. E. C. Eustis, Boston, President.

John Blue, Capelton, Que.

Hugh Cochrane, Boston.

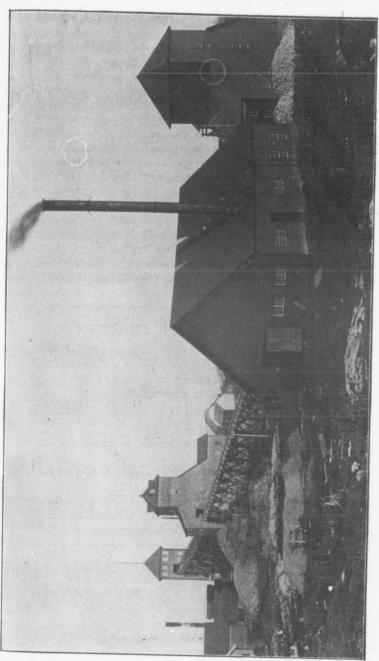
Head Office:

55 Kilby Street, Boston.

CANADIAN OFFICE:

John Blue, C. & M. E. Eustis, Que.

This company owns and operates the Eustis mine on Lot 9, in the II. range of Ascot, and situate at Capelton station on the Boston & Maine Ry., 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 3 to 4 per cent. copper, some of the ore being very rich, and in addition contains an appreciable amount of silver; the load varies in width from 4 to over 50 ft. From numerous assays of the ore the quantity of sulphur averages 45 to 50 per cent. No. 1 shaft, 2,400 ft. deep; No. 3, 2,350 ft., each from surface and measured on incline. The mine was originally opened on the top of the hill, at a height of 600 ft. over the



Nichols Chemical Co.-No. I, II and III Shafts, Albert Mines, Capelton, Que.

Massawippi river. Work was begun, starting from shaft No. 5 and at a level of 500ft. lower, a cross-cut or tunnel, 1,000 ft. long, was run in to strike the lode, the development of which has been continued by means of the two shafts already mentioned, and by leaving standing between them ore masses of 160 to 170 ft. These masses constitute an important reserve which can be drawn upon and removed at will. Mining work is being carried on by means of compressed air drills, and supports are provided for the mine by leaving pillars and putting up 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 600,000 tons, and for the last ten years the annual output has been from 25,000 to 30,000 tons, which is shipped to different points in the United States, for the manufacture of sulphuric acid for which it is admittedly well adapted. About 150 persons employed. The plant comprises: Six boilers with total of 450 h. p.; 2 air compressors (1 Ingersoll, 10 x 30, 12 drill, and 1 Rand compound, 14 x 22, 12 drill capacity); 12 3-inch steam drills, Deane steam pump, 8 in. cylinder, 3 in. suction, 2 in. discharge (about 4 hours' pumping done weekly in mine); 1 Worthiegton 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.

KAMLOOPS COPPER MINING CO.

Incorporated November, 1897.

Authorized Capital, \$60,000.

Directors:

G. A. Kirk, Victoria, B. C.
Benjamin Wehrfritz,
C. W. Tolston,

G. A. Kirk, Victoria, B. C.
Hon. D. W. Higgins,
John Park,

Head Office: A. T. Monteith, Sec.-Treas., Victoria, B. C.

Mines Office: John Park, Managing Director, Kamloops, B. C.

Owns and operates the Golden Star mineral claim, situated in the Kamloops Division of Yale District, British Columbia, on Coal Hill, a point about five miles south of the town of Kamloops. A small force is employed opening up the claim.

NICHOLS CHEMICAL CO. OF CANADA, Ltd.

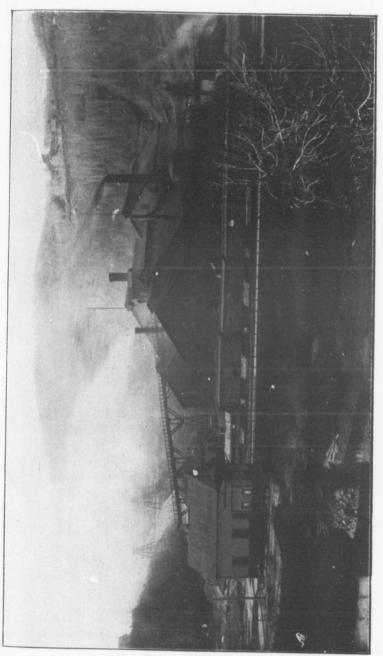
W. H. Nichols, President.

R. N. Hall, Vice President.

E. R. Nichols, Secretary-Treasurer.

CANADIAN OFFICE:

S. L. Spafford, Manager, Capelton, Que.



Nichols Chemical Co.—Chemical and Fertilizer Works at Capelton.

Head Office:

32 Liberty Street, New York.

W. H. Nichols, jr., Mining Engineer.
A. W. Elkins, Superintendent Chemical Works.

This company's property contains about 5,000 acres, and is situate in the Township of Ascot, Sherbrooke County, and the Township of Bolton, Brome County, Province of Quebec. It operates at Capelton station on the line of the Boston and Maine Railroad, the Albert pyrites mine and the Capelton 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.

TILT COVE COPPER CO., Limited.

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 £13,878 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 1890-91, £34,379 8s. 5d.; 1891-2, £34,909 12s. 8d.; 1892-3, £36,408 4s. 1d.; 1893-4, £37,276 3s. 9d. In June, 1890, the properties were leased for 99 years to the Cape Copper Co., Ltd., at a rental of \$4,400 per annum—sufficient to cover the debenture charges—the Cape Copper Co. has 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 Co. 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:

J. R. Francis. John Reeves.

J. C. Lever. John Taylor.

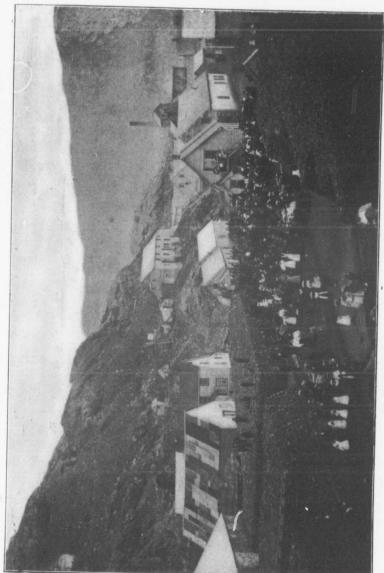
Col. J. W. Young.

Head Office: E. C. Leaver, Secretary, 9 Queen Street Place, London, E.C.

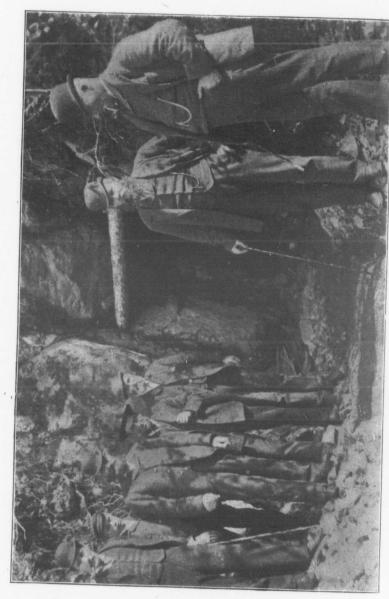
NEWFOUNDLAND OFFICE:

F. J. Williams, Tilt Cove, Newfoundland.

Owns and operates copper and other mineral properties at Tilt Cove, Twillinggate district, Newfoundland.



Tilt Cove Copper Co., Tilt Cove, Newfoundland.



Filt Cove Copper Co., Tilt Cove, Newfoundland.—Group of Company's Officers at Long Pond Trial Mine.

GOLD MINING INDUSTRIES.

GOLD MINING INDUSTRIES.

is

si

rc

0

ar

ex

in

pe

po

th

me

CO

un

is s

L'I

madin t

66 N

peo

app

the

this

sepa

thes

vein the

was

disc

tions

THE GOLD FIELDS OF CANADA.

It may be regarded as strange that a country, in which the discovery of alluvial gold antedates the similar discovery in Australia by fifteen years, and that in California by thirteen years, should be only now attracting the attention of the financial world to the wealth of its auriferous gravels and lode mines. Yet that is Canada's position to-day, although it is a country in which the political and economic conditions existent are most favorable for a development of a mining industry; a country where one operates under the security of the British flag, where there is a salubrious climate, where the necessory factors of wood, water, food and supplies are in abundance, where the titles are secure, and the administration of law and order are unquestionable, where labor and fuel are abundant and comparatively cheap, and where the home industries supply all the machinery, tools and equipment desired. This region so favored has been passed over by capital for nearly sixty years in favor of the greater wealth of the Western United States, the golden stores of Australia, and, more recently, the phenomenal deposits of the Transvaal. Possibly the exceedingly burdensome restrictions imposed on the mining industry by the Government of this last country has directed the attention of Englishmen (who practically are the capitalists of the world in mining matters) to a country over which their own flag floats and in which the only struggle will be with economic and not with political conditions.

In the statistical compilation published each year by the Geological Survey of Canada as a "Summary of the Mineral Production of Canada," it appears that the total value of all minerals produced in the Dominion in 1886 was in round numbers about \$10,000,000, but for the year 1897 this value had increased to \$29,000,000, of which coal and coke contributed about \$7,500,000, and gold something over \$6,000,000.

In 1886 the production of gold amounted \$1,365,496, being 13 per cent. of the full total; in 1897 the gold product constituted over 21 per cent. in value of all metallic and non-metallic minerals produced in Canada. Its ratio of increased production each year for the last three or four years has also been greater than that of any other mineral, and, in consequence of the attention which has been directed to Canada during that period, there has been a general inquiry by investors from abroad regarding the extent, situation and probable profits of the various gold fields of this Dominion. To answer this inquiry in a broad and general way, but yet with a statement of uncolored facts, is the object of this article, lack of space, however, precluding any attempt to go into details of different districts or of individual properties.

It may be said, broadly speaking, that a traveller landing in Halifax puts his foot on gold bearing rock when he steps on shore, and that, from the time he takes a transcontinental train in that city bound for the Pacific Coast, there is not a day of

his journey on the railway that he does not pass over some portion of territory which is, or has been, more or less auriferous. During his first day he will travel for a time within sight of some of the gold districts in Nova Scotia, in which the first successful vein mining for gold was done in Canada; before daylight of the next day he will pass near portions of the Province of Quebec in which alluvial mining has been carried on since the early sixties, and twenty-four hours later he touches the border of the region round Lake Wahnapitae, in which gold quartz veins have been found and are now working. In the evening of this third day he enters a district of that promising New Ontario, which is beginning to have a respectable production of the precious metal, and in which developments are so rapid as to justify a belief that only experienced exploitation is necessary in order to establish a permanent and profitable gold mining industry. The fourth day finds him at the western boundary of this New Ontario, and it is only the fifth day that will be passed in going through territory which has, perhaps, a doubt of possible auriferous deposits; but from the time he enters the portal of the mountain regions to the last moment of his journey's end he is passing through a succession of mineral bearing districts in which the mining of gold has been more or less prominent since 1860.

Along this stretch of 3,762 miles of railway journey are four provinces which contain the principal gold fields of the Dominion, excepting only that unknown and uncertain tract of the North-West known as the "Yukon Region."

These Provinces are Nova Scotia, Quebec, Ontario and British Columbia, and a brief account of the history, production, area and geology of each of the known fields is given below, beginning at the east and proceeding westerly.

NOVA SCOTIA.

History.— The first discovery of gold in this Province is imputed to Captain L'Estrange, R.A., during a fishing trip made in 1858, but the first discovery to be made public and to attract attention was undoubtedly that of a farmer, John Pulsiver, in the summer of 1860, in a portion of what is now Tangier district, known as "Mooseland." Mr. Pulsiver's discovery resulted in numerous explorations by other people in other sections that same summer and the following spring.

The industry of gold mining dates from the year 1862, when the Government appointed an officer known as the "Chief Gold Commissioner," and framed laws governing the acquisition and working of gold bearing lands, imposing a royalty upon the gold produced, and commenced the publication of a series of annual reports. In this year also arose the excitement consequent upon the finding of gold in many and separated portions of the Province and the inception of mining work in many of these districts. This excitement was fed for many years by the richness of quartz veins which were found cropping to the surface, and was increased to a "boom" by the schemes of both American and English speculators and promoters, which boom was due in no small respect to the very exaggerated ideas of the richness of the veins discovered. The excitement began to fade in 1868, when the lean and poorer portions of the lodes began to predominate over the rich pay-streaks, and when share-

holders began to realize that their extravagant expectations of dividends were unfounded.

days

depa

186

186

186

186

186

186

187

187

187

1870

187

1878

1870

1880

1882

188:

1884

1886

1887

1889

1890

1891

1892

1894

1895

1897

Total

Fields

of No

(:

When one considers that these early discoveries were all of narrow veins carrying very high value in pay chutes, that the development and working of these veins was intrusted to men more accustomed to fishing than to any other pursuit, that the milling was of a very imperfect kind entailing large losses, and that the character of the ore favored peculation by the workmen (a source of no considerable loss) such a reaction can be seen to have been inevitable. The unprofitable character of many of the early investments made was due not only to the narrowness of the veins and their uncertain continuity, but in a greater measure to the gross incapacity of the management supplied. From 1868 to 1882 there followed a period of depression, and amongst capitalists there arose a distrust of Nova Scotia gold properties and a feeling that the veins were too patchy or pockety in character to be reliable as an investment. During this period of depression the production fell off to about half of what it had formerly been, and the greater part of this diminished production came from discoveries of new districts, or from new and rich veins in some of the older districts; but the management did not improve and the same fate befell these later discoveries which had befallen the earlier ones, viz., that they were worked in a manner entirely devoid of system or economy, no ore bodies were opened up ahead, and no reserve fund was maintained in the treasury.

Some twenty years after discovery, in 1883 or 1884, a new era began, especially in regard to the character of the management employed. A number of men of experience and training in other mining countries were intrusted with the direction of mines which were chiefly properties that had been idle for ten years or more. The effect of the introduction of American methods, of modern machinery, better mills and business management was seen in the yield for the year 1885, since which time the value of the yearly production has been from \$400,000 to \$500,000. The result of this new management has been an increased attention paid to the mining of large bodies of low grade material which hitherto had been disregarded as profitless, and the noteable profits which have been made during the last few years from material yielding only from four to six dwts. to the ton have occasioned a partial disappearance of that distrust amongst capitalists which had previously marked this field. Nor is it unfair to say that the mine owners themselves must be largely held responsible for the delay in the development of this Province, for the reason that prices largely in excess of values were asked for properties upon which there were absolutely no reserves, little development and no plant of value. In almost every case since 1885, where ordinary business prudence has been exercised in the selection of a property and the price paid for the same, and in the choice of a managing man, success has resulted from the venture, and to-day many properties are equipped with plants that will stand comparison for effectiveness and economy with those of any other gold producing country.

Production.— From the year 1862 the Department of Mines has required sworn quarterly returns to be made by each person or company operating a gold mine, showing the number of tons of stuff milled, the yield of gold therefrom and the amount of

days' labor performed. From these sworn returns on fyle in the office of the department at Halifax, the following tables have been prepared:

TABLE No. 1.

Annual yield of Nova Scotia Gold Fields from 1861 to 1897.

| Year. | Tons
Milled. | Gold
Ozs. | | ned.
s. Grs. | Value at \$19.50 per Oz. | Average Yield
per Ton. |
|----------|-----------------|--------------|----|-----------------|--------------------------|---------------------------------------|
| 1861 (a |) | 6,000 | | 0 | C | 1 |
| 1862 | 6,473 | 7,275 | 0 | 0 | \$117,000 | · · · · · · · · · · · · · · · · · · · |
| 1863 | 17,002 | 14,001 | 14 | | 141,862 | \$21 91 |
| 1864 | 21,434 | 20,002 | 18 | 17 | 273,034 | 16 06 |
| 1865 | 24,423 | 25,454 | | 13 | 390,447 | 18 21 |
| 1866 | 32,162 | | 4 | | 496,357 | 20 32 |
| 1867 | 31,386 | 25,204 | 13 | 2 | 491,491 | 15 28 |
| 1868 | 32,262 | 27,314 | 11 | 11 | 532,634 | 16 96 |
| 1869 | | 20,541 | 6 | 01 | 400,555 | 12 41 |
| 1870 | 35,147 | 17,868 | 0 | 19 | 348,426 | 9 91 |
| 1871 | 30,829 | 19,866 | 5 | 5 | 387,392 | 12 56 |
| 1872 | 30,791 | 19,227 | 7 | 4 | 374,933 | 12 17 |
| 1873 | 17,093 | 13,094 | 17 | 6 | 255,350 | 14 94 |
| 1874 | 17,708 | 11,852 | 7 | 19 | 231,122 | 13 05 |
| | 13,844 | 9,140 | 13 | 9 | 178,243 | 12 87 |
| 1875 | 14,810 | 11,208 | 14 | 19 | 218,571 | 14 76 |
| 1876 | 15,490 | 12,038 | 13 | 18 | 234,754 | 15 15 |
| 1877 | 17,369 | 16,882 | 6 | 1 | 329,205 | 18 95 |
| 1878 | 17,990 | 12,577 | I | 22 | 245,253 | 13 63 |
| 1879 | 15,936 | 13,801 | 8 | 10 | 269,127 | 16 83 |
| 1880 | 14,037 | 13,234 | 0 | 4 | 258,063 | 18 37 |
| 1881 | 15,556 | 10,756 | 13 | 2 | 209,755 | 13 48 |
| 1882 | 22,081 | 14,107 | 3 | 20 | 275,090 | 12 45 |
| 1883 | 25,954 | 15,446 | 9 | 23 | 301,206 | 11 60 |
| 1884 | 25,147 | 16,059 | 18 | 17 | 313,169 | 12 45 |
| 1885 | 28,890 | 22,202 | 12 | 20 | 432,952 | 14 98 |
| 1886 | 29,010 | 23,362 | 5 | 13 | 455,564 | 15 70 |
| 1887 | 22,280 | 21,211 | 17 | 18 | 413,632 | 18 56 |
| 1888 | 36,178 | 22,407 | 3 | 10 | 436,940 | 12 08 |
| 1889 | 39,160 | 26,155 | 6 | 13 | 510,029 | 13 02 |
| 1890 | 42,749 | 24,358 | 9 | 9 | 474,990 | 11 11 |
| 1891 | 35,212 | 23,391 | 0 | Ó | 456,125 | 12 95 |
| 1892 | 33,633 | 21,080 | 3 | 18 | 411,063 | 12 22 |
| 1893 (b) | 28,040 | 14,030 | 5 | 7 | 273.590 | 9 75 |
| 1894 | 39,333 | 14,980 | 7 | 13 | 282,117 | |
| 1895 | 58,082 | 22,112 | 17 | 21 | 431,202 | |
| 1896 | 65,873 | 25,596 | 14 | 6 | 499,136 | 7 42 |
| 1897 | 76,559 | 26,579 | 19 | 21 | 518,311 | 7 57
6 78 |
| Totals | 1,029,923 | 660,446 | 8 | 14 | \$12,878,710 | \$12 50 |

⁽a) Estimated, authority of A. Heatherington, in "Practical Guide to the Gold Fields of Nova Scotia."

Area.—The area of the lower Cambrian rocks which constitute the gold measures of Nova Scotia, has been estimated by various authorities to embrace from five

⁽b) For 9 mos. only, the Govt. fiscal year being changed in 1893.

thousand to seven thousand square miles. These rocks extend along the Atlantic coast-line, in a general northeast and southwest direction for about 250 miles, with a width ranging from 10 to 30 miles. But a large portion of this area is occupied by granitic and gneissic rocks, occurring in patches and in continuous masses, which, when fully mapped out, will probably reduce the area of the gold measures to between 3,000 and 3,500 square miles.

The combined area, however, of the different districts which are producers is only about fifty square miles.

A study of the excellent maps which have been made of this gold field by Mr. E. R. Faribault, of the Geological Survey of Canada, leads one to the conclusion that there are many eroded anticlinals, not yet explored, which may ultimately become gold districts, since a very considerable portion of Nova Scotia is yet a comparative wilderness, known only to the hunter and the lumberman.

Geology.—The gold of Nova Scotia occurs both in quartz veins and in broad bands or belts of bluish fissile slates in which are interlaminated, or interstratified, veins and veinlets of quartz, with threads and stringers of the same materials ramifying in all directions throughout the mass, the gold being found in the laminæ of the slate as well as in the quartz itself. The quartz of the veins is both vitreous and opaque, ranging in color from bluish-black to milk-white, and carrying as associated minerals arsenopyrite and pyrite chiefly, with smaller quantities of chalcopyrite, blende and galena, and occasional specks of calcite, rhodocroisite and bismuthite. The continuous (or "main" lodes so called) vary greatly in width, running from an inch to twenty feet, but averaging usually from six to twelve inches. The auriferous slate belts range from three feet to over sixty feet in width, but are low grade in character, those worked having yielded from \$2 to \$10 per ton of rock milled; the quartz veins are higher in grade, those worked yielding from \$10 to \$1600 per ton.

Owing to the intense metamorphism to which these veins have been subjected, no fossil remains have yet been found in them, and their age is therefore to be determined by their strtagraphical relations and not from the fossils contained. They consist of quartzites and argillites having a thickness of from ten to twelve thousand feet, and are referred by the Geological Survey of Canada to the Lower Cambrian or Pre-Cambrian age, on account of their similarity lithologically to the measures of Quebec of this age. These rocks are usually divided into two groups, an upper and a lower series, but Mr. H. S. Poole, and some others, have been disposed to subdivide the lower group into two. The upper series is composed of black, sometimes greenish, argillites both graphitic and ferruginous in character, and always fissile. The lower series is made up of compact beds of quartzite and bluish-black slates, and in it occur the gold-bearing quartz veins. This quartzite is essentially a sandstone, with usually a felspathic, but sometimes an argillaceous, cementing material. The lower part of this series, according to Mr. Poole, is made up of beds of slates and grits, not carrying quartz veins but much crumpled and contorted. Mr. Faribault does not include these beds in the gold series.

The gold districts occur along the axial lines of a series of great anticlinal folds which are the result of contraction forces applied tangentially. The tops of these



Barrel Quartz Vein, Moose River N.S.

folds, in places, have been so eroded as to expose the edges of the constituent strata of quartzite and slate, with the included quartz veins, constituting the "proclaimed gold districts" of the Province. These veins, in common with the slate bands above referred to, are parallel in their strike to the course of the country rock) and for that reason (amongst others) were supposed, in the earlier years of mining, to be contemporaneous bedded veins, a view taken at that time by Dr. T. Sterry Hunt, Prof. H. Y. Hind, and others, as the conformability throughout with the large beds of quartz ite and slate is marked. Later investigations, after more extensive workings, tend to disprove this view and to refer them to a class of true veins which were formed by the infiltration and segregation of siliceous matter into the openings between the layers of slate and quartzite occurring along the lines of minimum pressure, or of least resistance, produced during the folding. The resultant of these two forces of gravitation and of contraction, is a force tending to separate or force apart the constituent layers of the series, and it is believed that to these forces is to be ascribed the openings (subsequently filled in by infiltration or lateral secretion) which have formed the present quartz deposits of the series. Mr. H. S. Poole (a) thus summarizes the main arguments in favor of the theory of true veins :--

"The distinctive features of the gold leads are their general conformability with the slate and quartzite beds and their regularity, suggesting that they are rather beds than veins. But there are characters that point to their being true veins in spite of these features, and they are the following: The roughness of the planes of contact between quartz and slate and quartzite; the crushed state of the slate or gouge on some foot-walls; the irregularity of the vein contents; the termination of the leads; the effects of contemporary dislocations; and the influence of stringers and off-shoots on the richness of the leads."

Dr. Selwyn (δ) holds the opinion that the quartz veins are not contemporaneous and that they must be considered as true veins. He also has pointed out the analogy between these quartz veins and those of the Bendigo district in Australia, and indicated the probability of similar origin.

The main difference or distinction between the Australian and Nova Scotia veins arises from the fact that the folds or flexures of the strata in Nova Scotia are much broader than in Bendigo, of greater extent and farther apart, and in consequence, the "legs" of the "saddle reefs" extend to much greater depths than in Bendigo. The greatest depths upon the dip of the vein yet attained in Nova Scotia (some 600 feet) show the quartz to be continuous, whereas in Bendigo "the vertical extent of the auriferous quartz is very limited," (c) being under rather than over 200 feet.

The influence which the granitic masses (which, as already mentioned, cut the gold measures) have exerted upon their gold veins and their metallic contents has not been determined and requires closer study, but that they have played an important part is quite probable since in many places they must be regarded as intrusive and their influence is seen all along the edges of the sedimentary strata penetrated by

(a) Report of the Department of Mines, N.S., 1878, p. 27.
(b) Report of Progress, Geological Survey of Canada. 1870-71.
(c) Transaction: American Institute Mining Engineers. vol. xx, p. 542.

morphic vitreous stauroli

them.

from the quite shother) a For the for some it may be but uncellimits.

The complete probable The

The veins wh

The quartzite near Isa must loo the indu ending is milled, or

By machine this Pro received.

The mai

(1.) mines is (2.)

license to pector 50

⁽a) The per ton, ar

them. At the Crows Nest mine on Cochran Hill, in Guysboro county, the metamorphic action exerted by these granites is well seen, beds of quartzite becoming vitreous quartz in their vicinity; the slates also become garnetiferous and crystals of staurolite and andalusite are of frequent occurrence.

From the similarity in structure and probable genesis of these deposits with those of Bendigo, and from the data obtained from these Nova Scotia districts which have been extensively worked, it would appear that the auriferous contents of these quartz veins and slate bands are in direct relation with the horizontal distance of such deposits from the axis of the anticlinal fold in which they occur. As some of these folds are quite sharp (having a vertical dip upon one side and from 40 to 45 degrees on the other) and others are broad, this distance will vary with each district within limits. For the narrow folds Mr. Faribault has placed the limits at from 600 to 800 ft., and for some of the broader ones the limit appears to be from 1,200 to 1,300 ft. Therefore, it may be expected that, in a series of veins the pay zone will be confined horizontally but unconfined vertically, although the quartz is continuous beyond these defined limits.

The summary of results which will be available when the Geological Survey has completed its work in these gold districts will be of the greatest value in arriving at a probable rule for governing the pay zone of these Nova Scotia deposits.

The bulk of the gold hitherto won has come from the smaller parallel quartz veins which, in some districts have recorded phenomenal yields (a). The district of Montagu is particularly noted in this respect.

The occurrence of gold in the slate has been alluded to, and more recently quartzite carrying gold in paying quantities has been found at the Richardson mine near Isaacs Harbor. To the development of these quartzose slate belts the industry must look for its enlargement and greatest profits in the future, and an indication that the industry is already turning in this direction is afforded by the returns for the year ending December 31st, 1897, which show a return of \$539,048 from 83,234 tons milled, or an average value of \$6.47 per ton.

By reason of the cheap but excellent labor, the low cost of fuel, supplies and machinery, the favorable climate and the easy means of access, the gold industries of this Province are worthy of more attention from capitalists than they have yet received.

Laws.—The mining law of Nova Scotia is exceedingly fair and easy to interpret. The main provisions are:—

- (1.) All mines are the property of the Crown, and the product from the gold mines is subject to a royalty of 2 per cent. upon the gross output, verified by affidavit.
- (2.) Gold mining lands are laid out in rectangular "areas," having a length of 150 feet along the course of the veins and a width of 250 feet across the same. A license to prospect may include up to, but not over, 100 areas, and costs the prospector 50 cents for each area in his application; the license is valid for one year.

⁽a) The year 1891 was notable for high yields. South Uniacke returned values of 10 to 20 ozs. per ton, and Oldham had one yield of 643 ozs. from 8 tons milled.

(3) Leases, running for forty years, can be obtained for any number of areas up 100, upon payment of \$2.00 for each and every area leased, and a further rental of 50 cents per area per annum; this rental is rebated if the provisions of the lease regarding labor to be performed thereon are complied with; such labor being performed or such rental being paid, the lease is non-forfeitable, and the title is absolute for the period of forty years. Such leases are renewable for a second period of forty years, and are transferable, being regarded as personal property.

(4.) If the areas are upon private lands, provision is made for an agreement with the owner of such lands, failing which a method of arbitration is provided whereby

the property may be acquired.

QUEBEC.

History.—Unconfirmed accounts place the first discovery of gold in the Province of Quebec as occurring during the first quarter of the century, but the first authenticated discovery was made in the gravels of the Gilbert river near its junction with the Chaudiere in the Seigniory of Rigaud-Vaudreuil in 1834.

A young girl, Clothilde Gilbert by name, (still living in 1896) in watering her father's horse in the Gilbert one Sunday morning had her attention attracted to a glittering stone at her feet, which she picked up and took to her parents as a curiosity. On account of its weight, color and oddity the stone (a nugget weighing 2 ozs. 4 dwts.) was placed on the chimney-shelf where a short time after it was noticed by Mr. Charles DeLery, the seignior of the district, who had business with her father, one of his censitaires.

Mr. DeLery bought the nugget from Mr. Gilbert, though uncertain that it was real gold, and when he went to France that year he took the nugget with him, from which, on learning its real character, he had some tea spoons made which are still in the possession of the DeLery family.

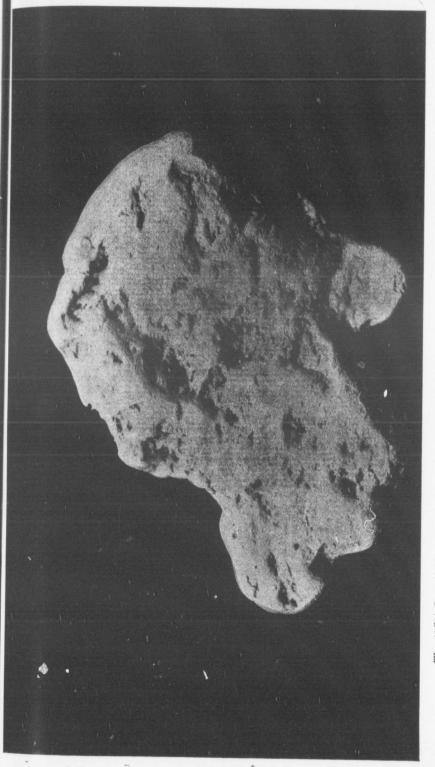
The first public announcement of this discovery was published the following year in a communication to the *American Journal of Science** by Lieut. F. H. Baddeley, R.E., then stationed in Quebec.

Upon learning the value of this discovery further search was instituted resulting in the discovery of several nuggets, but no attempt to work the gravel was made until about 12 years later. In 1846, for political services it is reported, Mr. DeLery received from the Government a grant in perpetuity of the mining rights within his seigniory, covering about 100 square miles.

In 1847 these rights were leased to a concern called the "Chaudiere Mining Co.," which, after desultory operations on the Gilbert and Des Plantes rivers for two or three years, ceased active operations.

The finding of this gold stimulated search on the other tributaries of the Chaudiere, resulting in the discovery of auriferous gravels at various points in the valley from the parish of St. Joseph northward to the boundary line. Some operations near the mouth of the DuLoup produced (in 1851-52) over \$4,300 from an area of one acre in which the pay gravel was only 2 feet thick. The workings were a

^{*}Am. Journal Science, 1st series, Vol. xxvii, p. 112.



The "St. Onge" Nugget, 42 ounces, found on Lot 12, St. Charles Concession, Gilbert River, Beauce, Que.

crude form of ground-sluicing and were suspended in 1852 on account of troubles with the owner of the soil, although many nuggets had been found ranging from one ounce to six ounces in weight.

From 1854 to 1863 no organized work was curried on, but a few individuals (singly or in groups) continued to prospect and work small putches with the pan and rocker. In 1863 some of these individuals (the Poulin brothers) discovered rich gravel on the north fork of the Gilbert river, and the result of this discovery was a small "rush" in 1863 and 1864, during which time some five or six thousand men were attracted to these fields.

Trouble at once arose over titles, the farmers giving leases to the miners in ignorance or disregard of the fact that the seignior held all mining rights. Excitement ran high, and provincial constables were required to preserve the peace and maintain the rights Mr. DeLery had conveyed to the Chaudiere Mining Co.

In consequence of these troubles and of the difficulty of obtaining satisfactory terms from the Chaudiere Company, there resulted as large an exodus of men in 1865 as there had been an influx during the two preceding years.

The difficulties of this time, supplemented by those occurring in 1877-78, are the origin of the bad reputation which the gold fields of Quebec have had as to insecure and imperfect titles. While it is true that a very complicated and unsatisfactory condition of titles still exists in the seigniory of Rigaud-Vaudreuil (largely due to leases and sub-leases ad infinitum) titles outside of that seigniory are clear and secure, and by far the larger portion of the auriferous gravels lie outside the limits of the DeLery seigniory. In 1864 the DeLery Gold Mining Company was formed, inheriting all the privileges of the Chaudiere Company for a period of 30 years from June, 1864, with the right of renewal for another 30 years. This renewal was given in 1894, and the seigniory of Regaud-Vaudreuil is now practically locked up until 1924.

The DeLery Company made a futile attempt at quartz mining near the Devil's rapids, and then ceased active work, preferring to sub-let its territory. The most important of these sub-lessees was Mr. W. P. Lockwood, who, by himself and companies organized through him, undertook investigations extending over many years which demonstrated the existence of an ancient river channel on the Gilbert, and proved that the gold in the modern gravels was derived from this preglacial bed.

Mr. Lockwood's troubles with titles in 1877 and 1878 have been referred to above; they arose from the policy of the Government in permitting the habitants, or farmers, to grant rights, and in issuing licenses to wor kupon ground already covered by the rights of the DeLery Company. These difficulties culminated in 1881, when the Government entered suit to test the validity of the grant to Mr. DeLery, and to set it aside. In 1883 the court dismissed the action, declaring in favor of the validity of the grant, and in 1884 this decision was affirmed on appeal.*

Owing to causes already mentioned this seigniory has not been in favor and little or no work has been done since 1885. In 1880-83 an attempt was made, under the guidance of a man totally ignorant of his subject, to work some bench gravels on

porter

but de yield

the co

from Weed pay di

statem total p

many

O Gilber

has been ports in mine which miles.

norther miles; running It

aurifero which a

main and towns¹. The norm

†Mir

^{*&}quot; Mines and Minerals of Quebec." J. Obalski, Govt. Mining Engineer. 1839-90, p. 58.

the DuLoup river by the hydraulic method, and something over \$200,000 is reported to have been expended in a ditch, pipe-line, monitors, etc., only to find after construction was finished that there existed no dump for the tailings.

Several other attempts to reach and work old channels failed for lack of capital, but demonstrated the existence of gravels (carrying gold in quantities sufficient to yield large profits) over a large extent of country.

Gold has also been found in the superficial gravels of the Little Ditton river, in the county of Compton, but as these lands are entirely in private hands (the estate of the late (Ion. J. H. Pope) they are not accessible, and no information is available.

The existence of gold in the drift of the St. Francis Valley, and about the shores of Lake St. Francis, has been noted for many years, but these gravels do not appear to have been so rich as those of the Chaudiere and little or no gold has been obtained from them. The same may be said of the deposits occurring in the townships of Weeden and Dudswell, although systematic exploration might show the existence of pay dirt.

Production.— It is impossible to give exact figures of the production of these fields for the reason that the Government of Quebec did not exact official returns for many years. There are returns only since 1868, and these are but fragmentary.

From 1868 to 1883 inclusive there were returned some \$280,000. From the statement of Mr. Obalski, Government Mining Engineer,† it would appear that the total production of the whole province from 1846 to 1889 is estimated, after extensive research, at \$2,000,000.

Of this amount it is estimated, by competent persons, that the alluvions of the Gilbert River alone produced fully one-half, or over one million of dollars.

Area.— The area over which superficial gravels carrying gold have been found has been variously reported at from 2,000 to 10,000 square miles in the different reports made to the Provincial Government and to the Geological Survey. While gold in minute quantities is widely disseminated in Quebec the area of the region over which it is likely to be found in economic quantities is from 4,000 to 4,500 square miles.

This area is irregularly shaped, having for its largest dimensions a line running northeasterly from Massawippi Lake to Lake Etchemin, a distance of about 120 miles; its transverse width in a northwesterly direction is comparatively uniform, running from forty to fifty miles.

It must not be understood that the whole of this large area has been proved auriferous, but that within these bounds are included practically all the regions in which auriferous alluvions have been found.

The Boundaries are Approximately.—The International boundary line on the south-east, a north-west line drawn through Lake Massawippi on the south-west, the main anticlinal axis of the Province (running from the township of Shipton to the township of Frampton) on the north-west, and the valley of the Etchemin river on the north-east.

[†]Mines and Minerals of Quebec. J. Obalski, p. 62.

Within this area are the four districts of the Chaudiere, Ditton, Dudswell, and Magog. The Chaudiere (as was previously mentioned in the historical sketch) is the chief district and the largest. It comprises all the water-shed of the Chaudiere above Beauce Junction on the Quebec Central Railway, and extends in a north and south direction for nearly 50 miles, with a greatest width of about 28 miles, embracing the seigniories of Rigaud-Vaudreuil, Aubert Gallionand Aubin de L'isle, and also the Townships of Shenley, Dorset, Gayhurst, Spalding, Risborough, Marlow, Jersey, Liniere, Metgermette, Watford and Cranbourne.

main

easte

Gree

easte

basin

super

origin

actio

decer

gold.

" pip

with

confo

grave

strear

the be

direct

seams

preser

found

by a r

This o

River

justifia

charac

Califo

one p

are kr T

gold f

(a)

(b) (c)

7

The Ditton district covers a small area in the county of Compton of some 15 or 20 square miles.

The Dudswell area is indeterminate, but so far gold has been found here only over a few square miles.

The district along the valley of the Magog has a length of about 12 miles with a width of 20 or 30 miles.

Geology.— The gold which has been obtained in Quebec has come entirely from alluvions, both ancient and modern.

That there are workable quartz veins in the Cambrian and Cambro-Silurian slates which underlie the auriferons gravels has long been the opinion of several authorities conversant with the country, (a) but the depth of the superficial deposits overlying these rocks is so great (from 50 to 200 feet) in most places as to preclude prospecting in the ordinary way.

Mr. Lockwood has informed me that several quartz veins were uncovered while working the ancient channel of Gilbert river, some of which carried visible gold and were very promising, but which nowhere cropped to the surface, and upon which no development was ever prosecuted. From the outcrop of several veins occurring in Cambro-Silurian rocks of the DuLup valley, I have seen minute particles of free gold, but the size of the veins was too small to admit of working at a profit.

Dr. Selwyn, who 20 years earlier (b) suggested the vigorous exploitation of the old deep channels, has expressed the opinion (c) that the future of the gold mining industry of Quebec must lie in the working of the solid vein stone.

It is from the working of alluvial deposits, however, that a stimulus for prospecting for auriferous veinstone must come.

The area alluded to on the preceding page is occupied chiefly by two synclinal basins trending north-east and south-west. The first or easterly one of these synclinals lies between the ridge forming the International boundary and the uplifts of the Pre-Cambrian rocks known as the "Stoke Mountain Range." This uplift is less pronounced to the north-east of Lake St. Francis but is represented by a back-bone of Cambrian rocks, some two to four miles wide, which keeps a general northeasterly course to Moose Mountain.

⁽a) T. Sterry Hunt, and A. Michael, Geol. Survey of Canada, 1886. R. W. Ells, Geol. Survey of Canada, 1886.

⁽b) Reports of Progress, Geol. Survey of Canada, 1870-71.

⁽c) Summary Report Geol. Survey of Canada, 1891.

The second or western cynclinal lies between the ridge just described and the main anticline axis of Pre-Cambrian rocks which traverses the Province in a north-easterly direction for many miles, and which is regarded as the prolongation of the Green Mountain range of the Appalachian system.

The eastern synclinal is almost entirely underlain by rocks of Cambro-Silurian age, portions towards the north, however, embracing areas of Cambrian rocks,

The bulk of the Chaudiere district and all of the Ditton district are within this eastern basin, while the Dudswell and Magog areas are in the western. The broad basin of the eastern synclinal is for the most part covered with a great thickness of superficial gravels and boulder clay, the latter of which may, or may not, have been originally deposited in this basin, but which certainly has been re-arranged by the action of the great ice sheet.

These superficial deposits have a general arrangement (a) which is as follows in decending order:

- (1.) Modern gravel and sand of a few feet in thickness sometimes containing fine gold.
 - (2.) Boulder clay, often exceeding 100 feet in thickness.
- (3.) Stratified clay and fine sand; the clay usually bluish, sometimes a white "pipe-clay;" the sand hard and firm when dry but running freely when saturated with water forming a "quick-sand."
- (4.) Stratified yellow or reddish gravel, containing flat water-worn pebbles lying conformably and presenting the unmistakeable ear-marks of "river-wash." This gravel is usually auriferous and is the direct debris from the wearing action of the streams of Devonian and later ages.

In some cases there is found a thin bed of sand between the yellow gravel and the bed-rock, when the gravel is then found usually to be poor and the gold lies directly on and in the rock and slate.

The gold is usually concentrated in the lowest portions of the gravel and in the seams of the decomposed slate bed-rock where the latter has been uptilted or has presented edges to the stream. Where the old bed is smooth little or no gold is found, and to this circumstance we think must be attributed the conclusion reached by a recent writer (b) that the distribution of gold in these old channels is sporadic. This opinion is strenuously opposed by Mr. W. P. Lockwood as regards the Gilbert River, and since that is the only old river bed which has yet been worked, it is not justifiable to infer that other old channels, yet to be worked, will be sporadic in character. Nor is it unusual to find, in the undisturbed, ancient river gravels of California and Australia, that there has been a greater accumulation of the gold in one portion of the river-bed than in another; the uncertainties of "smooth bed-rock" are known to every miner experienced in alluvial mining.

The authorities of the Geological Survey (ϵ) are strongly of the opinion that the gold found in the superficies has been derived from the erosion of the Cambrian and

⁽a) "The Gold Bearing Deposits of the Eastern Townships of Quebec," by Robt. Chalmers, Journal of the Federated Canadian Mining Institute, vol. 2, p. 21

⁽b) R. Chalmers, Op. Cit. (c) Report of Progress 1870-71 Dr. Selwyn; Ditto 1888-89 Dr. Ells

Pre-Cambrian rocks with their contained quartz veins, and that proximity to these veins is a necessary condition of a rich deposit of gravel; although as yet no quartz vein has been found which has contained gold in anything like paying quantity.

The fact exists that the richest gravels yet worked are ancient, and occur in the old channels of rivers running across Cambrian and Cambro-Silurian rocks. There is evidence to show that these rocks have had but little disturbance since Silurian times and that the rivers of that period excavated their valleys and perhaps filled them again with debris to such an extent as to divert the waters into a new course, long before the rearrangement of surface material during the ice age; in other cases it is probable that this diversion was caused by the glacial rearrangement.

From the fact that gold is not found in the boulder-clay it is evident that the gold alluvions were distributed prior to the clays. Where gold has occurred in modern gravels it has occurred in places below where one of these old river-beds has been crossed transversely, or impinged upon, by the course of the present river, which has acted to redistribute and concentrate the old gravels, thus causing a local spot richly auriferous.

No systematic attempt has been made to locate or map out the courses of these ancient river-beds, which may be accounted for by the fact that many of them are unquestionably below the level of the modern streams, and would entail heavy expense to keep prospect shafts and mine-workings free from water, but "it is in these old deep channels that the heaviest particles of gold may be looked for," and it is in them alone that gold mining in Quebec may expect to be remunerative; for quartz mining is not likely to speedily become a profitable industry owing to the heavy surface already spoken of. With judicious expenditure of money, advised by ability and experience, the gold fields of the Chaudiere valley should be highly remunerative to capital invested therein.

Laws.—The laws governing the acquisition and working of mines in Quebec do not encourage either the miner or the investor. The right to prospect and explore upon public lands is granted without fee, but before one can do any mining he is required either to obtain a "Mining License" or to purchase the "Mining Rights" over the territory he has selected.

The former can be acquired by the annual payment of a fee of \$5.00 and \$1.00 per acre for each acre desired; the latter can be purchased outright by paying for each acre five dollars if "more than twelve miles from a railway in operation," or ten dollars if less than twelve miles from such railway. No one license can be granted for more than 200 acres, and no sale of "rights" containing more than 400 acres can be made to one person.

To acquire either a license to mine, or mining rights, upon lands already granted, he must first buy the preferential right (a) from the owner of the soil, or if not able to do so he may "arbitrate" for "damages"—a procedure involving from three months to many months delay.

⁽a) Sec. 1441, Quebec Mining Law, Acts of 18;2.



The "McDonald" Nugget, weighing 45 ounces, 12 dwt., found on the De Lery Concession, Lot 16, Beauce. Province of Quebec.

The Quebec law makes a clear statutory division into two realties of "the soil" and "the property under the soil" (b), and gives the owner of the soil a "preferential right" to the purchase of the property under the soil, more tersely designated as "Mining Rights."

There is a provision empowering the Governor-in-Council to levy a royalty, not exceeding 3 per cent., upon the net value of the gold, i.e., "upon the value at the mine after deducting the cost of extraction," but this provision has never been enforced, and is not likely to be, although it hangs like the sword of Damocles over the investor's head. For the interest of the province, this section (No. 1435) should be taken off the statute-book.

ONTARIO.

History.—The occurrence of gold in Ontario was first publicly made known through the publications of the Geological Survey (c). The first actual discovery seems to have been made by Mr. M. H. Powell, in Madoc township, in the county of Hastings, in August, 1866, at the spot which has since been known as the "Richardson Mine." This discovery occasioned an influx of from three to four thousand prospectors into this section in the spring of 1867, and for a year or so considerable excitement prevailed, and some capital (chiefly American) came into this section. As soon as the zone of decomposition was passed, and the workings got into unaltered veinstone, the ore was not amenable to the amalgamation process, and failed to yield profitable returns, occasioning the excitement to rapidly fade away, and since 1868 this gold field of Ontario has received only intermittent attention.

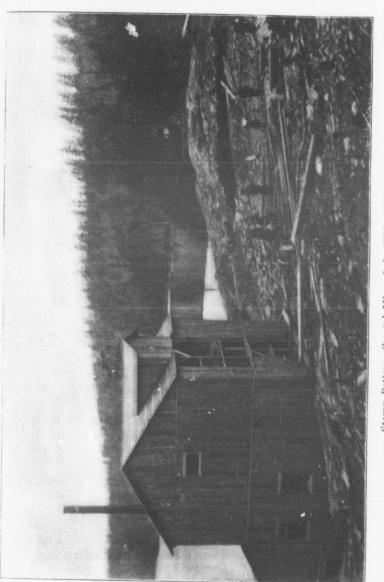
This is doubtless due to two causes, the first of which is the fact that the gold in these deposits is associated with mispickel, or arsenical pyrites, making its treatment difficult and expensive; and secondly, to the irregular character of the deposits, most of them having the form of gash veins, and upon exploitation proving to be segregations in the form of flattened lenses whose horizontal and vertical dimension are but too quickly determined.

Several companies have operated in this field, the chief of which is the old Deloro Gold Mining and Milling Co., which was largely financed in England and was under the management of a Mr. R. P. Rothwell, of New York. This company attempted the concentration of the mispickel as a primary process, subsequently roasting the concentrated and chlorinating the oxidized products it was contemplated to save the arsenic and to make the by-product of arsenious acid profitable. Unfortunately much of the gold in the mispickel was too coarse to be quickly attacked by the chlorine and the enterprise financially was not successful, although to this effort may be traced many of the modern improvements in the process of gold chlorination which is now so successfully used in the United States and abroad.

Recently (1896 this property was acquired by an English corporation known as "The Canadian Gold Fields, Limited," which has secured large additional tracts of land, and has installed a plant for the treatment of the ore by a process known as the

⁽b) Secs. 1423-1424.

⁽c) Report of Progress, 1867-68.



Stamp Battery, Crystal Mine, Lake Wahnapitae, Ont.

"Sulman-Teed," which appears to be a modification or adaptation of the bromocyanide treatment.

Other companies (the Crescent, Belmont, &c.) have operated in this county with partial success on surface ores, but none of them have made a financial success.

Gold was next discovered in Ontario, in the township of Moss, in the district of Thunder Bay, in 1871. The location has since been known as the "Huronian Mine," and for a time (1882-85) it was vigorously worked having been equipped with a 10 stamp mill and other machinery, but since 1885 nothing has been done and no other discoveries of importance have been made in this section.

Other reported discoveries, in other sections, in 1872 and 1875 attracted little or no attention, until the finding of rich specimens on Hay Island in the Lake of the Woods in the summer of 1878.

Considerable prospecting around the shores of the island and bays of this large lake resulted in the finding of several bodies of auriferous rock (such as the Sultana, Ophir, Pine Portage and others) within a year or two, and from 1882 to 1885 a very considerable amount of work was done upon these and other properties.

The management then, as subsequently, was chiefly in the hands of men totally inexperienced and woefully ignorant of the arts of mining and milling, who produced results so disapppinting and discouraging that the district was practically abandoned for several years.

A disculty which largely operated to prevent development in this district was the dispute between the Ontario and Dominion Governments regarding the boundaries of Ontario, which dispute affected the titles to the lands upon which mineral had been discovered and locations made. In 1891 this dispute was finally settled in favor of the Province of Ontario, and the following year actual development in the Lake of the Woods district may be said to have begun.

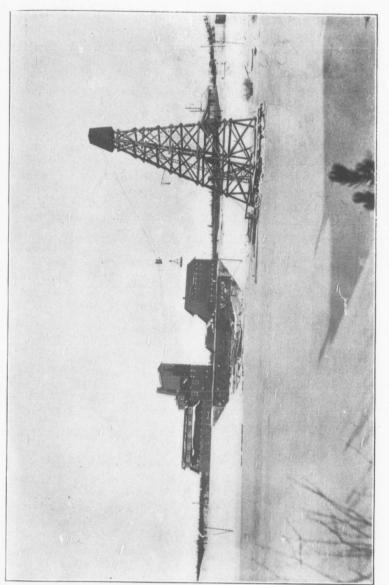
The first, and still the chief, mine to be extensively worked was the "Sultana," which, after many vicissitudes and struggles, became a profitable enterprise to its present owner, Mr. John F. Caldwell.

In 1887 and 1888 discoveries of gold were reported in the township of Dennison (at the "Vermilion" mine) and on the shores of Lake Wahnapitae respectively; the former has been worked out, and the latter has slowly developed into an industry, which, as yet, has not been remunerative.

Although the discovery of gold bearing quartz veins in the schists surrounding Vermillion Lake in Minnesota, U.S.A., had been noted in that State's official reports as early as 1866, the find was not followed up until the discovery of the "Little American" vein on an island in Rainy Lake in 1893.

Following this discovery a large number of Americans came into the Rainy River District, and since 1893 this section has been the busiest one in the gold fields of Ontario.

Production.—It is impossible to give an accurate estimate of the total amount of gold won in Ontario from 1866 to date, for the reason that no official records have been kept prior to the year 1892.



New Customs Milling Plant at Keewatin, Ont.

The Bureau of Mines came into existence on the 5th of March, 1891, but there was no reported production of gold for that year.

In the six years from 1892-97, inclusive, the total value of gold produced was produced was \$465,509. The production for the twenty years from 1869 to 1888, inclusive, is estimated at \$9,943.00(a), so that it may be safe to estimate the total production of the Province to December 31st, 1897, as not exceeding \$500,000.00.

For the year 1897 the production was \$190,244, from 27,589 tons; an average yield of \$6.89 per ton. The value of the bullion produced was \$16.67 per ounce.

Area.—The gold bearing lands of Ontario may be classed into three different fields, if the Lake of the Woo'ls and the Rainy River sections be taken as one.

The most easterly of these fields is the Marmora District in the County of Hastings, lying just north of Lake Ontario.

The area of this field is between 600 and 700 square miles, having a greatest length of about 36 miles and a greatest width of about 20 miles.

The second field includes the Wahnapitae district extending from beyond Lake Koo-ka-gaming on the north-east, into the townships of Dennison and Creighton in Algoma to the south-west. Its area is indeterminated but approximates a length of about 50 miles by a width of 12 or 13. So far this field has been the least important in the province.

The third field, if (as before said) inclusive of the Rainy River section, is by far the largest as it is the most important one.

It embraces an indefinite territory extending from the western shores of the Lake of the Woods to Lac des Mille Lacs on the east, a distance of over 200 miles, and from the International boundary on the south, northerly for nearly 100 miles; roughly speaking it includes nearly 20,000 square miles many of which, of course, are under lake and river waters.

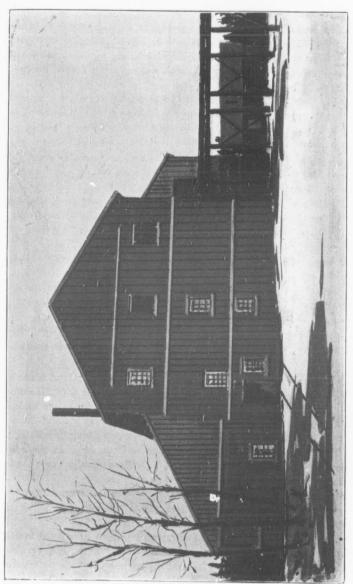
Geology.— Broadly speaking the whole of Ontario's gold fields may be said to lie in rocks of the Huronian formation. There are no alluvial deposits known in the province of any magnitude or of any economic value, although gold bearing gravels occurring along the valley of the Mississaga, north of Thessalon, have been reported, and have received considerable attention. The gold of Ontario, therefore, is in the solid veinstone.

In the Marmora district rocks known as the "Hastings series," consisting of crystalline dolomites, mica schists and micaceous quartzites, are associated with and penetrated by granites and diorites. In the vicinity of these eruptives, and sometimes occupying the zone of contact, are found deposits of quartz carrying as minerals, mispickel, pyrites, pyrrhotite, with occasional small quantities of chalcopyrite, and more rarely specks of galena.

According to Dr. Adams' report (b) it is as yet uncertain whether these rocks are to be regarded as upper Laurentian or as greatly modified Huronian.

T. e form of these quartz deposits is that of gash veins, or local segregations of (comparatively) small dimensions, with, of course, notable exceptions e. g. the old

⁽a) Mineral Resources of Ontario. Report of Royal Commission 1890, page 211. (b.) Annual Report Geol. Survey of Canada, 1892-93.



Foley Mines Co. of Ontario.—20-Stamp Mill, Seine River, Ont.

"Gatling" mine. The general experience in this district has been that the continuity of the deposits could not be relied upon.

The average value in gold of the best of the auriferous veins seems to be about \$12 per ton. The future of this field will depend upon the discovery of some process which will economically extract the gold from its arsenical associations, and also upon the opening of sufficient quantities of auriferous rock to assure a large tonnage of payable ore.

In the Wahnapitae district the prevailing rocks are crystalline schists with massive fine-grained beds resembling volcanic ash rocks and patches of dioritic eruptives in the southern portion, to the north and east clay slates are mingled with the above. All this series is reported as Huronian by Dr. Robert Bell. (a.)

The quartz veins traversing these rocks are small, and resemble those of the Hastings district in the fact that their horizontal and vertical bounds are of small dimensions. Many veins seen can be clearly traced from beginning to end, commencing with a thickness of a fraction of an inch they expand to a greater width of eight to 36 inches and then thin out to a final end. The course of many of these veins is very irregular and serpentine, and to describe them as other than local gash veins would, we think, be an error.

Although small, many of them are very rich, and further development may find bodies of a more permanent character.

The third field, though underlain by rocks of Huronian age, presents some different geognostical features in the Lake of the Woods section than are exhibited in the Rainy River section.

The auriferous quartz of the northern shores of the Lake of the Woods appears to occur along, or in the vicinity of, the line of contact between the gray gneisses of Laurentian age and the hard green schists of the Huronian.

This quartz occurs both as segregations of lenticular shape enclosed within the schists (as at the "Sultana" mine) and as fissure veins, (as at the Gold Hill mine.) Usually the veins are schistose, or conformable in strike and dip to the enclosing schists.

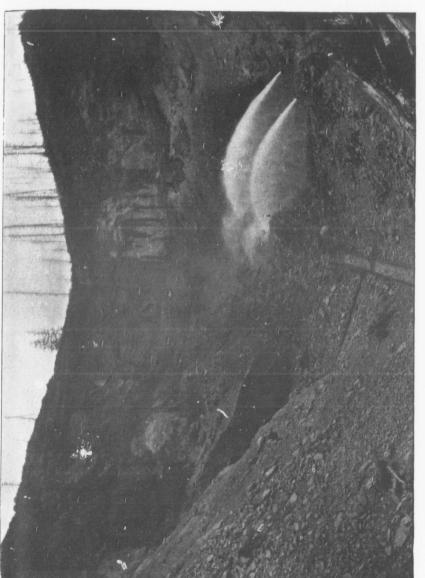
In the Rainy River country (b) the veins likewise are frequently schistose or "bedded," but are always in the Huronian rocks or in the eruptives which have penetrated them, and are not dependent for their auriferous contents upon the immediate vicinity of Laurentian areas.

The Huronian rocks of this section show many various characters, varying from soft, greenish ch'oritic schists, through hard, massive greenstones to yellow and brown felsites, acid eruptives and conglomerates.

Through these rocks granites and other eruptives have been forced in many places and at different periods, and in one area of granite between Bad Vermillion lake and Shoal lake many of the most promising discoveries have been made; there occur the "Foley," "Ferguson" and "Lucky Coon" mines. These mines lie in a

⁽a.) Annual Report Geol. Survey of Canada, 1890-91.

⁽b.) Fifth Report Bureau of Mines, Ontario, 1895.



Cariboo Hydraulic Mining Co.—Giants discharging 2,000 Miners' Inches in No. 1 Pit.

small area (of six or eight square miles) of modified granite in which the mica has been changed to chlorite or sericite and the feldspar has nearly disappeared, forming a "protogine granite." In this granite the auriferous quartz occur as true veins, having clean walls accompanied by a slatey gouge or selvage and frequently showing slicken sides.

Besides the segregated or "bedded" quartz veins (which are the most numerous) and the fissure veins, these Huronian schists are noteworthy for the occurrence of low grade auriferous fahlbands. Beds of pyritous, black or greenish schists, usually highly silicified, or with thin seams of segregated quartz, are not uncommon, the one upon which the most work has been done being known as the "Scramble" mine, which lies a short distance north of the railway line near Rat Portage. Here the width of the fahlband varies from 25 to 35 feet, and from latest information will average from \$2.00 to \$3.00 per ton. Some portions of the band, however, seem richer than others, and it is not unlikely that a rough sorting will give a gold tenor that will show a safe margin of profit.

Other fahlbands occur in the Manitou country (e. g. the Hammond reef) and in the region of Little Turtle lake.

It must be borne in mind that developments in this field have occurred only since 1893, and chiefly during the years 1896 and 1897, and considering the really small amount of development done and the vast area over which the gold occurs, it is yet too early to predict its future.

From the published returns the average values seem low, but from the advantages which the district possesses in the way of abundance of water and timber, and cheap water transportation in the summer time, it should be feasible to work low grade ores here at such a cost as to leave a satisfactory margin of profit.

Laws.— The laws of Ontario permit of acquiring deposits of minerals by direct purchase at prices ranging from \$2.00 to \$3.50 per acre, according to location within certain districts, and distances from railways. The purchaser, however, is required, within seven years from the date of the grant, to expend in bona fide operations upon the property, \$4.00 per acre if the grant exceeds 160 acres, or \$5.00 per acre if the grant is 160 acres or less. In default of this expenditure the grant may be forfeited and the property then reverts to the Crown.

In lieu of a grant a lease for ten years, with right of renewal for another ten years, may be acquired by paying one dollar per acre as rental for the first year, and 25 cents for each year thereafter in advance. Such leases are subject to the same expenditure per acre as in the case of granted lands, in default of which the lease is forseited; forseiture also follows desault of rental payment.

Pine timber standing on such grants or leases is reserved by the Crown.

The law made in 1892 also provides for the imposition of a royalty, not to exceed 3 per cent., at the expiration of a period of seven years from the date of the patent or lease.

There is also a provision for the pre-emption of mining land by "staking claims;" this provision is modelled somewhat after the British Columbia law, and has not, as yet, been availed of to any extent. Such claims may be staked by any-

whe Que

one of c

130

quantin as to valu

nnm Colu were rem up to Que Sim

disc

"L rich disc teres as h that

400

was

date from mill

muc head one having a "miner's license," the fee for which is \$10 per annum; the dimensions of claim shall not exceed 20 chains square, or 40 acres; the boundary lines must be brushed out or blazed, and must be run north, south, east and west astronomically; 130 days' labor are required upon each claim, in lieu of which no money payment is accepted.

BRITISH COLUMBIA.

History.—Gold was first discovered on the western coast of Canada in 1851, when an Indian woman found, by accident, a nugget upon the shore of Gold Harbor, Queen Charlotte Islands. This nugget found its way into the possession of officials of the Hudson's Bay Company, who made an investigation resulting in the finding of a quartz vein, about seven inches in width, carrying gold. In 1851 and 1852 some mining was done on this vein and some quartz shipped away from it, but reports vary as to the total amount produced, it being reported at from \$20,000 to \$75,000 in value.

The discovery which brought British Columbia into prominence as a mining country, however, was the discovery of alluvial deposits in 1857 upon the banks of the Thomson river, a little above its confluence with the Fraser. As the result of this discovery (which is said to have produced some 300 ounces during that year) a large number of people, estimated at from 20,000 to 30,000 in number, came into British Columbia the following year, and the deposits on the lower portion of the Fraser were vigorously worked. Comparatively few of the many thousands who had come remained during the winter, but the few who did remain gradually worked their way up these rivers, finding, in 1860, the Cariboo district and working upon the forks of Quesnelle river and upon Antler creek. In that same year the deposits on the Similkameen river in Yale district were found by miners working their way up from the south.

The extraordinary richness of the two creeks known as "Williams" and "Lightning" established the reputation of the district of Cariboo as one of the richest placer mining countries ever found. This was particularly true after the discovery of the old channels of these streams, and in this connection it may be interesting to note that considerable portions of the old bed of Williams creek yielded as high as \$1,000 to the running foot of its length; and from some claims (which at that time were about 25 x 100 feet) gold was obtained in amounts varying from 70 to 400 ounces per day. It is reported that from one claim in one day \$40,000 was washed.

The discovery of rich placer deposits on Wild Horse creek in East Kootenay dates from the year 1863, and the production of this creek is variously estimated, but from the best records obtainable the amount appears to be between six and seven millions of dollars.

The auriferous gravels of the Big Bend country were discovered and opened in 1865, and the deposits of the Omenica were first found in 1869 but did not attract much attention until 1871. The following year (in 1872) prospectors reached the head waters of the Dease river and found goldin the Cassiar country.

The rich deposits obtained in the years 1861 to 1864 on Williams creek were followed by the discovery in 1871 of the rich deposits in the old bed of Lightning creek. Of the total product of \$59,000,000 obtained from placer gold from 1859 to the first of January, 1898, it is estimated that over \$20,000,000 was the product of Williams creek alone, and that nearly \$40,000,000 of the total amount is to be credited to the Cariboo district.

The working of the ancient alluvions on these creeks was attended with much expense, so that after the year 1879 the yield from placer deposits all over the province fell off rapidly, and, while slightly increasing again during the last four years, it is now only about half a million a year, although the returns from the capital which has been going into the Cariboo district during the last two or three years should soon be apparent and will probably restore this branch of mining to a semblance of its former prosperity.

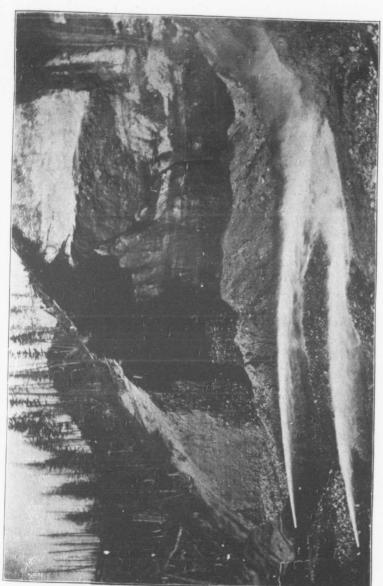
From 1858 to 1893 the production of gold in British Columbia was entirely due to the working of its placer gold mines, but in 1889, 1890 and 1891 discoveries of auriferous iron sulphides were made in the southern part of the West Kootenay division in what is known now as the Trail district, about seven miles north of the International boundary line. These sulphides so found were not continuously worked until the winter of 1892 and 1893, since which time the production has been largely increased, until at the present time the yield from this district alone outshadows any and all other gold producing districts in Canada. It must be borne in mind, however, that this gold field is of an entirely different nature and character to that found anywhere else to date in Canada; by which is meant that the major part of the gold contained is not free, but has to be extracted by means of a smelting operation, differentiating it from the gold found in the districts of the Provinces of Nova Scotia and Ontario.

About this same time a free milling gold vein was opened on Rice creek, a tributary of Rock creek, in Camp McKinney and about eight miles north of the boundary line. The first discovery of gold in this camp was in 1884, and the "Cariboo" vein was discovered in 1887, but work was not begun systematically until 1894. Free gold in quartz had been noted in the early sixties in veins occurring along several creeks and on mountains in the Cariboo district, and although primitive attempts were made to work some of these veins (particularly in 1877 and 1878) the results were unsuccessful, and vein mining has never been established as an industry in the famous placer district.

Prosuction.— The following figures and tables are taken from the excellent compilation contained in the report of the Minister of Mines for the year 1897:

The total production of gold in British Columbia from the discovery in 1858 to the end of the year 1897, was:

| From plac | er mines | | | |
 |
 | 9 | 59,317,413 |
|-----------|--------------|---------|--------|---|------|------|---------|------------|
| From lode | mines | | | |
 |
 | | 4,300,689 |
| | | | | | | | ******* | |
| Or | a total gold | product | ion of | f |
 | | d | 62 618 100 |



Cariboo Hydraulic Mine. --Giants discharging 2,700 Miners' Inches of water in Pit No. 2."

Yield of Placer Gold from 1858 to 1898.

| 1858 | 705,000 |
|--------------------------------|-----------|
| 1859 | 1,615,070 |
| 1860 | 2,228,543 |
| 1861 | 2,666,118 |
| 1862 | 2,656,903 |
| 1863 | 3,913,563 |
| 1864 | 3,735,850 |
| 1865 | 3,491,205 |
| 1866 | 2,662,106 |
| 1867 | 2,480,868 |
| 1868 | 3,372,972 |
| 1869 | 1,774,978 |
| 1870 | 1,336,956 |
| 1871 | 1,799,440 |
| 1872 | 1,610,972 |
| 1873 | 1,305,749 |
| 1874 | 1,8, ,618 |
| 1875 | 2,474,004 |
| 1876 | 1,786,648 |
| 1877 | 1,608.182 |
| 1878 | 1,275,204 |
| 1879 | 1,290,058 |
| 1880 | 1,013,827 |
| 1881 | 1,046,737 |
| 1882 | 954,085 |
| 1883 | 794,252 |
| 1884 | 736,165 |
| 1885 | 713,738 |
| 1886 | 903,651 |
| 1887 | 693,709 |
| 1888 | 616,731 |
| 1889 | 588,923 |
| 1890 | 490,435 |
| 1891 | 429,811 |
| 1892 | 399,526 |
| 1893 | 356,131 |
| 1894 | 405,516 |
| 1895 | 481,683 |
| 1896 | 544,026 |
| 1897 | 513,520 |
| 기계에 가는 맛있다. 이 그렇게 모르는 바람이 되었다. | |

the C direc

like face are a be ar push for th

along Mr. havin diam

which The g older

part a or ter are pi worke

long t found

under Schist Canad

(a.

.....\$59,317,473

The production of gold from lode mining began in the year 1893, and the product of the five years is given below:

Yield of Gold from Lode Mines from 1893 to 1898.

| | _ | _ | | _ | | | | | | Y | E | A | R | | | | | _ |
7 | | | | C | Oun | ces | Š. | | 1 | Val | ue. |
|-------------------|----|---|--|---|--|--|--|--|--|---|---|---|---|--|--|--|--|---|-------|--|--|--|---|-----|-----|----|---|-----------|-----|-----|
| 893
894
895 | | | | | | | | | | | | | | | | | | | | | | | | 6 | ,17 | 52 | | I | 23, | 10, |
| 896 | ٠, | | | | | | | | | | | | | | | | | | | | | | 1 | | ,25 | 59 | | 1,2 | 85, | ,18 |
| | | | | | | | | | | | | | | | | | | | | | | | | 215 | .08 | 36 | - | \$
4.3 | 00, | 68 |

Area and Geology.— The delimitation of gold bearing areas in a new province like British Columbia, where by far the vaster part of its 390,000 square miles of surface is an untrodden wilderness, must of necessity be confined to those portions which are at present occupied, or have been worked in the past, and at the best can only be an approximation. When it is further considered that each year prospectors are pushing ahead and opening new sections, this approximation becomes valuable only for the season in which it was made.

The region within which payable auriferous alluvial deposits have been found in the Cariboo country has a greater dimension of about 50 miles in a north and south direction, extending from Valley creek on the north to Beaver river on the south along the 122d meridian, with a greatest width of 30 miles. The area is given by Mr. Bowman (a) as an annular space surrounding the flanks of Cariboo mountain, having an average width of 10 miles and comprised within a circle 40 miles in diameter. The area may be taken as approximating 1,000 square miles, within which are included all diggings hitherto remarkable for their wealth or permanence.

The gravels of this section are of recent Post Tertiary and Tertiary age (b.) The gravels first worked here, in 1860-64, are recent, being the detrital remains of older gravels washed down and re-arranged by the present streams, and for the most part are worked out or now only worked by Chinamen. The high "bench diggings" or terraces of auriferous gravel lying from 100 to 800 feet above present river courses are put down as Post Tertiary, and constitute a large portion of the gravels now being worked by hydraulicing. The old channels of Williams' and Lightning creeks belong to the Tertiary period and all the old channels of this district are likely to be found of this age.

The greater part of the annular belt comprising the alluvial fields of Carboo is underlain by a series of crystalline schists (named by Mr. Bowman "Cariboo Schists") lithologically identical with the Cambrian and pre-Cambrian of Eastern Canada, and consisting of altered sediments — talcose, and chloritic slates, micaceous

⁽a.) Part C. Annual Report Geol. Survey, 1887.

⁽b.) Op. Cit. pp. 16, 17.

schists, some quartzites and occasional bands of calcareous shales, all contorted and much folded. It is only within this area of folded schists that gold has been found in profitable quantities.

Upon the hill sides and mountain tops in this area (as Mt. Tom, Island, Mt. Burns, Mt. Antler, Mt. Yanks Peak, etc., etc.,) quartz veins, corresponding in strike with the enclosing schists, occur in large numbers. The attempt to work some of these veins in 1877 and 1878 has been alluded to, with mention of the unsuccessful results. Nevertheless it is altogether within the range of probability that further search and intelligent investigation will reveal some of the sources from which the placer gold was derived, and that a vein mining industry will be established in the Caribbo district which will ultimately rival in production the famous yields of the sixties. "The very 'coarse' character of much of the placer gold and the definite localization of the richer parts of the deposits, show that these must often be near their points of origin." (a.) "It has often been recognized that belts of rock containing numerous small and irregular quartz stringers only will pay for mining and crushing as a whole " (b) and as the gold schists of Cariboo answers to this description, and do not afford such large auriferous quartz veins as would be likely to be the source of the coarse gold found in the gravels, it is probable that in such quartziferous schists will be found the material for a quartz mining industry.

The gravels of the Omenica and Cassiar district are in all respects similar to those of the Cariboo section. The areas of these northern districts are as yet undetermined, but, with Dease lake as a centre, pay dirt in Cassiar has been found within a circle whose radius may be taken at 40 miles, and the productive portion of the Omenica covers not less than 200 square miles.

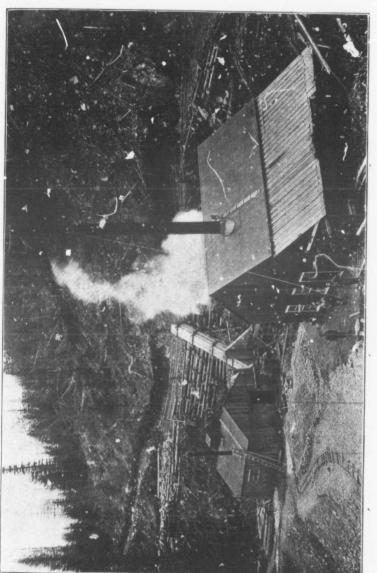
Large veins of quartz are represented to occur in both of these sections and to carry argentiferous galena, but there is no record of discoveries of free gold in veinstone.

The gravels of the Big Bend country occupy an area between the summits of the Rocky Mountain range and the Gold Range extending from the 53rd parallel southerly some 50 miles. The most productive sections have been the valleys of Gold creek and Carnes creek and their tributaries, covering an area of about 35 by 20 miles, or between 600 and 700 square miles.

Since 1895 many discoveries of auriferous veinstone have been made in this district, some carrying free gold and others carrying sulphides of iron with which free gold appears to be associated. At the period of writing several attempts are being made to open up these veins which promise a substantial basis for a remunerative quartz mining industry. Difficulties of access have kept this region back, but the general progress of transportation methods, now so rapidly advancing in British Columbia, will soon remove obstacles.

The gravels of the southern portions of the Kootenay divisions do not appear to be so extensive, nor accompanied by such large areas of gold bearing formations as are seen in the districts north of the line of the Canadian Pacific Railway.

⁽a.) G. M. Dawon, Part R. Annual Report, 1887, p. 53. (b.) Op. Cit. p. 53.



Centre Star Mine, Rossland.

The most productive of these southern fields on the eastern side has been that occupied by Wild Horse creek on the western slope of the Rocky Mountains, and by Perry creek and Moyie river on the eastern slope of the Selkirk range.

The gravels which have been worked on these streams are chiefly of modern origin, although a portion of a tertiary channel was worked on Perry creek. The area embraced covers, for the three streams, some 40 square miles, underlain by slates and quartzites of probable Cambrian age, with patches of diorites included.

In this slate series occur schistose or "bedded" veins, often of large dimensions (on Perry creek reaching widths of 40 to 60 feet) carrying gold associated with iron pyrites, and occasionally with the higher sulphurets of copper. But the gold contained is fine and so intimately associated with the sulphurets as to preclude the idea of milling the ore; several extensive tests conducted in 1897 failed to discover the existence of paying veins and led to the conclusion that the gold in the gravels must have been derived either from richer portions of these veins, long since eroded, or that it had come from the outcrops of pay chutes now deeply buried beneath a heavy drift.

Small amounts of gold have been washed from recent gravel deposits in valleys occurring on the range of metalliferous rocks running north-easterly from Trail towards Kootenay lake, in Nelson mining division.

These gravels are the detritus of small quartz veins occurring in the granites and mica syenites of the country, one or two of which veins have been worked as lode mines in recent years and have made a small production. The size, however, is small and the free gold appears to be confined to the zone of decomposition, after passing which the values are contained almost entirely in iron sulphides.

The valley of the Similkameen and tributaries, in the political district of Yale, is the most important of the southern placer fields. Although one of the first fields discovered it has never been abandoned, and gravels on two tributaries (Tulameen river and Granite creek) are yet abundant and remunerative in grade.

In this district most of the gravels worked have been modern, but there are undoubtedly deep lying deposits of tertiary gravels there which may prove as high in grade as gravels of similar age have done in the northern districts.

The area of Similkameen country approximates 700 to 800 square miles, and although quartz veins have been found in rock exposures in the valleys, no systematic work has been done upon them; but from recent discoveries during the last twelve months there is every reason to anticipate the establishment of vein mining in this section.

The other southern sections of Okanagan and Rock creek are now abandoned to the Chinese, though in Rock creek, as previously mentioned, mining upon one vein has been profitably carried on for some years.

This vein in character is similar to those described as occurring in the granites near Kootenay Lake. It lies in a massive rock said to be diabasic (a), and other veins are found in the immediate vicinity. The region is one of flat dipping faults, and the values contained in the veins are associated with sulphides of the base metals.

and wer from nari said qua seri

the min of a prograture regar will dire

that

or e atte

asso

\$4,0 of the have appointed by a thes

In s wall char cour dep

(chi

far i

⁽a) Annual Report, Minister of Mines, B.C., 1897, p. 604.

A district to which reference has not before been made is that lying between, and embracing, Bridge river and Cayoosh creek in Lillooet. Gold bearing gravels were found here early in the sixties, and considerable quantities of gold were washed from them. The valleys of both streams have great exposures of rock, in many places narrowing to a rock gorge. These rocks are a series of slates, quartzites and schists said to be of early Palaeozoic age, which have interstratified with them layers of quartz, the whole being more or less crumpled or folded, and traversed by a complex series of faults.

It was early acknowledged that these quartz bands were the original source of the gold found in the bars of both streams, and some of the early work in quartz mining was done on the "Bonanza" ledge on Cayoosh creek. In 1896 the discovery of an outcrop of quartz carrying very rich specimens attracted great attention, and the progress of the "Golden Cache Mines Company" formed to work this deposit, has attracted equal attention. The results which have been made public by this company regarding its operations have not been such as to inspire belief that these quartz veins will be found to be of high grade or specially remunerative. But attention has been directed to the field which covers some 400 to 500 square miles, and it is not unlikely that profitable ore bodies will be found there.

Large exposures of quartzose schists, associated with quartzites, and carrying interbedded quartz veins have been known (and worked to a slight extent) for some seven or eight years in the camp of Fairview on the Okanagan river, but so far the various attempts to work these deposits have not resulted profitably, with the exception of one chute in the "Morning Star" mine.

Vein mining for gold in British Columbia is at present practically the monopoly of the Trail district, in which (as previously noted) the gold occurs so intimately associated with iron and copper sulphides as to make it a smelting ore.

Trail district, politically, covers about 600 square miles, but the area within which payable ores occur is less than 20. This district has so far produced a total of \$4,000,000 in the four years of its existence as a producing country. The ore bodies of the Rossland camp, which comprises the productive portion of Trail creek district, have been the subject of careful study by the Geological Survey (a). The deposits appear to have the form of replacement veins along lines of fracture occurring in an irregular area of eruptive rock which has for its centre a mass of gabbro surrounded by an area of fragmental volcanic rocks frequently appearing to be porphyrites. Along these lines of fracture or of fissuring have been deposited bodies of iron sulphides (chiefly pyrrhotite) associated with small quantities of chalcopyrite and arsenopyrite. In some cases two walls are apparent, but in most of the deposits there is but a single wall which does not act to define or limit the ore body, but is simply evidence of the channel through which the mineral solutions may have acted to dissolve away the country rock and deposit their metalliferous contents. Comparatively few of these deposits of iron sulphides are sufficiently auriferous to pay for their extraction, and so far no indication of values can be obtained except through assaying. Owing to the hardness of the eruptives in which these deposits occur development is slow and

7

⁽a) Summary Report, 1896, p. 23-29.

expensive, and although this district is now in the fifth year of its existence not more than half a dozen properties can claim to have pay ore bodies of any magnitude. With the advent of a cheap method of extracting the precious metal from its matrix of base sulphides will come a tremendous industry, since the tonnage of ore (of a value at present too low to permit of smelting) already in sight is exceedingly large.

Similar bodies of auriferous sulphides occur south-westerly in what is called the Boundary district, but as yet only development has taken place and no production has been made.

It may indeed be said that as yet there has been no discovery of free milling quartz in quantity in British Columbia. While the "I. X. L." at Rossland, the "Poorman" and "Fern" near Nelson, the "Cariboo" near Rock creek, and the "Morning Stat" at Fairview, have worked for longer or shorter periods successfully, yet in all these cases with perhaps the exception of the "Cariboo," the free milling character of the ore has disappeared with increased distance from atmospheric oxidation, and the ore has become a concentrating, rather than a milling proposition. It is to the northern districts of Cassiar, Omenica, and Cariboo that one must look for discoveries of free-milling ore if indeed British Columbia is to have such, or, perhaps, to the quartz veins of the coast range above Vancouver, from which section come reports of discoveries of large veins said to be free-milling.

Laws.—The mining laws of British Columbia are being so constantly amended that it is difficult to give a synopsis.

- (1.) The first prerequisite for acquiring, owning or holding mineral property is the obtaining of a "free miner's certificate," which is good for twelve months and which costs \$5; joint stock companies must obtain a certificate as well as an individual miner or mine-owner; a transfer of mining property to a person or corporation not holding a "free miner's certificate" is invalid.
- (2.) In the development of mineral bearing lands the law of British Columbia divides into two parts—the Placer Mines Act and the Lode Mines Act. Lode mines are obtained by staking locations, the maximum size of which is limited to 1,500 feet square, containing 52 acres. The locations must be marked by boundary posts, and a post erected at point of discovery, and the side end location lines must be brushed out or otherwise designated.
- (3.) Each location is required to be recorded at the office of the Mining Recorder of the district within fifteen days after location is made, or if more than ten miles from the said office an additional day is allowed for each ten miles in excess of the first. After the location, and recording, a "free miner" is permitted to hold the same provided he shall perform development work upon the claim to the value of \$100 during the first year and each year thereafter, to which he shall make affidavit, and record that he has done the work. Upon showing evidence that this \$100 worth of work has been performed for five years, or that \$500 worth of work in all has been done upon any one claim, he is entitled to have a Crown grant issue for the same, after it has been duly surveyed, &c., &c.



Surface Works, Le Roi Mine, Rossland.

NORTH-WEST TERRITORIES.

There are two other portions of Canada which should, perhaps, be mentioned in any account of her gold fields; both of these districts are outside of any provincial boundary, and are territories under the administration and jurisdiction of the Dominion Government.

The first of these is the territory drained by the North Saskatchwan and some of its tributaries, and extends westerly from Edmonton some 200 miles, and easterly for over 100, gold having been obtained from washings at Battleford. The gold found has occurred entirely in the modern gravels of the Saskatchewan, and only the bars and beaches left dry at low stages of the water have hitherto received much attention.

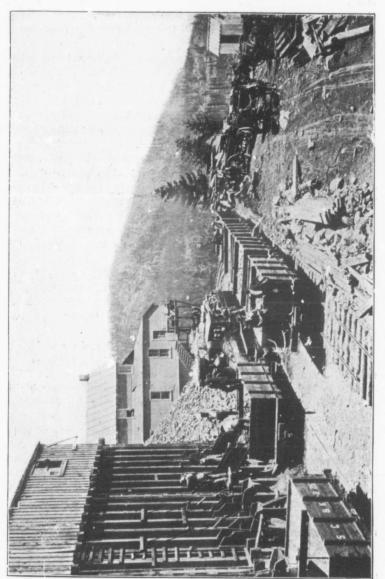
Discovered by Sir James Hector in 1858 when making his reconnaissance survey through the Rocky Mountains, the work of mining was begun in 1865, and from that year down to the present the river bars have received more or less attention. The production in some years has reached \$50,000, but in others has fallen much below that amount, and no authentic record of yield is available. The season of low water during which the bars could be worked by hand is comparatively short, and sudden rises of the river are frequent; so that for many years now the average earning of the men who have used a sluice-box or rocker have been under, rather than over \$1.50 per day. The gravel on these bars runs from 4 to 8 feet in thickness.

Some two years ago dredges were put upon the river, and attempts made to handle the gravels of the submerged portions of the river-bed, but owing to the inexperience of the operators, and many deficiencies in construction of the machinery their operations were financially unsuccessful. There is being made this year, a series of comprehensive tests, under the able management of Mr. A. E. Hogue, M.E., with a dredge of 500 cubic yards per diem capacity. Calculations have been made with due reference to the fine character of the gold and to the low grade nature of the gravels, and the management feel sure of a successful venture.

The source of the gold in these gravels is undetermined, but as post tertiary gravels are known to cover large stretches of the country to the westward, even to the slopes of the Rocky Mountains, it is to be supposed that the various branches of the North Saskatchewan have cut their banks through these auriferous gravels, and that at each flood time, portions of them are washed down and rearranged or redistributed in the bars of the present river; certain it is that the gravels appear to be enriched each time the river is flooded.

In this connection it may be pertinent to remark that not only the North Sa-katchewan river but those portions of the McLeod and Athabasca rivers lying between the 53rd and 54th parallels, also carry auriferous gravels, and that there is a large area between the Peace river on the north, and the north branch of the Saskatchewan on the south, which may be expected, with the advent of roads and better transportation, to become an important factor in the production of gold in Canada.

The other portion of the North-West Territories which has not been mentioned is the now famous "Yukon Region," concerning which there are three sources of



Loading Ore on Cars for Smelter at Le Roi Mine, Rossland.

information available, viz:—(i.) The Reports of Dr. G. M. Dawson and Mr. R. G. McConnell in the volumes of the Geological Survey for 1887-8-9. (2.) "The Klondike Official Guide," by Wm. Ogilvie, and, (3.) "The Appeal of the Yukon Miners to the Dominion of Canada" 1898.

The following brief account has been complied from the first and third sources, and the mass of ill-digested hearsay information contained in Mr. Ogilvie's book has has been disregarded. The first mining done in this region, in the valley of the Yukon proper, was in the year 1880, on a tributary of the Lewes river and the production amounted to very little. In 1881 remunerative bars were found on the Big Salmon river. In 1885 mining on the Stewart river produced gold of an estimated value of \$100,000, but the finding of "coarse" gold on Forty-Mile creek in 1886 drew off most of the miners from the Stewart, and since 1887 this river has been practically abandoned. The Stewart river has never been explored to its source and the work done on its tributaries so far has not demonstrated the existence of very rich gravel. The total number of miners in the Upper Yukon Basin in 1887 was estimated at 250. In the early nineties rich gravel was found on two tributaries of Sixty-Mile creek (Miller & Glacier creeks) and the total gold yield of these to 1898 is estimated at \$200,000. Between the discovery of gold on Sixty-Mile and that on the Klondike river in July, 1896, there was little new ground opened.

In July and August, 1896, discoveries of rich gravels carrying coarse gold were made on Gold Bottom, Bonanza and El Dorado creeks, tributaries to the Klondike river which is a stream of between 200 and 300 miles in length (of which only about 100 miles from its mouth has been explored) flowing southwesterly and emptying into the Yukon river about the 64th parallel of latitude.

These are the discoveries which have attracted the attention of the world, and have induced a mad "rush" into this inhospitable country during the last twelve months. So little, however, is definitely known of the vast region of the Yukon district (covering over 190,000 square miles,) and the areas of exceptionally rich ground thus far discovered are so small, that it is not within the region of probability that one per cent. of the people thus "rushed" in will find profitable diggings. Although water for sluicing and mining purposes may be obtained for (at the most) four months in the year, the costs of working frozen ground, and for subsistence during the other eight months will prevent the working of any but very rich gravels for some years to come. With the cutting away of the timber and the burning of the moss whenever dry enough, some portions of the ground may thaw out sufficiently to permit of small hydraulicing operations, but at the present time the only method of work feasible is by "drift mining," which is a matter of individual effort, and cannot be materially cheapened nor increased by capital, nor the operations of "companies."

The pay dirt, where found, averages from two to five feet in thickness lying beneath two feet of moss and from 10 to 20 feet of muck and barren gravel. Beyond the affluents of the Klondike and Indian rivers practically nothing is yet known of the value of the gravels to be found, and although the gold bearing gravels of the region have been shown to be widely distributed and extensive in area they have not been shown, with a few exceptions, to be very rich. As yet no places comparable in

Coluctions

is no

by q The logic

are o

Cana rest have

man

Regi

Ross

distri follo 1897 richness with many places in California, Montana and the Cariboo district of British Columbia, have been found, and it needs no second thought to comprehend that costs of extraction in the Yukon will always be greater than in the more favored sections to the south.

In regard to the discovery of rich gold bearing quartz veins in this region, there is no evidence that such have as yet been found. Numerous quartz veins have been seen and prospected, but as yet no veinstone of payable grade has been opened.

The rocks of the Yukon valley, between Forty Mile creek and the Stewart river, are chiefly hard crystalline schists and slates, and gray granites. Along the region of the Klondike river runs a belt of clay slates with interbedded lime stones traversed by quartz veins, and above this (to the south) occur schists more or less micaceous (a.) The age of these schists and slates has not been determined, but they have the lithological characteristics of Archean rocks.

Much may be expected from the development of this Artic field, but time and many other conditions will be required to assign to it its relative place amongst Canada's gold fields; and her fame and future, as a gold producing country, n ast rest on the development of the more accessible fields, which, for investment purposes, have certainly many features of preferment.

BIG VALLEY CREEK GOLD MINES, Limited.

Registered 24th April, 1896. Authorized Capital, £125,000, in shares of £1 each.

Directors:

The Earl of Kilmorey, M.P.

Ross Robinson. | Thos. Sopwith. | Walter Holdsworth. | Frank Davies.

Advisory Board in Canada:

Hon. Jas. Reid, Quesnelle, B.C. | Dr. J. W. Powell, Victoria, B.C. William Adams, M. P. P., Cariboo, B. C.

CANADIAN OFFIC ::

Major C. P. Dupont, Victoria, B. C.

Head Office:

E. A. Foster, 6 Great St. Helens, London, E.C.

This company, which was formed to operate a property of some 640 acres in the district of Cariboo, British Columbia, was at last report being reorganized. The following financial statement was submitted to the shareholders on 28th December, 1897:—

⁽a.) Report 1888-89 Geological Survey of Canada, p. 142.

BALANCE SHEET, 30TH SEPTEMBER, 1897.

| LIABILITIES. | | | | | | |
|--|-----------------|-----|----|----------|-----|----|
| To Share Capital:— | | | | | | |
| | £ | S. | d. | £ | S. | d. |
| | 125,000 | 0 | 0 | | | |
| Issued— | | | | | | |
| 17,118 subscribed shares, on which £1 per share | | | | | | |
| has been called up | 17,118 | | 0 | | | |
| Less calls in arrear | 2,318 | 15 | 0 | | | |
| | 14,799 | 5 | 0 | | | |
| 94,000 shares issued to Vendors as fully paid as | 94,000 | 0 | 0 | | | |
| 717.118 | | - | _ | 108,799 | 5 | 0 |
| " Sundry creditors—London | 0.00 | | | | | |
| British Columbia | 825 | | 0 | | | |
| | 224 | 0 | 0 | 1,049 | 0 | 0 |
| (Being Directors' fees and Managing Director's salary, not drawn as per contra.) | | | | | | |
| | | | 1 | (109,848 | 5 | 0 |
| Assets. | | | | J. 4- | 3 | - |
| | £ | | d. | £ | s. | d. |
| By Purchase price of 4 Leases, comprising a total area of 640 acres, situate in district of Cariboo, British Columbia — In Cash | | | | 20 | 3. | u, |
| In fully-paid shares (per contra) | 6,000
94,000 | 0 | 0 | | | |
| Development and general expenses, from 24th
April, 1896, (date of incorporation) to 30th
September, 1897:— | | | _ | 100,000 | 0 | 0 |
| At Mine— | | | | | | |
| Engineer's fees, salaries, legal and professional charges, amount paid £379 15 9 Accrued, but held in suspense pending more satisfactory develop- | | | | | | |
| ments | 602 | | _ | | | |
| Licenses, stores, stationery, print- | 603 | - 5 | 9 | | | |
| ing, traveling expenses, cables, etc. | 291 | 4 | 1 | | | |
| Wages | 2,764 | 11 | 9 | | | |
| In London— | | | - | 3,659 | 11, | .7 |
| Engineer's report, general expenses, | | | | 10000 | | |
| stationery, printing, cables, &c 127 3 7 | | | | | 3 | |
| Legal and professional charges 55 2 1 | | | | | | |

bro yie mi of

ho

bre

| | Directors' fees, amount | | | | | | | | | |
|-------|------------------------------------|-------|----|---|-------|----|---|---------|----|----|
| | paid£450 0 0 | | | | | | | | | |
| | Accrued but held in suspense | | | | | | | | | |
| | pending more satisfac- | | | | | | | 1. | | 3 |
| | tory developments 825 0 0 | | | | | | | | | |
| | | 1,275 | 0 | 0 | | | | | | |
| | Secretary and offices | 495 | 0 | 8 | | | | | | |
| | Less interest, transfer fees, &c., | 1,952 | 6 | 4 | | | | | | |
| | received. | 20 | 12 | 0 | | | | | i. | |
| | | | | - | 1,931 | 14 | 4 | 5,591 | 5 | 11 |
| " Sur | dry debtors, London | | | | | | | 14 | 7 | 11 |
| " Cas | sh-At Bankers, London | | | | 4,054 | 4 | 9 | | | |
| | In hand " | | | | 23 | 3 | 8 | | | |
| | Cariboo, British Columbia | | | 1 | 165 | 2 | 9 | 4,242 | 11 | 2 |
| | | | | | | | £ | 109,848 | 5 | 0 |

BLUE NOSE GOLD MINING CO., Limited.

Incorporated 1896. Authorized Capital, \$50,000, in shares of \$100.00.

Directors:

Simon A. Fraser. | Thos. Cantley. | John W. Fraser. | A. G. McNaughton. John Craig.

Head Office: John Craig, Secretary, New Glasgow, N. S. Mines Office: A. G. McNaughton, Superintendent, Goldenville, N. S.

The gold areas controlled by this company number 166, and comprise the Caledonia, Cobourg, Woodbine and Springfield properties at Goldenville, in the Sherbrooke district, Province of Nova Scotia. Size of vein worked, 12 to 15 inches; yielding 6 dwts. per ton. Produced in 1896 423 ounces from 1,536 tons of rock milled; three months work only; 1897, 1,939 oz. 13 dwts. were won from 7,983 tons of rock milled. The plant comprises:

Stamp Mills — (Old) 12 stamps; (new) 20 stamps, steam-driven; 4c h.p. horizontal multitubular boiler; compound condensing engine; weight stamps 850 lbs.; speed 80 p.m.; wire screen 40 mesh; Hammond ore feeders; Foster ore breaker.

Boilers in place - Two multitubular; two upright.

Drills-Ingersoll-Sergeant.

Hoisting Engines in place-Two, built by Fraser Bros., New Glasgow.

Pumps-Four in place, Cornish.

BRANDON AND GOLDEN CROWN MINING CO., Limited.

The

on t

pro

We

Gre

Bla

pan

the

divi

plan

Too

mer

und

gro

Chr

Roo

Buc

Wil

Ha

Gol

ling

Col

rive

por

only

It c

mine

also

Incorporated 18th March, 1897. Authorized Capital, \$1,500,000 in shares of \$1.00.

Directors:

Hon. T. Mayne Daly, Q.C., President.

Andrew Kelly, Brandon, Man.
W. J. Porter, Greenwood City, B.C.
W. A. Fuller, Spokane, Wash.
Frederick Nation, Brandon, Man.

W. A. Macdonald, Q. C., Nelson, B.C.
Hon. J. N. Kirkchoffer, Brandon, Man.
George H. Collins, Greenwood City, B.C.
W. J. Lindsay, Brandon, Man.

Wm. Jonnston, Brandon, Man.

Head Office: Walter L. Orde, Secretary, Rossland, B. C. Mines Offices: George H. Collins, Superintendent, Greenwood, B. C.

Owns and operates the Golden Crown mineral claim, situate in Wellington Camp, Boundary Creek Division of the Province of British Columbia. The ore is gold-bearing copper pyrites and pyrrhotite in a quartz gangue. At date of report the main tunnel was in 60 feet and was run to cut five small veins, with 280 feet to go to tap a vein, No. 2, at the top of the hill at a depth of 80 feet. One vein, No. 1, of the kind of ore described, 10 to 12 inches wide had been crossed. A shaft had been sunk 60 feet on vein No. 2, which was one to twenty inches wide of decomposed quartz and the sulphides from which high gold assays have been obtained, and the enclosing country rock was somewhat mineralised and also assayed a little in gold. Thirty feet south of No. 2 is vein No. 3, a small vein of quartz and sulphides exposed in a small cut. Vein No. 5, as exposed hy a long trench, was three to four feet wide, of quartz, copper, and iron pyrites and pyrrhotite, good samples of which have assayed \$35 per ton in all values. At date of report was being equipped with a suitable hoisting and pumping plant.

BRITISH AMERICA CORPORATION, Limited.

Registered 1897. Authorised Capital, £1,500,000, in shares of £1. The London & Globe Finance Corporation guaranteed £500,000 of this capital.

Directors:

The Marquess of Dufferin and Ava.

Right Hon. Lord Loch.
Hon. C. H. Mackintosh.

Edward A. Hoare.
Whitaker Wright.

Head Office: F. A. Labouchere, Secretary, 15 Austin Friars, London, E.C., England.

CANADIAN OFFICES:

Vancouver: The Hon. C. H. Mackintosh, Managing Director. Rossland: W. A. Carlyle, Ba.Sc. M. E., Mining Engineer-in-Chief.

At date of going to press the following properties had been acquired under option and otherwise, and arrangements were being made for their vigorous development. The following particulars is excerpted from a circular letter issued to the shareholders on the 26th March, 1898:

"District of Rossland, B. C.— The mines purchased include the following properties, z: Lucky Queen, Surprise, You Know, Number One, Rockingham, West Le Roi, The Kla, Josie, Poorman, Oreornogo, Nickel Plate, Golden Chariot, Great Western, Golden Dawn, Columbia, Kootenay, Tip Top, Copper Jack and Black Eagle.

"Of the properties in respect to which negotiations are pending with the company, one considered amongst the most valuable is the Centre Star, which includes the Idaho, and another is the Le Roi mine. [Since going to press this important dividend-paying mine is reported to have been purchased together with the smelting plant of the Le Roi company at Northport.]

Sophia Mountain District, B.C.—The corporation owns the Whoop-Up and Tootsie mine, which adjoin the Velve mine property, upon which successful developments are said to have been made. The corporation has also ten adjacent claims under option.

"Boundary Country, B. C.— The corporation has purchased the Algonquin group of mines, covering an area of over 800 acres, situate on Castle Mountain near Christina Lake, in the Grand Forks mining division, Yale district, viz: Bryan, Lala Rookh, Red Jacket, Calumet, Keewaydin, Hermit, Gogebic, Tartar, Hottentot Buckhorn, Arctic, Golden West, Oberon, Monarch, Mirror, Iroquois and Algonquin.

"West Kootenay, B. C.—In the Salmon River country, south of Nelson, in the Wild Horse district, the corporation has purchased five properties, viz: Argenteuil, Hawkeye, Murphy, Katharden and Mist Fraction.

"East Kootenay, B.C.—This corporation owns the Hoskins group, on the west side of Perry creek, and known as the Perry, Maybe, Emma, Southern Girl, Gold Bug, Bozeman and Manhattan. Four distinct reefs have been opened, varying from four to 25 feet in width, the ore being free milling.*

"Yukon District, Northwest Territories.—A well-finished warehouse, dwelling house and several town lots have been purchased in Dawson City. The British Columbia Iron Works are building a steamer for the corporation's use on the Yukon river. In the meantime a 2,000 ton steamer has been chartered to convey the corporation's supplies, now being purchased at Vancouver, to St. Michaels.

"The corporation has under option many properties in the Yukon country, but only one concession so far has been acquired conjointly with the London and Globe. It consists of a 20 years' dredging lease of 50 miles of river beds."

^{*}Note.—The signatories to the circular letter state: "We are assured by a recent cable that the Trail Smelter (purchased by the Canadian Pacific Railway) proposes to treat the ore from the mines owned by this corporation at cost price (freight from mines to smelter, 50 cents per ton,) and also to construct a branch line to our Columbia and Kootenay mines free."

BROOKFIELD MINING COMPANY, Limited.

Incorporated 18th January, 1897. Authorized Capital, \$500,000, in shares of a value of \$50.00.

Directors:

Wilbur L. Libbey, President.

Elijah H. Harding.

William S. Tupper.

Mine Office: W. L. Libbey, President, North Brookfield, Queen's Co., N. S.; Robert A. Logan, Secretary.

Owns and operates a gold property containing 104 areas at North Brookfield, Queen's County, Province of Nova Scotia. Average size of vein worked 14 inches yielding about \$17.00 per ton milled. Opened by shafts and incline. Equipped with 20-stamp mill and chlorination plant (Thies process) having a capacity of 12 tons daily. Output:—

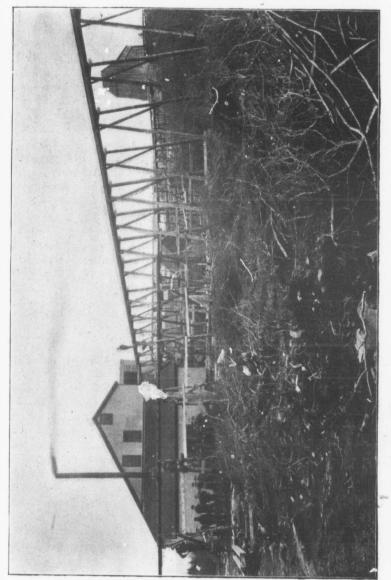
1896.....2,975 ozs. 11 dwt. 15 grs. from 4,242 tons rock milled.

1897.....4,667 " 10 " 15 " " 5,351 " "

1898.....3,906 " 18 " 00 " " 9,712 " "

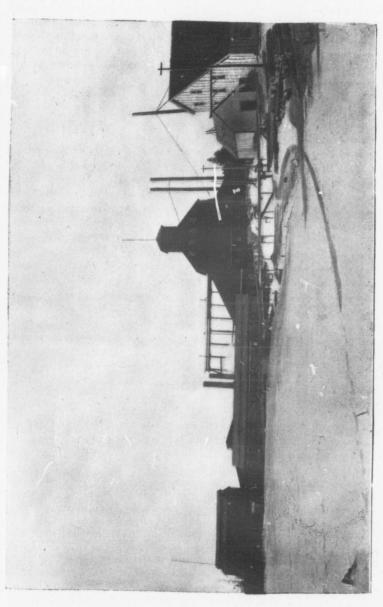
Generally the method of treating the ore is by stamping the ore wet, passing the pulp over electro silver plated copper plates and then saving the sulphurets by means of the Improved Triumph Concentrators. The resulting concentrates are roasted in single hearth reverberatory furnaces and then subjected to barrel chlorination by the Thies process—a process without patents, which is used with many adaptations by a large number of successful mines, in the mining regions of the United States, and other parts of the world.

The mill, with power and capacity for 40 stamps, at present fitted with 20, is placed directly over the working shaft. The shaft is perpendicular for 100 feet and then dips south to the depth of 400 feet at an angle of 23° cutting the pay chute on the fissure vein which has given to Brookfield its yield of gold. The shaft also dips north, cutting a large main lead at about the same angle, thus enabling the products of both leads to be hoisted to one deck on the top of the mill. The ore is hoisted to the iron-clad deck by a double cylinder steam hoisting engine placed on the ground floor of the mill, the whole arrangement being such that the engine-man hoists and dumps the self-acting skip of one ton capacity without assistance from the deck-man. The ore is shovelled from the deck into a 10 x 15 Dodge rock breaker placed below the level of the deck, whence it is fed through chutes into any desired ore bin. A waste rock car runs beneath the deck to take waste over a tramway elevated 50 feet high. In fact although this mill is in a low swampy place the most ample elevation has been given, by means of a massive stone foundation, for the concentrators below the stamps and for the deposit for years of both waste rock and tailings. On the lower floor are two sixty-horse power boilers, the main engine, the hoisting engine, 20 stamps with 8 foot silver plates and a large amalgamating room fitted up with hot



Blue Nose Gold Mining Co.-20-Stamp Battery at Goldenville, N.S.

and cold water, panning tubs, iron sheathed table to handle amalgam set retort, smelting furnace, and clean-up barrel. The whole building, including the large concentrator room, is heated with the exhaust steam and is lighted by two 5 K. W. dynamos, which likewise transmit power for the chlorination and furnace houses. The stamps are 900 pound stamps run on a 5 to 6 inch crop, 92 to the minute; 30 mesh wire screen is used. The mortars are narrow, single discharge, the latter being about 8 inches. Experiments are being made however, at present with a 20 mesh screen the object being to strike the medium between making too much slimes and saving too little gold by amalgamation. After the tailings leave the plates they pass through modifications of the Rittinger pulp sizers, where the pulp is divided into four sizes, and thence over 8 triumph concentrators. The over-flow from the last sizing box runs through a siime box where considerable slimes are collected assaying thus far about \$30 to the ton. Whether or not these slimes can be treated by roasting and chlorination has not been determined. The managers are aware that the question of sizing before concentration has been, and is much discussed, but having tried both methods the conclusion thus far for the Brookfield ore is in favor of sizing, After leaving the slime boxes the tailings are conveyed through sluices lined with riffles to the dump. A very small amount of concentrates is obtained from the sluices. The losses after leaving the concentrators are apparently largely from slimes and from sulphurets so exceedingly fine as to float. The concentration is done on eight Improved Triumph Concentrators 4 x 12 feet with smooth rubber belts. (This machine was patented by Mr. W. A. Sanders, now manager of the Equitable Mining Co., at Caribou Gold Mines, Nova Scotia, and by him sold to the Joshua Hendy Machine Co., of San Francisco). They are set at an inclination of 21/2 inches in 12 feet and receive 230 shakes per minute. The load is distributed over the endless rubber belt which travels about four feet per minute, at a depth of about 5-16 of an inch and of about the consistency of paint. Great care is necessary to keep even speed and not to allow pulp to become too thick or too thin. These two points added to the absolute necessity for cleanliness are the three most important points in running the machines, and it may be added most difficult to obtain. The average value of the concentrates now being made is about \$65 per ton; assays, however, made by Mr. F. H. Mason, of Halifax, have run, on pure sulphurets from this ore, as high as 6 ounces per ton. From the concentrating room the sulphurets are hauled on the tramways by electric power to the furnace house. Here there are three single hearth reverberatory furnaces each 8 x 70 feet, with a capacity of two tons each per twenty-four hours. Each furnace is worked by two men to a shift of twelve hours. These concentrates contain, according to Mr. Mason about 28 per cent. of sulphur and 16 per .ent. of arsenic, practically all of which is eliminated in roasting. The ore when cooked is run on to a brick cooling floor whence, when cooled, it is elevated by chain bucket elevator to the top of a 5 storey frame building containing four chlorination barrels, 16 filtering tanks, four storage tanks, 16 precipitating tanks, two settling tanks, two acid tanks and one tank in which to make ferrous sulphate. The ore is discharged from the elevators into cars containing one ton each, wheeled along over the desired barrel and dumped through a hopper into the steel barrel 60 inches



Brookfield Mining Co.-Milling and Chlorination Plant at North Brookfield, Queens Co., N.S. New 20-Stamp Mill. Shed for Chlorination. Furnace. Chlorination House.

Old Mill.

Oi

lai

Su

ve

fee

23

10

sh

tin

Tu

to

no

th

SO

ler

in

the

tin

ne

cre

62

shi

Th

ste

an

ned

sin

wa

long, 42 inches in diameter and lined with lead 12 pounds to the square foot. The entire charge consists of 125 gallons water, 15 lbs. chloride of lime, then the ore and last 40 lbs. of sulphuric acid 66° Beaume. The barrel is at once hermetically closed and revolved at 20 revolutions per minute for five hours. The barrel is then discharged through a lead lined half circle in the floor to a filter tank on the floor below. There are four of these lead lined filter tanks to each barrel, each being 6 x 8 feet by 18 inches deep in front and 17 inches back. The bottoms are covered by specially made mineral tiles 8 x 12 inches, perforated, and having 11/2 inch gutters underneath. On top of these is a rack 11/4 inch slats 4 inches high and 6 inches apart. Three sizes of quartz from 1/2 inch to ordinary gravel are placed in the rack for the filter. Before emptying the barrel, sufficient clean water is let into the filter to cover the gravel. This acts as a cushion to receive the pulp. Then the barrel is dumped, the contents striking on a wooden float to prevent disarranging the filter bed. The pulp is then washed three times with clear water, tests being made with ferrous sulphate to determine when the chloride of gold is all out of the pulp. The resulting solution is conveyed through lead pipes to the stock tanks on the floor below and the e retained until it is desired to precipitate the gold. It may be here remarked that all the tanks in this building are lead lined except the 16 precipitating tanks which are made of Florida cypress and coated several times with an acid-proof paint. When it is desired to precipitate, the solution is drawn down to the tanks, which are eight feet in diameter and three feet high. Each tank is provided with three outlets, one 18 inches from the bottom, and another I inch, and the third in the bottom. About eight or ten buckets of the ferrous sulphate is added to each tank of liquor and thoroughly stirred, then the whole is allowed to settle for three or four days, the gold being precipitated in the form of a brown powder on the bottom of the tank. The solution is drawn off through the two upper outlets opening one after the other to prevent stirring up.

The remainder is swept out through the bottom hole and placed in a small settling tank 2 x 2 x 4 feet and allowed to stand 24 hours. The supernatant liquor is then carefully syphoned off and the precipitate filtered on paper, dried, mixed with one half its weight of bicarbonate of soda and glass borax and then smelted; the resulting brick averaging 980 fine. The solution drawn from the precipitating tanks in every case is run through a sawdust filter which every few months is subjected to chlorination to get any gold that may be in it.

So far as the Brookfield ores go chlorination is a success, and there is every reason to believe that many, if not most, Nova Scotia ores could be more profitably worked if concentrators were introduced with subsequent chlorination in view. After the character of an ore is definitely determined and the amount of chemicals necessary to use per ton of ore is settled the process is a very simple one, which is a special advantage to a country like Nova Scotia, where there are no men in the line of chlorination who combine theory and practice.

The plans and specifications for the roasting and chlorination plant were furnished by Dr. Adolph Thies of the Haile Gold Mine, Lancaster County, South Carolina, who is a thoroughly educated chemist and metallurgist with some 40 years of actual experience in gold mining in various parts of the world, and from him also were obtained many of the most useful ideas in fitting up the mill.

CANADIAN GOLD FIELDS, Limited.

Head Office: 3 Lombard St., London, E.C., England. Mines Office: T. P. Kirkegaarde, Superintendent, Deloro, Ont.

Controls and is operating certain mineral claims at Deloro, Hastings County, Ontario, on which, during 1896 and 1897, extensive works were erected and a large force employed to recover gold from the mispickle ores of the district by the Sulman-Teek bromo-cyanide process.

The properties comprise lot 9 in the eighth concession of Marmora, 10 in the sixth, the west half of 10 and the north-east quarter of 8 in the ninth; in all 525 acres.

The old workings consisted of a shaft, No. 1, eight by 12 feet, known as the Gatling shaft. It was sunk to the depth of 154 feet at an incline of 55°, being a vertical depth of 127 feet. No additional sinking in this shaft has been done. At 70 feet from the surface on the incline, a level had been run north 119 feet, and south 230 feet. Sixty-six feet north of the Gatling shaft another, known as the Timber shaft had been sunk to level I. This shaft has been continued down as a winze, following the vein 79 feet, and connecting levels one and two. At 25 feet north of the shaft a cross-cut has been driven in east 38 feet. The north level has been securely timbered, and stoping is now being done. Level I south of the shaft has been extended Fro feet, making the total distance south 340 feet where it joins No. I level in the Turtle shaft. At 155 feet south of the Gatling shaft a winze has been sunk 63 feet to level 2 on the incline of the vein. Another winze south of the shaft 260 feet is now being sunk and is down 15 feet. The entire south level has been well timbered, and stoping above and below is now being done. Level 2 is 55 feet from level 1 on the same incline as the shaft. North of the shaft the old works extended 47 feet, and south of it 98 feet. The north drift has been now extended 108 feet, making a total length of 155 feet. At 25 feet north of the shaft a cross-cut is being run west and is in go feet. Sixty feet of the drift has been timbered and stoping is carried on. the south the level has been extended 181 feet, making a total of 279 feet, and timbered for the distance of 160 feet; stoping is now being done on it. The total of new work in the Gatling shaft is 400 feet of drifting, 160 feet of winzes, 128 feet of cross-cutting, besides the stoping.

The No. 2 or Tuttle shaft, nine by 14 feet, had been sunk by the former owners 62 feet at an angle of 64° west. At that depth a level had been driven north of the shaft 87 feet and a small stope made. Towards the south the level was driven 85 feet. The latter has been extended 62 feet, making the total length 147 feet, and back stoping is now being carried on. At 100 feet south of the shaft a winze is being sunk and is 10 feet down. North of the shaft the level has been extended 57 feet, connecting with level 1 in the Gatling shaft, and back stoping is being done. The total of new works the Tuttle shaft is 120 feet of levels, 10 feet of winze, and 30 feet of sinking on the fit, with stoping additional.

Four steam drills are used, and four pumps are provided to keep it fee from water, two being in constant use and two are kept as auxiliaries to be used when re-

quired. Two Heine safety boilers of 50 h. p. each supply steam for a double drum hoisting engine of 70 h.p., which serves to hoist both at the Gatling and Tuttle shafts. The skip loads are about 1,800 lbs., and about 75 tons of all grade ores are raised daily. A winze hoist is also used for hauling timbers and all other materials used in the mine through shaft A, which is 100 feet north of the Tuttle shaft. This shaft also supplies good ventilation in the mine. The poppet-heads, one over each hoisting shaft, are provided with ore bins, each having chutes for handling fine and and coarse ore. The skips automatically dump the ore on the grizzlies, where it is sorted. The first class passes into the bins and is hauled to the mill, a distance of a mile and a quarter; the second grade ore is reserved for future use.

The Deloro mill is situated a mile west of the mine and 250 yards east of the Marmora station on the Central Ontario railway. The building has three compartments under roof. The upper or rock room is 14 by 90 feet, the middle or mill room is 30 by 120 feet, and the lowest or extraction room is 70 by 90 feet. The laboratory building is 45 by 60 feet. Besides these there are an office, store-room and blacksmith shop under one roof, 20 by 50 feet; mill store-room, 16 by 20 feet; oil house, 14 by 16 feet, and two family residences.

He

Ca

and

sev

Col

As

\$76

Mo

Ed

The ore first passes through the crushers, of which there are three in the mill, two Blake and one of English make. It is then charged by automatic feeders into the pulverizing machines, of which there are also three, one of German and two of English make. The pulverized material from two of these mills is elevated and passes through screens, and thence is conveyed into a dry separating machine, from which it escapes in two streams, the coarser portion of a specific fineness going into the leaching vats, and the finer or almost impalpable powder being reserved for future treatment. In the third mill the pulverized material is drawn from the mill by a rapidly revolving fan through a screen into an air-tight chamber, the coarser particles therein falling to the bottom and being automatically delivered into cars for removal, while the fine is delivered outside of the building through the fan and is counted of no commercial value. The leachable product is placed in the vats and treated for the extraction of gold contained by the bromo-cyanide process, the gold being dissolved out and afterwards precipitated and recovered in the ordinary manner. The vats for the extracting purposes are eight in number, two for the preparation or strengthening of the liquors, four for leaching (each of them of 50 tons capacity,) and two for the reception of the liquors after leaching prior to the precipitation in the manner indicated. There has been accumulated already a large quantity of the ground ore which has been subjected to the treatment for extraction of gold, which it is proposed later to treat for recovery of the arsenic, itself a valuable by-product.

In addition to a small vertical engine of six h.p. used in the extraction room for working the pumps, seven in number, there is used for the mill one boiler of 80 h.p., an engine of 65 h.p., a duplux pump to fill the storage tank, which is of sufficient capacity to supply the mill for all purposes. The water supply is obtained from a reservoir excavated on the adjacent low ground, from which a channel has been cut to Lily creek at a point about 150 yards distant, insuring a constant head of water.

THE CANADIAN PACIFIC EXPLORATION, Limited.

Registered February 2nd, 1897. Authorized Capital, £500,000, in shares of £1 each. Shares issued, £315,000.

Directors:

The Right Honorable Viscount Powers Court, K.P., Chairman.

- J. M. MacLean, M. P., 40 Nevern Square, S. W. Vice-Chairman.
- G. H. Haywood, D.L. Dyers Hall Wharf, Upper Thames Street, E.C.
- A. Joshua, 12 Collingham Gardens, S.W.
- T. Edwards, 87 Queen's Gate, S.W.
- B. Rey, 22 Rue Lafayette, Paris, Banker.
- J. H. Trouncer, M.D., Cedar House, Surbiton.
- W. H. Corbould, 88 Cannon Street, London, E.C.

Head Office: H. B. C. Callow, Secretary, 88 Cannon Street, London, E.C., England.

Canadian Office: First Avenue, Rossland, B.C. W. H. Courbould, Managing Director. A. B. Irwin, Manager. H. Kehoe, Mining Engineer.

Formed to purchase from a Canadian Syndicate a group of mining properties, and to carry on all kinds of mining, prospecting, industrial, and financial operations in Canada and elsewhere. At present the company own and have under option several different groups of mining properties in the Kootenay district of British Columbia. The group on which development is most advanced is the Porto-Rico, on the north fork of Salmon river, Nelson división, Province of British Columbia. A shipment of 41 tons made in 1897 to the Trail smelter is reported to have yielded \$76.25 to the ton. The company is also developing the California claim on Toad Mountain, same district.

CARIBOO GOLD FIELDS, Limited.

Registered 1896. Authorized Capital £100,000, in 50,000 ordinary shares of £1 each, and 50,000 preference shares of like amount. The preference shares are entitled to a preferential dividend of 10 per cent., and after the ordinary shares have received a like dividend, both classes of shares will rank pari passu in the distribution of further profits.

Directors:

Edwin Bonner. | Arthur Cundall. | Robt. M. Meyer. | E. Collins. W. James Webster.

Head Office: W. B. Brough, 6 and 8 Eastcheap London, E. C. Mines Office: James Champion, C. and M. E., Barkerville, B. C.

Formed to acquire and work the gold mining concessions and water rights on Williams' creek Cariboo district, British Columbia, of the Whittier Gold Concessions, Limited, and certain other claims of which an option of purchase has been obtained. The concessions and claims comprise the bed of Williams' creek for a distance of nearly two miles.

DIRECTORS' REPORT.

The following is excerpted from the Directors' Report submitted to the share-holders 23rd March, 1898:—

"Since the commencement of the development work in 1895, great progress has been made in the face of exceptional difficulties. A change of management was found necessary, Mr. Whittier retired, and Mr. James Champion and Mr. L. A. Bonner were appointed in his place, but the directors have much pleasure in stating that the necessary extensive works are now almost completed, and that the mine on Williams creek, Cariboo, is ready to be started as soon as the season commences.

"The Drain Tunnel, 3,100 feet in length, close-timbered throughout, has been completed, and the necessary elevator, inclined shafts and underground connections have been constructed.

"The Elevators are ready to be placed into position and the pipe line has been laid and jointed, and is connected with all necessary sluices, head boxes, penstocks, etc.

" The Elevator Flume is 800 feet long, built in double compartments,

"The Ditches for carrying the water to the elevators, extending in all over a distance of 16½ miles, have been constructed, and are ready for use.

"The Elevators (which have been provided by Senator R. H. Campbell of San Francisco) are of the most modern and approved type, and writing from San Francisco, under date of 29th January, 1898, Mr. Campbell makes the following statement in regard to the construction of the elevators, and also of the works generally:

"'This plant of yours is much the heaviest ever built, and I can also say that it will be the most completely equipped hydraulic gravel and elevator plant ever erected, this includes *aitches*, *pipe lines*, *sluices* and *elevators*.

"The pipes supplying the elevators are about 4,000 feet long, and 18 inches to 24 inches in diameter. The pressure is 600 feet vertical height.

"The upcasts are 100 feet long and 22 inches in diameter. They are placed on an incline of 60 degrees, and are 72 feet deep from the surface down to the nozzles at the bottom.

""When the water is turned on the work of opening the pit will begin at the surface of the incline by removing the lagging overheaed; this will allow the gravel to descend to the bottom of incline over a plank floor, temporarily laid for the purpose, over the upcasts. When the gravel reaches the bottom it will immediately enter the doors of the elevators and be sent up through the upcasts and discharged into the sluices above. This plan of work will be continued until the pit becomes so large that it will be dangerous for men to work therein, when water will be turned on through the giants, and the gravel will be piped into the elevators as fast as is required. Should a cave occur or a rush of gravel come that would choke the doors

of the

been paris indic

wou

in m

sum susp who as a

We will lake draw

out

qua

nex

this hav

sus

sev

of the elevators, I have caused an overflow gate to be put in at the entrance of the drain tunnel, to prevent any gravel or sand from entering the drain.'

"During the construction a quantity of gold, amounting in value to £1,450, has been taken out of the property. This is, of course, only a small quantity in comparison to the large expenditure on the works, but the directors consider it a valuable indication, as it points to the rich nature of the gold deposits upon the property.

"The value realized, as may be seen from the accounts, has been placed against the cost of working.

"The expenses of developing the mine have been very great, and the directors would refer you to the paragraph in their report, made in July, 1896, when they asked the shareholders to assist them by taking up debentures, or joining the directors in making loans to the company at 10 per cent. interest, in order to provide the requisite funds.

"No response was made to that request, and as you will see by the audited accounts to 31st December, 1897, herewith, the directors have advanced a very large sum of money to the company in order that the work should be completed, and not suspended; they have been materially assisted in their efforts by Mr. James Webster, whom they have invited to take a seat on the board, and they recommend his election as a director of this company."

MINE MANAGER'S REPORT.

The following is excerpted from the report of Mr. James Champion, C. & M.E.: Ground Hog Lake.— During the past season we had two men employed to clean out the cut that was made in 1895, and have deepened the same about two feet.

The water in the lake at present is about ten feet lower than its original level. We can easily raise the water by building a dam to feet above its original level, which will give us a depth of 20 feet of water to draw from. We have lumber hauled to the lake to make boxes to lay in the deep trench we have cut to the lake, to enable us to draw the water through the dam, but owing to the scarcity of labor, and having so much other work that had to be finished, the work on this dam was suspended until next spring.

Lake Brough. — This lake is nearly as large as Ground Hog lake, and the quantity of water discharged therefrom is about the same.

During the past season the old dam has been removed in part and some new timber put in its place, but for the same reason as on Ground Hog lake we had to suspend work until next season.

Lightning Creek Ditch. — During the past season we had two bad washouts on this ditch, and several slides, which necessitated a great deal of work to repair. We have put in a great amount of crib work in all the bad places on this ditch, and we don't anticipate any bad slides next season.

The ditch was in splendid condition when we finished work.

Jack of Clubs Ditch.—We had two bad washouts on this ditch last spring, and several small slides. We repaired the washouts and have put in crib work at every slide, which will prevent any further slides at these places.

Mink Gulch Ditch.— On this ditch we had no washouts but a great many heavy slides. In fact the ditch was filled with dirt for several hundred feet in length. We have had all the dirt cleaned out and a large amount of crib work put in at all the bad places.

hewe

sawe

is 12

lumb

made

timb

with

wate

both

shaft

as ea

this

Eacl

This

he s

very

8 in

saw

lbs.

12 f

pipe

spri

flun

was

I don't think it possible that we can have many slides on the ditches next season if we put on men early in the season to watch the bad places.

New Ditches.— During the past year we have made 3½ miles of new ditches, as follows:—Commencing at the old pipe line we have run 145½ chains to a point over the apex of ridge between Stouts gulch and Lowhee creek. From this point we have conveyed the water in a flume down the side of the mountain—about 100 feet in perpendicular height—to the head of said gulches.

The length of flume is 700 feet from ditch to head of gulches. Length across the ridge 350 feet to head of ditch known as Lowhee ditch.

In the excavation of the above ditch we had 247 rods of rock and 335 rods of earth and clay, making the total length of this ditch 582 rods. This ditch was made by Wong Yet.*

Flume from Upper to Lower Ditch.— In the construction of this flume, 1,050 feet in length, we used 10,500 lineal feet of hewed timbers 8 inch by 12 inch for mud sills, 2,100 lineal feet for stringers, 3,132 lineal feet of hewed timber, 6 inch by 10 inch, for ties, and 19,031 feet B.M. (board measure) of sawed lumber. We used on this flume 350 lbs. of nails.

Lowhee Ditch.—This ditch commences from the end of the above-named flume, and extends to the pipe line, a distance of 546 rods.

In the excavation of this ditch we had 300 rods of rock and 246 rods of earth and clay. This ditch, with the exception of 75 rods at the upper end made by Wong Yet, was made by white labor, and I am sorry to say cost about twice as much per rod as the ditch made by Wong Yet.

Pipe Line.—From the end of the above ditch (Lowhee ditch) we cleared a place about 40 feet wide, down the mountain side, of all timber, and graded the same 4,080 feet in length to the elevator shaft for a pipe line.

The pressure from the end of ditch to the elevator being too great, we have placed the penstocks down the pipe line 1,080 feet from ditch. From this point we shall have 260 lbs. pressure per square inch (net) at the elevator nozzles, which Mr. Campbell says is ample.

In placing the penstocks 1,080 feet from the ditch line, we had to make a flume to convey the water from the ditch to said penstocks. In the construction of this flume we used 2,160 lineal feet of hewed timbers, 8 inch by 12 inch, for stringers, 1,100 feet ditto for mud sills, 3,132 lineal feet of hewed timber, 6 inch by 10 inch, for ties, 19,926 feet B.M. of sawed lumber, and 400 lbs. of nails.

Waste Gates.—During the past year we have put nine waste gates in the ditches, and five flumes to carry streams of water, owned by other parties, across our ditch. In the construction of these waste gates and flumes we have used 2,056 lineal feet of

^{*}Wong Yet is the Chinese Contractor.

hewed timber, 6 inch by 10 inch, for mud sills and stringers, and 7,200 feet (B.M.) of sawed lumber.

Penstocks.—We have built two penstocks—one for each pipe line—each penstock is 12 feet long, 12 feet wide, and 10 feet deep. The sides and bottoms are made of lumber 12 inch wide by 3 inch thick. The frame, or stanchions and bridles, are made of 6 inch by 8 inch timbers.

We have used in the construction of these penstocks 432 lineal feet of hewed timbers for sills, and 8,172 feet B.M. of sawed lumber.

Distributing Tank.—We have built just above the penstocks, and connecting with the flume, a distributing tank. From this tank we have two flumes, one leading to each penstock. In these flumes we shall place gates that will enable us to turn the water into one or both penstocks at pleasure. We can also turn the water off from both penstocks through a waste flume.

In the construction of this tank we used 216 lineal feet of hewed timbers 8 inches by 12 inches, for sills, and 3,332 feet B.M. of sawed lumber.

Pipe Line.—We have one line of pipe laid from penstock to near the top of pipe shaft, a distance of about 3,600 feet.

We have the ground grades for the other pipe line, which we shall put in place as early as possible in the spring.

The company's teams are now busily engaged in hauling pipe from Quesnelle for this line.

Elevator Flume. —During the past year we have built a double elevator flume. Each compartment is 3 feet 9 inches wide, 4 feet high in the clear, and 800 feet long. This flume is built on trestles 20 feet high at the elevator shaft, and continues about he same height for the whole length, the grade of the flume, 3 inches to 12 feet, being very nearly the grade of the creek at that place.

In the construction of this flume we have used 5,936 lineal feet of hewed timber 8 inches by 12 inches for mud sills, caps and stringers, 5,760 lineal feet of round timber for posts, 857 lineal feet of ¾-round iron for drift bolts, 75,482 feet B.M. of sawed lumber, 6,400 blocks 8 inches high and averaging 12 inches square, and 1,721 lbs. of nails.

Blacksmith's Shop.—We have built a blacksmith's shop 16 feet by 24 feet, walls 12 feet high, near the elevator shaft. We also built a shed 16 feet by 24 feet—simply a roof on posts—at the pipe yard for the convenience of straightening and cutting pipe under.

Eye Opener Claim.—We had two bad breaks on this ditch, and some slides last spring, but with care, we should have no breaks there next spring.

Last spring we took up the new 12 in. pipe line on this claim, 1,760 feet in length, and relaid it at another part of the claim.

We also placed a new penstock at the head of pipe line, made about 96 feet of flume from penstock to watercourse, and put in a dam to turn the water in said flume.

We also built a sluice 3 feet wide, 2 feet high, and 24 feet long, to carry the waste water over the Black Jack ditch.

At the claim we built a sluice 3 feet wide, 2 feet high, and 156 feet long, to carry the water and tailings over the Forest Rose ditch.

This flume is blocked throughout with blocks 5 ins. high and about 12 ins. square. On the upper part of the claim we built a sluice 3 feet wide, 2 feet high, and 48 feet long. This flume is also blocked throughout, and was placed there to catch any gold that might escape over the bedrock.

During the past season we hydraulicked off 55,000 cubic yards of gravel from this claim. The amount of gold obtained was not nearly as much as we expected, but we have great hopes of doing much better next season. The bedrock where we left off is much flatter than we have had, and there is every indication of there being a "gutter" a head. Wherever a gutter is found the pay is generally much better.

The expense of starting this claim next spring should not exceed \$300, as we have everything in good working order, with the exception of making about 60 feet of sluice, to be put in where the bedrock began to go off flat, that we may carry the tailings far enough to run in the next sluice below without any manual labor.

Drain Tunnel.—Since the last annual report this tunnel has been driven 843 feet. From this point a crosscut 8 feet high and 10 feet wide in the clear has been driven, to intersect the bottoms of the elevator and pipe line shafts. We have also driven a crosscut 37 feet, to intersect the old Ballarat drain, that we might tap the water from the old works. This connection was made very successfully, without doing any damage to the workmen or tunnel.

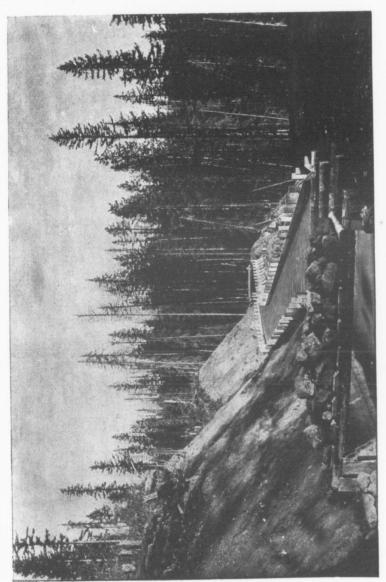
After we tapped the water we cleaned out 450 feet of the old tunnel, hoping to reach the Union shaft quicker than by running our main tunnel. We found, however, that we could not reach the said shaft without incurring as much expense as by running the main tunnel. By doing this work, however, we got all the water to run in the old channel, leaving the main tunnel perfectly dry, which enabled us to make a great deal better headway than we could possibly have done, had not the old tunnel been cleaned out.

Shafts.—During the past year we sunk one air shaft 65 feet deep on the tunnel. In sinking this shaft we had so much water to contend with, that we had to bore a hole 6 inches in diameter through to the tunnel. In boring this hole we averaged 4 feet per day. It was a very tedious work, but it was the only thing we could do under the circumstances. The connection with the tunnel was accurately made.

We cleaned out and repaired the old Union shaft, 68 feet deep, for air. This shaft is at the end of the drain tunnel, 3,018 feet from the place of beginning.

We have sunk a two-compartment elevator shaft 8 feet 6 inches long by 5 feet wide, within timbers, and 79 feet deep, on an angle of 60 degrees. This shaft is timbered throughout with square sets of 6 inch by 8 inch timbers, and 4 inch by 6 inch centre posts. All the centre posts are dovetailed, so that they cannot be knocked out in throwing down dirt to the elevator.

At right angles to the elevator shaft we have sunk a double compartment shaft, 8 feet by 5 feet in the clear, at an angle of 30 degrees, to bring the pipe through to the elevator shaft.



Cariboo Hydraulic Mining Co.-Flume below Hazeltine Creek.

(Mr. Bonner has taken back a map of the cross section of the creek at this place, showing the relative positions of these shafts).

This shaft is timbered throughout with square sets of 8 inch by 8 inch timbers, with 6 inch by 8 inch timbers for centre posts.

The depth of this shaft is 136 feet on an angle of 30°

During the past year we have excavated 1,732 feet 6 inches lineal feet of shafts and tunnels. Taking the dimensions of the shafts and crosscuts into account, we have excavated much more ground in the twelve months, since change of management, than was done in the two years previous.

Value of Gravel Mined per Cubic Yard.— During last winter and spring we were unable to wash any gravel from the tunnel owing to the lack of water. By the time we had water we tapped the old drain tunnel, which prevented us from going ahead in the tunnel for some time. Whilst the water was being drained off ve started the elevator shafts. After sinking this shaft 70 feet to water, we started the men to clean out the sand and gravel that washed back from the old tunnel. We found the water so high in the tunnel that we had to make two flat bottom boats to bring back the gravel.

After we had the tunnel fairly started and began to wash the gravel, our first clean-up yielded \$1 per cubic yard.

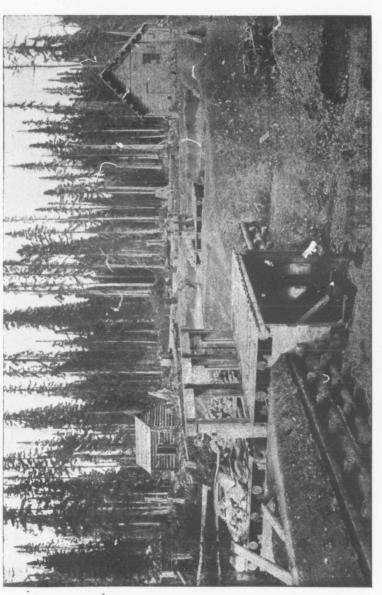
A list of our clean-ups are as follows:

| Ist | clean-up | \$1.00 | per cubic | vai | rd. |
|-----|----------|--------|-----------|------|---|
| 2nd | " | 1.18 | | " 46 | |
| 3rd | 6.6 | 2.24 | 6.6 | 4.4 | |
| 4th | 4.4 | 3.00 | 6.6 | 4.6 | |
| 5th | 4.4 | 3.50 | 6.6 | | |
| 6th | 6.6 | 8.00 | 4.6 | 4.6 | This was whilst the tunnel was dry. |
| 7th | 6.6 | 7.00 | 6.6 | 4.6 | A great deal of water in tunnel. |
| 8th | 6.6 | 7.00 | 4.4 | | section of water in tunnel. |
| 9th | " | 7.10 | " | 4.4 | This was the last clean-up from the bottom of the pipe shaft. |

The above splendid returns were obtained from gravel mines 10 feet high and 10 feet wide. The bottom of the present tunnel is eight feet above bedrock at this point. We can reasonably expect that the gravel from the bottom of our tunnel to bedrock is much richer than what we have taken out, say \$10 per cubic yard. Then we have 18 feet or 6 yards high, that will average \$8.50 per cubic yard.

The vertical depth of elevator shaft to drain tunnel is 68 feet 6 inches depth from drain tunnel to bedrock (about) 8 feet, making the total depth from surface to bedrock 76 feet 6 inches, or 25½ yards.

| Then we have 4 | yards of | tailings
earth | at | \$0.5 per | cubic | yard | | | | |
|----------------|----------|-------------------|----|-----------|-------|------|--|---|---|--------|
| 4 | 6.6 | gravel | 66 | | ٤. | | | | | 0.10 |
| 4 | 4.4 | clay | 66 | 0 00 | | | | | | 0.00 |
| 5 | 6. | gravel | 66 | 0 50 | | | | | | 2.50 |
| 3 | 66 | 66 | 66 | 3.00 | 4.6 | | | | | 15.00 |
| 3 | | | | 0.00 | | | | ٠ | | 24.06 |
| | | | | | | | | | 1 | 642.20 |



Cariboo Hydraulic Mining Co,-Head of Main Ditch with Division Dam in Six-Mile Creek and Head Gate in Main Ditch.

Thus, $$42.20 \div 25.50$ (number of yards in depth)=\$1.655 (nearly) per cubic yard from top to bottom.

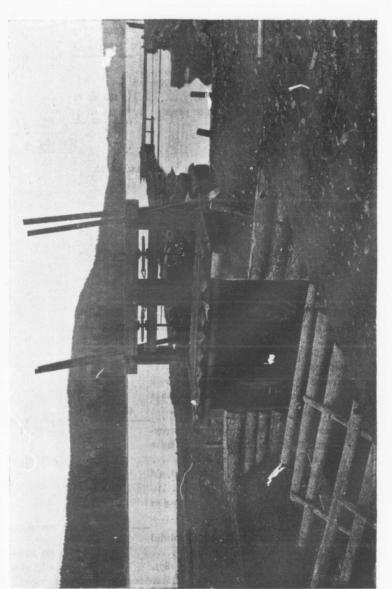
Mr. Campbell says that his two elevators will elevate 3,000 cubic yards per day. If we take one-half, the quantity, viz., 1,500 cubic yards per day, and put the season's run at 90 days (to be safe,) we have 135,000 cubic yards, at \$1,655 per cubic yard, we have \$223,425.00 for the season.

In looking over the above figures, giving such splendid results, we must not forget that during the first year, in opening out the pit from the elevator shaft, we will not be able to get down to much of our rich gravel, and will not be able to send away the quantity mentioned, but it is quite evident, from the above figures, which I have put very low, we shall be able to make a nice dividend the first year.

All the ditches, flumes, shafts and tunnel are in splendid condition, and we anticipate no set-back in starting up the works next spring.

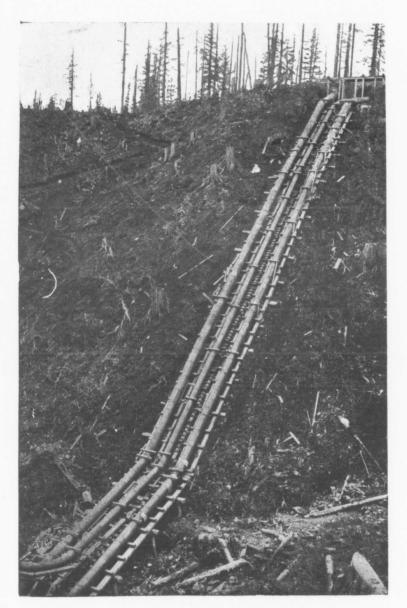
CONSTRUCTION ACCOUNT, THREE YEARS ENDING 31 DECEMBER, 1897.

| , 3. 2201 | DER, 109 | 11. | |
|--|----------------------|-----|----|
| Salaries for three years in British Columbia Office expenses " " " " " " " " " " " " " " " " " " | £3,680
772
711 | | 2 |
| Plant, including costs and transport from England, with | , | | 3 |
| haulage from Ashcroft over Cariboo road of 300 tons | | | |
| of steel pipe lines, cost and transport of elevators, | | | |
| inclusive of all labor | v# 600 | | _ |
| Drain Tunnel, 3,100 feet long, close timber-set through- | 15,689 | 4 | 7 |
| out, with pipe shaft, elevator shaft and air shaft, etc. | 0 | | |
| Creek Flumes, including Great flume, 2,200 feet long; | 8,535 | 12 | 10 |
| Elevator flume, 800 feet long; both made in double | | | |
| compartments; also Williams' creek dam | | | |
| Ditches — Construction of various ditches for conveyance | 9,307 | I | 5 |
| | | | |
| of water from lakes and various sources for hydraulic | | | |
| power — altogether about 16½ miles in length | 8,394 | 4 | 7 |
| Buildings, including office and dwelling-house, with | | | |
| furniture, barns, sheds, etc | 1,244 | 14 | 2 |
| General labor and timber | 1,321 | 14 | 4 |
| General bla ksmith work | 469 | 18 | 0 |
| General expense, including cables, etc | 1,794 | 8 | I |
| Store for goods supplied for general purposes | 348 | 10 | 6 |
| Eye-opener claim, for plant and labor £2,907 o 8 | | | |
| Less value of gold |) | | |
| Law expenses | 1,454 | 13 | 8 |
| Auditora | | | |
| | 145 | 19 | 10 |
| General Interest Paid in 1896 £336 7 9 | 4,5 | , | |
| " " 1897 722 0 9 | | | |
| Due December, 1897 (since paid) 1,111 7 4 | | | |
| , | 2,169 | 15 | 10 |
| | | | |



Cariboo Hydraulic Mining Co.—Head Gate and Crib Work at Polleys Lake, B.C.

| Debenture Interest. — Paid in 1896£792 11 " " 1897 496 14 | | 9 (| 5 3 | | | |
|---|----------|------|------|---------|----|----|
| Due December, 1897 (since paid) | 59 | 9 18 | 8 1 | | | |
| | - | _ | | 1,889 | | 4 |
| Exchange and discount | | | | 26 | 8 | I |
| London Office Expense, three years, including | | | | | | |
| stationery, for B. C | | | 3 11 | | | |
| Rent and Secretary three years | 54 | 4 10 | 0 0 | 733 | 3 | ΙI |
| | | | , | €58,689 | 4 | 7 |
| BALANCE SHEET, 31ST DECEM | BER, 189 | 7- | | | | |
| LIABILITIES. | | | | | | |
| To Nominal Capital Authorised— | £ | S. | d. | L | S. | d. |
| 50,000 £1 Ten per cent. Preference Shares | | | 0 | ~ | | |
| | 50,000 | 0 | | | | |
| | | | | | | |
| | ,100,000 | 0 | 0 | | | |
| To Capital Issued— | | | | | | |
| 50,000 £1 Ordinary Shares issued as fully paid, | | | | | | |
| in part payment of properties under agree- | | | | | | |
| ment of November, 1894 | 50,000 | 0 | 0 | | | |
| 22,457 Preference Shares of £1 each | 22,457 | 0 | 0 | | | |
| To Too one and Debottom estimable with | | | | 72,457 | 0 | 0 |
| To Ten per cent. Debentures, returnable with | | | | | | |
| preminm of £20 per cent | 10,000 | 0 | 0 | | | |
| Six per cent. Debentures, returnable at par with | | | | | | |
| option of repayment in Preference Shares at | | | | | | |
| par | 4,300 | 0 | 0 | 14,300 | 0 | 0 |
| " Loans due Directors with option of taking repay- | | | | 14,300 | | |
| ments in Preference Shares at par, inclusive | | | | | | |
| of interest to 31st December, 1897 | | | | 27,973 | 6 | 2 |
| Cheques issued in B. C. and not presented, old | | | | | | |
| banking account | 90 | 11 | 6 | | | |
| " Bank of Montreal cheques issued in currency or | | | | | | |
| overdraft (since provided for) | 901 | 4 | 10 | | | |
| | | | | 991 | 16 | 4 |
| " Bills payable in British Columbia (since provided | | | | | | |
| for) | | | | 499 | 19 | 2 |
| Debenture interest, due 31st December, 1897, | | .0 | | | | |
| (since provided for) | 579 | 18 | 1 | | | |
| " Sundry creditors in British Columbia (since mostly | - 0 | | | | | |
| paid) | 1,389 | | 6 | | | |
| " Suspense account | 68 | 7 | 2 | | | |



Cariboo Hydraulic Mining Co.—Pipes down side of Dancing Bill Gulch,

| Collected | 97 | 16 | 1 | 2,135 | 5 | 10 |
|--|--------|----|----|---------|----|----|
| | | | L | 118,357 | 7 | 6 |
| Assets. | | | - | | | |
| By Purchase of Properties—
Freeholds, leaseholds, mining claims, water | £. | s. | d. | £ | s. | d. |
| rights, with Government fees for records, &c.
Expenses incurred for consolidation of titles on | 57,417 | 11 | 0 | | | |
| same by private Act of Parliament (Legislature of British Columbia), April, 1896 | 500 | 0 | 0 | 57,917 | | |
| For expenses incurred during three years in con-
struction of works, including plant, build-
ings, flumes, ditches, drain tunnel, pipe | | | | 3119-1 | | |
| lines, &c., as per schedule annexed | | | | 58,689 | 4 | 7 |
| Stock, &c., in store at Barkerville | 500 | 0 | 0 | | | |
| " Ditto in blacksmith's shop | 460 | 0 | 0 | | | |
| " Office furniture, London | | | _ | | 16 | 6 |
| " Sundry debtors | 10 | | | 562 | 5 | 11 |
| " Cash at bank | 181 | | I | | | |
| " in hand | | 10 | 5 | | | |
| " in Barkerville | 24 | 7 | 0 | 209 | 9 | 6 |
| | | | £ | 118,357 | 7 | 6 |

CARIBOO MINING, MILLING AND SMELTING CO.

Organised 10th March, 1888. Authorized Capital, \$800,000 of a par value of \$1.00.

Directors:

Jas. Monaghan. | G. B. McAulay. | M. M. Cowley. | C. P. Chamberlin. Edward O'Shea.

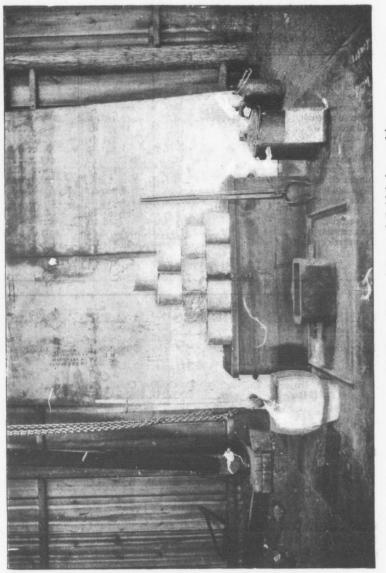
Head Office:

G. B. McAulay, Secretary, Eagle Block, Spokane, Wash.

CANADIAN OFFICE:

Jas. Monaghan, President, Camp McKinney, Yale District, B.C.

Owns and operates the Cariboo and Amelia claims at Camp McKinney, District of Yale, Province of British Columbia. Average size of vein worked, four feet.



Cariboo Hydraulic Mine, -- Cakes of Retorted Gold before melting.

yielding about \$19 per ton. Opened by three shafts at date of report 70 ft., 50 ft., and 180 respectively, and by one tunnel 1,200 ft. Equipped with 10-stamp-mill (steam) Knowles & Cameron pumps, Ball hoisting engines (2), three boilers, Blake ore breaker, and other machinery. Balance sheet under date 1st May, 1898, shows:—

| Dr. | . Cr. |
|-------------------------------------|-----------------|
| Capital stock | \$800,000 00 |
| Water rights and Mines \$800,000 | 00 |
| Dividends paid | |
| Expense account | |
| Mill account 17,352 | 62 |
| Personal property 354 | 51 |
| Mineral tax 1,320 | 83 |
| Bullion account | 413,291 77 |
| Building account 575 | 73 |
| Amelia claim | 26,230 20 |
| Profit and loss | 00 |
| Labor account 121,643 | 00 |
| Mine and mill supply account 51,131 | 74 |
| Bills receivable 518 | 40 |
| Rent account | 3,664 71 |
| Treasurer's account | 91 |
| 1,243,186 | 68 1,243,186 68 |

CENTRE STAR MINING AND SMELTING CO., Ltd.

Incorporated 16th July, 1895. Authorized Capital, \$500,000, in shares of \$1.00.

Officers:

P. A. Largey, President. T. M. Hodgins, Treasurer. Geoffrey Lavall, Vice-President. W. G. Benham, Secretary.

Oliver Durant, General Manager.

Directors:

P. A. Largey. | Sir Cl

Sir Charles Ross.

A. H. Tarbet.

Oliver Durant.

S.V

end

sul

in of g

siglibee and ore mo Ser with is s

fur put ava lar

> an wa

> alc

is

mi

wi

Fa

Canadian Office: Oliver Durant, Trail, B.C.

Formed to carry on mining in British Columbia. Owns and operates the Centre Star and Idaho mineral claims, comprising an area of about forty acres at Trail Creek, West Kootenay, Province of British Columbia. Across the east end of the Centre Star claim, runs in a northerly direction Centre Star Gu'ch on the east side of which in a diorite bluff is exposed a ledge 30 to 50 feet wide covered with the heavy iron-stained rock or true iron-capping from the decomposition of the sulphides here present in mass. On either side of this ledge is a smaller one. The main tunnel enters on the outcropping of this main ledge on the west side of the gulch and runs

S.W. about 1,100 feet along the lead, heading for its objective point, the Le Roi east end line. Several large bodies of low grade ore are traversed, one of nearly massive sulphides or pyrrhotite being 147 feet long and 14 to 16 feet wide, while another is nearly 70 feet wide. From this tunnel cross-cuts are being run to the side lines, and in one to the north, the "north vein" was cut at 280 feet, where it is 4 to 6 feet wide of good ore, with a larger percentage of copper than is found elsewhere in the mine. At 180 feet in the cross-cut to the south, the "south vein" was cut but there it is small. Mr. Durant states that besides the large amount of low grade ore now in sight, there is much good shipping ore, but none will be shipped until the mine has been thoroughly explored and opened up for work and the conditions for shipping and smelting are the best. Already nearly 2,000 feet of work have been done, and the ore taken out is being stored in a large dump for future use. There is at the tunnelmouth a good blacksmith shop and engine room, in which is a 7-drill Ingersoll-Sergeant air compressor and an 80-h. p. boiler, now running three drills in the mine with which 1,600 feet of work has been done since December 5th, 1895. Ventilation is secured by running pipes fitted with compressed air exhausts from the face of work to a shaft sunk on the lead and tapping the tunnel 410 feet from the mouth. After further work has been done a large shaft will be sunk, and a heavy hoisting plant put in, probably near the west end of the claim, and both railways will be easily available. Work will also be done soon to exploit the Idaho ground into which the large exposure mentioned leads, and has been traced through into the Enterprise claim on the east.

CLIFF GOLD MINE.

Owners:

S. M. Wharton. | G. C. Wharton. | J. R. Cook. | E. T. Late.

Head Office: Rossland, B.C.

This mine is located in the Trail District, Province of British Columbia. A well-defined lead is believed to run through the St. Elmo Consolidated, St. Elmo and the Monte Cristo. About the centre of the claim is a 45 foot shaft, full of water, with several tons of ore at the top, and below in the hillside several open cuts along the ledge from which there has been taken high grade ore. The lead can be easily traced through the claim, but the faults met with in the underground workings show plainly at the surface. In a tunnel 350 ft. long, with 100 ft. of cross-cuts, there is for the first 90 ft. solid ore, low grade, averaging 4 ft. wide, then a slip throws the ore 20 ft. to the northwest, the chute then continuing for 65 ft., beyond which it is much broken up and a small stringer of ore 2 to 10 inches wide is found running east and west. One hundred feet lower down is tunnel No. 2, now being driven ahead with a machine drill. For 65 ft. the tunnel is all in the coarse grained pyrrhotite assays a few dollars in gold, with a fault of 5 feet to the north and the continuation of this chute for 90 feet further, being in places 12 feet wide, but also low grade. Faults are now met with, beyond which the ore has not yet been found. At the upper or west end of the claim it is claimed the best ore has been found, and tunnel No. 2 will be run through to develop this ground.

THE CONSOLIDATED CARIBOO HYDRAULIC MINING CO., Limited.

Reconstructed 1897. Authorized Capital, \$5,000,000, divided into \$1,000,000 shares of \$5.00 each. 800,000 issued to shareholders; 200,000 shares unissued.

Directors:

W. D. Matthews, Toronto, President.

Herbert C. Hammond, Toronto, Vice-President.

R B. Angus, Montreal. E. B. Osler, Toronto.

T. G. Shanghnessy, Montreal. John Cassils, Montreal. 22 i

dia

plac

ing

254

wat

tim

dur

and

slui

ing

bot

wil

per

abo

bot

wo

lea

Ca

De

lia

George F. Hartt, Montreal.

Head Office: 305 Board of Trade Building, Toronto.

James L. Love, Secretary.

Mines Office: John B. Hobson, M.E., General Manager, Quesnelle Forks, Cariboo District, British Columbia.

L. F. Warner, M. E., Assistant Manager.

The company's property is located in the heart of the Quesnelle river region, famous for its rich shallow placers and extensive deposits of high grade auriferous gravel. It is situated on the south side of the south fork of Quesnelle river, four miles east of the town of Quesnelle Forks, four miles west of the outlet of the great Quesnelle lake, and about 200 miles north of Ashcroft on the Canadian Pacific railway, via Cariboo waggon road to 150 Mile House, thence by Forks road 60 miles to Quesnelle Forks in Cariboo district, B. C. It comprises 33 mining leases, aggregating 2,458 acres of land which cover the auriferous deposits of an ancient river for a distance of about 11 miles, commencing at Dancing Bill gulch, then south-easterly up the south bank of the South Fork river a distance of about two miles, thence westerly through the depression of the Little and Long Lake valleys, a distance of about nine miles, to confluence of Morehead creek with the main Quesnelle river. The depth of the auriferous deposits from surface to bed of channel, varies from 400 to 600 feet, and the quantity of auriferous deposits included in the company's property is estimated at 350 millions of cubic yards.

The water is delivered through a system of canals 7 feet by 13 feet by 3 feet deep, 21 miles in length from the mine to the source of the water supply at Six Mile creek, the outlet of Polleys and Bootjack lakes, which have a storage area of about 1,564 acres, and have been converted into storage reservoirs by the construction of substantial dams 8 feet high, across their outlets. This supply is augmented by the water of Dancing Bill gulch, and numerous streams on the line of the main canal, which insures a supply varying from 2,000 to 3,000 miner's inches of water throughout seasons of average rainfall.

The water is delivered at the mine on the floor of the present excavations under a head of 300 feet, and 400 feet at bedrock or bottom of the channel.

The mine is equipped with a portable hydraulic plant, consisting of four lines of 22 inch, and one line of 18 inch steel pipes, aggregating about 6,000 feet in length, also six No. 8 hydraulic giants, having nozzles varying from 5 to 10 inches in diameter.

During the summer of 1898 an earth dam 480 feet long and 50 feet high will be placed across the outlet of Morehead lake for the purpose of making a reservoir having an area of 600 acres and a storage capacity of 550 million cubic feet, equal to 254,559 miner's inches of water.

A canal 10 miles long, having a capacity for delivering 2,500 miner's inches of water at the mines will also be constructed during the season of 1898, after which time it is estimated that the mines can be operated full time for six or seven months during the season.

The gold saving appliances consist of a system of sluices 3 by 5 feet in pit No. 1, and 3 by 6 feet in pit No. 2, both paved with improved longitudinal iron riffles.

Undercurrents intended for the recovery of fine gold, will be placed below the sluices as soon as the mine is sufficently opened to accommodate their installation.

During the progress of the work of equipment and the opening of the two working pits in the top gravel at Dancing Bill gulch, the sum of \$332,611 in gold was recovered from about six acres of top gravel, averaging about 250 feet in depth. The bottom bench of gravel underlying pits Nos. 1 and 2, about 150 feet deep to bedrock, will be opened during the season of 1898, and it is estimated to yield over 50 cents per cubic yard.

Two working pits are now opened in the upper gravels, banks of which are about 300 feet in height. The floor of the working pits is about 100 feet above the bottom of the channel. This lower bench of high grade gravel will be opened and worked as soon as the upper workings are carried forward a sufficient distance to leave the lower workings safe from the danger of caves from the upper workings.

DIRECTOR'S REPORT. (Dated January, 1898.)

"A charter was obtained at the last session of the Dominion Parliament incorporating the above company with a view of taking over the assets and liabilities of the Cariboo Hydraulic Mining Company, Limited.

"This company was duly organized and directors elected on the 9th of December, 1897, and in pursuance of an agreement made between the trustees of the Cariboo Hydraulic Mining Company and this company, the transfer as contemplated is being carried out.

"The capital stock of the new company to the amount of \$4,000,000 out of the \$5,000,000 authorized, has been issued for the purpose of carrying out the agreement.

"Under the agreement every member of the old company is in respect of each fully paid up share, entitled to fully paid up shares in the new company in the proportion of eight shares in this company in exchange for one share in the old company.

"For the information of the shareholders a balance sheet showing the assets and liabilities of the new company is presented with this report.

"Your directors also beg to submit for your information the report of the manager, Mr. J. B. Hobson, for the year 1897, dealing with the operations of the old company, the water supply, equipment and physical operation of the mines acquired by this company.

"Attached to same are maps showing location of the mining leases and water rights (including those to be acquired); also details of the present working pits, that will give a general idea of the extent and condition of the property at the time of taking over.

"Your directors have decided to increase the water supply by constructing the Morehead ditch to connect with our present system, at an estimated cost of about \$125,000. When the Morehead system is completed it is estimated that it will afford 127 days' water of 2,000 miner's inches for 24 hours, in addition to the present supply obtained from Polleys and Bootjack lakes, and streams tributary to main canal, making the total water supply sufficient to operate the mines 250 days of 24 hours each, during the season.

"W. D. MATTHEWS, President."

ASSETS.

| 1 | | | | | |
|--|--|----------------------------|-------|---------------------------------|----|
| Mines, mining leases and water rights, canals, reservoirs, hydraulic plant and appliances, buildings and machinery | | | \$3, | 894,558 | 38 |
| Per Inventory (see Manager's Report): Wagons, harness and pack rigging | 3,813
30,963
5,217
6,711
853 | 80
40
73
90
70 | | | |
| Personal accounts
Cash in bank.
Cash on hand at mine office | 2,509 | | \$ | 53,979
3,693
52,516
22 | 47 |
| LIABILITIES. | | | \$4,0 | 004,770 | 07 |
| Capital Stock Authorized, \$5,000,000. Capital stock issued and now being exchanged Outstanding drafts Personal accounts. | | | \$4,0 | 000,000
4,184
585 | 74 |
| | | | \$4,0 | 004,770 | 07 |
| Evenner prov Manager's Deserve | -0 | | | | |

EXCERPTS FROM MANAGER'S REPORT, 1897. (December 31st, 1897.)

"In handing you this, my annual report for the season of 1897, I am pleased to state that while the washing time was thirteen days and nine hours less than in the season of 1896, and the workings confined to the lower grade top gravels in pits Nos. I and 2, the product for the season has been increased and the operating expenses materially reduced. Had we been favored with sufficient water to enable us to open the lower bench of high grade gravel to bedrock, as expected, the product for the season would have been fully up to expectations.

The results of the past season's work are tabulated as follows :-

Run No. 9.

Commencing April 13th and ending June 15th, 1897:-

| | WAT | TER USED. | | | | | | |
|--------------|----------------|-------------------------------|-------|---|--|--|--|--|
| Days. Hours. | | Qty. Miner's In | ches. | How Used. | | | | |
| 13 | 6 22 | 26,499.9
5,833.3 | | Clearing out ice and frozen gravel. Washing gravel and extending sluices. | | | | |
| 26 | 6½
21½
8 | 20,541.7
53,791.7
666.7 | | | | | | |
| 53 | 16 | 107,333.3 | | | | | | |

Summary of Run No. 9:-

| Time occupied in | washing |
53 days, 16 hours. |
|-------------------|---------|-------------------------------|
| Quantity of water | used |
107,333.3 Miner's inches. |

Quantity of material rem wed:

| Ice and frozen gravel from Pit No. 1 | . 47,124 | cubic yards. | |
|---|-----------|--------------|--|
| Ice and frozen gravel from Pit No. 2 | . 37,764 | 4.6 | |
| Top gravel north-east side Pit No. 1 | . 182,633 | 6.6 | |
| Top waste gravel and clay from west ris | n | | |
| Pit No. 2 | . 145,537 | 4.6 | |

Total quantity of gravel washed. 413,058

| Duty of water per Miner's inch |
3.84 " |
|--------------------------------|-------------------|
| Gold recovered |
4,152 ounces. |
| Value. |
\$71,098.62 |

Average yield per cubic yard of gravel 17 2-10 cents.
Product per day of 24 hours \$1,333.17.

Run No. 10.

Commencing June 17th and ending August 25th, 1897:-

| WATER USED. | | | | |
|------------------------------|----------------------------|--|-------|---------------------------------|
| Days. | Hours. | Qty. Miner's In | ches. | How Used. |
| 12
3
7
3
8
14 | 14
3½
14
10
13 | 25,166.7
6,291.7
15,166.7
6,833.3
17,083.3
29,583.3 | | Washing gravel and moving pipe. |
| 50 | 1 1/2 | 100,125.0 | | |

Summary of Run No. 10 :-

| Time occupied in washing. Quantity of water used. Quantity of gravel washed: Top gravel north-east side Pit No. 1 Top waste from west rim, Pit No. 2 Gold recovered. Value (825½ fine) Yield of gravel per day of 24 hours. Todays, 1½ hours. 300,565 cubic yards. 44,666 " 345,231 " 3,603 ounces. \$61,754.12 17 1-10 cents. Product per day of 24 hours. \$1,235.00 | | |
|---|--|--|
| Quantity of gravel washed: 300,565 cubic yards. Top gravel north-east side Pit No. 1 300,565 cubic yards. Top waste from west rim, Pit No. 2 44,666 345,231 344 Gold recovered 3,603 ounces. Value (825½ fine) \$61,754.12 Vield of gravel per cubic yard \$61,754.12 | Time occupied in washing | 50 days, 1½ hours. |
| Duty of water per Miner's inch. 3-44 " Gold recovered. 3,603 ounces. Value (825 ½ fine) \$61,754.12 | Quantity of gravel washed: Top gravel north-east side Pit No. 1 | 200 fff cubic words |
| | Value (825½ fine) | 3,44 "
3,603 ounces.
\$61,754.12 |

He

ship cour dow pers

drun

respe

Frue

Provi north

RUN NO II.

Commencing August 26th and ending November 1st, 1897: -

| WATER USED. | | | |
|-------------|--------|----------------------|--|
| Days. | Hours. | Qty. Minei's Inches. | How Used. |
| .7 | 11 1/2 | 14,958.4 | Washing top gravel. Bank blast.
Washing top gravel. |
| 7 | 231/2 | 15,958.4 | |

Summary of Run No. 11:-

| Time occupied in washing | 7 days 221/ hours |
|---------------------------------------|-------------------------|
| Quantity of water used | It ors a Minor's inches |
| Top graver washed | SI SI7 cubic wards |
| Duty of water per Miner's inch. | F 1/2 66 |
| Gold recovered | 378 |
| Value. | \$52 ounces. |
| Vield per cubic yard of gravel washed | \$5,707.00 |
| Product per day of 24 hours | 0 9-10 cents. |
| roduct per day of 24 Hours | \$713.37. |

The gravel washed during run No. 11 represents about 100 feet in depth from the surface down, which could not be reached by the hydraulic streams, and was thrown down from the north-east rim on August 30th, by a bank blast of 16,500 lbs. black powder.

SUMMARY OF THE SEASON'S WORK.

| Total time occupied in washing | III days, 17 hours. |
|---------------------------------|-------------------------|
| Total quantity of water used | 223,416 Miner's inches. |
| Total quantity of gravel washed | |
| Gold product for the season | |
| Value of gold | \$138,559.79. |

CORDOVA EXPLORATION CO., Limited.

Incorporated 1897.

Directors:

D. G. Deeprat.

— Cruddas.

Sir Andrew Noble.

— Scott.

- Fellows.

Head Office: D. G. Deeprat, Managing Director, 3 Great Winchester Street, London, E.C., England.

W. M. Brown, Secretary, Hebburn-on-Tyne, England.

Canadian Office: D. G. Kerr, Superintendent, Belmont Gold Mine, Marmora, Ont.

Owns and operates a mineral property comprising about 1,000 acres in the township of Marmora, Hastings county, and in the township of Belmont, Peterborough county, Province of Ontario. Vein worked averages 5 ft.; opened by three shafts, down, at report, respectively, No. 1, 140 ft.; No 2, 40 ft., and No. 3, 25 ft. Sixty persons employed. The mining and milling plant comprises:

Boilers - Two return tubular, 70 h.p. and 25 h.p.

Rock Drills - Two Peerless.

Hoisting Engines — Two Lidgerwood, stroke 8×12 in. and 6×12 in., single drum 40×30 in.

Pumps—Four Northey, having a capacity of 200, 42, 22 and 15 gallons p.m. respectively.

Rock Breaker - One Blake, 10 x 13 in.

Mill — (steam) 10 stamps, 850 lbs., drop 85 p.m., challenge feeders, two Frue vanners, etc.

CROWS NEST MINING CO.

Organized 1897. Authorized Capital \$300,000.

Directors:

Marland L. Pratt, Boston. Henry E. Weston Boston.

H. Harris Phinney, Boston. Walter C. Cogswell, Boston.

Lawrence W. Jenkins, Boston.

Canadian Office: Wm. H. Weston, Mine Superintendent, Melrose, Nova Scotia.

Owns and is operating 280 gold mining areas at Melrose, in Guysborough county, Province of Nova Scotia. Belt from 4 ft. to 12 ft. worked; stake lode 2 in. to 30 in.; north lode 2 in. to 18 in.; other lodes not worked. Opened by two shafts to 150 ft.

level and one down to a depth of 60 ft; adit 200 ft. level, in at May 1st, 1898, 535 ft.; cross-cuts 381 ft.; four drifts of a total length of 806 ft.; open cut 400 ft. by 30 feet deep.

Milling Plant (steam) — Comprises 20 stamps ; 850 lbs.; drop 100 p.m. Began milling April, 1898.

ru

th

fa

fr

th

Boilers - Two locomotive, 60 h.p.

Air Compressor—One Ingersoll-Sergeant, compound duplex 9 in. x 18 ia. x 12 in., capacity 5 drills.

Rock Drills - Three Ingersoll-Sergeant; one Rand "Little Giant."

Rock Breaker - One Dodge 9 in. x 16 in.

Pumps — One Northey duplex 6 in. x 4 in. x 7 in. to supply mill with water. Electric — 140 light, Can. Gen. Electric, Edison bi-polar dynamo.

CRYSTAL GOLD MINING CO., OF RATHBURN, Limited.

Incorporated 1894. Authorized Capital, \$1,000,000, in shares of \$100.

Directors:

Hon. Peter White, Pembroke, Ont. Alexander Barnet, Renfrew. | Thos. Hale, Pembroke. | Jas. B. Klock, Klock's Mills. R. McConnell, Mattawa.

Head Office: W. R. White, Secretary-Treasurer, Pembroke, Ont.

Rinaldo McConnell, Managing Director, Mattawa, Ont.

Owns and operates a gold mining property at lake Wahnapitae, Province of Ontario. Small milling plant erected in spring of 1897, and mining proceeding.

DEER PARK GOLD MINING CO.

Incorporated 1897.

Authorised Capital, \$1,250,000 in shares of a value of \$1.00.

Directors:

J. R. Barber, M.P.P., Fresident.
L. W. Mulholland,
Donald Cameron,
R. L. Patterson,
F. A. Mulholland.

Head Office: 30 Jordan St., Toronto; Melford Boulton, Secretary.

Mines Office: F. A. Mulholland, Manager, Rossland, B.C.

Owns and operates the Deer Park mineral claim, comprising 52 acres and situated on the east side of Deer Park mountain, 1½ miles southwest of the town of Rossland, Trail District, Province of British Columbia.

The following is excerpted from the Manager's Report, under date of 4th April, 1898:—"Upon assuming charge of the mines on 8th of November, I found the shaft sunk to a depth of 145 feet, with a short drift at the 50 foot level running to the south-east 16 feet, and one running north-west 27 feet, and one at the 100 foot level running north-west 35 feet.

"The shaft was not timbered below the 100 foot level.

"My first work was to sink the shaft 57 feet, making it a total of 202 feet in depth; I then cut out a large roomy station and thoroughly timbered the shaft up to the 100 foot level. Soon after commencing to sink the shaft the ore began to show fair assays in gold and silver, improving rapidly until the daily samples averaged from \$30 to \$40 per ton. This ore continued for about 40 feet or to a depth of 185 feet in the shaft, when the values rapidly decreased until the 200 foot level mark was reached. Here the results were so low as to indicate clearly that we had passed through our pay chute; I, therefore, drifted 20 feet to the north-west, hoping to again catch the pay chute. In this I was disappointed, therefore drifted to the north-east for a distance of 15 feet, with better success.

"I then started a cross cut to the east, and was almost immediately rewarded by higher values. This cross-cut has been driven 35 feet, in solid quartz and iron, with numerous streaks and bunches of high grade ore. At 35 feet from the shaft the cross-cut ran to a change of formation, which presents some of the characteristics of a hanging wall, a question of importance which remains to be solved in the future.

"Drift I, from cross-cut, starts at a point 9 feet from the shaft and extends 33 feet to the south. There has been a constant increase both in the quantity and values of the ores. This drift has progressed until it is now producing some shipping ore.

"Drift 2, from cross-cut, is being driven south along the supposed hanging wall, and is also producing some ore of a shipping value. This drift is just starting and is in four feet from the cross-cut.

"At the 150 foot level I have cut out a station and started a drift towards the north. It is now in 12 feet on 7 feet of good ore. There are bunches of exceedingly high grade ore disseminated through this body of quartz. We can now pick out \$400 assays at any time (and the whole seven feet of ore should be shipped) with but little sorting.

"Lower grade quartz still continues on both sides of this drift for unknown distances. The trend or pitch of this ore body is towards the south, therefore the drifts I and 2 from the cross-cut on the 200 foot level are apparently now in the north end of the ore chute.

"I have sent two large samples of our shipping ore to the LeRoi Smelting Works, at Northport, and they offer to contract our ore at a rate of \$8.75 per ton, f. o. b. Rossland. I think we can get a much better rate than this later on in the summer, when the Trail Smelting Works and the Webber Cyanide Works begin operations. By that time we will have our nine in shape for economical mining and sorting, and the government waggon road will be constructed, so we can work our mine at a minimum cost."

DOMINION GOLD MINING AND REDUCTION CO., Limited.

Incorporated 1895. Authorized Capital, £200,000, divided int 200,000 ordinary shares of £1 each.

D

in

or

di

ob

in

de

an

de on 18

dia mi

de

fau

wh

hu

the

per

wit

im

rec

fee

cor

Directors :

Somerset F. Gough-Calthorpe. | E. Allen Robinson. | Hon. M. W. Elphinstone.
A. L. Foster. | Count Oscar Von Reichenbach. | David Ziman.
A. Marshall Hay, Chairman.

CANADIAN OFFICE:

A. Marshall Hay, Rat Portage, Ont.

Head Office :

F. W. Croucher, Secretary, Portland House, 73 Basinghall Street, London, E.C.

The company owns and operates the adermentioned properties in the Lake of the Woods district, Province of Ontario:—

| Mining Locat | tion X 90 k | nown as | rtagea
Black Jack | 6.6 | 320 | acres |
|--------------|-------------|---------|----------------------|-----|----------|-------|
| 6.6 | I 11 | 6.6 | I XI | 66 | 27 | 66 |
| 6.6 | K 76 | 4.6 | Excelsior | 6.6 | | 66 |
| 66 | P175 | 66 | Jerusalem | 6.6 | 99
85 | 66 |
| 6.6 | K 70 | 6.6 | Gold Hill | 66 | 90 | 66 |
| 46 | P193 | 4.6 | Golden Slipper. | 66 | 20 | 6.6 |
| 44 | P192 | 64 | 192 P | 4.6 | 51 | 6.6 |
| 66 | P191 | 66 | Judge Mills | 66 | 227 | 6.6 |
| 6.6 | P190 | 6.6 | Combination. | 66 | 220 | 4.6 |
| 6.6 | P194 | 4.6 | Golden Gate | 66 | 75 | 66 |
| 4.6 | P298 | 6.6 | Sultana Jr | 66 | 25 | 66 |
| 6.6 | K100 | 66 | K 100 | 4.6 | 80 | 66 |
| 6.6 | P188 | 66 | Elphinstone Mine | 66 | 95 | 66 |
| 6.6 | P 23 | 66 | Yellow Girl | 66 | 17 | 66 |

The company also owns a controlling interest in the Homestake Mining Company of Algoma (151,000 shares of \$1.00 each out of a total share capital of \$300,000) and a one-third interest in the Queen of Sheba Mining Location (about 170 acres), both situated in the same district.

The Reduction Works, which are situated within the town limits of Rat Portage, embrace about two acres of freehold land, having dock frontage on the Lake of the Woods, and connection by siding with the Canadian Pacific Railway. They have been equipped with 20 stamps of the most improved type, and a complete outfit of milling machinery, including two ore breakers, frue vanners, Krupp concentrating tables and Colorado "Perfection Concentrators," automatic samplers, etc., etc. A chlorination plant (including roasting furnaces, etc., of sufficient capacity to deal with the concentrates of the district), and a cyanide plant of large capacity, are partially constructed and can be completed at a very moderate expenditure.

DIRECTORS' REPORT, 1897.

The following is excerpted from the report submitted to the shareholders on 31st December, 1897:—

"Your directors are glad to be able to congratulate shareholders upon the improved financial position of the company since you were last called together; not only have all the old liabilities of the company, amounting to over £5,500, been discharged, but we have, as at August 31st, the sum of £6,809 5s. Iod. cash in hand.

With reference to the Cedar Island Gold Mining Company, in which we have obtained a considerable interest, your directors are sanguine that this investment will prove of a very satisfactory nature. The property consists of about 319 acres, in the Lake of the Woods district. What appears to be a valuable reef has been opened up on the Cedar Island, 24 tons of ore from which was sent to this company's reduction works at Rat Portage, and yielded 94 ozs. of gold. It is proposed to continue sinking the shaft on this property immediately, to a sufficient extent to prove the reef at depth, and if developments justify it, a battery will at once be erected.

No fees have been drawn by the directors since the formation of the company, and as they are largely interested in the future prosperity of the company, they prefer to wait until its prospects are satisfactorily assured before doing so."

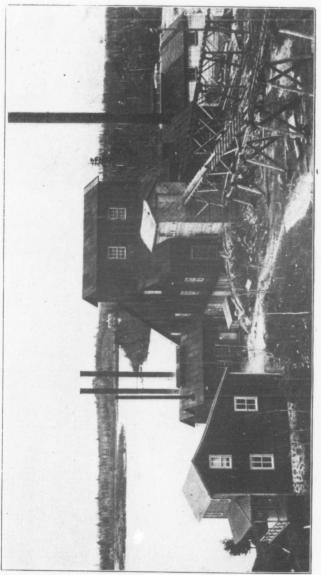
MANAGING DIRECTOR'S REPORT.

Mr. A Marshall Hay in his last annual report reviews the operations of the company as follows :—

During the year now closing, operations have been almost entirely confined to developments on the Gold Hill and Black Jack group of properties. The main shaft on the Pebble Vein was continued to a depth of about 130 feet, and a drive made about 18 feet to the 120 feet level. The unsatisfactory conditions which have rendered profitable work impossible in sinking on this shaft (viz., the flinty character of the country rock, and excessive water), made it advisable to stop sinking and to start diamond drilling so as to prove whether the vein was persistent, and to ascertain at a minimum of cost and delay whether the same character of country rock continued at depth. At the Black Jack shaft work was suspended early in the year owing to the unprofitable nature of the ground at the bottom of the shaft. The ore-body has been faulted at the point where the shaft was sunk, and appears to run to the north-east, which will be determined by the diamond drill now operating at a point several hundred feet north-east of the shaft. As already reported, the Pebble Vein was cut by the drill at a depth of 303 feet in exactly the same character of country rock, but there being only about 15 inches of quartz at this point, having an assay value of \$2.50 per ton, it would not be justifiable to continue the shaft unless other developments with the drill in the neighbourhood should prove that the ore-bodies materially improve in size and value in the lower strata. This has been the experience of other mines in the district where the same conditions have obtained, although in no other recorded case has the barren stratum continued to a depth of more than about 200 feet. In order to ascertain, if possible, the depth of the hard copping, the hole was continued to a depth of 399 feet (equal to about 340 feet vertical), but without

encountering any change. Work was therefore stopped at this point, and the drill is now in operation near the junction of the Black Jack and Middle Veins, where they are apparently intersected by the Pebble Vein. A considerable amount of costeaning and test-pitting was done during the past summer on these and other veins in order to define their character, strike and dip, with a view to testing them at depth with the diamond drill. The Black Jack and Middle Veins are large and well defined on the surface, varying from 8 to 15 feet wide, carrying schist and small lenses of quartz, which latter usually pan and assay well. The Pebble appears to be a fissure vein and cuts through the others near the junction. The schist is well mineralized and carries from one to two dollars per ton in gold. The country rock in which the veins are enclosed is a fine-grained dark-trap, similar to the rock at the point where the first bore-hole was put down on the Pebble Vein, but only extending to a depth of 40 feet at the point where drill-hole No. 2 was put down. This hole is now down 118 feet (14th Dec., 1897), and the drill has been passing through a conglomeration of schist and quartz for over 70 feet. At the present rate of progress the vein should be cut before the end of December. Fuller information and assays will be sent at as early date as possible.

On the Combination Vein, which lies about one quarter of a mile south of the Pebble Vein, three test pits have been sunk to a depth of 5, 15 and 25 feet respectively. The vein, which is traceable for about 900 feet on the surface, runs from 1 to 4 feet wide, about half slate and about half quartz. In No. 1 shaft a small pocket of very rich ore was struck at a depth of about 10 feet near the foot wall. The average quartz in the vein assays and pans well, but at a depth of 25 feet it has pinched out to a few inches. This vein runs parallel to the Allen Frances Vein, lying about 150 feet to the north, from which very rich surface samples have been taken. The latter vein dips strongly toward the Combination vein, and it is the intention to test them with the diamond drill, by intersecting them both at depth, before going to the expense of sinking shafts. The depth of the drill holes will be determined by the experience gained at other points during the present winter. On the "E.B." or "Contact Vein," which lies nearly a mile north of the Pebble and Black Jack Veins, a shaft has been sunk to a depth of about 25 feet, at which point the vein was cut out by a floor of country rock. This vein, lying between the trap and granite, can be traced for over half a mile in a north-east direction. Numerous samples, taken from different points on its outcrop, have panned and assayed well, but no large body of quartz is exposed at any point. Nearly all the best deposits in the district have been found in contact veins, and it will be policy to test this vein by diamond drilling and further work. On the north side of the "Contact Vein" a test pit has been sunk about 15 feet on what appears to be a fissure vein crossing the granite and running into the "Contact Vein." This has shown up a body of quartz from 3 to 5 feet wide, similar in appearance to the quartz obtained from the "Master Jack Mine," on the neighboring property, which belongs to a Canadian company. The ore is low-grade, carrying only from three to four dollars per ton, but further work might be profitably done upon it. Another point which has been selected for diamond drilling is the Keystone Vein, near Hollon lake, where, owing



Dominion Gold Mining and Reduction Co.-Works at Rat Portage, Out,

to the configuration of the ground, the conditions for drilling are exceptionally favorable for obtaining a cross section of the ore body at depth.

Sultana Junior. - This property is an island lying about forty chains west of the Sultana mine, and comprises about 27 acres. There are several veins on the property, but little work has been done upon them. The Burley Gold Mining Company of Ottawa (after prospecting with a diamond drill through the ice between the Sultana Island and the Sultana Junior) have taken up the land lying under the water between these points. A large body of good ore has been proved to exist, and operations have already been commenced to reach the ore body by the novel and expensive method of coffer-damming the lake and sinking inside the coffer dam. A crib 60 feet square has been sunk in place, on which the shaft house and mining plant will be erected, so that the owners have evidently courage and faith in the property they have secured. From the strike of the veins already proved on Sultana Island and under water, it is probable that at least one of them runs into Sultana Junior Island. To determine this, and to establish the continuity and value of the main vein on the island, diamond drilling operations have been commenced by this company at a point where the drill should intersect the junction of what appears to be the Crown reef (crossing from Sultana Island) and the main vein on Sultana Junior. The drill is now down about 98 feet (14th December, 1897) and is passing through a comparatively coarse-grain trap characteristic of this neighborhood. The vein should be cut at a depth of between 200 and 300 feet, before the end of the year, and the result will be advised as early as possible.

Reduction Works. — Although a large number of properties are under development in the district, there has not been much ore sent into the works for treatment during the past year. However, several hundred tons have been treated from different properties, including the Mikado, Cedar Island, Gold Coin, Cameron Island, Gagné Island, Bully Boy and others, and there are indications of increased shipments when navigation opens in the spring. Should the result of diamond drilling at Sultan Junior prove the existence of a body of pay ore, it will be feasible to ship the ore from that point to the reduction works by barge at a cost of about fifty cents per ton, the distance being only seven miles. The works and docks are now in good order, after having been overhauled at considerable expense, to prevent depreciation.

Rat Portage, 14th December, 1897.

ALEX. M. HAY.

FINANCIAL STATEMENT.

Profit and Loss Account from the Incorporation of the Company, to Aug. 31st, 1897.

| | DI. | | | | | | |
|---------------|------|------|----|---|------|----|---|
| To insurance, | 1896 | £127 | 10 | 3 | | | |
| | 1897 | 115 | 6 | 9 | C | | |
| Interest, | 1896 | 75 | 6 | 6 | £242 | 17 | 0 |
| 66 | 1897 | 542 | 0 | 0 | | | |
| | | | | - | 017 | 0 | 6 |

| | Wages, salaries, taxes, and management at mines, | 500 | | 2 | | | |
|----|--|-------------------------------|--------------------|----------------------|--|--|--------------------|
| | 1896 | 599 | 5 | 5 | | | |
| | Wages, salaries, taxes, and management at mines, | 2,620 | 11 | 10 | | | |
| | | | | + | 3,219 | 17 | 1 |
| | Salaries, rent and taxes and sundries in London,'96 | 464 | | 0 | | | |
| | " " " " " " " 97 | 486 | 19 | 0 | 951 | 11 | 0 |
| | Difference in exchange | | | | | 11 | 8 |
| | Depreciation on furniture | | 0 | | | | |
| | Depreciation on machinery | 592 | 4 | I | 608 | 4 | 1 |
| | Preliminary expenses written off | | | | 479 | | 2 |
| | Repairs at reduction works | | | | 120 | 4 | 2 |
| | | | | | £,6,242 | 6 | 8 |
| | | | | | 20,242 | | |
| | Cr. | | | | | | |
| By | bullion received from mines | | | | € 251 | 5 | 3 |
| , | Transfer fees | | | | | 16 | 0 |
| | Milling receipts Sundry receipts | | | | . 511 | | 6 |
| | Balance | | | | . 5,368 | | 11 |
| | Databotti | | | | | | 8 |
| | | | | | £6,242 | 6 | 0 |
| | Balance Sheet, August 31st, | 1897. | | | | | |
| | Dr. | | | | | | |
| | | | | | | | |
| To | o authorized capital£ | 200,000 | 0 | 0 | | | |
| | Capital Issued To vendor as fully paid | 150 000 | | | | | |
| | | 150,000 | 0 | 0 | | | |
| | Subscribed | | | 0 | c 00 | | |
| | | | | 0 | (188,707 | | 0 |
| | Subscribed | | | 0 | (188,707
24 | | |
| | | | | -£ | 24 | _3 | 4 |
| | Sundry creditors | | | -£ | | _3 | |
| | Sundry creditors | | | - £ | 24
(188,731 | 3 | 4 |
| В | Sundry creditors | 38,707 | 0 | - t | 24 | 3 | 4 |
| В | Sundry creditors | £5,952 | 19 | 0
-£ | 24
(188,731 | 3 | 4 |
| В | Sundry creditors | £5,952 | 0 | - t | 24
(188,731 | 3 | 4 |
| В | Sundry creditors | £5,952
30 | 19 | 0
-£ | 24
(188,731 | 3 | 4 |
| В | Sundry creditors. Cr. y purchase of mines. Machinery and plant Less.— Old crusher sold. | £5,952
30
£5,922 | 19
18
1 | 10 9 1 | 24
(188,731 | 3 | 4 |
| В | Sundry creditors | £5,952
30 | 19
18
1 | 0
-£ | 24
(188,731 | 3 | 4 8 |
| В | Sundry creditors | £5,952
30
£5,922 | 19
18
1 | 10 9 1 | 24
(188,731
(161,576
5,329
2,017 | 3 3 0 0 | 4 8 |
| В | Sundry creditors. Cr. y purchase of mines. Machinery and plant Less.— Old crusher sold Less.— Depreciation, at 10 per cent. Exploration and development account. Sundry debtors. | £5,952
30
£5,922 | 19
18
1 | 10 9 1 | 24
(188,731
(161,576
5,329
2,017 | 3 3 0 | 4 8 |
| В | Sundry creditors. Cr. y purchase of mines. Machinery and plant Less.— Old crusher sold. Less.— Depreciation, at 10 per cent. Exploration and development account. Sundry debtors. Investment Account.— Shares in Cedar Island | £5,952
30
£5,922 | 19
18
1 | 10 9 1 | 24
(188,731
(161,576
5,329
2,017 | 3
3
3
7 199 14 | 4 8 8 |
| В | Sundry creditors. Cr. y purchase of mines. Machinery and plant Less.— Old crusher sold. Less.— Depreciation, at 10 per cent. Exploration and development account. Sundry debtors. Investment Account.— Shares in Cedar Island Gold Mining Co., Limited, at cost. | £5,952
30
£5,922 | 19
18
1
4 | 10 9 1 1 | 24
\$188,731
\$161,576
5,329
2,017
129
7,500 | 3
3
3
7 199 14 | 4 8 8 |
| В | Sundry creditors. Cr. y purchase of mines. Machinery and plant Less.— Old crusher sold. Less.— Depreciation, at 10 per cent. Exploration and development account. Sundry debtors. Investment Account.— Shares in Cedar Island | £5,952
30
£5,922
592 | 19
18
1
4 | 10 9 1 1 | 24
\$188,731
\$161,576
5,329
2,017
129
7,500 | 3
3
3
7 199 14 | 4
4
8 |
| В | Sundry creditors. Cr. y purchase of mines. Machinery and plant Less.— Old crusher sold. Less.— Depreciation, at 10 per cent. Exploration and development account. Sundry debtors. Investment Account.— Shares in Cedar Island Gold Mining Co., Limited, at cost Cash on loan to stock exchange. | £5,952
30
£5,922
592 | 19
18
1
4 | 10 9 1 1 | 24
£188,731
£161,576
5,329
2,017
129
7,500 | 3
3
3
3
7 19
9 14 | 8 8 0 111 0 |
| В | Sundry creditors. Cr. y purchase of mines. Machinery and plant Less.— Old crusher sold. Less.— Depreciation, at 10 per cent. Exploration and development account. Sundry debtors. Investment Account.— Shares in Cedar Island Gold Mining Co., Limited, at cost. Cash on loan to stock exchange. "at bank "at mine | £5,952
30
£5,922
592 | 19
18
1
4 | 10 9 1 1 | 244
\$188,731
\$161,576
5,329
2,017
129
7,500
6,800 | 3 3 3 6 0 0 177 199 144 | 4 8 8 0 111 0 0 |
| В | Sundry creditors. Cr. y purchase of mines. Machinery and plant Less.— Old crusher sold. Less.— Depreciation, at 10 per cent. Exploration and development account. Sundry debtors. Investment Account.— Shares in Cedar Island Gold Mining Co., Limited, at cost Cash on loan to stock exchange. "at bank | £5,952
30
£5,922
592 | 19
18
1
4 | 10 9 1 1 | 24
£188,731
£161,576
5,329
2,017
129
7,500 | 3 3 3 6 0 0 177 199 144 | 4 8 |
| В | Sundry creditors. Cr. y purchase of mines. Machinery and plant Less.— Old crusher sold. Less.— Depreciation, at 10 per cent. Exploration and development account. Sundry debtors. Investment Account.— Shares in Cedar Island Gold Mining Co., Limited, at cost. Cash on loan to stock exchange. "at bank "at mine | £5,952
30
£5,922
592 | 19
18
1
4 | 0 / 10 9 I I I O 7 3 | 244
\$188,731
\$161,576
5,329
2,017
129
7,500
6,800 | 3
3
3
0
0
0
17
17
19
14
14
15
16
16
16
16
16
16
16
16
16
16
16
16
16 | 4 4 8 8 0 11 0 0 0 |

DUNCAN MINES, Limited.

Registered 1897. Authorized Capital, £150,000, in shares of £1, 75,000 of which were taken by the vendor company as fully paid and in full satisfaction of the purchase price.

Directors:

Captain E. Ironsides Bax. Alexander McNab. Hammersley Heenan. Charles E. Shepheard. Arthur Lodin. Saturnin Maisonnabe.

C. S. Drummond.

British Columbia Board:

Captain T. J. Duncan.

C. S. Drummond.

Head Office: Chas. F. Watson, Secretary, 6 Great Winchester Street, London, E.C., England.

Canadian Office: Nelson, British Columbia.

Formed for the purpose of carrying on the business of prospecting, development, mining and agency, and acquiring properties in British Columbia and elsewhere. The company has purchased from the Duncan Exploration Company of British Columbia, Ltd., a number of mining properties which have been partially developed, and valuable claims and interests, some description of which is given in the appended report of Mr. C. S. Drummond:—

WILD HORSE CREEK PROPERTIES.

The "Wren."—This mine is situated on the north side of the south fork of the "Wild Horse Creek," and about half a mile up from its junction with the main creek; in this distance the fall of the creek is about 500 feet. The mine is distant from Nelson about 15 miles by rail to "Ymir," and thence by an almost level grade, 3½ miles, to the junction of the creek; the ascent to the mine is not difficult. The vein at the outcrop is about 30 feet wide, and the pay shute at the same place about 8 feet wide. The angle up the mountain side from the tunnel mouth is about 60 degrees. The assays showed the surface croppings to contain \$5.58; these improved to \$14.26, \$19.42 in tunnels, and concentrated 4 to 1, gave \$71.93, ordinary machinery concentrates 8 to 1, the result will be about \$150 in gold per eight tons of rock. There is an immense body of this ore. Since this claim was located a great many others have been staked all round. The water power on the property I estimate at several thousand h.p., and, even at the lowest stage of the water, more than sufficient to drive 60-head of stamps.

The "Calumet" is the adjoining property, the creek dividing them, and I feel certain that the "Wren" vein follows through this property. At the present time we are using the claim as a dumping ground for the ore coming from the "Wren" tunnel. Captain Duncan suggests that we should sink a winze in the "Wren"

tunnel and drift from it under the creek through the "Calumet"; but that is a matter for later consideration. As in the "Wren," the direction of the "Calumet" vein is north-east and south-west.

Nothing has been done in the way of development on this claim up to the present time. Captain Duncan hopes to get the Government to allow the work being done on the "Wren" to count as also on the "Calumet," and there is no doubt that this will be allowed.

"The Little George" is high up the mountain side, in the same valley as the two former claims, but about 1½ miles nearer "Ymir" town. The full returns and reports have not yet come to hand in this case, but the samples from the surface assayed \$26.10 per ton in gold. The vein as far as has been prospected varies from 2 feet to 25 feet in width.

Captain Duncan would have sent us the report on the property before now, had not his men been driven out by a sudden flow of water, which took some time to divert. When this happened he was cross-cutting to reach the vein, preferring to tunnel rather than to sink a shaft, and the wisdom of his course was proved in a practical although unpleasant way. \$26.10 seems a very large return for surface assay.

BEAR CREEK PROPERTIES.

The "Planet," "Comet," and "Rocket" are situate in the valley of the "Bear creek," which is on the other side of the mountain, and to the south from the "Wild Horse Valley." Both creeks empty into the Salmon river at and near the town of Ymir.

Like the "Wild Horse Valley," this valley is easy of access, and the waggon road, which we have built up to the mines, is of very easy grade. The "Rocket" claim covers the ground through which flows the "Bear creek." The "Planet" and "Comet" are up the side of the mountain and adjoining.

Captain Duncan had only just got the waggon road open at the time of writing his last letter received in London, and the supplies and material for the erection o the houses, blacksmiths' shops, etc., will have now reached there.

The vein, as ascertained from the preliminary tests, showed a width of 50 feet, and the assay returns from the "iron capping" showed \$3.30 in gold per ton. The ore in this vein shows great similarity to that of the now famous "Le Roi" mine at Rossland, and is of the same quality as that mine was on the surface.

HALL CREEK PROPERTIES.

The "Hall creek" flows into the Salmon river at a point only 8 miles distant from Nelson, the railway station being called "Hall Siding."

"Alice and Romance." These claims are situate quite close to the "Fern" mine—(Captain Duncan's mine—previously referred to).

There is a good waggon road up to the "Fern," which we can use; the distance from railway station I should judge to be about 2½ miles.

We have driven three tunnels on these properties, and the assays would seem to justify us in proceeding vigorously. From the first, ore taken out assayed \$21.49 in

gold and \$17.80 in copper per ton, and since then improvement has been shown. In the second cutting, but on a different ledge, the returns showed an almost pure copper; and in the third drift we have silver-copper ore of great likeness to the ore of the well-known "Hall mines," which is but a few miles away.

I strongly urge the formation of a subsidiary company to work these two claims. Our syndicate holds a half interest in these properties and the Dominion Mining, Development and Agency Company, Limited, hold the other half.

The "Condor" is a situated near the Hall siding station, and is strongly marked true fissure vein. Captain Duncan says that he likes the appearance of the vein, and miners are now at work sinking a shaft on the property. It will cost but a small sum—say £40—to ascertain the assay value of this claim. Reports have come in which would indicate that we have a very good property. It is held jointly with the Dominion Mining, Development and Agency Company.

Re

ru

de

N

SUMMIT SIDING.

This point is but 5 miles from Nelson, and about 21/2 miles from Hall creek.

The "Catherine" and "Custer" can be seen from the town of Nelson. There has been considerable work done on them. The tunnel is in about 50 feet, and a quantity of ore has been sacked and is ready for shipment as soon as we build the waggon road up to the mine.

The assays of the ore from the properties ran as the tunnel driven in \$11.16, \$14.05, \$19.42, \$28.99, and \$249.69 in gold per ton.

The vein is about an average of 26 inches wide.

This is a property which could very well be sold to some other company for the purpose of working it, our company taking its profit either in cash or shares, or partly in each.

The town lot in "Ymir" is favourably placed for the offices of the company, or can be sold at a good profit at any time.

It must be remembered that the work that has been done on our claims has been accomplished since last June, or say in about three months.

In addition to the above we have options on various properties which look most promising; we are now proving them before binding ourselves to purchase, and have ample time wherein to ascertain their value. Some of these options are over properties which are already paying large dividends.*

FAIRVIEW CONSOLIDATED GOLD MINES CO., OF FAIRVIEW, Limited.

Re-incorporated 1897. Authorized Capital, \$975,000 in shares of \$1.00.

Officers:

Hon. J. H. Turner. C. E. Redfern.

Abraham Levy. W. E. Boyd.

^{*}Note.—Since this report was written, some of these dividend properties have been acquired.

Directors:

Hon. D. W. Higgins, W. A. Dier.

A. A. Davidson. R. Russell.

A. S. Levy.

Offices: Victoria, B. C., and Hamilton, Ont., W. E. Boyd, Secretary.

Mines Office: Fairview, B.C.

Formed to acquire and work the White Swan, Quartz Queen, Calfornia, Rob Roy, Sundown, Ocean Wave, Silver Bow, Ironclad, Reco, Fannie Morris, Nightingale and Standard mineral claims at Fairview, Yale district, British Columbia. The "Silver Bow" has a vein running north-east and south-west across the formation, on which a tunnel, after cross-cutting for about 75 feet, runs from 75 to 80 feet along a vein two to three feet wide, and six feet wide in one place, of a very white quartz carrying a very small percentage of sulphides.

Fannie Morris, about one mile south of Fairview, below the road to the "Tinhorn," has a shaft sunk 18 feet, showing considerable decomposed quartz matter with some sulphides, towards which two men were at work running a cross-cut tunnel.

Nightingale, located N. E. of "Tinhorn," at foot of mountain, where a vein running N., 20 degrees W., of white quartz with iron and copper pyrites and galena, is disclosed for several hundred feet by open cuts and a shaft about 20 feet deep.

Reco has an exposure in one place in the granite of rusty weathering quartz two to three feet thick, carrying very little sulphides. It dips N.E. at an angle of 30 degrees, and a shaft has been sunk 30 feet to strike it, but it is not yet deep enough. Work sufficient to secure a Crown grant has been, or is being done on other claims. From the different claims, samples according to the prospectus of the company have given high assay values, but no estimate can yet be formed as to the amount and value of the quartz that may be developed on these claims, as only mill-runs can afford decisive and reliable information. (See Mines Report, B.C., 1897.)

FAIRVIEW GOLD MINING CO., Limited

Incorporated 1897. Authorized Capital £100,000 in shares of £1.

Directors:

The Right Hon. the Earl of Kintore, G.C.M.G.
Harvey Green. | Hon. C. Hanbury-Tracey. | G. A. Phillips.

Head Office: Herbert W. Marten, A.C.A., 3 Gracechurch Street, London, E.C., England.

Mines Office: Fairview, B.C.

J. R. Mitchell, General Manager. Arthur L. Pearse, F.G.S., Consulting Engineer.

Formed to acquire and work the Fairview group of mineral claims at Fairview, in the Yale district, Province of British Columbia. The property comprises the "Joe Dandy," "Daisy Dean," "Atlas" and Belmont claims, and covers a total area of 130 acres. These claims lie at the foot of the mountains and the vein strike N. 65 degrees W., dip northerly 36 to 60 degrees crosses two small ridges, on the summit of one, where the vein lay between a dyke of porphyritic rock and quartzose schists, considerable ore was raised by the original owners (The B. C. Development Company, Limited) and milled at a small stamp mill at Reed creek, yielding, it is reported, excellent returns. The vein, so far developed, is not large, or from one to three feet wide, but the quartz, bluish-white in color, with sulphides, gives good gold assays wherever thus mineralized. At 1st August, 1897, the two main tunnels had reached 287 and 266 feet respectively, the first having in addition a subsidiary drive of 34 feet, and the three main shafts, 56, 32 and 90 feet respectively, the two first having cross-cuts driven in of 38, 35 and 40 feet. Surveys have been made for an aerial tramway, about 10,000 feet long, down to a mill site on the Okanagan river, where a 20-stamp mill is being put up, and where it is proposed to install an electric power plant for mine and mill.

FERN GOLD MINING AND MILLING CO., Limited.

Incorporated 1897. Authorized Capital, \$200,000 in shares of a value of 25 cents each.

Directors:

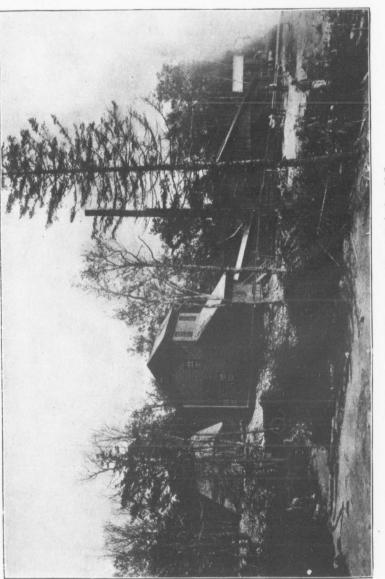
F. C. Innes, President and Managing Director,
H. Abbott. | S. O. Richards. | R. G. Tatlow. | Phelps Johnson. | C. C. Bennett.

Head Office: C. C. Bennett, Secretary, Vancouver, B. C.

Mines Office: E. L. Nankivell, Mine Manager, Hall's Siding, via

Nelson, B. C.

Owns and operates the Fern, Hidden Treasure, Eureka, Elymira and Chicora mineral claims, situate 3 miles from Hall Creek Station, on the Nelson and Fort Sheppard Railway, about 14 miles from the town of Nelson, British Columbia. Equipped with 10-stamp mill and other plant. Up to the end of December, 1897, there were two clean-ups, yielding \$28,500, at a cost of \$12,000 in three months, and from the second clean-up, after crushing in 44 days 1,251 tons, the yield per ton was \$7.70 caught on the plates, and \$1.55 in the concentrates, or \$9.25. Development work is progressing, and it is the intention of the management to enlarge the plant, and perhaps to add to the cyanide plant, as the work is reported to be showing a fast-increasing quantity of ore. In 1897 a dividend of \$10,000 was paid.



Golden Lode Mining Co.-Mill at Uniacke, N.S.

FOLEY MINES CO. OF ONTARIO, Limited.

Incorporated 29th November, 1896. Authorized Capital, \$1,000,000 in shares of a par value of \$5.00.

Directors :

Hon. Lyman Melvin Jones.
S. S. Babcock.
Rod A. Demmé.
Thos. J. Hurley.

W. H. Cawthra.

Head Office: Edmund Bristol, Secretary, 103 Bay Street, Toronto. Mines Office: "Foley," Seine River, Ontario, via Tower, Minnesota.

Owns and operates mining section A.L. 74, comprising 42 acres; A.L. 75 comprising 41 acres; A.L. 76, comprising 108 acres in the Rainy River district, Province of Ontario. The principal veins worked are known as the "Bonanza," "No. 5," "Lucky Joe," "Jumbo," "No. 7," and "No. 9." Equipped with 20 stamp mill and a suitable mining plant.

43rd MINING AND MILLING CO., OF CARIBOO, Limited.

Incorporated 1896. Authorized Capital, \$600,000.

Trustees:

Lt.-Col. Wright. | Capt. W. A. Jamieson. | Capt. M. N. Garland. F. W. Valleau, C.E. | J. S. Holloway.

Directors:

N. C. Sparks, Ottawa, President.

Wm. McGillivray, Ottawa. Capt. S. M. Rogers, " Major A. P. Sherwood." Thos. Kenny, Ottawa. Capt. H. Watters, "Lieut. S. E. DeLaRonde, "

Head Office: Capt. S. M. Rogers, Sec.-Treas., 36 Rideau St., Ottawa.

Mines Office: Joshua Wright, Manager, North Bend, B. C.

This company has been formed for the purpose of working and developing the following auriferous bench diggings and creek diggings situated on Manson and Slate creeks, in the Omenica division of the Cariboo district, British Columbia, containing 720 acres of bench diggings and three miles of creek diggings, and recorded as leases No. 55-563-4-5-6-7-8-9-70-1-2-3-4-5-6-7—15 leases in all; 9 bench diggings and 6 creek diggings.

395,483 05 43,891 82

\$439,374 87

FINANCIAL REPORT, 1897.

Receipts.

| | \$1,190 4 | 46 |
|--------------------|-----------|--|
| \$4,990 00 | | |
| 1,500 00 | | |
| 6,490 00
512 50 | | |
| | 5,977 | 50 |
| | 27,050 | 00 |
| | 619 | 55 |
| | 16 | 00 |
| | \$34,853 | 51 |
| | 1,500 00 | \$4,990 00
1,500 00
6,490 00
512 50
5,977
27,050
619
16 |

Assets.

| Cash on hand | \$ 970 92 | | |
|--|--|---------|----|
| Book debts | 2,005 13 | \$2,976 | 05 |
| Inventory Goods, etc., on Hand. — Saw mill Pack train Plant and tools. Merchandise | 2,356 81
2,437 61
5,634 16
1,936 26 | | |
| THE COMMENT OF THE CO | | 12,364 | 84 |
| Shareholders' stock unpaid | | 3,635 | 00 |
| LtCol. Wright, manager, balance | | 927 | 66 |
| Ashcroft, Lake Teslin and Yukon Transportation, Trading and Mining Co., charter | | 109 | 50 |
| Trust stock\$200,000 00 | | | |
| Less sold 102,740 00 | 97,260 00 | | |
| Franchise and claims—5 miles creek claims, 1,000 acres bench claims. | 201,000 00 | | |
| Reduction on trust stock sold | 77,210 00 | 375,470 | 00 |

Balance charged to construction, see statement.....

| Disbursements. | | | |
|--|-----------------------|-----------------------------------|----------|
| LtCol. Wright, advances | \$17,100 00
966 82 | D.V 266 | 0. |
| Major S. Maynard Rogers statement | | \$18,066
8,027
7,000
788 | 32
00 |
| Balance on hand in bank, \$922.66; cash, \$48.25 | | 33,882
970 | 59
92 |
| | | \$34,853 | 51 |

| Liabilities. | | | | |
|---|----------------|--------------------------------------|----------|-------|
| Bills payable | | | | |
| Wages—J. Wright, 1896 LtCol. Wright, 1897. A. F. Cotton, " E. Goodall, " C. Williams, " | 75
26
7. | 4 50
5 60
8 29
3 94
9 33 | | 50 00 |
| Open Accounts.— James Reid
Hudson Bay Co | 4,401 | | 1,16 | 1 66 |
| Sundry Accounts Due. — Ottawa
British Columbia | | 3 33 | 9,91 | 3 79 |
| · | | _ | 1,24 | 9 42 |
| Capital stock | | | 39,37 | |
| Construction Account. | | | 439,37 | 4 87 |
| Balance from 1896 | | | | |
| Wages. | | | \$14,886 | 22 |
| Licenses | \$18,982 | - | | |
| Travelling | 423 | | | |
| Transportation. | 764 | - | | |
| Legal | 3,854 | 84 | | |
| Interest and exchange | 127 | | | |
| Prospecting | 817 | | | |
| Sundry expenses | 285 | 62 | | |
| Sundry expenses | 3,778 | 39 | | |
| Less credits | 29,033 | | | |
| | | | 29,005 | 60 |
| | | | \$43,891 | 82 |

FRASER RIVER CONSOLIDATED GOLD, Limited.

Registered 1897. Authorized Capital, £150,000, in shares of £1.

Directors:

Ross Robinson, Chairman.

Frank Davies. | Geo. F. Fulcher. | Alex. Patten. | Edward Pope.

Head Office: W. A. Parker, Secretary, 65 New Broad St., London, E.C.

Formed to acquire, to work certain leases extending about 30 miles on the Fraser river, British Columbia. The property extends from Hill's Bar to a point about half a mile below Ruby Creek station, and the purchase consideration, fixed by the British

Columbia Venture Syndicate, Limited, the vendors and promoters, was £100,000, payable £6,000 in cash, £24,000 in cash or fully paid shares at the option of the directors, and £70,000 in fully paid shares. The following is excerpted from the prospectus:—

Vield of Gravel.—A large number of samples taken from various points of the river by Mr. Rattray were averaged by panning down the gravel and saving the concentrated black sand and gold; the assay result of a mixture of an equal portion of all these samples was about 2 s. 6 d. per ton; or allowing for stones, which in panning had to be thrown aside, say one-half, or 1/3 per ton. These samples were taken from various points from Hill's Bar down to below Ruby creek. Mr. Rattray, speaking of his assays, says:—

"My assay comes from ground that has been turned over time and again"; and taking the official returns of the amount of gold that has been recovered from the 'Hills' and other bars within the boundaries of the claim, it is only reasonable to suppose that a few yards of them, in the river where the gold washer has not been able to get at, will also be as rich in gold as the Bars were formerly."

Samples taken by Messrs. Bainbridge, Seymour & Co., in most cases from near the water line, from Puget Sound Bar to Ruby Creek Bar, gave an average of about 44 cents per ton, or allowing for large stones, say 22 cents or 11d. per ton.

Samples taken by these gentlemen from the upper reaches of the river, viz., from Hill's Bar to American Bar yielded nearly double that value.

Mr. Breckman states that he took samples all down the reaches at the edge of the water or as far in it as possible; all showed good prospects, and he estimates the average value at 1/3 per ton after allowing for stones.

For years Chinamen and others have been working by "rockers" on the bars and banks, and when the aforementioned examinations were made numbers of men were at work in this way.

Cost of Dredging.—It is generally stated in New Zealand by the officials that I grain of gold (=2d.) per cubic yard (=1¼ tons) of gravel will pay the expenses of dredging in that country; and that the amount of gold per cubic yard in excess of I grain is calculated on as clear profit.

The rent of the three leases is \$350 per annum, and a royalty to the Government of 50 cents per ounce of gold recovered from the river.

Cost of Dredgers.—The estimated cost of a diedger to handle 1,000 tons per day of eight hours is about £3,000, built on the Fraser river.

Estimate of Profits.—Three dredgers handling 1,000 tons each per day of eight hours for 250 days per annum with a recovery of say 11d. per ton, the lowest estimate, less say 3d. per ton expenses should yield a profit of about £25,000 per annum.

These figures are based on the dredger only being worked one shift of eight hours per day, but there is nothing to prevent work being carried on day and night, with a corresponding increase in recovery, if electric light be used. The directors are

assured that by the addition to the plant of a dynamo worked by water power, electric force can be obtained to work the whole of the dredging operations, thus utilizing the 24 hours as an actual day in the most economical manner.

In view of the favourable reports above-mentioned and the profits that have been and are now being made on the banks and bars by primitive means, demonstrating the presence of gold in the gravel, the directors believe that these leases can be immediately worked at a profit on a large scale by means of proper dredges, which they propose to have built and placed on the river as soon as possible.

GOLDEN GROUP MINING CO.

Incorporated 1896. Authorized Capital, \$100,000.

Directors :

G. E. Franklyn | A. M. Jack | W. Black | W. Butler
A. A. Hayward.

Head Office: A. M. Jack, Secretary, Halifax; A. A. Hayward, Managing Director, 175 Hollis St.

Mines Office: D. McAskill, Mine Superintendent, Waverley, N.S.

Owns and operates certain gold areas at Montague, Halifax County, Province of Nova Scotia. Equipped with a ten-stamp battery and a suitable mining plant. The returns officially reported by the Mines Department in 1897 show a yield of 951 ozs. 5 dwt. from 1,199 tons rock milled.

GOLDEN PROVINCE MINES OF BRITISH COLUMBIA, Limited.

Incorporated 1897. Authorized Capital, £125,000 in shares of £1.

Directors:

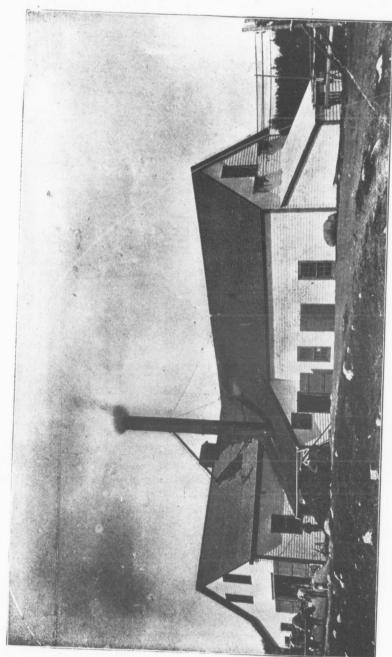
J. Wilfred S. Lawton | Geo. H. Hutchinson | Wm. Ryland | T. H. Vernon.

Advisory Board in Canada:

Dr. A. R. C. Selwyn, C.M.G. | C. Fred'k Law.

Head Office: Horace Cawood, Hartshead Chambers, Sheffield, Eng. Canadian Office; Chas. F. Law, Vancouver.

This company has been formed to purchase the lease of gold bearing ground, dated the 27th July, 1896, granted to Mr. C. F. Law by an Act of the Legislature of the Province of British Columbia, known as the "Quesnelle Prospecting Act, 1895," and to develop, work, or sell to subsidiary companies, as may be deemed most desir-



Golden Group Mining Co.—Mill at Montague, N.S.

able, the auriferous gravels comprised in such lease, covering an area of 4,018 acres. The property consists of an old river channel, situated on Baker creek, near Quesnelle, Cariboo District, B.C., and is held for a term of twenty years, subject to an annual rental of six per cent. of the net proceeds after deducting the cost of working, and ten per cent. depreciation of plant, etc. The course of the old river bed having been located, a tunnel is being driven from Baker creek to the gutter of the channel. In his report upon the property Dr. Selwyn says: "The indications are precisely like those which occur in the celebrated Ballarat gold fields of Victoria, Australia, and in those of the lava-capped hills of California. There is, therefore, every reason to anticipate that this undertaking will be as richly rewarded as were those of Victoria and California." The necessary preliminary work of development has been carried out in an unusually economic and thoroughly efficient manner. It consists of a cleared and well graded wagon road from the Fraser river to the mine, a shaft 5 feet by 6 feet, well timbered, 265 feet deep; also a drive 200 feet long and cross-cut 50 feet to rim rock.

GOLDEN RIVER QUESNELLE, Limited.

Incorporated 1896. Authorized Capital, £350,000, divided into 103,000 ten per cent. Cumulative Preference Shares of £1 each (of which 80,000 are reserved for working capital), and 247,000 ordinary shares of £1 each.

Directors:

Hon. Forbes Geo. Vernon
Ross Robinson
Major F. I. Richard-Seaver
Major C. T. Dupont.

Halfred Baldwin, M.P.
Thos. Sopwith
G. Blake Walker

Advisory Board in British Columbia:

Sir Henry T. P. Crease | Hon. C. E. Pooley | Joseph Hunter, C.E. F. B. Pemberton, C.E.

Canadian Office: Major C. T. Dupont, Managing Director, Victoria, B.C. Head Office: E. A. Foster, Secretary, 6 Great St. Helens, London, E.C.

Formed to acquire the rights and powers conferred by three Acts of the Legislature of British Columbia, viz.:

The Quesnelle Lake Dam Company Act, 1881; An Amendment Act, dated 12th May, 1883; An Amendment Act, dated 21st February, 1895;

granting the exclusive right to extract the gold and precious metals in the entire length of the South Fork of Quesnelle river, and a portion of the main Quesnelle river, about 9½ miles, in the District of Cariboo, British Columbia.

The powers under the Acts of Parliament have been granted for a period up to 1st January, 1913, at an annual rental of \$350 (about £70), and in consideration of the outlay to be incurred in the construction, on or before the 31st December, 1897,

of a dam to pen back the waters of the Quesnelle lake, and thereby enable mining for alluvial gold to be carried on in the bed of the river.

The purchase price for the property has been fixed at £270,000, payable as to £23,000 in cash, and the remainder in fully paid ordinary shares, or partly in cash and partly in shares at the option of the directors, leaving £80,000 available for issue as working capital.

DIRECTORS' REPORT.

The following is excerpted from the report submitted to the shareholders, 10th November, 1897:

"As will be seen from the balance sheet, the sum of £35,500 had at that date been remitted to British Columbia, and of this amount £32,037 had been expended in connection with the construction of the engineering works undertaken by the company. Since the 30th June a further sum of £5,500 has been sent out, making a total to date of £41,000.

"It will be gratifying to the shareholders to learn that the Directors are assured by the engineer in charge, in a report dated October 1st, 1897, that, although the works are of a much more substantial and expensive character than originally intended, he is confident of being able to complete the whole work under the original estimate, viz., £46,000.

"The directors expected that the engineering works would have been completed, and mining operations commenced, before the date of this report. But although the utmost energy has been exhibited by the management in British Columbia, and everything has been for some time in readiness to commence work upon the dam, a most exceptional season has interfered to prevent this being done. The prolonged heat of the weather during the summer months caused an excessive quantity of snow to be melted in the high ranges of mountains in the neighborhood of the Quesnelle lake; this, combined with an exceptionally heavy rainfall in the autumn, has been the means of keeping the water of the lake at a much higher level than in ordinary years, and delaying for some three months the falling of the water in the Quesnelle river sufficiently to allow of work being commenced on the dam.

"The waste-water course being finished, with the gates in position and the material for the dam all ready, the putting of the latter in place will proceed very rapidly, and we are assured that mining operations will be commenced about the end of November. The greatest advantage will be taken of the short time left before the severe weather sets in to test the richness of the river bed, but the Board fear it will be the spring of next year before the company will be able to prosecute regular mining operations.

"Mr. McGillivray, the River Mining engineer, of whose appointment the shareholders have been advised by circular bear date July 8th, has made as thorough an examination as was possible of the river and adjoining country, and the directors are glad to be able to inform the shareholders that he has formed a very favourable opinion of the value of the company's property and the likelihood of a rich yield of gold being obtained from the gravel in the bed of the river. "Since his arrival at the company's property, he has been actively engaged in making preparations to commence mining immediately the state of the water permits, and also in constructing a waggon road for the conveyance of the lumber necessary for fluming sluicing, etc. In this latter work he has received considerable assistance from the Government road superintendent. As this road will be of public advantage, it is hoped the Government will take it over and recoup the company for its outlay."

BALANCE SHEET, 30TH JUNE, 1897.

| | | n | | | | | | | | |
|---|-------------------|------------------|-------|----|--------|-----|------|----------|------|------|
| | | Dr. | | | | | | | | |
| To Share Capital, viz. :- | SHARES. | £ | S. | d. | £ | | S. (| d. £ | 5 | . d. |
| Ordinary shares, £1 each do unallotted | 247,000
1,612 | 247,000
1,612 | 0 | - | | | | | | |
| | 245,388 | 245,388 | 0 | 0 | 245.38 | 8 (| 2 | 0 | | |
| 10% cumulative preference shares, £1 each | | 103,000 | 0 | | -43,30 | , | | | | |
| do unallotted | | 17,069 | 0 | 0 | | | | | | |
| | 85,931 | 85,931 | 0 (| 0 | | | | | | |
| Not called up, 5/-per share | | 21,482 | | | | | | | | |
| | | 64,448 | 5 (| 0 | | | | | | |
| Deduct calls in arrear | | 2,280 | | | | | | | | |
| | | 62,167 | 12 (| 6 | | | | | | |
| Add calls paid in advance | | 3,334 | | | | | | | | |
| | | | | - | 65,501 | 12 | . (| 310,886 | 12 | 6 |
| To vendors | | | | | | | | 1,612 | | |
| " Sundry creditors | | | | | | | | | 3 16 | |
| | | | | | | | | | | |
| | | Cr. | | | | | | £312,520 | 9 | 3 |
| D. D. I. | | 07. | | | £ | s. | d. | £ | S. | d. |
| By Purchase of property Expenditure at Mine— | | | | | | | | 270,000 | 0 | 0 |
| Advisory Board salarie | c and ana | | | | | | | | | |
| legal and profession | onal charge | es | iees, | | 2,426 | 15 | 11 | | | |
| Rent, licenses, statione | rv and pri | nting, tra | vell- | | | 3 | | | | |
| ing expenses, loss of | | | | | 429 | 7 | ΙI | | | |
| Plant and construction | works, st | ores, &c | | | 32,037 | 7 | 8 | 24 802 | | 6 |
| Expenditure in London- | | | | | | | | 34,893 | 11 | 6 |
| Engineer's report, gene
printing, travelling | expenses | , cables, | &c. | | 391 | 6 | 8 | | | |
| Director's fees | • • • • • • • • • | | | | 2,298 | 8 | 2 | | | |
| Secretary and offices | | | | | 399 | 14 | 6 | | | |
| Legal and professional | charges . | | | | 101 | 12 | 6 | | | |
| | | | | | 3,191 | I | 10 | | | |
| | | | | | | | | | | |

| | | | 312,520 | | |
|-------|-------|----------|--|----------------------------|----------------------------|
| | | _ | 4,459 | 6 | 6 |
| 606 | 8 | 6 | | | |
| 10 | 3 | 3 | | | |
| | | | | | |
| 3,842 | 14 | 9 | | | |
| | | | 3,107 | 11 | 3 |
| 23 | 10 | 7 | 2 160 | | |
| | | | | | |
| | | | | | |
| | 3,842 | 3,842 14 | 23 10 7
3,842 14 9
10 3 3
606 8 6 | 3,842 14 9 10 3 3 606 8 6 | 3,842 14 9 10 3 3 606 8 6 |

GOLD FIELDS OF BRITISH COLUMBIA, Limited.

Registered 1897. Authorized Capital, £600,000 in shares of £1.

Directors:

Right Hon. the Earl of Essex.
Col. Henry Fludyer.
Ernest Grant-Govan.

Col. T. H. Austey.
F. Callow Hole.
Alexander Matheson.

Canadian Board:

Hon. C. E. Pooley. | Hon. David W. Higgins. | David R. Ker.

Head Office: R. Stanley Williams, Secretary, 16 Copthall, Avenue, London, E.C., England.

Canadian Offices: Inns of Court B'd'g., Vancouver, B. C., and Revelstoke, B. C.

Organised to carry on the business of a general exploration, prospecting, development, mining, trading and financial corporation in British Columbia. For these purposes a contract has been entered into for the acquisition of the following mining properties and town sites, aggregating about 3,300 acres.

- (1.) Ten mineral properties forming part of the Albert canyon and Downie creek group, containing in all about 450 acres, as follows: —The Waverley, Montague, Oldham, Tangier, Detroit, Nethercluny, Vancouver (fraction), Strandberg (fraction), Spider (fraction), and Fly (fraction).
- (2.) The mining properties formerly belonging to the Channe Mining Company, Limited, a corporation established in British Columbia in 1896, with a capital of \$1,000,000. These properties consist of the following claims, upon which more or less development work has been done, and are as follows:— I. Bobby Burns (52 acres);
- 2. Hetty Green (52 acres); 3. Daniel Webster (52 acres); 4. Seattle (52 acres);
- 5. Highlander (52 acres); 6. Estero (52 acres); 7. Joe. Jefferson (52 acres); 8. Poodle Dog (52 acres); 9. Black Swan (fraction); 10. Tom Moore (52 acres);
- 11. Ingersoll (52 acres); 12. R. E. Lee (52 acres); 13. Nancy Hanks (52 acres);

- 14. One-half interest in Belmont (52 acres); 15. Three-fourths interest in Olga (52 acres); 16. Picnic (fraction).
- (3.) Six hundred and forty acres known as the Chrome valley claims, situated in the Similkameen district of British Columbia, and stated by the vendors to consist of auriferous gravel.
- (4). One-half interest in the Flossie L. mine, the property of the Rossland Gold Mining Company. This mine is situated on Spokane mountain in the Trail creek division of British Columbia, and close to the town of Rossland.
- (5). One-half interest in the Little Darling mine, the property of the Little Darling Gold Mining Company. This mine is situated on Red mountain, in the Trail Creek mining division of British Columbia and close to the town of Rossland.
- (6.) One half interest in the mineral properties known as the Little Flo, Victoria, the Handy and Prospector, all situated in the Trail Creek mining division of British Columbia or within four miles of the town of Rossland.
- (7.) One half interest in the mineral properties known as Confederation, Osswego, Eureka, New Dominion, Queen of the Hills, Sholto and Golden Chariot, situated in the northern division of West Kootenay, British Columbia.
- (8.) Valuable options for the purchase of other nine claims forming part of the group known as the Albert canynon and Downie Creek mining properties, in all extending to more than 460 acres, and named as follows:—Nelson, Truro, Burlington, Dartmouth, Climax, Toronto Chief, Snowball, Victoria, Revelstoke.

These mining properties cover an area of nearly 3,000 acres.

Town Sites.—(A.) Thurlow town site, situated on Thurlow Island. With regard to this site the vendors supply the following information, which is founded upon reports obtained by them: The extent of this town site is 160 acres, and it includes a water frontage of about 2,000 feet.

Included in the contract to purchase are the whole of the assets and rights possessed by the Shoal Bay Trading Company. The trading post was opened in the middle of June, 1896, and by the 1st October had sold more than \$5,000 of supplies, the net profit being about \$1,500.

It is the intention of the directors to engage the services of practical and experienced prospectors, who will on behalf of the company, explore some of the very large areas of the comparatively unexplored territory of the province.

The price to be paid for the whole of the property to be acquired by the company has been fixed by the vendors, who are selling at a profit, at the sum of £400,000, payable as to £40,000 in cash, £200,000 in fully-paid up shares, and as to the balance of £160,000, in cash or fully-paid shares, at the option of the directors,

GRANITE CREEK MINING CO., Limited.

Incorporated 1895. Authorized Capital, \$150,000, in shares of \$10 each.

Directors:

Robert Stevenson, President.

W. Barclay Stephens. | W. L. Hogg. | J. N. Greenshields. | C. R. Gillard. A. W. Fleck. | W. Dale Harris.

Eastern Office: W. L. Hogg, Secretary, St. Francois Xavier St., Montreal.

Mines Office: Granite Creek, Yale District, B.C.

Formed to acquire and work an auriferous bench property, centaining 640 acres, at Granite Creek, in the Similkameen division, Yale district, Province of British Columbia. The ground has been prospected and is reported to average from 25 to 35 cents to the cubic yard.

The following statement of accounts was submitted at the annual meeting of shareholders, held in Montreal, 21st December, 1897:—

ASSETS AND LIABILITIES.

ASSETS.

| Property, mines and equipment Organization account Gold on hand Profit and loss | 2,867 05 | | 6- |
|---|--|-----------|----|
| LIABILITIES. | | \$167,362 | 00 |
| Capital stock Bills payable Sundry creditors. | 15,000 00
3,242 60 | \$167,362 | 60 |
| OPERATING ACCOUNT. | | | |
| Cr. | | | |
| By returns of gold sent to New York Gold on hand (estimated Balance carried to profit and loss account. | T 400 00 | \$15,960 | 20 |
| Dr. | | 4-313 | -, |
| To wages and labor at mine " Supplies and provisions General expenses Salaries and wages. Travelling expenses Interest and discount. Tools and implements Legal expenses | 8,356 38
2,502 60
1,154 31
2,750 00
438 50
415 54
215 46
127 50 | \$15,960 | 29 |

PROFIT AND LOSS ACCOUNT.

| T. D. | | | |
|--------------------------------|----------|----|-------------|
| To Balance from 1896 | \$ 8,473 | 34 | |
| Balance from operating account | 14,350 | 60 | |
| Co.'s suit | 3,076 | 10 | |
| | 129 | 72 | |
| " Balance | | | \$26,029 76 |

HAMMOND GOLD REEF MINING CO. Limited.

Incorporated 1897. Authorized Capital, \$1,000,000 in shares of \$1.00.

Directors:

| Sir Richard Cartwright | Walter Macdonald |
|------------------------|------------------|
| Hon. G. A. Cox | W. H. Garvey |
| B. W. Folger | R. K. Sproule |
| James Hammond | Henry Folger |

Head Office: W. H. Garvey, Secretary, 37 Yonge St., Toronto, Ont. Mines Office: Saw Bill Lake, Ont., Wm. Tedford, Superintendent.

Owns and operates a property comprising 112 acres at Saw Bill Lake, Upper Seine river district, Province of Ontario. Opened by open-cast workings. Equipped with 10-stamp battery and a suitable mining plant. Thirty persons employed in 1897. The value of the bullion produced in 1897 was \$4,000.

HAWK BAY GOLD MINING CO. Limited.

Incorporated 1896. Authorized Capital, \$150,000 in shares of \$1.00.

Directors:

| F. C. Bruce | John Tilden | S. C. Mewberry | H. N. Kitson |
|---------------|----------------|----------------|--------------|
| H. C. Beckett | Hugh C. McLean | F. S. Wiley | |
| | S. C. N | ewburn. | H. A. Wiley |

Head Office: H. N. Kittson, Sec.-Treas., Hamilton, Ont. Mines Office: H. A. Wiley, Managing Director, Port Arthur.

Owns and operates mining location 324X, situate on Hawk bay, on the Seine river, in the Rainy river district, Province of Ontario, comprising 53 acres. Vein worked averages three feet, yielding about \$17 in gold per ton. Equipped with 35 H.P. boiler (loco. type), Rand compressor, Bacon hoisting engine, cylinder 7 in. χ 10 in., Northey pumps, and other machinery. Being opened up.

HIAWATHE GOLD MINING AND MILLING CO. OF ONTARIO, Limited.

Incorporated 1897. Authorized Capital, \$500,000.

Directors:

H. E. Kyle | F. McPhillips | D. O. Cameron | W. A. Harvey James Hammond

Head Office: F. McPhillips, Secretary, 1 Toronto St., Toronto, Ont. Mines Office: W. A. Harvey, Hiawathe Mine, Saw Bill Lake, Ontario.

Owns and operates location 336X, containing about 80 acres. Situate about one mile N.W. of the south end of Moose lake, an expansion of Seine river, and forty miles from Bonheur station on the Canadian Pacific Railway. Four veins are reported on the property, varying in size from 3 feet to 6 feet on surface. Opened by 3 shafts, down at date of report 35 feet, 50 feet and 70 feet respectively. Being equipped with a suitable mining plant.

HORSEFLY GOLD MINING CO.

Incorporated under the laws of the State of California. Authorized Capital, \$1,000,000, in shares of \$10, of which at date 800,000 shares have been subscribed.

Directors:

H. N. Morse, President.

Fred. H. Beaver. | L. P. Drexler. | R. T. Ward. | M. W. Harlow. | Milton Babb.

Registered Office: 16 Chancery Lane, Victoria, B.C.

Head Office: R. T. Ward, Secretary and Manager, 610 Clay Street, San Francisco, Cal.

Mines Office: Quesnelle, B. C.

The property contains 360 acres of auriferous mining ground on the Horsefly river, Cariboo district, province of British Columbia; 140 miles by waggon road, north of Ashcroft, a station on the main line of the Canadian Pacific railway, together with the right to all the necessary water from an adjacent stream, to hydraulic the same, arriving on the ground under a pressure of over 300 feet. The property was formerly known as the Harper leasehold. The claim is 2,640 x 5,940 feet, with an estimated average depth of over 50 feet, and is located on an ancient channel similar in formation and appearance to the well known blue gravel lead of California. On this lead, within the boundary of this claim, over thirty shafts have been put down to bedrock from thirty to one hundred and fifty feet in depth, and numerous tunnels and

cross-cuts run in different directions to prospect the ground, in all of which gold is found in paying quantities. For twenty years placer claims have been worked on the surface of this ground, in a small way with sluice and rockers, with flattering results, one claim alone having taken out in this way over \$300,000—and rockers have been known to pay from bedrock over \$200 per day to a single rocker. The following is excerpted from the report of the Minister of Mines for 1897:

To work this gravel at Harper's Bar, an hydraulic elevator plant has been installed, as nearly all the ground that could be laid bare by wing-damming, etc., had been worked, and two pits have been begun, one on either side of Horsefly river, but lack of water prevented the final clean-up of the sluice boxes, the pits at once filling up when the elevators ceased working. This mining is not only removing the modern gravel, but is laying bare the rim rock of shaley clay rock and blue gravel, of which a considerable amount can be thus handled if sufficient water is procurable and the sluices are run out to give a good dump to the tailings.

By agreement with the Horsefly Hydraulic Co., this company secures all surplusage of water in Mussel creek above what the former company requires and can carry off in its system of ditching, but this arrangement has already led to trouble and legal complications.

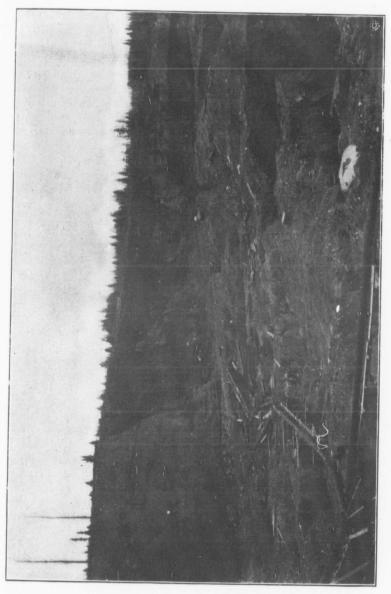
A ditch five miles long, four feet wide on bottom, three feet deep, and grade 6.4 feet per mile has been dug from the dam on Mussel creek, then a pipe line 9,500 feet long has been laid to the mine, of which 7,000 feet are 30 inches in diameter, of No. 12 steel plate, reducing to 26 inches in diameter, while below the Y, two lines, each 22 inches in diameter, are contracted to 15 inch pipe for the elevators and 11 inch for the monitors, so that there are about 13,000 feet of pipe line. The total head of water at the elevators is 305 feet, with a pressure of 105 lbs. per square inch.

In "China Pit," on the left hand of the river, the elevator lifts the gravel, water etc., 40 feet into the sluices, and with a four inch nozzle 12 inch throat and 18 inch discharge pipe, elevates about 1,000 cubic yards of gravel per 24 hours, using a No. 3 monitor with a three inch nozzle.

In the other pit the elevator, with a five inch nozzle, a 16 inch throat, and a 22 inch discharge pipe, is calculated to raise 33 feet, 1,500 cubic yards of gravel, using a No. 3 monitor with 4 inch nozzle.

In the pits at the foot of the elevators are short sluice boxes 20 to 24 inches wide, and at the head the discharge sluices are 34 and 48 inches wide, but comparatively short length, so that the tailings are being dumped close to the pit.

During the last season mining operations began April 13th, and a full supply of the water lasted to August 20th, but mining could not be carried on all that time, for in the season of highest water, from four to six weeks in June and July, when the water is most abundant for mining purposes, the workings are flooded, except the "China Pit," which is flooded only in excessively high water. This pipe line will not carry enough water to keep both elevators working at the same time, the large one requiring the maximum supply for efficient work, the smaller one in "China Pit" being used when water begins to slacken. Hence when water is in greatest supply, flood water greatly prevents its use. On the stoppage of the water some of



No. 5 Pit.-Horsefly Hydraulic Mine, Cariboo, B.C.

the sluice boxes were cleaned up, but a general clean up was not possible before the pits filled, for although some gold is lifted with the gravel the most of it is caught in the boxes at the foot.

Trouble and delay were felt by the wearing ont of the castings in the elevators. During another season if a continuous supply of water can be got, a much greater amount of gravel can be mined, the pits got into better shape and some definite results obtained, and as the rich ground gets below the influences of these appliances, drift mining will have to be resorted to if the ground proves rich enough to pay for this system of mining.

Timber is scarce close by and has to be hauled two or three miles. While working 16 men were employed at \$1.50 to \$2.50 per day and board, pipe-men getting \$2.00 per day and board and the necessary rubber boots.

An electric light plant lights the workings with seven arc lights, a pipe running from the main line to a Pelton wheel, that supplies power for the dynamo.

HORSEFLY HYDRAULIC MINING COMPANY, Limited.

Incorporated 1893. Authorized Capital, \$250,000, in shares of \$10. In 1896 debentures were issued for the sum of \$150,000, payable in five years and bearing interest at 10 per cent. per annum.

Directors:

J. M. Browning.

President:—B. T. Rogers.

| W. F. Salsbury.

Secretary:—A. Oakley.

Principal Place of Business: Vancouver, B.C.

Location of Works: Horsefly, Cariboo District, B.C.

Manager, J. B. Hobson, M.E., Horsefly, B.C. Asst. Manager, G. W. Snyder,

The company's property is situated on the Horse Fly river, about 150 miles north of Ashcroft on the line of the Canadian Pacific Railway. It is 53 miles north of the 108 Mile House, on the Cariboo waggon road, and about six miles south of the Quesnelle lake, in Cariboo district, B.C.

It comprises 19 mining leases, aggregating about 2,100 acres of land, covering the auriferous gravel deposits of an ancient river.

The deposits contain a large percentage of rounded, water-worn pebbles, cobbles and boulders of quartz, and are similar in character to the best of the famous deep gravel deposits of the ancient rivers of central California, known as the Blue Lode.

The bedrock, constituting the floor of the workings, is about 90 feet above high water mark of the Horse Fly river. The water system, as now successfully com-

pleted, brings water from Mussel creek, a southern tributary of the Horse Fly river, by a ditch and pipe line 12½ miles in length, with a capacity for delivering 1,800 miner's inches of water.

The pipe line is of steel, 30 inches in diameter, made in two inverted syphons, aggregating 8,300 feet. There are also three sections of 3×5 feet flume on line of ditch, aggregating 600 feet.

Water is delivered from the main ditch under a head 168 feet, and from the Rat lake pooling reservoir near the mine, under a head of 106 feet, affording ample power for operating the property by hydraulic process where found suitable, or to operate a 100 stamp mill, if required, to crush the high grade cemented gravel encountered in the workings opened in the company's property in the Discovery and Foyle claims.

The mines are equipped with a complete portable hydraulic plant of 18 and 22 inch pipes, and six No. 8 hydraulic giants.

During the progress of the opening work done during the seasons of 1894, 1895 and 1896, the sum of \$92,426.00 gold was recovered from 750,000 cubic yards of gravel and extremely hard cement.

The ten stamp mill, furnished and erected by W. D. Matthews, Esq, under agreements entered into and approved at the annual meeting held in March, 1897, was completed for operation by water power, (as per agreement) and turned over for the company's use on the 10th day of July, 1897, after which time the gravel extracted during the progress of the development work was delivered at the mill and crushed.

The result of the crushings is given in the following statement :-

STAMP MILL REPORT.

| DATES. | Mill run
hours. | No.
stamps. | Tons of gravel crushed. | Gold recovered. | Yield
per ton. |
|--|--------------------|----------------|-------------------------|----------------------------------|----------------------|
| July 10 to Aug. 3
Aug. 3 to Sept. 5 | 426
488 | 10 | 1,100
1,660 | 1,093 07 | 99 |
| Sept. 5 to Oct. 3
Oct. 3 to Oct. 10 | 538 | 10 | 1,987 | 1,890 78
2,388 12
1,120 00 | I 33
I 25
I 78 |

SUMMARY.

| Time run with 10 stamps | 1,673 heurs. |
|-------------------------------------|--------------|
| Quantity of cemented gravel crushed | |
| Gold recovered | |
| Value of gold | \$6,446.50. |

The delay in getting the mine properly opened and in condition to keep the mill running full time, was caused partially by difficulties encountered in the underground works and the impossibility of securing the number of drift miners required for gravel extraction.

During the progress of the work it has been demonstrated that the 10-stamp mill, when run full time, is capable of crushing 5\mathbb{s} tons of cemented gravel per hour, or 135 tons per day of 24 hours, and that the cost of mining and milling will not exceed \$1.40 per ton.

The gravel crushed during the season was all that was extracted during the progress of the development work, and included a large percentage of the low grade gravel taken from the upper portions of the drifts, gangways, airways and chutes.

With additional labor the low grade material encountered could have been separated and sent to the dump, but testing proved that it would yield more than the cost of milling, so it was deemed best to crush it, and thereby increase the aggregate product, at the risk of apparently reducing the average yield per ton.

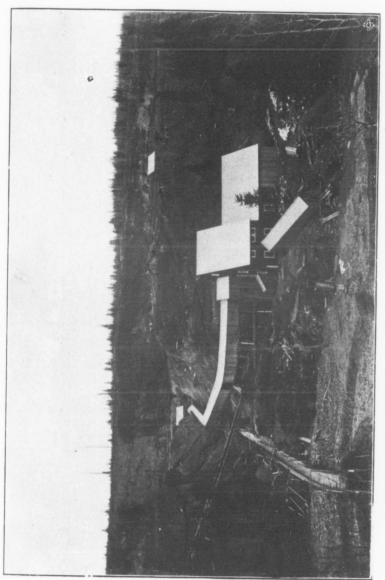
By reference to the table giving milling results it will be noted that the product increased with the progress of opening the mine. This gradual increase in product taken together with results of a thorough sampling of the faces of the working breasts now opened, and the previous tests made of the gravel exposures, warrant the opinion that when the mine is properly opened for breasting, any desired average found profitable up to \$5 per ton can be secured.

The low grade gravel encountered in the workings is usually free and yields its gold readily by washing. This gravel should be breasted out separately and the gold recovered in washing dumps, in the customary way adopted for the recovery of the gold from low grade gravel drift mines, leaving the higher grade cement and gravel for treatment by the milling process.

In compliance with orders received from head office, the mine was closed down on the 10th of October, 1897, to be re-opened early in 1898.

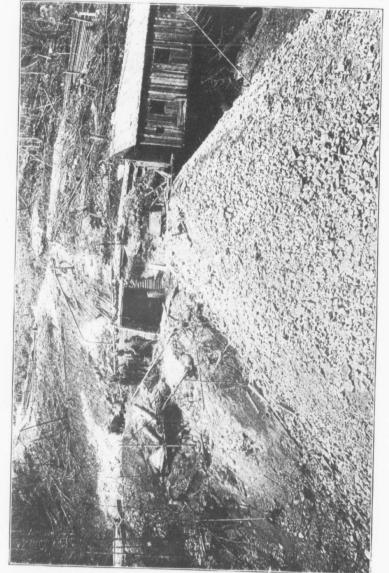
STATEMENT OF RECEIPTS AND EXPENDITURES FOR SEASON 1897. PERMANENT IMPROVEMENTS.

| THE ROY ENERY IS. | | | | |
|--------------------------------|---------|----|---------|----|
| Stamp Mill— | | | | |
| Labor | \$1,288 | 66 | | |
| Lumber | 1,073 | 32 | | |
| Stores | 236 | 61 | | |
| Explosives | 38 | 85 | | |
| | | - | \$2,637 | 44 |
| Tunnel and Track— | | | Ψ=,03/ | 44 |
| Labor | Ca arm | | | |
| Explosives | \$2,257 | | | |
| Lumber | 319 | | | |
| Stores | 606 | | | |
| Stores. | 156 | | | |
| Blacksmithing | 64 | 45 | | |
| _ | | | 3,404 | 58 |
| Total permanent improvements | | | \$6,042 | 02 |
| OPERATING ACCOUNTS—DEVELOPMENT | WORK. | | | |
| Mining | | | | |
| Labor | \$7,719 | 60 | | |
| Explosives | | | | |
| Stores | 1,191 | | | |
| Blacksmithing | 186 | | | |
| 5 | 160 | 29 | | |
| | | - | \$9,257 | 91 |



10-Stamp Water-Power Cement Mill, Sluices and Pit No. 1.—Horsefly Mine, Cariboo, B.C.

| Milling— | | |
|--|------------|------------|
| Labor | \$1,656 20 | |
| Stores | 74 75 | |
| | | 1,730 95 |
| HYDRAULICING. | | |
| Labor | \$343 00 | |
| Stores | 65 65 | |
| LAND AND LEASES. | | \$408 65 |
| Balance of first year's rent government leases on eight | | |
| leases | \$ 280 00 | |
| Three year's rent, government lease | 1,650 00 | |
| Free miner's license, 1897
Surveying | 95 60 | |
| | 121 00 | 2,146 50 |
| BUILDING MAINTENANCE. | | 2,140 30 |
| Labor | \$136 50 | |
| Stores | 3 20 | |
| OPERATING ACCOUNTS. | | 139 70 |
| D | | |
| | 159 00 | |
| Ditches maintenance | 660 43 | |
| Pipe line maintenance | 78 oo | |
| Camp maintenance | 730 30 | |
| Waggons and harness maintenance | 55 95 | |
| Tools and implements, 10 per cent. dep | 404 65 | |
| Roads and trails | 90 25 | |
| Prospecting | 1,564 01 | |
| Travelling expenses | 1,612 40 | |
| Stable expense | 866 04 | |
| Insurance | 467 50 | |
| Postage and telegraph | 53 32 | |
| Stationery and printing | 23 60 | |
| Caretaking | 145 33 | |
| Management, salary and board | 3,085 00 | |
| Total operating expenses | | 23,679 59 |
| I and the second | | -314/19 39 |
| RECEIPTS. | | |
| GOLD ACCOUNT. | | |
| August clean-up | | |
| Hydraulic sluices 24. ozs. | \$ 404 64 | |
| Gold on hand, 1896 7 " | 101 10 | |
| Stamp mill 64.83 " | 1,093 07 | 0.0 |
| September clean-up | | 1,598 81 |
| Stamp mill | | 1 800 78 |
| October clean-up— | | 1,890 78 |
| Stamp mill | | 2 200 |
| 149.30 | | 2,388 12 |



Iron Mask Tunnel, Rossland, B.C.

| October 10th clean-up | | | | |
|---|-----------------|----|--------|----|
| Stamp mill | | | 1,074 | 53 |
| Total gold | | | 6,952 | 24 |
| Less taxes, freight, insurance and Bank com-
mission | | | 706 | |
| | | - | 6,246 | 18 |
| Profit on stores | 35 | 93 | | |
| Profit on farm | 910 | 75 | | |
| Profit on boarding house | 1,570 | 47 | 2,517 | 15 |
| Total receipts | | | 8,763 | 33 |
| SUMMARY. | | | | |
| Permanent improvements | 6,042 | 02 | | |
| Operating account—development work | 23,679 | 59 | | |
| Total receipts ₁ | 29,721
8,763 | | | |
| Net expenditure | | | 20,958 | 28 |
| INVENTORY. | | | | |
| Provisions and miscellaneous mining stores | | 00 | | |
| Γools and implements | 3,641 | 80 | | |
| Harness, waggons, horses, etc. | 1,233 | 00 | | |
| Lumber and logs | 749 | 50 | | |
| Total | | | 23,930 | 85 |
| | | | | |

IRON MASK GOLD MINING CO.

Incorporated August, 1895. Authorized Capital, \$500,000 in shares of \$1.00.

Directors:

H. M. Richards | Austin Corbin | A. T. Herrick | J. F. Herrick A. M. Holter | Peter Larson | E. J. Roberts.

Head Office: J. F. Herrick, Secretary, Spokane, Wash.

Mines Office: J. F. Herrick, Managing Director, Rossland, Wash.

Owns and operates the "Iron Mask" mineral claim, comprising 11 acres in the Trail district, Province of British Columbia. Average size of vein worked, 6 feet; opened by shafts, 250 feet and 190 feet respectively, and one tunnel in at date 450 feet. Equipped with Ingersoll-Sergeant drills; hoisting engine having double cylinder, 9 x 12 in.; drum, 42 in.; Knowles pump and other plant, the power for which is supplied from the War Eagle mine, which it adjoins.

JUMBO GOLD MINING CO., Limited.

53

24

18

15

33

Incorporated 7th May, 1896. Authorized Capital, \$500,000.

Head Office: Spokane, Wash. Mines Office: M. R. Galusha, Rossland, B.C.

Owns and operates the "Jumbo" claim, comprising 21 acres, 2½ miles west of the town of Rossland, Province of British Columbia. On this claim is a very prominent exposure of iron-stained, fine grained eruptive rock, with more or less decomposed sulphides, in which a shaft was sunk, showing some low-grade ore, and afterwards a tunnel was run in about 260 feet, with about 125 feet of cross-cuts. For 150 feet there was no ore; then the tunnel entered and continued for nearly 90 ft. in a body of very low grade, coarse grained pyrrhotite, in which, however, there is ore containing some copper pyrites, mispickel and calcite, that carries enough value in gold to make it shipping ore. Being opened up.

KNOB HILL GOLD MINING CO. Limited.

Incorporated 1897. Authorized Capital, \$1,500,000.

Directors :

S. H. C. Miner | W. H. Robinson | D. A. McCaskill | C. J. Chisholm A. L. White | J. P. Graves,

Head Office: A. L. White, Secretary, St. James St., Montreal. Mines Office: W. Yolen Williams, Greenwood, B.C.

Owns and operates the Knob Hill mineral claim, in the Greenwood camp, Vale district, Province of British Columbia. The ore-body is fully 50 feet wide, of nearly solid, fine-grained magnetite, carrying a very small percentage of copper, and some quartz and calcite in the same altered eruptive rock. Narrow bands of quartzose rock, with some yellow copper, traverse this body of iron along the line of strike. Small openings show the continuation of this mineralized zone to the south, but with a much narrower width of ore. In the Mines Report for 1897 we find the following respecting this deposit:

"Again we are confronted by the fact that too little has yet been done to show the true significance of this large ore-body, in which are, apart from iron ore, very small values in gold and copper, as will be seen in the samples taken and assayed by Mr. Guess, whose results were kindly submitted by Mr. Graves, i.e.:

(1) Nine feet of magnetite ore gave \$2.75 in gold, 9 ozs. silver per ton, 3.8 per cent. copper, 57.6 per cent. iron, and 7.5 per cent. silica.

(2) Twelve feet gave \$1.12 in gold, .6 ozs. silver per ton, 1.9 per cent. copper, 46 per cent. iron, and 22.3 per cent. silica,

(3) Twenty feet gave \$1.50 in gold, 4 ozs. silver per ton, 1.82 per cent. copper, 36.9 per cent. iron, and 29.3 per cent. silica.

A general sample across the whole ledge gave (not assaying for gold or silver) 37.8 per cent. iron, 30.8 per cent. silica, and 6.3 per cent. lime.

Hence this ore exhibited in this surface cut will make valuable material for fluxing in smelting, and further work, since resumed, may yet disclose higher values in gold, silver and copper in this ledge, about which so little is really known."

The plant comprises: One steel boiler, 50 h.p.; one 10 drill duplex Rand compressor; Rand drills, Bacon hoisting engine, Cameron pump, etc.

LE ROI MINING AND SMELTING CO.

(Reported acquired by British America Corporation, Limited, 3rd June, 1898.) Incorporated 20th May, 1891. Authorized Capital \$2,500,000 in shares of \$5.00. (Dividends paid to February, 1898, \$800,000.)

Directors:

| | W. W. D. Turner. | |
|----------------------------------|--------------------------------|---------------------------------|
| George Turner.
W. M. Ridpath. | L. F. Williams. | J. M. Armstrong. |
| F. H. Graves. | W. J. Harris.
J. N. Peyton. | D. W. Henley.
E. D. Sanders. |

Head Office: Spokane, Wash. Mines Office: Rossland, B. C.

George Turner, Managing Director.

W. M. Ridpath and W. J. Harris, Managing Committee.

Owns and operates at Trail, British Columbia, the "Le Roi," "Black Bear" and "Ivanhoe" claims. Vein worked averages 25 feet and yields \$35.00 to \$40.00 per ton. The equipment comprises:

Boilers — Two 80 h.p. tubular; three 100 h.p.

Air Compressors — One Rand 40-drill; one Rand 4-drill, and one Rand 10-drill.
 Rock Drills — Fifteen (Rand and Ingersoll-Sergeant).

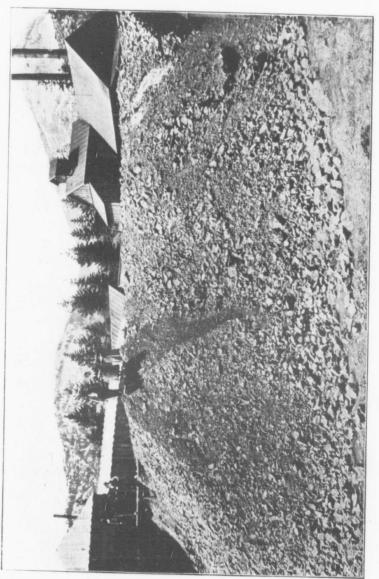
Pumps -- Three Cameron and one Blake.

Hoisting Engines — One Lidgerwood, friction geared, 12 x 14 inch; one 20 x 42 inch direct-acting Ingersoll; one small American make.

Lighting -- By Edison electric plant, having a capacity of 200 lamps and three arc lights.

Diamond Drills - One Sullivan.

Smelting works at Northport, Wash., T. Breen, Superintendent.



Pile of Ore at Le Roi Mine, Rossland, B.C.

LILY MAY GOLD MINING CO., Limited.

Incorporated 1896. Authorized Capital \$1,000,000, in shares of \$1.00 each.

Directors:

George Turner. | Frank Kizer. | J. C. Williams. | W. J. Harris. A. K. Roy.

Head Office: 215 Hyde Block, Spokane, Wash.

Mines Office: Rossland, B. C.

Owns and operates the "Lily May" gold claim, comprising 13 acres, 1½ miles south of the town of Rossland, Trail district, Province of British Columbia. Opened by three shafts, at date, down 108 feet, 50 feet and 90 feet, and by a tunnel in 85 feet, connecting with No. 1 shaft at a depth of 68 feet. Equipped with one 50 h.p. upright boiler, Ingersoll-Sergeant 5 drill compressor, steam pump and other plant.

LILLOOET, FRASER RIVER AND CARIBOO GOLD FIELDS CO., Limited.

Registered 24th January, 1895. Authorized Capital £300,000 in shares of £1, of which there has been subscribed and fully paid £250,000.

Directors:

R. M. Horne-Payne, *Chairman*. Le Vicomte du Peloux. Hon. Forbes G. Vernon.

J. Horne-Payne, Q. C. R. Northall-Laurie, Henri Rosenheim.

CANADIAN OFFICE:

Edgar A. Bennett, Revelstoke, B. C.

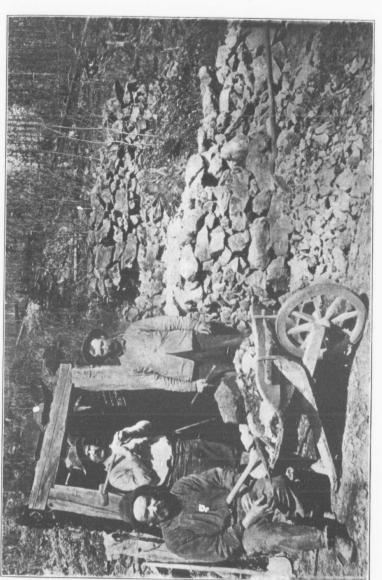
Head Office:

Francis Williams, Secretary, 1 and 2 Great Winchester St., London, E.C.

At date of report the company is interested in 81 claims in the Province of British Columbia, and of these owns 45, has a 75 per cent. interest in nine, and has 27 under bond. These embrace the Alpha group in the Lardeau district; the City of Spokane mine, Trail district; Lanark group, Illecillewaet district; the Sunshine group, Lardean district; Isabella group, Illecillewaet district, and the Aaron group, Montgomery district. The following is excerpted from the report submitted to the shareholders 8th December, 1897, (for year ended 30th September):

DIRECTORS' REPORT.

The statement of income and expenditure shows a debit balance of £45,095 12s. 3d., which, you will note, has been arrived at by writing off the sum of £31,025 11s. 8d., on account of deposits on options, the cost of work done in the investigation of



Tunnel at the Lily May Mine, Trail, B.C.

claims subsequently abandoned, and various other expenditure which must be deemed to have been unproductive. In the annual report last year the directors pointed out it could not be expected that every property on which an option was obtained and work done would prove a mine, and during the present year various properties on which prospecting did not warrant further outlay have been abandoned. Amongst those retained are some which promise to prove valuable mines.

Our chief engineer, Mr. Robert Jamieson, resigned in April, and shortly afterwards our managing director advised us that Mr. Jamieson's estimates upon the Lanark property were most inaccurate, both with regard to the quantity of ore developed and its concentrating proportions. It will be remembered that in an extract from the last annual report of Mr. Jamieson, which was sent to the shareholders, Mr. Jamieson stated: "The work developed in the several tunnels to the 270-foot level exposes a body of ore which is immediately available, and which I estimate to contain not less than 38,000 tons, and with the present strike at the 400-foot level it would be perfectly safe, even at this stage, to add at least one-half to the foregoing estimate;" and advices, dated November 26th, 1896 from Mr. Jamieson, informed us that the ore body on this 400 foot level had been opened up and found to be 41 feet wide. During the summer all the ore opened up to the 400-foot level on the Lanark Vein proper was taken out, and it only amounted to 16,269 tons. Especially inaccurate were his estimates as to the number of tons of crude ore it would take to produce one ton of concentrates. Instead of the proportions being in the ratio of 4 or 5 to 1, the 16,269 tons of ore only produced 1,820 tons of concentrates, yielding a net profit of about \$16,000. This sum does not appear in your balance sheet, and we shall propose to the independent Lanark Company to use it towards writing down the expenditure on capital account. The small profit resulted from the heavy cost of mining and the expenses incurred in marketing that class of ore, which were as follows: Duty, \$21 per ton; railway freight and treatment charges, about \$23 per ton; and mining, about \$30 per ton of concentrates; while the gross value was about \$83 per ton. The last report received before operations were suspended show that the cost of mining can be considerably reduced, but the net profits would, in the opinion of the board, be still insufficient to justify the expenditure that would be necessary to open up new ore bodies. The work, therefore, has been closed down until such time as it can be carried on under more economical conditions.

On Mr. Jamieson's estimates the board had formed very great expectations, especially of the value of the Lanark, and upon the receipt of the unfavorable report of the managing director, it immediately arranged for Mr. Horne-Payne, Q.C., to go to British Columbia, and with the assistance of the best technical advice obtainable, advise about the actual position. Mr. Horne-Payne, Q.C., has not been able to get back in time for the general meeting, but reports have been received from him confirming the reports made by our managing director respecting the great inaccuracy of Mr. Jamieson's estimates.

Apart from the Lanark, the principal efforts of the board have been directed to the Alpha and the Sunshine properties. Mining operations were suspended on the Alpha about the same time as on the Lanark, because the value of the ore so declined with depth that, under existing economical conditions in British Columbia, it could not be profitably worked. The Sunshine has, however, yielded such exceptionally high grade ore up to the present that work has been steadily prosecuted on this property. Some ten tons a week are being taken out, and the board is pleased to state that for the past 14 weeks the entire expense of developing the property will be more than covered by the ore produced. During that time some 180 tons have been "sacked" ready for shipment, and your directors trust that this mine will prove to be good and permanent.

Early in the year it became apparent that it would be greatly to the advantage of the company to amalgamate several of its claims with the adjoining "Silver Cup" property, and after protracted negotiations this was satisfactorily accomplished, and a company entitled "Sunshine, Limited," was formed with a capital of £300,000, divided into 250,000 ordinary shares of £1 each and 50,000 preference shares of £1 each, carrying a preferential interest at 10 per cent., and thereafter ranking equally with the ordinary shares. 215,000 ordinary shares and 25,000 preference shares have been issued, leaving in reserve 35,000 ordinary shares and 25,000 preference shares.

et

o

d

O

n

f

Your company has undertaken to provide a working capital of £8,000, and owns in the Sunshine, Limited, 155,000 ordinary shares and 25,000 preference shares.

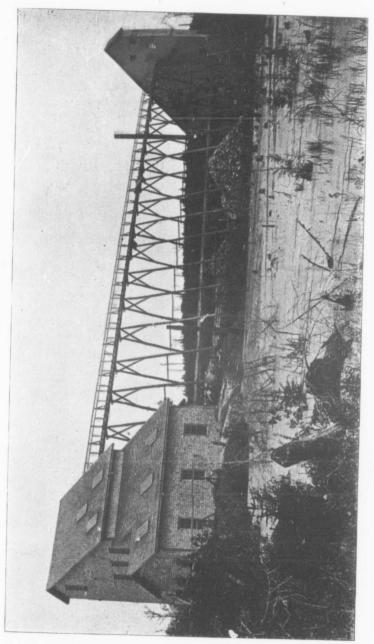
It will be seen from the balance sheet that the company has in reserve a large amount of immediately realizable securities consisting of Egyptian Unified, Colonial Government securities and English corporation stocks, which the board proposes to use with the utmost caution. With this reserve and the properties already acquired, the board looks forward with confidence to the future of the company.

The directors having been strongly advised that their business in British Columbia can be more satisfactorily handled from Revelstoke, have decided to remove their offices to that point, but, in consequence of doing so, regret to say that they have been obliged to accept the resignation of the managing director. The secretary of the company is now temporarily at Revelstoke in charge of the company's affairs.

BALANCE SHEET AT 30TH SEPTEMBER, 1897.

| LIABILITIES. | | | | | | |
|---|-------------------|----|----|----------|----|----|
| To Capital Stock Authorized— | | | | £ | S. | d. |
| 300,000 shares of £1 each | | 0 | О | | | |
| 250,000 shares of £1 each, fully paid
Sundry creditors— | | | | 250,000 | 0 | 0 |
| London | 889 | 0 | 10 | | | |
| Vancouver | 2,315 | | | | | |
| | | _ | _ | 3,204 | 7 | 1 |
| | | | 1 | 5253,204 | 7 | I |
| ASSETS. | | | | | | |
| By cost of acquisition of Mining properties, including deposits on account of options and purchase of properties. | £ | S. | d. | £ | S. | d. |
| chase of properties, &c., together with the amount expended on mining developments Less amount written off | 171,901
31,025 | 19 | 5 | | | |
| | | | _ | 140,876 | 7 | 9 |

| By Sundry investments at cost | 55,844 | 1 7 | (|) | | |
|---|-----------------|-----|------|-----------------|-----|-----|
| Less dividends accrued at date of purchase | 473 | 9 | 10 |) | | |
| Loans on security | | | | 55.370
7,544 | 1 4 | 0 |
| " Sundry debtors | | | | 3,177 | IC | 3 |
| | | | | | | |
| London bankers £209 14 9 | | | | | | |
| Petty cash | 212 | 0 | | | | |
| Paris bankers £268 17 4 | 213 | , 0 | C | , | | |
| Petty cash 0 16 1 | | | | | | |
| Vancouver, at bankers and in hand | | 13 | 40 | | | |
| " Office Furniture | | | _ | 532 | 0 | 10 |
| Less depreciation written off at 10 per cent | | | | 607 | 1.4 | 1 |
| "Income and Expenditure account— | | | | 007 | 14 | 1 |
| Balance as per last account | 6 4 7 6 | * " | 6 | | | |
| Balance added for this year | 6,456
38,638 | | | | | |
| - | | _ | _ | 45,095 | 12 | 3 |
| | | | | fara 201 | _ | _ |
| | | | , | £253,204 | 7 | I |
| INCOME AND EXPENDITURE ACCOUNT (FOR THE YE. | AR ENDI | NG | 301 | H SEPT. | 18 | 07 |
| | | | ,,,, | | , | 97. |
| T D.I. I I I | L | S. | d. | L | S. | d. |
| To Balance brought from last account | | | | 6,456 | 15 | 6 |
| " Properties account— | | | | | | |
| Amounts written off | | | | 31,025 | 11 | 8 |
| Expenditure at London, Paris and Vancouver offices— | | | | | | |
| " Legal | 1,060 | 6 | 4 | | | |
| ing, stationery, advertising, postages, &c | 5,298 | 18 | 2 | | | |
| Cables and telegrams | 384 | | 0 | | | |
| Office furniture, 10 per cent. depreciation writ- | - | | | | | |
| ten off Travelling expenses | 67
1,724 | | 7 | | | |
| Duty on share warrants in France (two years) | 522 | | 6 | | | |
| " Audit fee | | 10 | | | | |
| " Directors' fees | | | | 9,111 | | 4 |
| ii Directors lees | | | | 1,800 | 0 | 0 |
| | | | | £48,394 | 2 | 6 |
| | | | | | | |
| D. T. 11 | L | S. | | L | S. | d. |
| By Dividends and interest on investments | 1,361 | | | | | |
| Interest on loans and deposits | 1,533 | 8 | 2 | | | |
| Interest, exchange and discount | 73 | | 9 | | | |
| | | | _ | 3,298 | 10 | 3 |
| Balance carried to balance sheet | | | | 45,095 | 12 | 3 |
| | | | | €48,394 | 2 | 6 |
| | | | | 21 /3/4 | | |
| | | | | | | |



Lake Lode Gold Mine.—Mill and Shaft House, Caribou, N.S.

LONDON AND BRITISH COLUMBIA GOLD FIELDS, Limited.

Registered 1897. Authorized Capital, £200,000, in shares of £1, of which 197,500 are ordinary and 2,500 deferred shares. The deferred shares will not be entitled to participate in the profits of any year until 20 per cent. for that year has been paid on the ordinary shares, after which they will be entitled to one-half of the remaining profits.

Directors:

Arthur Johnstone Douglas | M. F. Armstrong | Arthur Fell | Henry W. Forster
Oliver Wethered | Richard Popkiss.

Head Office: E. R. Tasman, Secretary, 3 Lawrence Pountney Hill, London, E.C.

Canadian Office: J. Roderick Robertson, General Manager, Nelson, B.C.; S. S. Fowler, E.M., Mining Engineer.

Formed with the following objects :-

- (a) To prospect for gold and other minerals; to locate, peg out or otherwise acquire mining and other leases and properties or interest therein.
- (b) To acquire, or take options of, concessions or mines, or blocks of shares in mining, land or other companies, and to provide working capital for such companies.
- (c) To promote or otherwise establish companies or associations of a public or private character, for the purpose of acquiring and working, or otherwise turning to account, desirable mining undertakings or other enterprises, after the same shall have been duly examined or tested by this company, and to invest capital in existing approved mining and other properties.

DIRECTORS' REPORT, 1897.

"The Directors submit their Annual Report and statement of accounts, made up to the 30th September, 1897. The period with which these accounts deal covers about sixteen months, dating from the incorporation of the company.

The properties and interests held by the company are as follows:

The Ruth Mines, Limited (Shares).

The Ymir Gold Mining Claims.

The Alma Gold Mining Claims.

The Norfolk Gold Mining Claims.

The Yukon Goldfields, Limited (Deferred or Founders' Shares).

The British Columbia and New Find Goldfields Corporation, Limited (Deferred or Founders' Shares).

The Rossland War Eagle Co. (Shares).

The Ruth silver mines were converted into an English company, under the title of the Ruth Mines, Limited, on the 30th June last, and being a shipping property

has made a nett profit of \$91,806 between that date and the 30th November last, which, taking the rate of exchange at \$4.85 to the £ sterling, amounts to £18,929 is. 5d.

ed

er

e

Ξ,

11

n

The Ymir group of mines, owned by this company, began to open up so very richly that the board decided to devote its principal energy to that property. A large amount of development work has been carried out, and a road four miles in length built from the railway to the mine. Our manager has instructions to have this mine absolutely proved, so that it may be offered later on with confidence at its proper value. It is satisfactory to know that the engineers' reports confirm the opinion always conveyed to the shareholders, that in this property alone we have ore of a value exceeding the amount of the whole of this company's paid-up capital. The amount of ore already opened up might have justified the flotation of this property, but your directors feel that by further development they will be enabled to very largely increase the profit to be derived from this source, and they feel certain that the shareholders will approve of a policy, which although limiting the amount of the ascertained profits, will undoubtedly give a much larger reward later on.

A small amount only of development work has been done on the Alma group of mines, which adjoins the Ymir group, as the developments on this latter must afford a valuable guide to the works to be undertaken on the Alma. It is hoped, however, that the Alma group of mines will eventually prove as valuable as the Ymir.

The Norfolk claims, owned by this company, are situated in the Boundary creek district and are considered to be of good prospective value by our engineers, although but little development work has yet been carried out upon them. However, it is the intention of the directors to push on with this work without further delay.

The Yukon Gold Fields, Limited, has received intimation of the arrival of their expedition at Dawson city, and as that part of the world is generally considered as likely to become one of the largest gold producers, the directors confidently believe this company's holding of deferred shares in the Yukon Gold Fields, Limited, may prove an asset of very great value, there being little doubt that their engineer, Mr. Wood, who arrived at Klondyke on the 29th September, 1897, will have the opportunity of securing some very valuable claims.

The British Columbia & New Find Goldfields Corporation, Limited, it is understood, has good business in hand which will, it is expected, considerably enhance the value of its founders' shares in which this company has a holding.

It will be seen by the profit and loss account that the profits dealt with in the year under review are principally in connection with the Ruth Silver Mines. This profit alone has however not only been sufficient to cover the whole of the company's prospecting and administration expenses both here and in British Columbia, but leaves a credit balance of £4,546 IIs. 6d.

The Ymir group and other mining properties appear in the accounts only at their nett cost to the company which does not approximate in any degree to their value.

By reducing the credit balance of £4,546 11s. 6d. by the amounts written off on account of preliminary expenses and depreciation of office furniture a nett profit of £3,658 3s. 11d. is shown which the directors recommend should be carried forward.

They have however received intimation that the Ruth Mines, Limited, contemplate paying a substantial dividend early in January next, and the cash which this company will receive should be sufficient to pay a 10 per cent. interim dividend upon its paid up capital, and it is the intention of your directors to distribute the same when received.

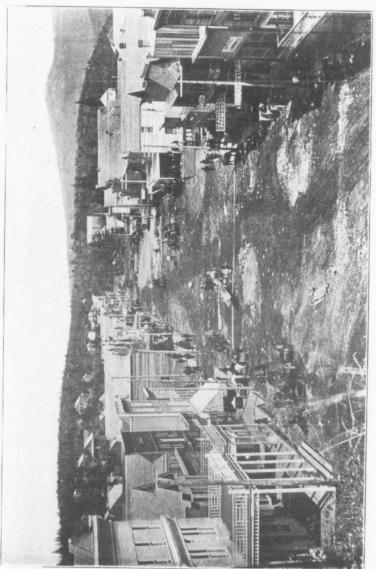
In conclusion the directors feel that they have cause to congratulate the share-holders on the results which have been obtained during the period now under review. More particularly so as the profit shewn has been obtained practically from one property alone, and does not take into account the largely improved values of the other properties which have been acquired and are being steadily developed.

To secure properties of the value of those owned by this company, it will be evident to the shareholders that it was necessary to investigate and have reports made upon a very large number, involving a vast amount of work, and the result of this investigation is that the company now possesses the pick of over 100 properties considered.

During the current year the directors confidently anticipate that they will be able to successfully float one or more of the properties in hand, and they are now considering the advisability of taking interests in or acquiring other properties from which further lucrative business may be expected.

BALANCE SHEET, 30th SEPTEMBER, 1897.

| TO SHARE CAPITAL.— Dr . | | | | | | |
|--|-------------------|----|---|----------------|----|----|
| Authorized. — 197,500 ordinary shares of $£1$ each 2,500 deferred shares of $£1$ each | £197,500
2,500 | | | | | |
| 200,000 | £200,000 | 0 | 0 | | | |
| Subscribed and Issued. —100,000 ordinary shares | 50,000 | 0 | 0 | | | |
| Less calls in arrear | 3,343 | 15 | 0 | | | |
| 2,500 deferred shares fully paid | 46,656 2,500 | 0 | 0 | | | |
| Sundry Creditors.—London | 3,129 | ΙΙ | 5 | £49,156 | 5 | 0 |
| British Columbia | 3,112 | 7 | 0 | | | |
| Profit and Loss. — Balance as per account | | | | 6,241
3,658 | | |
| | | | £ | 59,056 | 7 | 4 |
| Cr. | | | | | | |
| By investments in various companies (those purchased
being taken at cost and those otherwise acquired | | | | | | |
| at par) Mining claims and options, including development | | | £ | 33,936 | 4 | 9 |
| thereon to date | | | | 9,463 | OI | 8 |
| Preliminary expenses | £ 4,254 | I | I | | | |
| Less proportion written off | 850 | 16 | 3 | | | |
| | | - | | 3,403 | 4 | 10 |
| | | | | | | |



Columbia Avenue, Rossland, B.C.

| | | _ | | - | | |
|--|-----------|------|------|----------|-----|-----|
| Office furniture and surveying instruments British | | | | 1 | | |
| Columbia | 187 | 16 | 8 | | | |
| Less 20 per cent. depreciation written off | | II | 4 | | | |
| Sundry Debters London | 0 | | | 150 |) ! | 5 4 |
| British Columbia | 3,778 | 3 | | | | |
| British Columbia | 348 | 9 | I | 1 | | |
| Cash at Bank and in Hand British Columbia | 6 | | _ | 4,126 | 12 | 6 |
| London | 6,704 | | 6 | | | |
| 230114071 | 1,272 | 7 | 9 | | | |
| | | | | 7,976 | 9 | 3 |
| | | | 1 | 559,056 | 7 | 4 |
| PROFIT AND LOSS ACCOUN | | | | | | |
| (From 16th May, 1896, the date of Incorporation, | to 30th | Sep | tem | ber, 189 | 77. |) |
| Dr. | | | | | | |
| To Prospecting and General Expenses London and | | | | | | |
| British Columbia | | | | £2,786 | 7 | Q |
| To General Extenditure, London.— Directors' fees | | | | 22,700 | / | 9 |
| and managing director's salary | 2,087 | 13 | 4 | | | |
| Office rent and salaries | 658 | 5 | | | | |
| Cables, telegrams and postage | | 9 | | | | |
| Printing, stationery and advertising | 236 | | I | | | |
| Travelling expenses | | 0 | | | | |
| Legal charges | 200 | | | | | |
| Bank charges | 53 | | | | | |
| | | | - | | | |
| Community of Division 11 and 11 | 3,901 | 6 | IO | | | |
| General Expenditure, British Columbia Office rent | | | | | | |
| and salaries£2,774 17 4 | | | | | | |
| Travelling expenses 946 5 10 | | | | | | |
| Cables, telegrams and postage. 374 14 10 | | | | | | |
| Legal charges 129 11 9 | | | | | | |
| Printing, stotionery and sundry | | | | | | |
| expenses 31 8 11 | | | | | | |
| | 4,256 | 18 | 8 | | | |
| m | | | _ | 8,158 | 5 | 6 |
| To reporting and consulting engineers' fees, British | | | | | | |
| Columbia and London | | | | 3,552 | 7 | 0 |
| Balance carried down | | | | 4,546 | 11 | 6 |
| | | | | | | |
| | | | £ | 19,043 | 12 | 6 |
| To Preliminary Expenses Proportion written off | | | | £850 | 16 | 2 |
| Depreciation, written off office furniture, | | | | 2,050 | 10 | 3 |
| British Columbia | | | | 277 | | |
| Balance, as per balance sheet | | | | | 11 | 4 |
| | | | | 3,658 | 3 | 11 |
| | | | 1 | 64,546 | 11 | 6 |
| Cr. | | | = | | | |
| By profit on property purchased and sold, received in full | v naid el | har | 00 6 | 12 666 | | |
| Profit on working mining property | y para si | iiai | COL | | | I |
| Fees and commissions earned, received in fully pa | id share | c | | | 2 | 6 |
| Interest, balance | ad Shale | d. | | 963 | | 2 |
| Transfer fees | | | | 75 | | 9 |
| | | | | 33 | 5 | 0 |
| | | | L | 19,043 | 12 | 6 |
| By balance brought down | | | 1 | 4,546 | II | 6 |
| | | | N | 4,540 | | U |
| | | | | | | |

MIKADO GOLD MINING COMPAN' Limited.

Registered 15th July, 1896. Authorised Capital, £45,000.

Directors:

Col. Engledue, Chairman.

A. J. Weber.

James Reid.

A. L. Mather.

Head Office: C. F. MacNicol, Secretary, 79 Gracechurch St. London, E.C.

Mines Office: Theo. Breidenbach, Superintendent, Mikado Mine, via Rat Portage, Ont.

Formed to adopt and carry into effect an agreement made between the South African General Development Syndicate (Ltd.) of the one part, and the Mikado Gold Mining Co., and to carry on mining in the districts of Rainy River, Thunder Bay, and Algoma, Province of Ontario. At date owns and operates mining locations D147, 148, 149, 200 and 201, comprising respectively 40, 46, 15, 72 and 114 acres at Shoal Lake, Lake of the Woods, Ontario, on which is situated the Mikado gold mine worked by the company. Vein worked averages 8 ft.; equipped with 20 stamp battery (steam) and suitable mining plant.

DIRECTORS' REPORT. (Submitted 11th January, 1898)

"The directors beg to submit to the shareholders their report and statement of accounts for the period ending 30th September, 1897, viz., 14 months.

"The development of the mine, and the erection of machinery, has been in active progress. The main shaft was sunk to a depth of 126 feet, and has been fitted with cages for hoisting. The shaft on No. 2 Reef was down a depth of 90 feet. 692 feet of drifting had been done to 30th September, thus opening up a considerable amount of stoping ground.

"A battery of 20 stamps with complete steam power, with mill building, engine and boiler house have been erected, also hoisting engine with shed. There are also blacksmith's shop, stables, magazine, and a well built camp to accommodate about 80 men, consisting of boarding house, mess room and kitchen, store building, laboratory and office, assistant manager's quarters, and a house for the manager; a substantial wharf for landing stores has been erected, and a powerful steamboat has been purchased for communication between the mine and Rat Portage, also horses and waggon.

"The battery commenced crushing on 9th August last, and, up to 30th September, 1,470 tons of ore had been treated, which produced 2,413 ozs. of gold, being 1 oz. 13 dwts. per ton of the value of \$35,628, or, say, £7,384.

"Prospecting over the company's property has been carried on, with the result that several veins have been discovered, all gold bearing, but which require further development to prove their value.

6

6

3

6

6

2

9

"It will be seen that there is a balance in favor of the mine of £2,663 18s. 5d., as the outcome of the 14 months' working, and the directors desire to point out that such result may be considered as highly satisfactory, and unique in the annals of quartz ree mining. It should be remembered that no work was commenced until August, 1896; since then the mine has been sufficiently developed te ensure a supply of 50 tons of ore per day for crushing. A complete milling plant has been erected, and everything points to a speedy earning of substantial dividends."

BALANCE SHEET TO 30TH SEPTEMBER, 1897.

LIABILITIES.

To Capital (authorized) 45,000 shares of £1 each. £45,000 o

| " Capital issued (36,207 shares of £1 each fully-paid) | £36,207 | 0 | 0 |
|--|---|-------------------------------------|---|
| " Loans | | 0 | 0 |
| " Sundry creditors | 586 | 17 | 5 |
| " Difference in exchange | 46 | 6 | 3 |
| " Balance of profit and loss, | 2,663 | 18 | 5 |
| 1 | £43,234 | 2 | I |
| ASSETS. | | | |
| By Cash in London and Canada | £1,335 | 14 | 11 |
| Property account | | | 0 |
| Mine development | 4,184 | | 7 |
| " Buildings | 3,016 | 6 | 6 |
| " Plant and machinery | 3,667 | 17 | 0 |
| Steamer account | 462 | 17 | 0 |
| " Stores, office furniture, and stationery | 122 | II | I |
| " Live stock and vehicles | 83 | 3 | 0 |
| " Sundry debtors | 150 | 0 | O |
| | | | - |
| | £43,234 | 2 | 1 |
| Profit and Loss Account, from 13th July, 1896, to 30th Se | £43,234
PTEMBER | | - |
| Dr. | | | - |
| Dr. To Expenditure—Canada :— | PTEMBER | | - |
| Dr. To ExpenditureCanada:— Salaries, wages, cables, postages, explosives, fuel, legal, | PTEMBER | , 18 | - |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travellng, and general expenses | PTEMBER | , 18 | - |
| Dr. To ExpenditureCanada:— Salaries, wages, cables, postages, explosives, fuel, legal, | PTEMBER | , 18 | 97- |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travellng, and general expenses | PTEMBER | , 18 | 97. |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travellng, and general expenses. Insurance. Expenditure—London:— | РТЕМВЕР,
 £2,948
 101 | 3 0 | 97- |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travellng, and general expenses Insurance Expenditure—London:— Office maintenance | £2,948
101 | 3 0 | 97- |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travellng, and general expenses Insurance Office maintenance Directors' fees (14 months) | £2,948
101
233
801 | 3 0 | 97- |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travelling, and general expenses. Insurance Expenditure—London:— Office maintenance Directors' fees (14 months) Legal and travelling expenses, interest, stamps, cable, adver- | £2,948
101
233
801 | 3 0 6 13 | 97. |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travellng, and general expenses. Insurance. Expenditure—London:— Office maintenance. Directors' fees (14 months) Legal and travelling expenses, interest, stamps, cable, advertising and general expenses. | £2,948
101
233
801
716 | 3
0
6
13 | 97. |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travelling, and general expenses. Insurance Expenditure—London:— Office maintenance Directors' fees (14 months) Legal and travelling expenses, interest, stamps, cable, adver- | £2,948
101
233
801 | 3
0
6
13 | 97. |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travellng, and general expenses. Insurance. Expenditure—London:— Office maintenance. Directors' fees (14 months) Legal and travelling expenses, interest, stamps, cable, advertising and general expenses. | £2,948
101
233
801
716 | 3
0
6
13 | 97. |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travellng, and general expenses. Insurance. Expenditure—London:— Office maintenance. Directors' fees (14 months) Legal and travelling expenses, interest, stamps, cable, advertising and general expenses. | £2,948
101
233
801
716
2,663 | 3
0
6
13 | 97. |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travelling, and general expenses. Insurance Office maintenance. Directors' fees (14 months) Legal and travelling expenses, interest, stamps, cable, advertising and general expenses. Balance carried to balance sheet Cr. | 233
801
716
2,663 | 3
0
6
13
12
18 | 97. |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travellng, and general expenses. Insurance. Diffice maintenance. Directors' fees (14 months) Legal and travelling expenses, interest, stamps, cable, advertising and general expenses. Balance carried to balance sheet Cr. By Sale of bullion. | 233
801
716
2,663
£7,464 | 3 0 6 13 12 18 15 | 97. |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travelling, and general expenses. Insurance Office maintenance. Directors' fees (14 months) Legal and travelling expenses, interest, stamps, cable, advertising and general expenses. Balance carried to balance sheet Cr. | 233
801
716
2,663
£7,464 | 3
0
6
13
12
18 | 97. |
| Dr. To Expenditure—Canada:— Salaries, wages, cables, postages, explosives, fuel, legal, travellng, and general expenses. Insurance. Diffice maintenance. Directors' fees (14 months) Legal and travelling expenses, interest, stamps, cable, advertising and general expenses. Balance carried to balance sheet Cr. By Sale of bullion. | 233
801
716
2,663
£7,464 | 3
0
6
13
12
18
15 | 97-
111
10
8
4
9
5
111 |



as at of til ly

5 3 5

7.

11

Town of Trail, showing Smelting Works.

MIOCENE GRAVEL MINING CO. OF CARIBOO Limited.

Authorized Capital, \$300,000.

Directors:

R. A. Campbell | F. J. Coulthard | Gordon Drysdale.

Mines Office: R. A. Campbell, Horsefly P.O., Cariboo District, British Columbia.

Formed to acquire the placer mining claims in the Quesnelle mining division of the Province of British Columbia, known as the "Diamond," the "Cyclone," the "Harper Lake," the "Beaver Lake," the "Mountain Tip," the "Slide," the "Capitol," "El Capitan," the "Junction," the "Beaver Dam" and the "Lava Point," and also to acquire by gift, pre-emption, purchase, exchange, or any other lawful means, any other placer mining claims, or mineral claims or leases, or other mining property in the Province of British Columbia.

The B.C. Mines Report, 1897, reporting on this company's operations, says: "Senator Campbell, on studying the conditions at Harper's Bar, and recognizing the fact that the shafts sunk here and all the other workings betrayed the existence of a large ancient and gold-bearing channel, running east and west through this flat lying country, having secured the ground lying on the west of the Harper lease, began the sinking of a shaft 4 x 8 ft., to exploit this channel. As the values are thought to be along the rim-rock and bottom of the channel, it was hoped that this shaft would reach the bottom of the channel, but at a depth of 250 feet the shaft was still in the blue, hard gravel, showing an unexpectedly great depth. For the first 65 feet the shaft passed through hard boulder clay, that near by forms one of the banks of the Horsefly, and then into the great deposit of gravel, in which is a large amount of quartz pebbles and small boulders or cobbles, perfectly water-worn, and a small amount of very fine gold. At 250 feet a run of fine sand checked sinking, as the pumps and hoisting plant were hardly adequate, so great a depth not having been anticipated: so sinking was stopped until heavier pumps could be installed, although the flow of water is small, or about 35 gallons per minute. Instead, after putting in a pump station at 180 feet, a cross-cut was started and run to what may be the rimrock. If on reaching bed-rock gravel is found rich enough to pay for drift-mining, having ascertained the exact position of the gutter or lowest point of the channel, a working shaft can be sunk with proper hoists and pumps for the water, that promises to be light in flow, as the boulder clay keeps out all surface water, and it is possible, in the Beaver Lake valley, to run a long tunnel to drain and exploit a long stretch of this old river course, after thoroughly prospecting with drilling machines, which might have been used to great advantage before the present work was undertaken. There are no signs of cement-gravel so far to be seen.



Modstock Gold Mining Co.-Main Shaft and Mill, Forest Hill, Stormont District, Nova Scotia.

of he he iva ner

the f a ing the be

the the the of

the een ugh g in im-

ing, l, a ises ble,

etch nich cen.

MODSTOCK MINING CO., Limited.

Incorporated October 9th, 1896. Authorized Capital, \$300,000, in shares of \$100.

Directors:

J. D. Cop 'and, President.
R. D. Kirk | Robert Dickson | C. N. Wilkie.

Head Office: C. E. Harris, Sec.-Treas., Antigonish, N.S. Mines Office; W. J. McIntosh, Manager, Forest Hill, Guysboro Co., N.S.

Owns and operates 57 gold areas at Forest Hill, Stormont district, Province of Nova Scotia. Equipped with 10-stamp mill (steam) and other plant. The output of the mine during the past three years has been: 1895, 1676 tons rock crushed (six month's working), yielding 998 ozs. 4 dwt.; 1896, 3,580 tons of rock crushed, yielding 1,854 ozs.; 1897, 3,884 tons crushed yielded 2,214 ozs. 11 dwt. Opened by 3 shafts, down at date of report, 130 feet, 150 feet and 90 feet, and by an adit in 630 feet. Equipped with 10-stamp battery: weight stamps, 850 lbs.; drop, 88 p.m.; and suitable mining plant.

MONTE CRISTO GOLD MINING CO.

Incorporated 1st May, 1896. Authorized Capital, \$1,000,000, in shares of \$1.00.

W. D. Currier | J. P. Graves | F. E. Snodgrass | F. C. Loring | F. F. West

Head Office: F. E. Snodgrass, Sec. Treas., Spokane, Wash.

Mines Office: Rossland, B.C.

Owns and operates the "Monte Cristo" mineral claim, located on the west slope of Monte Cristo mountain, one mile west of the town of Rossland, Trail district, Province of British Columbia. Equipped with one tubular 80 h.p. boiler, one Ingersoll-Sergeant 7-drill compressor, Cameron steam pump, etc. The Report of the Minister of Mines, 1897, says: "On the "Monte Cristo," where was found near the surface such a body of valueless pyrrhotite, in the lower tunnel and incline from the same, or to a depth of nearly 500 feet from the surface, has been found ore carrying much more copper and enough gold that should make this, if correctly reported by the management, good pay-ore, but extensive exploratory work is being pushed ahead vigorously."

MONTREAL HYDRAULIC MINING CO. OF CARIBOO, Limited.

Incorporated 27th March, 1895. Authorized Capital, \$250,000.

Directors:

F. C. Innes, President.

S. O. Richards. | J. M. Browning. ! John Kennedy. | E. B. Greenshields.

Head Office: C. C. Bennett, Secretary, Vancouver, B.C.

Mines Office: Thos. Drummond M.E., Quesnelle, Cariboo, B. C.

of

ut

ix

d-

30

The company's property consists of sixteen claims, covering about two thousand acres, on the Quesnelle river, about 25 miles below the forks of Quesnelle, in the Cariboo district, British Columbia.

Of the property the Mines Report of 1897 says: "There is here a large amount of gravel, auriferous, and a tunnel 1,000 feet long has been driven in gravel, but not on bed-rock, with cross-cuts 500 feet long to rock, thought to be the rims of the channel, here 500 feet apart, this supposed channel running through a valley or low depression from 2,000 to 3,000 feet wide. Also several shafts, 10 to 60 feet deep have been sunk through surface dirt or alluvium to the gravel, which is said to be fine with some boulders, with, as far as prospected, low but pay-values in gold. For hydraulicing, water-rights have been secured on Beattie creek, across which, where it runs out of a low-lying valley occupied by a series of meadows and lakes, and descends through a steep and narrow valley, a dam 55 feet high and 250 feet long on top, and 40 feet at the bottom, could be constructed, and the water carried from this reservoir through 103/4 miles of ditch (or 81/4 miles by tunnelling 1,500 feet) and 4,000 feet of pipe-line across Beaver valley to the river, where there would be a fall of 300 feet from the pressure-box to bed-rock. For dumping the sluices can discharge into the Quesnelle river with a clean drop of 100 feet. The present management is endeavoring to form a company with sufficient capital to more thoroughly exploit and test this ground and, if favorable, to put in the water-courses and open it up for mining.

MONTREAL-LONDON GOLD AND SILVER DEVELOPMENT CO., Limited.

Authorized Capital \$1,200,000, in 5,000,000 shares of a par value of 24 cents.

Officers:

Wm. Strachan, President.

Hon. A. A. Thibaudeau, Vice-President. S. H. Ewing, Treasurer.

Clarence J. McCuaig, Manager.

Directors:

R. Wilson Smith. David Morrice. W. J. Withall.

Dr. Roddick, M.P. Robert Jaffrey. R. Bickerdike.

Head Office: T. James Claxton, Secretary, 180 St. James Street, Montreal.

Mines Office: Bernard Macdonald, M. E., Dufferin Mine, Salmon River, Nova Scotia,

This company acquired in 1897 the celebrated Dufferin gold mine, at Salmon river, Halifax county, province of Nova Scotia. The property on which mining rights are held is in two blocks. The one on which the mine is situated comprising 365 gold areas, each 150 by 250 feet. (For history of this productive property see Canadian Mining Manual, 1893.) Mr. E. R. Faribault (Summary Report Geol. Survey, 1897) says: "The quartz veins worked at the Dufferin are situated on the apex of a very sharp anticlinal fold. At the main shaft the apex has a westerly and easterly pitch, which has caused a sliding and an uplift of the strata, developing large auriferous quartz veins on the crown of the saddle. These latter occur one under another in the same manner as some of those in Victoria, Australia." At date of going to press the company had under construction a completely new mining and milling plant (60 stamps) of large capacity, it being the intention to prosecute mining operations vigorously in 1898.

MOYIE PLACER MINING COMPANY, Limited.

Incorporated 30th September, 1897. Authorized Capital \$100,000 in shares of \$1.

Directors:

R. L. T. Galbraith. W. Van Arsdalen. Thos. T. McVittie. Wm. Thompson. A. W. McVittie. J. E. Humphreys. Hugh Watt.

Head Office: C. F. Venosta, Secretary, Fort Steele, B. C.

A. W. McVittie, Manager.

This company controls two placer mining leases, comprising 320 acres on the Moyie river, between Nigger and Boulder creeks, about 26 miles from Fort Steele, South East Kootenay, province of British Columbia.

Manager's Report.
(Submitted 28th August, 1897.)

The following is excerpted from the report of the manager submitted to the shareholders:



on ng ng ng ee ol. he nd ge er of nd ng

Oland Gold Mine, Montague, N.S.—Southwest view of Boiler and Pump House and Mill.

"Briefly then, our experimental work has shown that we have six hundred thousand cubic yards of gravel easily worked, which will yield thirty cents per yard, with the certainty that there is much more gravel behind this, and without including the pay gravel which is almost sure to be found under the clay. We have 1,500 inches of water at a good pressure for three months and a fairly good supply for the balance of the season at a cost of \$1,000, while for an expenditure of about \$6,000 we can have 2,000 inches all the season. We have a perfect dump. The gravel is what may be called 'loose' and will wash and run easily, there being very few boulders that will not run off in a four-foot flume, which is what I propose to work with. With three streams of water from our hose and the balance of the water running in an open cut we should have no difficulty in moving three thousand yards per day; for night work we must be satisfied for the first year with bonfires, as there is a large quantity of good firewood easily available."

Further on the report says: "The ordinary duty of a miner's inch of water in such gravel as ours is generally estimated at three cubic yards per day; but if we allow two yards, and allowing for various delays and mishaps, estimate on fifty days' work, out of the possible ninety of good water, we still have one hundred and fifty thousand yards of gravel moved, which will give us \$45,000 in gold, and we have still the balance of the season with an average of half water supply to largely increase our clean-up so that we may quite safely estimate our season's clean-up at \$50,000."

NEW EGERTON MINING CO. Limited.

Organized 1890; incorporated 1896. Authorized Capital, \$200,000.

Directors:

James D. McGregor, M.P.P. | Peter A. McGregor | John H. Sinclair, M.P.P.

John Yorston | George Mitchell, M.P.P.

Head Office: R. M. McGreger, Secretary, New Glasgow, Nova Scotia.

Mines Office: George F. McNaughton, Superintendent, 5 Mile Stream, N.S.

Owns and operates some 300 gold areas in the 15 Mile Stream district, Province of Nova Scotia. Writing of the occurrence of gold here, Mr. E. R. Faribault (Summary Report Geol. Sur., 1897) says: "The north ancicline of the Moose river mine passes through this district, and is here composed of three minor anticlinal folds. The two most northerly folds are only 130 feet apart at the east end of the district, on the New Egerton property, and have a pitch to the east at an angle of 30 degrees. Mining operations have, so far, been confined to the quartz veins lying along the two northern anticlines. The New Egerton company has lately taken possession of the principal properties which had been worked from time to time by different companies, and they are now operating on a large scale the important belts of low grade ore

known as the Mother Seigel, and the Nonpareil, on the synclinal fold, immediately south of the middle anticline, at the eastern end of the district."

The property is now being operated by open cast workings, 30 persons being employed.

The mining plant comprises: Two return tubular boilers, 80 and 35 h.p.; Rand compressor, Rand and Ingersoll drills, Bacon hoisting engine, two steam pumps, Dodge crusher, and a horizontal cable-way (Harris-Millar) 800 feet span. The milling plant comprises a battery of 30 stamps (steam driven), and a water driven battery having 20 stamps; weight stamps, 750 lbs.; drop, 92 p.m. During 1897 nine months milling with the 30-stamp battery gave 2,546 ounces from 8,222 tons rock crushed. Operations were suspended in October to change system of working, and were resumed with both mills running, 15th May, 1898.

The returns of the gold won by the former and present operators have been furnished by the Department of Mines:

| | 1887 | 299 | ounces, | 15 | dwts. | from | 569 tons ro | ck crushed |
|----|----------------------|-------|---------|----|-------|------|-------------|------------|
| | 1888 | 946 | 6.6 | 8 | 66 | 66 | 2,151 | 6.6 |
| | 1889 | 786 | 6.6 | 9 | 6.6 | 6.6 | 1,417 | 4.4 |
| | 1890 | 2,184 | 6. | 9 | 6.6 | 6.6 | 2,476 | 4.6 |
| | 1891 | 2,446 | 66 | 5 | 6.6 | 6.6 | 4,263 | |
| | 1892 | 1,285 | 6.6 | | 6.6 | 4.6 | 2,460 | |
| | 1893 | 497 | 4.6 | 17 | 4.6 | 4.6 | 1,401 | 4.4 |
| | 1894 | 552 | 6.6 | | 4.6 | 6.6 | 1,173 | |
| | 1895 | 2,956 | 6.6 | 2 | * 4 | 6 4 | 5,239 | 4.4 |
| | 1896 | 2,624 | 6.6 | | 6.6 | 6.6 | 5,200 | 6.6 |
| | 1897* | 2,850 | 66 | 6 | 4.4 | 6.6 | 9,429 | |
| *T | en month's milling o | | | | | | 211-2 | |

, and a surf

d

ı,

ng

00

ie

00

is

k

r

a

n

y

NEW FRASER RIVER GOLD MINES, Limited.

Re ered 1897. Authorized Capital, £75,000, in shares of £1.

Directors:

John Lowles, M.P., *Chairman*. C. Ashworth | Hon. F. S. A. Hanbury-Tracy, Jr.

Head Office: W. A. Stearns, Secretary, 23 Leadenhall St., London, E.C.

This company has been formed to acquire and develop. (1) Two licenses or mining leases, dated 28th September, 1894, for twenty years, granted by the Government of British Columbia, to work ten miles of the bed and bars of the Fraser river, giving the right to dredge or otherwise reclaim the precious metals contained in the sand and gravel thereof; (2) The gold placer mining claims known as the "Lyall Bar" and "Saw Mill Flat," situated on the same river. The purchase price was £60,000, payable as to £25,000 in fully paid shares, and the balance of £35,000 in cash or shares, at the option of the Directors.

NEW GLASGOW GOLD MINING CO., Limited.

Incorporated by an Act of the Legislature of Nova Scotia, 1895.

Authorized Capital, \$20,000.

Directors:

John McIntosh, Stellarton. | Angus Chisholm, New Glasgow.

J. A. Fraser, New Glasgow.

Head Office: J. A. Fraser, New Glasgow, N.S.

Property at Goldenville, Guysborough County, Nova Scotia. Equipped with 10-stamp mill and other plant. The gold yield since 1895, officially reported, has been:—

| 1895 (4 months only) | 1,073 | tons | milled gave | 432 | oz. | 8 | dwt. |
|----------------------|-------|------|-------------|-------|-----|---|------|
| 1896 | 3,791 | 6.6 | 4.6 | 1,734 | 66 | 5 | 66 |
| 1897 | 4,492 | 66 | 6.6 | 1,595 | 4.6 | 9 | 6.6 |

NEW GOLD FIELDS OF BRITISH COLUMBIA, Limited.

Registered 1897. Authorized Capital, £250,000, in shares of £1 each.

Directors:

Sir Charles Tupper, Bart., Chairman.

John Lowles, M.P.
Sir Charles M. Rennedy.

F. E. Harman.
C. Ashworth.

Canadian Board:

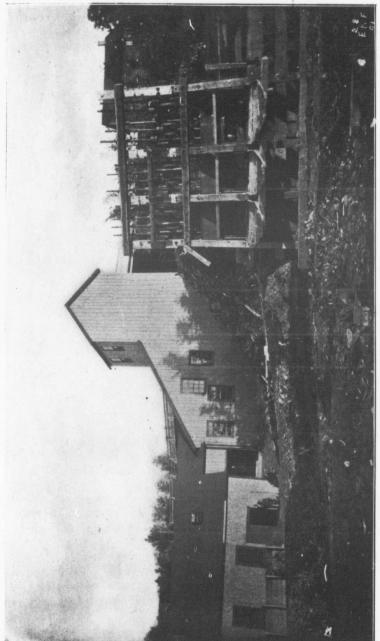
Rufus A. Pope, M.P. | George P. Brophy, C.E. | E. Bristol.

Head Office: W. C. Stearns, Secretary, 23 Leadenhall St., London, E.C.
Mr. James Morrish, M.E., Consulting Mining Engineer.

Mines Office: J. Leckie, M.E., Velvet Mine, via Rossland, B. C.

Formed to acquire in British Columbia and elsewhere by purchase, lease, concession, exchange or otherwise, mining property, claims, water rights, and also including lands, mines, mining rights and claims, minerals, ores, mills, stamps, smelting and other works for treating ores and minerals and rendering them marketable, etc.

The company has secured and is now vigorously and successfully exploiting the Velvet and other claims on Sophie Mountains, about five miles west of Rossland, Trail district, Province of British Columbia.



Oldham Gold Co.—ro-Stamp Mill at Oldham, N.S.

with has

A,

i.C.

conalso eltble,

the

OLD IRONSIDES MINING CO., Limited.

Incorporated 1895. Authorized Capital, \$1,000,000.

Directors:

S. H. C. Miner. | S. E. Rigg. | J. P. Graves. | C. E. Gault. W. A. Ritchie.

Head Office: J. W. Penfield, Secretary, Spokane, Wash. Jay P. Graves, Manager.

Mines Office: W. Yolen Williams, Mine Superintendent, Greenwood, B.C.

Owns the Old Ironsides mineral claim, Greenwood Camp, Yale District, Province of British Columbia, on which development work is proceeding. Equipped at date of report with 10-drill Rand compressor, Bacon hoisting engine, Cameron pumps and other working plant.

OLIVE GOLD MINING CO., OF SEINE RIVER, Limited.

Incorporated February, 1897. Authorized Capital, \$1,000,000, in shares of \$1.00.

Directors:

Hon. Geo. E. Foster, M. P., Ottawa.

Wm. Blackwood. Dr. R. M. Simpson.

A. T. R. Blackwood. Dr. A. H. Simpson.

All of Winnipeg.

Head Office: Clifford B. Deacon, Secretary, Winnipeg, Man.

Mines Office: Wm. A. Preston, Superintendent, Mine Centre, Ontario.

This company owns mining locations G. 60, G. 61, G. 69 and H. P. 439, comprising 290 acres on Turtle lake, Seine River, Province of Ontario, upon which is the "Olive" gold mine. Vein three feet worked; opened at date of report by two shafts, A 170 feet and B 62 feet; equipped with a small prospecting mill, two stamps and mining plant. Upon these properties over \$31,000 have already been expended in the way of permanent improvement and development work. The reduction mill upon the property in the first run of 168 tons of ore, taken as it came, from A shaft from the surface down, yielded in free gold \$6,755, an average of \$40.20 per ton, besides considerable value in the concentrates. These concentrates will average about \$60 to the ton and amount to about 7 per cent. of the ore treated. Bullion produced in 1897 of a value of \$7,231.21.

\$27,655 71

STATEMENT OF ASSETS.

| Mining locations G. 60, | G. 61, G. 69, H. P. 439, | containing in all 290 acres, |
|-----------------------------|-----------------------------|------------------------------|
| and upon mining locations (| 6. 60 and G. 61, the follow | ving work has been done: |
| C1-G 66 A 22 | | |

ult.

.C.

rict, ped ron

00.

m-

is

VO

ps

led

nill

aft

on,

ge

on

| and upon mining locations G. 60 and G. 61, the following work | has be | een | done: | |
|--|--------|-----|---|----|
| Shaft "A". Shaft "B". Winze. "A" shaft, drift east. "A" shaft, drift west. Buildings. Machinery.— Two stamp mill with Frue vanner, crusher, feeder, plates, pulleys, belting, shafting, steam pump, buckets, steam hoist, freight and customs | | | 145
62
69
110
77
\$8,200 | 66 |
| One engine, one 20 h. p. boiler, one saw mill with belting, pulleys, shafting, etc., freight included | 2,842 | 00 | | |
| Tramway. — 960 feet tramway | 625 | | | |
| One car and cable | 95 | | | |
| Tools. — Blacksmith and mining | 200 | | | |
| Steel and iron in stock | 400 | 00 | 8,262 | 00 |
| Pentes and working chamber | 250 | 00 | 0,202 | 00 |
| Ladder way compartment and skidway | 316 | | | |
| | | 50 | 566 | 50 |
| | | | d = = = = = = = = = = = = = = = = = = = | - |
| Household Effects Stoves and pipes, cooking utensils, table- | | | \$17,028 | 50 |
| ware, furniture and office fittings and supplies | | | | |
| wate, turniture and onice fittings and supplies | 911 | 00 | | |
| Paradan Pounday and from | | | 911 | 00 |
| Powder. — Powder and fuse | 325 | 00 | | |
| Trans and Posts | | _ | | 00 |
| Team and Boats.— I team horses, harness, wagon, sleighs, etc. | 500 | | | |
| Two scows | 125 | | | |
| One canoe | 35 | 00 | | |
| | | _ | 660 | 00 |
| | | | \$18,924 | 50 |
| Eleven gold bricks, containing 409 ounces | 7,231 | | , | 3 |
| About 30 tons concentrates, about | 1,500 | | | |
| | | _ | 8,731 | 21 |
| | | | | |

OMENICA CONSOLIDATED HYDRAULIC MINING CO.

Incorporated 1896. Authorised Capital, \$100,000 in shares of \$1.00.

Directors:

Wm. Munsie, Victoria, President.

Thos. B. Hall.
J. W. Ladd.
J. W. Moore.

Dr. G. L. Milne,
R. T. Williams,
Capt. C. E. Clark.

Head Office: J. T. Bethune, Sec.-Treas., Victoria, B. C. Mines Office: Capt. C. N. Black, C. and M. E., Omenica, B. C.

Formed to acquire and work seven placer claims and leaseholds, situate on Manson, Black Jack Gulch, and Lost Creeks, in the Omenica district, province of British Columbia. Being opened up.

OTTAWA GOLD MILLING AND MINING CO., Limited.

Incorporated 1897. Authorized Capital, \$1,000,000, in shares of \$1.00.

Directors:

Hon. G. E. Foster, M.P.
John Mather.
A. W. Fraser.
Denis Murphy.
R. A. Mather.

George Hay.

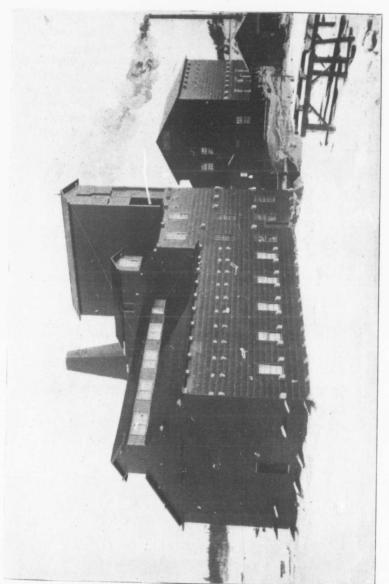
John R. Coates.

K. A. Mather.
E. Seybold.
F. P. Bronson.

Head Office: A. W. Fraser, Secretary, Ottawa, Ont.

Works: F. T. Snyder, Superintendent, Keewatin, Ont.

Owns and operates a well equipped modern milling and reduction plant at Keewatin, Lake of the Woods mining district, province of Ontario. The ore brought in by the barges of the company from the different points on the Lake of the Woods, on arriving at the company's dock, is lifted direct from the barges into a skip holding about a ton, and hoisted to the top of the lower, and conveyed along a cableway (Locke-Miller, the span being 450 feet) into the sampler, where it is dumped into a 60 ton ore bin. From this bin the ore drops into a crusher with a capacity of ten tons an hour, is there crushed, and is hoisted up the elevator and allowed to slide down over a screen. The rock that is too large to go through the screen goes to a set of rolls, where it is reduced to the necessary size, goes up the elevator and is again sent over the screen. After going through the screen, the ore drops into an automatic machine sampler, which can be regulated to take any required percentage - the usual being about 5 per cent. From the sampler the ore drops directly into a weighing bin, where it is weighed. In this connection it is worthy of particular note by the owner of ore that all estimates of weight will be based on the dry weight of the ore, which will be determined from the actual percentage of moisture in the ore as ascertained from the samples. After being weighed the ore goes into one of the storage bins. The sampler contains ten 200 ton bins, and thus has an available storage capacity of 2,000 tons of ore. Our illustration gives a better idea of what this building is like than any amount of description could, and it is only necessary to add that in size it is 42 x 96 feet, with an extreme height of 70 feet, and a height of 40 feet to the top of the ore bins. The whole building is very massively constructed, all the material used being the product of the district. The mill stands directly by the side of the sampler and within a short distance of it. In the space separating the two buildings is the water power, with a fall of nearly 20 feet, and the whole Lake of the Woods to draw from. The stamp mill contains the first twenty of what will ultimately be a sixty-stamp mill, much the largest mill that has been erected, or is in contemplation, anywhere in western Ontario. The building is of a much more substantial and permanent nature than any similar building as yet in the district, the



Reduction Works of the Ottawa Gold Milling and Mining Co. at Keewatin, Ont.

22

t at ght ods, old-

way
to a
ten
lide
o a
gain
an
age
to a
of
ore

the able this add 40 all

the wo

foundation, as will be seen, being very massively constructed of stone. All the machinery for the mill has been made from special plans and designed after a careful study of the characteristics of the ores of the district, and with a view of treating them to best advantage. With this object in view the machinery is all heavier than the standard patterns, and there are besides other variations which will make this mill peculiarly adapted to the treatment of the local ores. All the mill machinery has been made at the Gates Iron Works, of Chicago; while the shafting and gearing, which is constructed to drive the whole sixty stamps, was procured from the Hamilton Manufacturing Company, of Peterboro, Ontario. The weight of the stamps is 950 pounds, and the drop eight inches, each stamp dropping 100 times per minute.

PRINCESS GOLD MINING CO. OF ONTARIO, Ltd.

Incorporated 1896. Authorized Capital, \$500,000.

Directors:

Ewen MacKenzie, President.

John Flett. | Henry O'Brien. | Henry Lowndes. | Thos. Shortiss.

Head Office: J. R. McKenzie, Secretary, Room 106, McKinnon Building, Toronto.

Owns and operates Location 118 D on Black Sturgeon Lake, 2½ miles north of Rossland station, on the C. P. R. and 7½ miles from the town of Rat Portage. Being opened.

QUESNELLE RIVER GOLD DREDGING CO., Ltd.

Registered 1897. Authorized Capital, £55,000, in shares of £1.

Directors:

Henry Duncan. | Geo. F. Farrer. | Major General P. D. Henderson. Frank Spencer.

CANADIAN OFFICE:

Hugh McLean, Resident Manager, Vancouver, B. C.

Head Office:

Francis W. Croft, Secretary, 4 Draper's Gardens, London, E.C.

Formed to acquire the rights and powers granted under a lease from the government of British Columbia for a period of 20 years from 30th June, 1896, at a rental of £150 per annum, granting the exclusive right of dredging for gold on three miles

of the Quesnelle river, Cariboo District, Province of British Columbia, as follows:—Commencing at a post marked Joseph Reichenback on the south bank of the said river about 10 chains below the mouth of the Beaver river, adjacent to the Main Quesnelle Gold Dredging and Mining Company's claim, thence up the river a distance of three miles to Drummond's claim, the said claim of three miles covering the bed and bars of the said river from low watermark to low watermark according to plan.

The purchase consideration was £40,000 payable in fully paid shares of the company, or partly in cash and partly in shares, at the option of the directors.

RAT PORTAGE GOLD MINING CO., Limited.

Incorporated 1896. Authorized Cipital, \$1,000,000 in shares of \$1.00.

Directors:

D. C. Cameron, President.

Angus Carmichael. Hugh Armstrong.

the

ful

em

the

nill

een 1 is

ds,

:d.

iss.

ıg,

of

ge.

d.

rn-

iles

J. H. Neeve. C. W. Chadwick.

Henry Langford. Geo. Barnes.

Head Office: John H. Challoner, Secretary, Rat Portage.

C. H. Park, Mining Engineer.

Owns and is developing Location 640 P., known as the "Master Jack" gold mining claim, comprising 37 acres, Blind lake, Lake of the Woods District, Province of Ontario.

REGINA (Canada) GOLD MINE, Limited.

Incorporated December, 1894; reconstructed January, 1896. Authorized Capital, £150,000, in shares of £1, of which £127,000 is issued.

Directors:

Lieut.-General Sir Henry Wilkinson, K.C.B., Chairman. H. Chester Master | Col. Mallard | W. Rivett-Carnac.

CANADIAN OFFICE:

Henry A. Pringle, F.G.S., General Manager, Regina Mine, Lake of the Woods, Ont.

Head Office: J. L. Middleton, Secretary, 13 Walbrook, London, E.C.

Owns Mining Location 566 P (comprising 35 acres), and 567 P (comprising 42 acres), and a water location of about 200 acres, situated in Regina bay, Lake of the Woods, 45 miles S.E. of Rat Portage. Communication with Rat Portage by company's steamer: 5 hours. The property contains six gold-bearing quartz veins; No. 3 only is as yet worked.

The mining and milling plant comprises:

Boilers—Three return tubular, 2 of 125 h.p. and 1 So h.p. Compressors—One 12 drill, Ingersoll-Sergeant.
Rock Drills—Twelve Ingersoll-Sergeant.
Hoisting Engine—One Bacon.
Rock Breaker—One No. 3 Gates.
Tremaine Mills—Eight in place, equal to 40 stamps.
Cyanide plant—Electric lighting, etc.

DIRECTORS' REPORT.

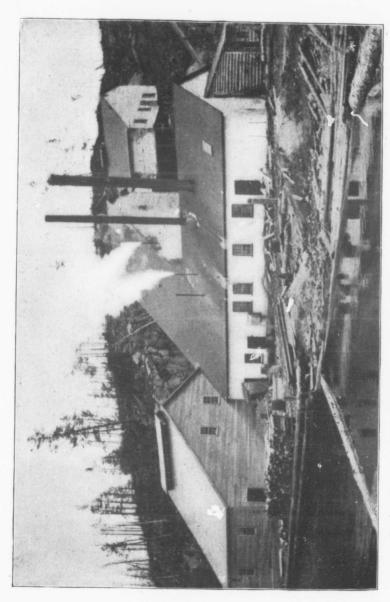
The following is excerpted from the Report to the shareholders, 21st December, 1397:—

"During the whole of the period under review, development work in the mine has been vigorously carried on, with most satisfactory results.

"The main shaft has been sunk to a depth of 374 feet; the gold-bearing quartz vein at the bottom is 4 ft. 6 inches wide, assaying on an average 17 dwts. of gold to the ton. One thousand six hundred feet of "levels" (or galleries) have now been driven in the mine, and the "6th levels" "north" and "south" have been recently started, at a depth of 360 feet from the surface. This extensive development work has opened up large masses of paying ore, estimated by the mine manager, Mr. H. A. Pringle, to aggregate 24,000 tons, worth on an average 10 dwts. per ton. This substantial reserve of ore is being rapidly added to as the work of driving the various levels proceeds.

"The persistent development work in the mine having justified the expectations of your Board, and ample "reserves" of paying ore being now in sight, the Directors decided, in the summer of this year, that the capacity of the mill should be forthwith increased from 10 to 40 stamps. Further funds were of course required to carry out this important work, and it was decided to offer 20,000 of the unissued shares of the company to the shareholders at par, as "priority" shares—these to receive 100 per cent. in dividends before the ordinary shares participitated, after which they merge into and become ordinary shares.

"The terms and advantages of this issue, and the reasons that had rendered it necessary, were fully explained to the shareholders in a circular letter, dated the 28th July. In it they were urged to subscribe for them promptly, that the additional stamps might be purchased and reach the mine before the navigation of the Lake of the Woods closed for the winer. The response to this appeal was small, and far from sufficient to justify the Board in proceeding with the work of increasing the crushing power of the mill. They have, however, by their personal exertions, and with the help of many of their friends, now succeeded in placing a sufficient number of the "priority" shares to amply cover the probable cost of the proposed additions to the mill and machinery; but they greatly regret that the work will have to stand over till navigation opens, about the middle of next May. No time will then be lost in increasing the mill to 40 stamps. It will be able to crush (at the lowest computatation) 2,000 tons of quartz each month of 26 working days. It will be seen that if



Regina (Canada) Gold Mine, Ltd.-Mine at Whitefish Bay, Lake of the Woods, Ontario.

the quartz yield only 10 dwts. per ton the mill will be producing at the rate of 12,000 ozs. of gold per annum, worth about £46,000, of which it is hoped that at least £30,000 will be clear profit.

"During the present winter development work will be continued in the mine. The ground under the lake (to the north) and beyond the air shaft (to the south) will be vigorously opened up. It is also proposed to drive a cross-cut from the 185 foot level north to the small "magazine" vein, situated about 220 feet to the east of the mine. This vein is very rich on the surface, assaying from 2 ozs. to 22 ozs. of gold to the ton.

"The Regina mine being the first public mining company established in the vast district of the Lake of the Woods, has had many and great difficulties to contend with, inseparable from all pioneer undertakings. Not the least of these has been the establishment of an efficient system of accounts. As the work advanced the system adopted proved far from perfect, and some difficulty has been experienced in adjusting our accounts. This has now been overcome, and the Board is greatly indebted to their auditors, Messrs. Hays, Akers and Hays, for the trouble that they have taken in remodelling the books on the best possible system.

"In the accounts it will be noticed that calls are represented as unpaid to the extent of £1,210 10s. Since the 30th June the remaining call has been made, and all are now paid, excepting a small balance of about £100."

BALANCE SHEET (INCLUDING RECEIPTS AND EXPENDITURE FROM RECONSTRUCTION OF COMPANY TO 30TH JUNE, 1897).

Dr

| Dr. | | | | | | |
|--|---------|----|-----|------------|----|----|
| To Share Capital, viz.:— | | | | | | |
| Authorized— | | | | | | |
| 170,000 shares of £1 each. | | | | | | |
| Issued— | £ | S. | d. | £ | S. | d. |
| 127,111 shares taken as 17s. paid in reconstruction | 108,044 | 0 | 0 6 | | | |
| 127,118 | 123,940 | 4 | 6 | | | |
| Add calls paid in advance | 564 | 10 | 6 | | | |
| Less calls in arrear | 124,504 | | | 123,294 | _ | 0 |
| First mortgage debentures | 16,000 | 0 | 0 | 123,294 | 3 | |
| Interest accrued at 10 per cent. per annum | | 12 | 5 | 18,221 | | , |
| " Sundry loans | | | | 5,060 | | 5 |
| n Imperial Bank of Canada overdraft against bullion
deposited | | | | 140
804 | | |
| | | | , | (147,521 | I | 8 |
| | | | - | | _ | |

ll ot ie d

st

m ng ir e-

ne nd

d.

0

5

7 2

| Cr. | | 7 | | | | |
|---|----------|----|----|---------|----|----|
| By Expenditure on Capital account— | £ | S. | d. | £ | S. | d |
| Purchase of property being balance of undertak- | | | | ~ | | |
| ing taken over from old company | | 1 | | 131,047 | 13 | IC |
| On development, management, &c., viz. :- | | | | | | |
| Sinking shafts and driving levels, &c., | | | | | | |
| materials and stores, milling and assay- | | | | | | |
| ing | 12,532 | 17 | I | | | |
| Buildings and plant and machinery | | | 6 | | | |
| Management and general expenses in Canada | 1,369 | | 0 | | | |
| Directors' fees | 595 | | 8 | | | |
| Secretary's salary and rent of offices | 283 | 6 | 8 | | | |
| Cablegrams, travelling, printing, stationery, | | | | | | |
| stamps and miscellaneous expenses in | | | | | | |
| London | 237 | 0 | 5 | | | |
| Interest and bank charges | 409 | | I | | | |
| Loss on exchange | 33 | 9 | 3 | | | |
| Preliminary expenses | 325 | | 2 | | | |
| Water rights | 100 | | 0 | | | |
| | £,16,801 | 7 | 10 | | | |
| Less proceeds of bullion won during year | | | | | | |
| | | | _ | 13,031 | 9 | 11 |
| Interest on debentures from 1st March, 1896, to | | | | | | |
| 30th June, 1897, at 10 per cent. per annum | | | | 2,133 | 6 | 8 |
| Materials and stores on hand | | | | 1,001 | 14 | 3 |
| Cash, viz. :— | | | | | | |
| Bullion in transit | 228 | 0 | 10 | | | |
| Cash at bank (London) | 78 | 16 | 2 | | | |
| | | | | 306 | 17 | 0 |
| | | | £ | 147,521 | I | 8 |
| | | | | | | |

REPUBLIC GOLD MINING CO.

Registered 30th May, 1896. Authorized Capital, \$750,000.

Head Office: Spokane, Wash.

Mines Office: W. T. Smith, Greenwood, B.C.

Owns and operates the "Republic," "None-Such," "Last Chance" and "Hidden Treasure" claims, situated about four miles from Greenwood, Boundary Creek District, Yale Division, Province of British Columbia. On the "None-Such" two tunnels have been driven to explore an irregular vein of white quartz, carrying a

little iron and copper pyrites, on the trend of which 800 feet to the north-west rises the eruptive mass of granite that runs up this valley. The upper tunnel, 100 feet long, shows a vein 1.5 to 4 feet wide, but the lower, 240 feet long, with a 60 foot cross-cut, was along the vein at the beginning, but shows nothing but stringers of quartz in the schists for most of its distance. "Last Chance," on the timberless slopes, is an irregular vein, from I to 30 inches wide, of white, banded quartz, with galena, gold and native silver, and coarse crystalline iron pyrites. This vein is nearly conformable with the enclosing black slates, and is more or less contorted and irregular, as seen in the incline, 95 feet deep being sunk on this vein, on a dip of 35 to 50 degrees. Several tons of fine looking ore showing the native silver were on the dump, and the vein can be traced in several open cuts. "Republic," on the face of the bluff, overlooking Boundary creek, is a vein with the same strike as the "Last Chance" vein, but cutting across the slates, 12 inches wide, an incline was down 50 feet on what was said to be a very uniform vein, and on the dump were 2 or 3 tons of ore or quartz, with much galena, iron pyrites and some blende and copper pyrites, an average sample of which was stated to have assayed 3 ozs. gold and 18 ozs. silver. (See Mines Report, B.G., 1897.)

RICHARDSON GOLD MINING CO.

Paid up Capital, \$100,000. Organized 1892.

Directors:

George A. Pyke, *President*.
A. N. Whitman | S. Sweet | Thos. Spry | S. R. Griffin.

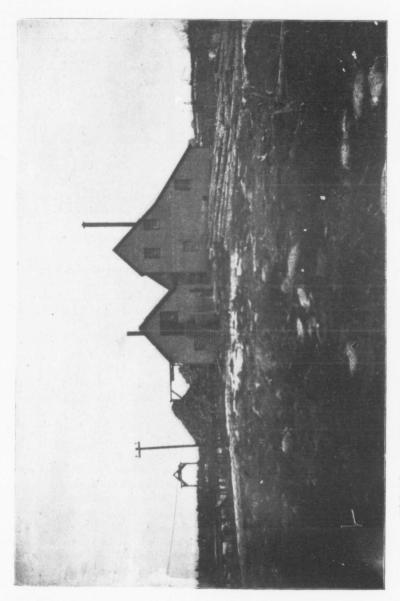
Head Office: A. B. Cox, Manager, Isaac's Harbor, N.S.

Owns 126 gold areas at Gold Brook, in the Stormont District, Nova Scotia.

The Richardson belt is composed of slate and quartz, between regular walls of whin. It is located in what is known as Stormont Gold District as the Gold Brook anticlinal (also called the Upper Seal Harbor anticlinal), the course of which is N. 62 degrees W. and S. 62 degrees E., and along which auriferous belts, lodes and drift have been discovered for a distance of three miles.

The Richardson belt was first discovered and worked on its south dip, where the average width was eleven and a half feet. In working west the belt narrowed down considerably. Eastward the belt turned in a northerly direction, increased in width to eighteen feet, and lay very flat, the dip changing from south to east; continuing, it swung around and ran westwardly, assuming a north dip, and growing smaller again than on the turn.

The mill for crushing this ore is located about three hundred yards from the mine on the shore of the lake, from which the water supply is obtained. The ore is conveyed from the mine in cars running over steel rails, laid the greater part of the distance on trestle work. These cars are hauled by means of a steel cable, the power



Richardson Gold Mining Co.—Shaft House and other Works at Country Harbor.

being taken from the mill. The total expense for haulage averages about three cents per ton, including renewals of cars, ropes, wheels, axles, etc.

When first started the mill was furnished with but fifteen stamps; a few months later the number was increased to twenty, and later to forty. At date of report it is proposed to increase the mill to sixty stamps.

The following extracts from a report to the directors in June, 1894, may be of interest, it being remembered that the mill then consisted of twenty stamps, with hand breaking and feeding;

"At the mine three shafts have been sunk. The west shaft is not more than 30 feet deep, and was put down mainly to test the length of the belt, which is here about seven feet wide.

"The middle shaft is down 100 feet; width of belt here from eight to fourteen feet. Tunnels and stopes are driven west from here 72 feet, or to a point within 18 feet of the west shaft."

The labor expenses here for drilling and blasting amounted to 26 cents per ton. The cost of dynamite per ton of ore sent to mill was 3½ cents.

"Tunnels and stopes are also driven east from here to connect with the east shaft, which is 108 feet deep. The southerly dip of the middle shaft is about 52 degrees from the horizontal; that of the east shaft about 42 degrees. East of the east shaft a tunnel has been driven on the belt 89 feet, the belt at this point having a width of 17½ feet. Here a bend of 70 to the northward takes place in the course of the belt. A tunnel has been driven here on the belt for a distance of 85 feet, the dip being 23 degrees in an easterly direction, the width 18 feet."

The total cost for mining, transporting to mill and milling at this time was \$2.90 per ton, including an allowance for total depreciation in value of plant for five years, and for taxes, insurance and all charges.

"The belt for the most part is composed of one large lode on the back-wall side varying in width from one to four feet, and a varying number of smaller lodes intermixed with slate. At places nearly the entire belt is quartz, and gold is sometimes found in the soft slate between the lodes. Not enough black or waste rock can be obtained below to load the scaffolds; and the walls have to be supported by leaving in blocks or pillars of ore."

It may be stated here that the underhand method of stoping was employed. In an attempt to use the overhand method it was found that the slate between the veins of quartz was not firm and solid enough to hold the quartz in place overhead, and, consequently, large masses of rock were falling, making it dangerous to the miners beneath. At greater depth the slate becomes more firm and solid, and overhand stoping may be resorted to.

At this time hoisting was done from the east and middle shafts by a single cylinder engine, geared to a single friction-drum. The gear was so located that the rope could be shifted from one shaft to the other as occasion required. Wheelbarrows were used below ground as a means of transporting the ore to the shaft; and the ore was then hoisted in tubs to the surface, where it was washed, the waste rock thrown out, and the good ore shovelled into cars to be hauled to the mill.

Since then the belt has been followed farther west on the south dip; the east shaft, now the pump shaft, sunk to a depth of 200 feet, and the belt driven and stoped on around the turn and followed west on the north dip. At the time of writing the belt produces more waste slate than in 1894.

The present plant consists of a hoisting, pumping and breaking gear, located on the apex of the semi-cone formed by the turn of the belt. Two shafts are worked from here, one on the south dip and one on the north. The bottoms of these shafts are about 250 feet apart, as measured on the belt around the turn: and as they are sunk this distance is of course increasing. At the surface they are 48 feet apart, and converging towards each other. At a height of 26 feet above the surface the skiptracks from each meet above the same deck-head; and self-dumping skips empty their loads beside the same rock-breaker. The "sump" at the deck-head into which the skips dump their loads is lined on the bottom with open sand-cast iron plates, 7/8 inch thick, laid in 36 inch of cement. The ore is here thoroughly washed, the waste rock thrown into trolleys and run out on the dumps, and the good ore shovelled into a hopper, which drops it into the jaws of a 9 x 15 inch Blake breaker, from which it falls into a bin. Cars are run under the bins where the ore is allowed to fall into them. They are then run out on the main track and hauled by the wire cable to the mill, where they are dumped into a bin of 500 tons capacity. Thence the ore runs through shoots into the automatic feeders supplying the mortars. Copper plates are used inside these mortars. The surface dimensions of the outside plates are 12 ft. 6 After passing over the outside plates and through mercury traps the sand is discarded, no attempt being made at concentration.

In the mine every attention has been paid to working the rock to the greatest advantage. On account of the dip to the seams in the belt, it has been found that two drills working towards the west accomplish as much as three drills working towards the east. The works below are now supplied with a regular system of tracks, over which the ore is conveyed in trolleys to the electric-lighted loading stations at the shafts. The south shaft, being the main shaft, is supplied with two skip tracks, one for the east and one for the west ore. The pump way is between the skip tracks and a little below them, or nearer the foot-wall, thus being out of the way when ore is being loaded into the skips or timber being unloaded from them. The ladder-way is a compartment by itseff, cribbed up under the foot-wall cribbing, where it passes through the surface material, thus being out of the way of anything which could fall or injure a man. The slope of the shaft is so flat that no ladder is required to get at the pump. The north-shaft has a skip-way in the east end and a ladder-way in the west end. The stopes were started from the east side of the south shaft and carried round to the north shaft-this rock being hoisted from the south shaft. The stopes are then continued west beyond the north shaft and the ore hoisted from the north shaft. Thus, while ore has been hoisted from both shafts, the sinking and expenses connected therewith have been confined to one shaft. The number of hand-drills employed here to produce 2,000 tons of crushing ore per month has never exceeded nine-two men to a drill. The surface plant at a mine consists of a 60 h.p. tubular boiler set in brick, and a 50 h.p. compound engine set on concrete foundation.

cents

onths it is

be of with

an 30 here

rteen

in 18

ton.

e east ut 52 of the

ing a se of e dip

62.90 ears,

side ntertimes n be

wing

In veins and, iners hand

cylrope rows

own

Floors of engine and boiler rooms are of concrete. The hoisting machine is a double drum one, built especially by the Jenckes Machine Co., and laid on a concrete foundation. The drums are side by side, and of the usual cone-friction type; but instead of being driven by two small cylinders attached to it, its driving shaft is driven by belt and pulley from the compound engine, the same engine serving to drive the pumping gear and the rock breaker. The experience here has been that it is far more economical to drive everything from one compound engine than from a number of smaller ones, particularly where all machines are working continually day and night. The engineer fires his own boiler, and no extra attendance is required for the hoisting machines. Thus, the deckman when not engaged in bringing up or lowering skips can wash and assort ores.

The water from the mine pump is discharged into a tank under a hatch in the peak of the roof. A hose from this serves for washing quartz or for fire purposes. The building is heated by exhaust steam from the engine, and like the mill, forge, workshops, stables, office, manager's house, etc., is lighted by electricity.

At the mill the plant consists of forty 850 lb. stamps, two return tubular boilers, one 16 x 42 Corliss engine, one Worthington duplex steam pump, 3½ in. suction and 3 inch discharge, one Northey pump of the same description, a dynamo for lighting purposes, and the hauling gear for bringing the ore from the mine. The forty stamps are arranged in a row, and the ore bin extends the full length of the batteries.

The ore cars enter the building at right angles to the ore bin, are turned on a table and run along the top of the bin to be dumped wherever the ore may be most required. One mortar is reserved for test purposes, the bin in front of it having a partition to keep the test ore separate from the regular ore.

The stamps drop 90 times per minute, and the mortars are arranged for very fine crushing. At times the gold is so fine as to be indiscernible to the naked eye. An instance of this was when 4,000 tons of ore were milled in which not a colour of gold was seen, but which when cleaned up gave a fair profit.

With this plant the total cost for mining and milling, including all charges, was \$1.65 per ton.

At the mill but one engineer was employed on each twelve hour shift, it being also his duty to attend to the dynamo and lights. It may be interesting to know that the electric light plant installed here paid for itself in one year in the saving of kerosene oil alone.

GOLD YIELD.

| 1893 | 2,237 | ozs. | 18 | dwts. | 10 | grs. | from | 6,048 | tons rock | milled |
|------|-------|------|-------|-------|------|------|--------|--------|-----------|--------|
| 1894 | 1,674 | " | 10 | 66 | 10 | 66 | 6.6 | 7,016 | . 6 | |
| 1895 | 1,677 | " | 7 | 66 | | 66 | 66 | 10,383 | 66 | |
| 1896 | 2,550 | 66 | (from | m 1st | Jan. | to | 31st I | Dec.) | | |
| 1897 | 3,004 | 66 | | " | | 66 | 66 | 25,450 | ** | |

SAW-BILL LAKE GOLD MINING CO., Limited.

Incorporated 1896. Authorized Capital, \$125,000, in shares of \$1.

Directors:

John S. Tilden, Hamilton, Ont., Fresident.

H. A. Wiley. Frank C. Bruce. F. S. Wiley. Thos. W. Lester. H. N. Kittson. H. C. Beckett. John Hoodless. W. Southam.

Head Office: H. N. Kittson, Sec.-Treas., Hamilton, Ont.

F. S. Wiley, Port Arthur, Managing Director.

Owns and operates mining locations 313X and 314X, situated on Saw-Bill Lake, an arm of the Seine river, Rainy River District, Province of Ontario. The vein worked at the surface has a width of about 4 feet. It strikes N. 9° E. astronomical, and can be followed in a southerly direction for 300 feet, where it bends to a direction S. 24° W. for another 300 feet, gradually failing in width until it becomes very small. In a northerly direction it has been traced about 900 feet, beyond which point the surface falls away into a swamp. The hade of the vein is easterly at an angle of a little over 10 degrees from the vertical. Though running 'with the formation' there seems to be no doubt about the true fissure character of the vein. The walls are well defined, the hanging-wall particularly so, often showing slickensided surfaces and a parting of crushed chloritic material between the wall and the vein-matter. On the foot-wall, there is a certain amount of mingling of the vein-matter with the inclosing rock, and a number of stringers and small parallel veins, so that the vein contents do not come away so freely from this wall as from the hanging-wall. Equipped with 10-stamp mill and other plant.

SEINE RIVER (Ontario) GOLD MINES, Limited.

Incorporated 22nd July, 1896. Authorized Capital, £100,000 in shares of £1.

Directors:

Lieut.-Col. Sydney F. Foster.

Jas. Juman. | Richard Pearce.

A. Galt Ross.

Lt. Col. Swaine.

CANADIAN OFFICE:

Ferguson Mine, via Mine Centre, Rainy River District, Ontario.

Head Office:

Wm. Murdock, Secretary, 62 Broad St. Ave., London, E.C.

Owns and operates Mining Location A. L. 110, 111, and K 223, comprising 40 acres each, in the Rainy River District, Province of Ontario. Being opened at date of report by five shafts down 100 ft., 50 ft., 100 ft., 75 ft. and 40 ft. respectively. Small prospecting plant only, including mill of three stamps.

in the rposes. forge,

boilers,

double

e founinstead

ven by

ive the

t is far

number

ay and for the

lower-

suction or lighte forty tteries.
d on a e most eving a

or very ed eye. lour of

being bw that

s, was

ed

STELLARTON GOLD MINING CO., Limited.

Incorporated 1894. Authorized Capital, \$20,000, in shares of \$10.00.

Directors:

John McQuarrie, Stellarton, N.S.

James Keith, New Glasgow. Duncan McGregor, Westville, N.S. W. Ormond, Thorburn, N.S. John G. McQuarrie. Sherbrooke, N.S.

Head Office: Geo. E. McDonald, Secretary, New Glasgow.

John McQuarrie, Stellarton, Man. Director.

Formed for the purpose of mining in the Sherbrooke District, Province of Nova Scotia. Property contains 36 gold areas. 15 stamp mill. Returns for seven months in 1895, gave 946 oz. 6 dwt. frcm 1,930 tons rock crushed; and 5 months' work in 1896 105 oz. 5 dwt. 9 grs. from 343 tons rock milled; 1897 (9 months) 823 oz. 19 dwt. 19 grs. from 1,546 tons rock milled.

SULTANA GOLD MINE.

Owner and Manager:

John F. Caldwell, Winnipeg.

Mines Office: Sultana Mine, via Rat Portage, Ont.

The Sultana mine, known as location 42X, is situated on Sultana island on the north shore of the Lake of the Woods. Prospecting was commenced by the present owner in 1890, but mining was not began until March, 1892.

The ore bodies appear to be lenticular, the lower one of immense size, and are enclosed in the sheared and schistose edge of an area of coarse porphyritic granitoid gneiss, mapped by the Geological Survey as Laurentian, but adjoining green Huronion rocks. The ore is somewhat quartzitic looking, contains one or two per cent. of iron pyrites, and is free milling to the extent of 75 or 80 per cent. Of this deposit the Mines Report for Ontario, 1897, says:—

"The Sultana has the largest body of quartz in sight of any of the mines in western Ontario. The main body lies on the south side of the shaft; on the north side it is rather narrow. At the widest known place, which is at the end of the south drift in the third level, it is 66 feet; but a portion of this. about 20 feet near the west wall, is low grade and will probably not be treated. The vein is nearly solid quartz, only a little country rock showing in places. At the end of the south drift in the second level it measured 21 feet, and neither wall had been reached. At the end of the south drift in the fourth level it measured 32 feet, and only the hanging wall is exposed."

The mining plant at date comprises:—Three 100 h.p. boilers, Rand compressor, six Rand drills, Bacon hoisting engine, 5 feet drums (double) four steam pumps, (Blake, Snow, and Cameron), one Gates No. III rock breaker, and electric lighting plant. The mill contains a battery of 30 stamps, weight 900 lbs., dropping from 85 to 90 p.m., and is equipped with six improved Frue vanners and a cyanide plant.

Sultana Gold Mine and Surface Works, Sultana Island, Lake of the Woods, Ont.

N.S.

Nova onths rk in

the

l are itoid nion iron the

es in orth outh west artz, the d of ll is

nps, ting

TANGIER MINE, Limited.

Incorporated 1897. Authorized Capital £120,000 in shares of £1 each.

Directors:

Right Hon. the Earl of Essex.

Sir Robert Garnett Head, Bart. Col. Thos. H. Anstey. Frederick Callow Hole. Hon. George E. Hill-Trevor. E. Grant Govan. Alexander Matheson.

Head Office: R. Stanley Williams, 16 Copthall Avenue, London, E. C., England.

Canadian Office: Revelstoke, B. C.

Formed to acquire and work the Tangier mineral claim, comprising 52 acres. This property is one of the mineral claims known as the Albert Canyon and Downie Creek group, and is situated in the West Kootenay district of British Columbia.

The Tangier was purchased by the Gold Fields of British Columbia, Limited, after careful investigation, and since it was acquired a considerable amount of development work has been done, sufficient, in fact, to satisfy the directors of the value of the property.

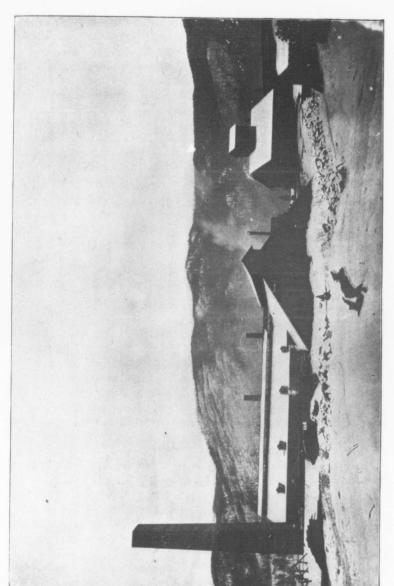
TRAIL SMELTING AND REFINING WORKS.

Owned and operated by the Canadian Pacific Railway Company (under charter of British Columbia Southern Railway Company).

Head Office: W. H. Aldridge, E.M., General Manager, Trail, B.C.

The works which are located in the town of Trail, B. C., comprise:—
The Sampling Mill, daily capacity 150 to 200 tons, bin capacity in the mill, 750 tons. The ore passing through a 12 x 22 inch Blake crusher, is run through a trommell, whence the fines go to a Constant cylindrical sampler, and the over-size to a 9 x 15 crusher and rolls, and then to the sampler and into the bins, until the lot of ore is settled, from whence it goes to the calciners or to the bins from which it can be drawn in cars to the blast furnace, This sampler is inadequate for the amount of ore offered, and is now being enlarged so as to handle 350 to 400 tons per 24 hours.

In the roast house is one O'Hara automatic calcining furnace, with foundations laid for a second. This furnace is 120 feet long over all, and has two 90-foot hearths, one above the other, 9 feet wide. One travelling chain passes along the centre of the hearths, carrying hix plows and 6 trolleys or chain carriages, at the rate of about 25 to 35 feet per minute, and as yet very little repairs have been required, the chain, plows, and trolleys showing but little sign of corrosion in the furnace. Fifty tons of ore



Trail Smelting Works, Trail, B.C.

23

res.

of the

r of

omo a of be

ore ons

the to ws,

crushed to pass a half-inch ring are roasted per day, with a loss of 70 per cent. of sulphur contents, the ore taking 12 to 14 hours to pass through the furnaces in which ten fire places fired with wood supply the heat. Besides this furnace, there are in the furnace-room six circular calciners, such as used in Butte, placed above the reverberatories, the ore automatically fed, passing over six horizontal revolving hearths that discharge alternately from the rim and centre upon the lower one, thence into the hoppers below that are immediately over the hearth of the reverberatory. It is designed in this furnace that when once ignited no further fuel will be needed than the sulphur, but they must run continuously, and on account of irregularity, until recently, in the operation of the reverberatories, these calciners have not been used.

The dust chamber is 180 feet long, 10 x 12 feet inside, with wing walls from the sides every 10 feet, not over-lapping, but having a clear space through the chambers to the chimney, which is 140 feet high and 8½ feet square inside.

Furnace Room—60 x 310 feet, 68 feet to peak of roof. The ore is being smelted after two methods:—(a.) In four reverberatories, hearths 14 x 22 feet, 40 tons each per 24 hours, in charges of roasted and unroasted ore, slag and limestone, are now being treated. The fuel is wood, but as this is not yet dry enough to give the required heat, coal also is being used, over 70 tons a day, from the collieries of the McNeill Co., at Anthracite, on the eastern limits of the Rocky Mountains, whence it is brought over the Canadian Pacific Railroad to Revelstoke or Arrowhead, and thence in scows down the Arrow Lakes, and the Columbia to the smelter, whence it is raised up an incline 160 feet by a small steam hoist with cable and car, to a trestle along which the car can be run to the shutes wherever needed in the works.

(b.) In a 40-in. circular furnace, 12 feet high to feed floor, water-jacketted, with six 3-inch tuyures, also with fore-hearth 45 to 55 tons of raw ore are now smelted in 24 hours. As the amount of sulphur in those ores is low, and that in the pyrrhotite not available for fuel, as already it is a natural matte, a typical form of pyritic smelting cannot be used, but more or less fuel is necessary, and a very satisfactory grade of coke is got from Fairhaven, Washington, although it carries from 20 to 24 per cent. ash. A small amount of limestone is added to the charge, but at present a very acidic slag, rather thick, but giving a good separation, is flowing, but very careful handling of the furnace is imperative. The analysis of this slag gives SiO₂, 42 to 46 %; FeO., 12 to 19 %; Al₂ O₃, 14 to 19 %; and MgO. 4 to 6 %.

A new 200-ton rectangular blast furnace, made by E. P. Allis & Co., Milwaukee, Wis., after a composite design by Mr. Bellinger and Mr. Wedekind, is being quickly erected. In this furnace 120 x 38 inches at the tuyeres, the steel water jackets will be 5½ feet high; height to feed door 14 feet, with 14 6-inch tuyeres with thimbles of smaller size that can easily be put in for the purpose of experimenting with the quantity and pressure of blast, for all arrangements are to be such that tests can be made under varying conditions, to determine the greatest possible efficiency for this furnace upon this class of ore. Another feature of this furnace will be that, besides the movable fore-hearth, the bottom or crucible of the furnace will also be mounted, so that if required it can be altogether withdrawn from beneath the water-jackets,

The bluff on which the smelter stands is sand, but the top and face of the dump, 120 feet high, is being covered with slag that flows in sand gutters from the reverberatories, or is wheeled out in the usual slag-pots from the blast furnace; but in a short time all slag will run from the furnaces into the water troughs, be granulated, and then swept out to the dump, which will be protected from scouring out by the slag covering.

In the engine room is a 65-horse power engine, with a 40-horse power engine now on the way. A No. 5 Root blower is now used, but a No. 7 will be needed when the big blast-furnace is blown in. Power is transmitted by shafting, but mostly by wire cables running over large pulleys to different parts of the works. However, steam power may soon be replaced by electricity, as a plant is to be erected at the foot of the dump and supplied with Pelton wheels and water under a 250-foot head.

TRIUMPH MINING CO.

Organized 1897.

Directors:

| Pat | rick | Culligan. |
|-----|------|-----------|
| Cha | rles | Cheney. |
| | | Sanborn. |

nt. of

vhich

n the

bera-

that the

It is

than

until

used.

n the

nbers

elted

each

uired Neill

it is

ence

aised

with

ed in

melt-

de of

cent.

very reful

6%;

ikee,

will

es of

uan-

nade

nace

the l, so F. S. Richardson.
A. B. Upton.
F. A. Kimball.

Head Office: F. A. Kimball, Secretary, Alpena, Mich.

Mines Office: James S. Rayburn, Mine Superintendent, Rat Portage, Ont.

Owns and operates a property comprising 500 acres, nine miles east of Rat Portage, province of Ontario, on which is situated the Triumph gold mine. At date of report the main shaft was being sunk by contract to a depth of 200 feet. The plant comprises an Ingersoll hoisting engine, 2-stamp Tremaine mill, etc.

TUDOR GOLD MINING CO., Limited.

Incorporated 1894. Authorized Capital, \$150,000, divided into 15,000 shares of a value of \$10 each.

Directors:

Chas. F. Ayer, President, Lowell, Mass.

James C. Ayer, New York. Fredk. Taylor, Lowell, Mass. S. W. Thurlow, Lowell, Mass. J. E. Hardman, Halifax, N.S.

Head Office: S. W. Thurlow, Treasurer, Lowell, Mass.

Mines Office: Waverley, N. S.

The company controls, under lease from the local Government, a property containing over 100 gold areas, situate in the Waverly district, Halifax county, province of Nova Scotia. Mine ten miles form the city of Halifax. 75 men employed. 20-stamp mill, driven by compound condensing steam engine; one compound condensing duplex 10-drill Rand compressor; one double cylinder, 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. Foster 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" and "Perfection" concentrators.

In 1895, from January to September, the yield reported for royalty was 989 oz. 7 dwt., from 4,457 tons of rock crushed; no returns received for 1896; yield in 1897 457 oz. 2 dwt. 9 grs., from 695 tons of rock milled.

TULAMEEN MINING CO. Limited.

Incorporated 1894. Authorized Capital, \$20,000.

Directors:

W. B. Stephens, Montreal.

A. Fleck, Ottawa. C. Berkeley Powell, Ottawa. W. Harris, C.E., Ottawa. W. L. Hogg, Vancouver.

Head Office: W. L. Hogg, Secretary, Vancouver, B.C.

Formed to acquire and operate hydraulic claims in British Columbia. Property being opened up.

VICTORIA CONSOLIDATED HYDRAULIC MINING COMPANY, Limited.

Incorporated by an Act of the Legislature of the Province of British Columbia, 1895. Authorized Capital, \$300,000.

Directors:

Frederic Nicholls, Toronto. Donald D. Mann, Montreal. D. E. Campbell, Victoria. Thos. G. Holt, Montreal. Wm. Wilson, Victoria. I. H. Hoare, Vancouver.

Head Office: A. E. McPhillips, Secretary-Treasurer, Victoria, B.C.

Mines Office: Quesnelle Forks, Cariboo, B. C.

The property comprises hydraulic ground on the south side of the South Fork of the Quesnelle river and adjoining the Hop E. Tong company on Dancing Bill gulch, held under a lease from the Crown, dated 6th November, 1890, for a term of twenty years at the yearly rental of fifty dollars, save and accept thereout that mining ground

known as the "Loo Quong Ching Ton" line claims, containing twelve acres, more or less, on Dancing Bill gulch, and which said ground was demised by the Lieut.-Governor in Council to the Cariboo Hydraulic Mining Co., Limited.

con-

ince

sing

gine

one

two

ped

OZ.

d in

erty

1G

895.

k of

ilch,

enty

ound

In his report on the Cariboo district, Mr. Carlyle (Mines Report, B.C., 1897) describes the operations of the company as follows: At the time of visit a considerable clearing had been made, and a face was being washed off with a 2-inch nozzle, and already both rims of this channel had been found at a point half a mile up the gulch from the main river. The channel appeared to be about 150 feet wide, and was at a considerable elevation above the bed-rock in the Cariboo mine, the gravel prospected well enough to be very profitable, if further development proves up a large body. Rose's gulch has apparently cut across a bend in this channel, as along the south side test pits again disclose gravel, while the new waggon road to the dam at Quesnelle Lake, is said to have laid bare an excellent cross section along the right bank of the South Fork. A large amount of gold is said to have been taken from this gulch by both Whites and Chinese, and higher up on the north bank of the gulch a small bed of gravel has been washed in a small way, coarse gold being found lying next to a peculiar deposit of "cement" or boulder clay. This discovery is of great interest, and during the coming season will be further opened up and explored, as a large amount of water can be brought from Spanish Lake in a ditch 12 to 13 miles in length, while the dumping facilities are excellent. The company at this point has acquired, or three miles from Quesnelle Forks, four leases and bonded the adjoining or Bain leases, by means of which a fair water supply can be secured for further prospecting.

On the left bank of the South Fork the company owns several leases immediately north-west of the Cariboo mine, on which in the past considerable, but unsuccessful, work has been done, the Cariboo channel having been thought to pass here. Work has also been done, but with poor results, on the lease on the north bank of the North Fork, below the mouth of the Spanish creek, to which water was brought from Spanish Lake in about six miles of ditching and a considerable length of pipe-line. Prospecting has also been done, but with no results as yet, on leases on Poquette creek, near where it flows into Quesnelle lake. During the coming year it is expected that all work will be concentrated at this discovery in Rose's gulch, where another clue will be afforded to the as yet little understood buried river system.

WAR EAGLE CONSOLIDATED MINING AND DEVELOPMENT CO., Limited.

Incorporated 1896. Authorized Capital, \$2,000,000.

Directors:

George Gooderham, President.

T. G. Blackstock. | G. A. Cox. | W. H. Beatty.
W. G. Gooderham. | A. E. Gooderham.

Head Office: E. J. Kingstone, Secretary, Toronto.

Mines Office: J. B. Hastings, M.E., Rossland, B.C.

Formed to acquire from the War Eagle Gold Mining Company, the War Eagle mine in the Trail Mining Camp, British Columbia. It also owns the Crown Point mine in the same district, and the Richmond group, near Sandon, in the Slocan district.

War Eagle Mine. - Reporting on the character of the ore deposits mined by the company, Mr. Carlyle (Mines Report, B.C., 1896,) says:-"The vein runs nearly east and west, dip. N. 65°, and passes on the east into the Centre Star claim. In the first workings shaft No. 1 was sunk over 70 feet in a shute of low grade ore that assayed from \$12 to \$16 in gold, but about 300 feet west was found a splendid ore shute of high grade ore that averaged over 21/4 ounces in gold from the surface, and in which the slope at the surface extending down to tunnel No. I, is 120 feet long and 8 to 12 feet wide, where the ore before being mined was clean sulphides, or pyrrhotite and chalcopyrite. At the west end of this shute the ore becomes scattered through the diorite, and a fault, strike N. and S. and dip. about 60° W. has apparently dislocated the vein about 45 to 50 feet to the south, beyond which the ore was of a lower grade. Tunnel No. II is 126 feet, vertically, below tunnel No. I (1,100 feet long, and near its mouth is a shaft sunk 35 feet in an ore shute of low but good grade, which follows the tunnel for 160 feet along the floor as if it were the apex of another ore shute, for shute No. I, in tunnel No. I, does not appear in tunnel No. II, but shutes Nos. II and III appear to come together between the two tunnels, for in the lower tunnel is found corresponding to the position of the two above, one shute of high grade ore, much of which, taken out in running the tunnel, had an average gross value of \$57.60 per ton, 310 feet long and from 2 and 3 feet up to 12 and 14 feet wide of solid ore."

The plant comprises :-

Boilers :- Two, return tubular, each 100 h.p.

Compressors:—One Duplex, Rand, 20-drill; and (being installed at date of report) one 40-drill Ingersoll-Sergeant, electrically driven.

Drills:-13 Ingersoll-Sergeant; 3 Rand.

Hoisting engines:—One, Fraser & Chalmers, cyl. 8" x 10", 4' drum (single) and (being installed) one Ingersoll-Sergeant 6' drum (double).

Pumps: - One Knowles; one Cameron.

Electric Machinery:—One 400 h.p. synchronous motor for driving compressor and one 300 h.p. for operating hoisting engine, built by Canadian General Electric Company.

125 persons employed in 1897.

Crown Point .- The plant comprises :-

Boilers :- One return tubular, 60 h.p.

Compressor :- One Rand, 4-drill.

Drills :- Three Rand.

And other plant.

DIRECTOR'S REPORT, 1897.

(Submitted 23rd November.)

"Submitted herewith is a statement of the accounts and a report on the mine; the former being brought down to the 30th September, and the latter to the 31st of October. These are so complete as to call for little by way of comment or explanation.

FREIGHT AND TREATMENT OF ORES.

"The directors having found it impossible under existing conditions to obtain any reduction in the cost of freight and treatment of the company's ores, and feeling that the present rates could not be long mantained in the face of improving railway facilities and the competition likely to ensue thereon, determined in July last to stop shipping altogether, and to devote their energies to putting the mine in shape to ship freely, when rates were satisfactory.

"Up to that time the company had been shipping about thirty tons a day, chiefly ore encountered in development.

"This policy of withholding the ores from shipment has been abundantly justified by the important announcement since made by the Canadian Pacific Railway, both to your directors and to the public generally, that it will at once provide for the transportation and treatment of Rossland ores at cost for the purpose of stimulating the development of that camp.

What these rates, both for freight and treatment, will be, your directors are at present unable to announce, but that they will be settled within the next month, and that they will be sufficiently below existing rates to satisfy the company its policy of non-shipment is not open to doubt.

In view of the magnitude of the ore reserves on hand and the extent of the development of the War Eagle mine it will be necessary as soon as possible to double the capacity of our compressor and hoisting plant in order to be prepared to handle our output and maintain our ore reserves.

In this connection it may be said that the West Kootenay Power and Light Company are installing an electric plant of five thousand horse power at Kootenay Falls, and have promised power this winter at one-half the cost of steam.

Altogether your directors think the shareholders are to be congratualated on the continued improvement in the mine under systematic development and in the certain prospect of being able within the next few months to materially cheapen the cost of mining, transporting and treating the company's ores.

FINANCIAL STATEMENT. - Assets.

| Mines and mineral claims | | \$1,6 | 570,013 14 | 4 |
|--------------------------|---------|-------|------------|----|
| Rossland | \$2,404 | 10 | | |
| Bank of Toronto | 994 | 55 | | |
| On hand | 228 | 05 | | |
| | | _ | 3,626 61 | í. |

Cagle Point ocan

In that l ore, and g and

h the cated rade. near llows e, for s. II nel is

e ore,

57.60

ore."

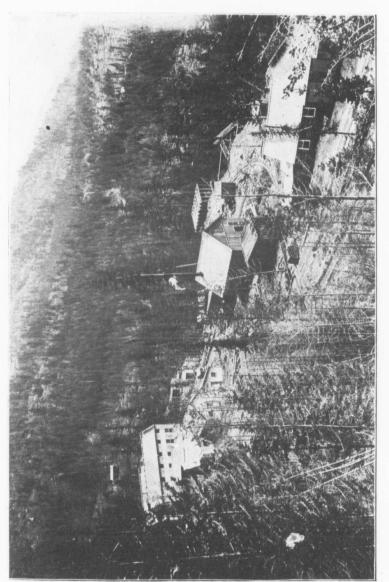
e) and

lectric

| Mine Supplies, Etc., on Hand.—Candles | \$ 51 | 20 | | |
|--|---------|-------|----------|----|
| Powder | 1,791 | 57 | | |
| Lumber | 453 | 88 | | |
| Fuel | 423 | 75 | | |
| Lubricating oils | 389 | | | |
| Pipe and fittings | 630 | 37 | | |
| Drill and machine fittings | 1,507 | 49 | | |
| Rolling stock and rail | 803 | 84 | | |
| | фа. rar | | 6,051 | 26 |
| Permanent improvements | | - | | |
| Boarding house improvement | 25 | 00 | 3,156 | 20 |
| Boarding house supplies | | | 1,525 | |
| Rossland, office furniture and fixtures | 355 | 12 | -,5-5 | 13 |
| Toronto, " " | 301 | | | |
| B.C. Smelting and Refining Co., for exchange on ore | | 5 | | |
| settlements | | | 3 | 59 |
| Hall Mines, Limited, for exchange on ore settlements | | | 3 | 15 |
| | | - | | |
| D - C 1 I | | \$1 | ,685,033 | |
| Profit and loss | | | 40,779 | 61 |
| | | \$1 | ,725,813 | 02 |
| Liabilities. | | | | |
| Capital stock paid up | | . \$1 | ,650,000 | 00 |
| George Gooderham | | | 75,813 | 02 |
| | | \$1 | ,725,813 | 02 |

PROFIT AND LOSS ACCOUNT. - To Cost of Mining, Etc.

| War Eagle Mine.—Mine labor \$ | 60,894 | 22 |
|--|--------|---------------|
| Mine supplies | 14,216 | 78 |
| Compressor supplies | 444 | 52 |
| Compressor labor | 2,388 | 29 |
| Fuel | 4,002 | 74 |
| Office expenses | 821 | 76 |
| Salaries | 5,503 | 29 |
| Assaying | 1,409 | 28 |
| General expenses. | 1,287 | 86 |
| Legal expenses | 250 | 45 |
| Surveying expenses | 429 | 25 |
| Written off for depreciation in value of permanent | | |
| improvements, rolling stock, rail, tools, | | |
| office furniture, etc | 2,989 | 25 |
| | | - \$94,637 69 |



Surface Works at War Eagle Mine, Rossland, B.C.

| | | | \$125,746 | 97 |
|---|---|---|---------------|---|
| " Balance | | | 40,779 | 61 |
| | | | 137 | 25 |
| " Transfer for | | - | \$84,830 | 11 |
| 1st to 20th January, 1897 | 15,846 | 87 | | |
| " Profits of the War Eagle Gold Mining Co. from | | | | |
| By Net proceeds of ore sales | \$68,983 | 24 | Ψ123,740 | 91 |
| | | | \$125 746 | 07 |
| Interest | | | 1,686 | 70 |
| Boarding house labor | | | 259 | 30 |
| Toronto office expenses | | | 860 | IO |
| General expenses | | | 4,845 | - |
| To Tiger and Uncle Sam | | | 870 | |
| Richmond Group Assessment work, etc | | | | |
| | 794 | 62 | \$ 21.415 | 17 |
| | 1000 | | | |
| Assaying | | - | | |
| Compressor supplies | 90 | 26 | | |
| Legal expenses | 334 | 00 | | |
| Office expenses | 3 | 75 | | |
| Salaries | 980 | 24 | | |
| Compressor labor | 2,563 | 87 | | |
| Mine supplies | 3,749 | 13 | | |
| Crown Point Mine Mine labor | \$ 12,624 | 25 | No. 1 | |
| | Mine supplies. Compressor labor Salaries. Office expenses Legal expenses. Compressor supplies. General expenses. Assaying. Fuel. Richmond Group. — Assessment work, etc. To Tiger and Uncle Sam. General expenses. Toronto office expenses. Boarding house labor. Interest. By Net proceeds of ore sales. Profits of the War Eagle Gold Mining Co. from | Mine supplies 3,749 Compressor labor 2,563 Salaries 980 Office expenses 3 Legal expenses 334 Compressor supplies 90 General expenses 237 Assaying 37 Fuel 794 Richmond Group Assessment work, etc To Tiger and Uncle Sam General expenses Toronto office expenses Boarding house labor Interest 1 By Net proceeds of ore sales \$68,983 " Profits of the War Eagle Gold Mining Co. from 15,846 " Transfer fees 15,846 | Mine supplies | Mine supplies 3,749 13 Compressor labor 2,563 87 Salaries 980 24 Office expenses 3 75 Legal expenses 334 00 Compressor supplies 90 26 General expenses 237 30 Assaying 37 75 Fuel 794 62 Richmond Group \$ 21,415 To Tiger and Uncle Sam 870 General expenses 4,845 Toronto office expenses 860 Boarding house labor 259 Interest 1,686 By Net proceeds of ore sales \$68,983 24 " Profits of the War Eagle Gold Mining Co. from 1st to 20th January, 1897 15,846 87 " Transfer fees \$84,830 " Transfer fees 137 |

Manager's Report.

The following is my report upon the War Eagle mine, the accounts up till September 30th, and the condition of the mine to October 31st.

CROWN POINT.

The main tunnel was run fifty feet ahead, passing through some stringers of copper ore without gold value. The drift at level of bottom of shaft, continued north by hand drills, is in the vein, but only a scattering of iron and copper, without value. The station for the underground hoist is being cut out under the raise.

WAR EAGLE.

Since May 22nd, date of my semi-annual report, up till October 1st, 1,468½ feet of tunnelling, 135 feet of raising,, and 115 feet of sinking has been done to prospect the veins, and with favorable results.

No. 1 Raise.—The finest body of ore discovered, was opened by the No. 1 raise, in the ground lying between the old No. 2 and 3 stopes, above No. 1 tunnel. The virgin area is 120 feet long by 100 feet high. In making the raise, about 350 tons were taken out. A large portion of the ore extracted was shipped with the west raise ore. 170 tons sold alone, netted \$14.34 per ton. The average of mine samples in

this working gives a width of five feet and a value of \$24.50 gold. Some fifty tons are broken in the raise ready for shipment. The top is ten feet from the surface. The Nos. 2 and 3 chutes were always considered as disconnected above tunnel No. 1, but are now shown to be ends of a continuous ore chute, comprising old No. 2 chute, No. 3 chute, and the ground between. I have just started a prospecting drift east, half way between tunnel No. 1 and surface, to see whether there is any ore between Nos. 1 and 2 chutes. The No. 1 raise ground is equivalent, above the No. 1 tunnel, to the west stope ground above the No. 2.

West Stope, West Raise Stopes.—The west stope and the west raise stopes are fulfilling all the conditions I pointed out on May 22nd. They contain, as far as worked, a continuous body of ore six feet wide. Between May 22nd and October 1st, 1,342 tons were shipped, and 1,060 tons broken, ready for shipment. The value is fairly represented by the average value of the total ore shipped, \$23.00 per ton.

375 Foot Levels.—The 375 east and west have not done as well as expected. Both are driven or. bodies of ore five to ten feet wide, assaying \$10.00 to \$16.00 gold. The 375 east for the past twenty feet has had a fine body of ore five feet wide, assaying \$16.00 gold, about \$20.00 total values, very heavy in iron, and looking as if it might make quite a strong chute. This ore is further east than the good showing on No. 2 tunnel. The 375 west is also improving. The faces of the two drifts are already 385 feet apart all in ore bearing ground. I expect the 375 west will continue for eighty-five feet, and the 375 east for fifty feet; if so, the ore chute on the 375 level will be 510 feet long. Ninety tons of ore have been shipped from these drifts; the rest is on the second class dumps.

500 Foot Tunnel.—On the 500 foot level, at the winze, the vein has only been cross-cut. It is ten feet wide, and the portion that looks like the pay streak is five feet. The average values were too low to be called ore, going about \$4.00; hand samples went up to \$38.00. I have no doubt that in drifting, bodies of shipping value will be found. The winze is down 270 feet, twenty-eight feet below the 500 foot level; both it and the 500 foot levels east and west will be pushed.

The 500 foot level east from our extension of the Iron Mask tunnel is 140 feet long, and encountered a body of quartz ore, six feet wide, fifty feet long, and averaging \$15.00 per ton gold. The 500 foot level, westward from the extension of the Iron Mask, is 516 feet long, and has just entered a vein carrying a pay streak twelve inches wide, assaying \$75.00 gold. This working is now getting into favorable ground for ore, it is 450 feet further to the winze. A branch called the South 500 west, has been run southwesterly for 257 feet from this tunnel, to prospect a parallel vein without finding any ore.

East Raise.—Prospecting here has not resulted favorably. Some ore was found, but nothing to really add to the value of the mine. We will push the workings further.

South Drift.—This has been run north 63 feet from tunnel No. 2, and passed into an ore body 50 feet long, 30 inches wide, assaying \$20.00 gold per ton. This amount of ore is still in the face. The drift has also been run south 341 feet, and just struck an ore body 18 inches wide, assaying \$26.00 gold.

Summary.—From the estimate of ore in sight, it will be seen that I am able to claim \$722,000 net; an advance of \$237,000 over May 22nd. Were it desired to ship ore, I would put machines stoping in the west raise, west stope, No. I raise, 375 east and 375 west. Without any exertion, they would each produce t venty tons, or one hundred tons daily, while I have no doubt various other openings in the mine would lend their quota.

Development—It will be seen from the maps that the veins are opened 520 feet on their greatest depth, and 1,400 on their greatest length. During the year, from January 20th to September 30th, the following work has been accomplished:—

| 2,303 feet of tunnelling and drifting at anaverage cost per foot | ¢ | |
|--|------|-----|
| | \$20 | 12 |
| 371 feet of raising, at an average cost per foot | 30 | 33 |
| 175 feet of sinking, at an average cost per foot. | 92 | 29 |
| 4,810.75 tons of ore stoped, at average cost per ton | 3 | .25 |
| 1,050 tons of ore broken in stopes, ready for shipment 600 tons produced from headings and shipped, not included in costs. | 2 | 80 |
| 50 tons produced from headings, yet in chutes. | | |

These costs are fully specified in the accompanying tables. The old headings, at the time this company took over the mine, aggregated 2,825 feet, so by September 30th, the development was doubled. On November 23rd there will be 1½ miles of tunnels, drifts, raises and winzes.

Ore Shipments.—The following tables, "Product of the Mine," show amount of ore sold to smelters, its value, and their charges. As you know, the smelters do not pay market values, but arbitrary ones set by themselves. For instance, the actual average gross values contained in War Eagle ore, sold since January 20th, per ton was:—

| Gold at 20.66 per oz.
Silver at 601 per oz. | 1 081 |
|---|-----------|
| Copper at 10¾c. per lb
(N. Y. price for casting) | |
| (11. 1. price for easting) | . 5.530 |
| Average actual market value per ton | \$27.284 |
| was | . 23.014 |
| Difference or indirect charge for smelting | . \$4.270 |
| The average direct smelting charge per ton | . 10.150 |
| Total real smelting charge per ton | \$14.425 |

The total gross value at market prices during period of shipment of the $5,410.\frac{74.8}{10000}$ tons, between January 20th and September 30th, 1897, was:—

| Gold, 5,178. $_{7.00}^{7.32}$ oz. at \$20.66.
Silver, 17,808. $_{1.00}^{4.02}$ oz. at 60½c.
Copper, 278,316 lbs. at 10¾ c. | 10.720 | 72 |
|--|---------|----|
| Total market value. Total smelters' gross value. | 125 526 | 60 |
| Total smelters' net value | 60.577 | 77 |

PRODUCT OF THE MINE—CHARGES AND VALUES PER TON.

75 or ne

et

| YEAR. | Net | Value. | Direct
Smelting
Charge. | Smelters
Gross
Value. | Indirect
Smelting
Charge. | Actual To'l
Smelting
Charge. | Gross
Market
Value. |
|----------------------|-----|----------------|-------------------------------|-----------------------------|---------------------------------|------------------------------------|---------------------------|
| 1894
1895
1896 | 29 | 41
05
29 | 12 50
10 87
9 89 | 36 91
39 92
31 18 | 6 63
7 41
5 79 | 19 13
18 28
15 68 | 43 54
47 33
36 97 |
| 1897
1897 | | 69
86 | 9 42
10 15 | 24 II
23 OI | 4 48 | 13 90
14 42 | 28 59
27 28 |

CHARGES AND VALUES PER ANNUM.

| YEAR. | Net Tonnage. | Net Value. | Direct Smelting
Charge. | Smelter's
Gross Value. |
|-------|---|---|--|--|
| 1894 | 46 93
9,980 93
8,920 29
1,995 55
5,410 75 | \$ 1,145 55
289,951 36
189,944 38
29,318 42
69,577 77 | \$ 586 62
168,486 32
88,222 41
18,803 57
54,948 85 | \$ 1,732 17
398,437 68
278,166 79
48,121 99
124,526 62 |
| | 26,354 45 | \$579,937 48 | \$271,047 77 | \$850,985 25 |

| YEAR. | Indirect
Smelting Charges. | Total
Smelting Charge. | Market Value. |
|-------|--|---|--|
| 1894 | \$ 321 39
73,925 83
51,611 07
8,928 55
23,105 67 | \$ 908 01
182,412 15
139,833 48
27,732 12
78,054 52 | \$ 2,053 56
472,363 51
329,777 86
57,050 54
107,632 29 |
| | 157,892 51 | \$ 428,940 28 | \$1,008 877 76 |

Ore Reserves.— By a careful comparision of the areas now opened by the No. I raise, No. I tunnel, west aise, No. 2 tunnel, winze, and 375 foot levels, with those from which the past product of the mine has been extracted, and the output of the small stope in Josie North, the shaft at mouth of No. 2 tunnel, and small ore chute in the 500 foot East, I consider that 38,000 tons smelters' gross value \$29.10 per ton, total \$1,108,000, a safe estimate of ore that may be called in sight. Probably in extraction a greater tonnage of lower value than this estimate will be produced, but the net results will be the same. The valuation and tonnage is based upon past product of the mine. I do not mean to preclude the possibilities of the ground now opened yielding in excess of estimate. The mine is in an advantageous position for stoping, and while carrying on the present line of development, this ore could be placed on

cars at foot of ore bins for \$3.25 per ton, and the total amount extracted in a year. The cost of extraction per ton, so far, has been \$3.25, an analysis of which is shown in the table of costs.

Thirty-eight thousand tons in sight at \$29.10 per ton may be considered a proportionately high value in comparison with five thousand four hundred and eleven

tons shipped this year at \$23.01 per ton.

I believe the ore shipped was lower grade than the total of the ore blocked in the mine, because it came from west raise on the west boundary of the ore chute, from the west stope, all along the bottom of an ore chute where it passes into a barren zone; from the ragged edges of the old No. 2 stopes, and from the 375 east and west, that are in a fairly poor level as far as run; the only heavy ore came from the No. I raise.

The ore estimated in sight is along the No. 1 raise and the shaft, and under the high grade body found on No. 2 tunnel, and in the heart of the west raise on No. 3

chute.

I should judge that at least 10,000 tons of low grade ore would be mined with the 38,000 tons of high grade. With low general smelting rates, this would probably go direct to the smelter, otherwise to the second class dump. Six thousand tons of such ore is already on the dumps, and about the mine, extracted with the past high grade ore. I could not give any authoritative estimate of the value of this 10,000 tons,—probably \$10.00 per ton.

A careful analysis of all our vein samples in ore of quantity that would have been

considered worth stoping shows the following percentage of values:

| Gold Values. | Per Cent. | Gold Values. | Per Cent. | Gold Values. | Per Cent. |
|---|--------------------------------------|---|---------------------------------------|---|------------------------------|
| \$ 1 00
2 00
3 00
4 00
6 00 | 0.34
1.20
1.54
5.13
8.20 | \$14 00
16 00
18 00
20 00
22 00 | 6.32
12.13
5.13
4.61
1.71 | \$30 00
32 00
34 00
36 00
38 00 | 0.86
3.08
0.68
0.85 |
| 8 00
10 00
12 00 | 16.07
10.94
8.88 | 24 00
26 00
28 00 | 3.59
3.56
1.71 | 40 50
50 60
80 90
\$15 41 | 2.31
1.37
0.68 |

This data is from 585 assays; their average value in gold is \$15.41. A rejection of the low grade ore to either the waste or the second-class dumps, and hand-sorting, brings up the contents to shipping values. The percentages are not exactly fair, as I think the wider ore bodies were the richer. So far there has not been any large bodies of lower grade ore than this discovered in the War Eagle. About the rest of the camp I have not the requisite information to judge. They would occur in the Centre Star, Cliff, Cons. St. Elmo, Columbia and Kootenay, Monte Cristo, Great Western, Jumbo, Deer Park and Iron Horse.

Future Working.— Following the present lines for the immediate future is the best. An enlargement of compressor plant and hoisting engine will be necessary. This will not be practicable until next spring, when the proposition of a vertical shaft can also be met.

Cost of Mining.— This is fully set forth in the monthly statements rendered, and others herewith attached. The driving expense is comparatively high, and the country rock, a dark augite porphyrite, as comparatively hard; the costs of ore extraction are not so bad.

Richmond Group.— Only the necessary assessment work has been done on these claims. They have also been surveyed, and application made for Crown grant.

[Signed] JOHN B. HASTINGS.

COMPARATIVE STATEMENT OF COSTS

ar.

wn

ro-

ren

the the ie; nat ise. The ith bly of igh

on

s I ge of he

the ry.

nd the exShowing average cost per foot for period from January 20th to June 30th, 1897, as compared with costs for period from July 1st to September 30th, 1897, not including charge for depreciation in value of permanent tools, appliances, etc., etc.

| Nature of Work. | Period. | Work
Accomplished. | Cost per Foot |
|------------------------------|--------------------|-----------------------|---------------|
| 1. Tunnelling, Drifting, etc | Jan. 20 to June 30 | . 1,270 feet | \$19 42 |
| | July I to Sept. 30 | . 1,033½ " | 19 52 |
| 2. Raising | Jan. 20 to June 30 | . 288½ " | 29 17½ |
| | July I to Sept. 30 | . 132½ " | 29 84 |
| 3. Sinking | Jan. 20 to June 30 | . 98½ " | 95 05½ |
| | July I to Sept. 30 | 76½ " | 81 74 |

Table of Mine Costs, January 20th to September 30th, 1897. Nature of Work.

| | Tunnelling, | | la la comi | ORE EXT | RACTION. |
|--|--|--|---|--|--|
| | Drifting, etc. | Raising. | Sinking. | Shipped from
Brokendown
Stopes. | In Stopes
not
Shipped. |
| Total No. of Feet Tons of Ore AVERAGE COST FOR | 2,303½ | 421 | 175 | 4,81034 | 1,059 |
| Drilling Mucking Timbering Smithing General Labor Hoisting | \$6 58½
2 95¾
01½
1 18
1 76¼
27¾ | \$9 44½
3 95¾
3 14
1 22¼
2 46½ | \$32 43¼
3 89¼
7 07¾
3 91½
7 89
5 64 | \$0 94
44 ½
31 ½
10½
23¼ | \$0 90
08\frac{1}{5}
35\frac{1}{2}
16\frac{4}{5}
23\frac{1}{2} |
| Ore Sorting Air Explosives Candles Drill Fittings Lubricating Oil General Mine Supplies Assaying | 1 5134
2 0834
211/2
1934
041/2
7234 | 2 12
2 76½
30¼
25½
05
1 10 | 7 61
7 37½
98½
61½
19
3 33½ | 16 ¹ / ₄
18
27
03

00 ¹ / ₂
13 ³ / ₄
07 | 01 ½ 21 ½ 29 % 03 ½ 05 ½ 00 % 04 ½ 10 % 10 % 10 % 10 % 10 % 10 % 10 % 10 |
| Surveying Office Expense Legal Expense General Expense Salaries Depreciation | 1234
1834
0514
341/2
1 181/2
65 | 07
27
08¼
44½
1 78
95 | 47½ 75 26¼ 1 12 5 66½ 3 05¾ | 02¾
01¼
03¼
19¼
09 | 01\frac{3}{5}
02\frac{3}{5}
05
10\frac{1}{5}
08\frac{5}{5} |
| Total average cost. | \$20 113/4 | \$30 33 | \$92 283/4 | \$3 243/4 | \$2 80 |

During the progress of tunnelling and drifting, raising and sinking, 650 tons of ore were produced, of which 600 tons were shipped; 50 tons are yet in chutes, entailing a further cost of:—

| | Tunnelling. | Raising. | Sinking. |
|----------------------|-------------|----------------|----------|
| Ore sorting per foot | | \$0 43¾
45¾ | \$0 32 |
| Ore sorting Assaying | | | |

Of ore extracted, 100 tons were stoped by hand, costing \$7.28 per ton, the drilling alone being \$3.48.

WAVERLEY MINE, Limited.

Registered 1897. Authorized Capital, £100,000, in shares of £1 each.

Directors:

Col. T. A. Anstey.

J. S. Bridges. | F. Callow Hole. | John King. | John H. Robertson.
E. C. de Segundo. | Col. H. Fludyer. | E. Grant Goven.

Advisory Board in Canada.

John Grant. J. M. Kellie, M.L.A.

Head Office: R. Stanley Williams, 16 Copthall Avenue, London, E.C. Canadian Office—Revelstoke, B.C.

Formed to acquire the Waverley mineral claim, being on a group of mineral claims known as the Albert Canyon and Downie Creek group, situated at the head of the north fork of the Illecillewaet river and Downie creek in the West Kootenay district, British Columbia. Being opened.

Supplementary List of Gold Mining Companies.

s of en-

dril-

son.

eral lead enay

| | | CAPITAL. | T. | | | |
|---|---|------------------------------------|---------------------|-----------------------------------|---------------------------|--|
| COMPANY. | DISTRICT. | Authorized, | ParValue
Shares. | CANADIAN OFFICE. | MINE MGR.
OR
AGENT. | REMARKS. |
| Abbotsford, Ltd
Abe Lincoln, Ltd.
Abraham Lincoln. | Rossland, B. C
Gold River, N. S | \$1,000,000
1,000,000 | \$1.00 | 51,000,000 \$1.00 Rossland | D.C. Butterneld | Rossland. G.R., Lunenburg Co. D.C. Butterneld to stamps; wield 1807 50 ozs. |
| Acadia Gold Reduction | Ovens, N.S | | | | | 5 dwts., from 85 tons milled
3 months crushing '97, gave
78 ozs., 3 dwts. from 210 |
| Active M. and Dev. Ltd | Seymour Creek, B. C. | | I.00 | I,000,000 I.00 Vancouver, B.C | | tons. Owns the Seymour, Star and |
| A. D. II. Mining | Rainy River, Ont | | : | Mine Centre, Ont . John Campbell. | John Campbell. | |
| Agnes Hydraulic, Ltd | North Bend, B.C | 200,000 | I.00 | North Bend, B.C | M. N. Garland. | 200,000 I.00 North Bend, B.C M. N. Garland. 50 acres gravel claims on |
| Alabama Hydraulic | Cariboo, B.C | | : | Barkerville, B. C. | | Fraser K, near North Bend;
being opened.
Working 5 acres, Mosquito |
| Albany, LtdAlbani, Ltd Albani, B.C Albaria Gold Dev Syndicate, Ltd Albani, B.C Albaria Gold, LtdRossland, B.C | Trail Creek, B.C
Alberni, B.C
Rossland, B.C | 750,000
£ 15,000
\$1,000,000 | 1.00
£10
1.00 | Rossland | Jas. Armstrong. | Creek. Owns the Albany claim. Jas. Armstrong. Registered Sept., 1897. Anstrong. Registered Sept., 1897. |
| Albion Gold, Ltd | B.C | 200,000 | 1.00 | : | : | Head office, Spokane, Wash. Directors: J. J. Moore, H.C. |
| Alexandra M. & Dredging, Ltd | B.C | 3,000,000 | : | 3,000,000 Vancouver | | Shaw, J. W. Weart.
Incorporated 1895. |

Supplementary List of Gold Mixing Companies.—Continued.

| | | CAPITAL. | I | | MINE M'G'R. | |
|--|-----------------------|------------------------|---------------------|---|-----------------|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | CANADIAN OFFICE | OR
AGENT. | REMARKS. |
| Alf, Limited | Trail Creek, B.C | | | 1,000,000 Brantford, Ont W. E. Phin. | W. E. Phin | Owns the Alf claim, South |
| Alhambra Gold and Copper, Ltd Nelson, B.C. | Nelson, B.C. | 000,000 | i | Victoria & Nelson | | Owns the Francis J. & Major claims, near Nelson, B. C. |
| Allison Ranch Hydraulic, Ltd Similkameen, Y., B.C. | Similkameen, Y., B.C. | 750,000 \$1.00 250,000 | \$1.00 | NWestm'ster, B.C. | F. J. Couthardt | NWestm'ster, B.C. F. J. Couthardt Devel, gravel claim 2 m. n. side Tulamen river at the single provided to the Similary of the Similary with the Similary wi |
| Alpha Bell G. Quartz, Ltd Lillooet, B.C. | Lillooet, B.C | 200,000 | 1.00 | I.oo Vancouver, B.C | | Junction with the Simmes meen at Princeton. Owns Alpha Bell Fraction, Tillonet, B.C. |
| Alwilda G. M. and Dev., Ltd Trail, B. C | Trail, B. C | 000,000 | 1.00 | I.oo Rossland, B.C | | Owns the Alwilda claim on Green mountain, 5 m. n.w. |
| Amazon Gold M. and S., Ltd . Kettle Riv Dis., B.C | Kettle Riv Dis., B.C | 1,500,000 | | I.00 H.O.Portland, Or. | | town of Rossland, B.C.
Owns the Amazon and Miz-
pha claims, Kettle river
div. Yale dis., B.C. |
| Ambrozine Gold Mines, Ltd
American Eagle, Ltd. | N.F.Salmon R., B.C | 500,000 | 1.00 | 1.00 Vancouver, B.C F. S. Taggart 1.00 Rossland, B. C | F. S. Taggart | Formed to purchase the
American Eagle claim, N.
Fork Salmon river, Nelson |
| Anderson Gold Mine | Musquodoboit, N.S. | 10,000 | : | Musquodoboit, NS | John Anderson. | Io,000 Musquodoboit, NS John Anderson Owns 91 gold areas; mill destroyed by fire and no returns 1897. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | I. | | | |
|--|--------------------------------------|----------------------|---------------------|--|--|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares, | OFFICE. | MINE Nº 5 R. OR AGENT. | REMARKS. |
| Anglo-Can. G.M. & Dev. Co. of
Brantford, Ont. | Ontario | 90,000 | | Brantford, Ont. | R. G. Tatlow . | ZI |
| Arganaut of Kootenay, Ltd Trail Dist., B.C | Trail Dist., B.C | \$ 500,000 Vancouver | : | Vancouver | : | placer claims, Cariboo, B. C. Formed to acquire the 'Elean- |
| Arlington Gold & Copper, Ltd. Boundary Dist., B.C. Athabasca, Ltd | Boundary Dist., B.C.
Nelson, B.C. | 1,000,000 \$1.00 | \$1.00 | 1,000,000 \$1.00 Greenwood, B.C | G. O. M. Dock-
rill, Sec. New
Westminster. | ZO |
| Austen, and others | Beaver Dam, N.S | | : | Halifax | Joseph Austen . | Joseph Austen . 3 month's crushing in 1897, |
| Badger Tourmaline Con., Ltd Trail District, B.C
Baker Gold Mine | Trail District, B.C | 1,500,000 | I 00 | 1,500,000 1 00 Rossland H. C. Walters . No information. | H. C. Walters . | milled.
No information. |
| Bald Indian Bay M. & Invest.,
Ltd. | burg, N.S. | | | Gold River, Lun-
enburg, N.S | I. N. Baker | old River, Lun-
enburg, N.S I. N. Baker Gold yield 1897, 363 oz. 14 |
| Barrachois, Ltd | Ont | 000'9 | 1.00 | 1.00 Ottawa, Ont A. W. Fraser . No information Wine Harbor, N.S M Shaughnessey to stamps, 9 mon in 1807 graves | A. W. Fraser
M Shaughnessey | Ottawa, Ont A. W. Fraser No information. Wine Harbor, N.S M Shaughnessey 10 stamps, 9 months' crushing in 80.7 gaves 277 or 1 and 10.1 |
| | | | | | | 3 grs. from 538 tons milled. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | L. | Carrier State of the State of t | Mrse M'c'n | |
|-----------------------------|---|-------------|---------------------|--|---------------------------|---|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE, | OR AGENT. | REMARKS. |
| Oredging & M., Ltd. | Beatty Gold Dredging & M., Ltd. North Bend, B.C | | 100.00 | Niagara Falls, Ont | H. C. Symes,
President | 50,000 100.00 Niagara Falls, Ont H. C. Symes, Formed to acquire from M. President Beatty & S.ins, Welland, Ont., a lease of a dredging claim at Boston Bar, on the Fraser River, near North |
| Beaudette, Ltd | Upper Arrow Lake,
B.C. | 000,000 | 1.00 | I.oo Sandon, B.C G. Larsen | r. Larsen | Bend, B.C. No report for 1897 received. Formet to develop 'Beaudette (1), 'Beaudette (2),' and 'Beaudette (3) mineral claims, near the source of |
| Big Bend, LtdBie Bump, Ltd. | McCulloch Creek,
B.CRossland, B.C. | 250,000 | | Vancouver | F. H. Oliver. | McDonald Creek, about 3
m. from the foot of Upper
Arrow lake, W. Kootenay,
B.C.
No information.
Head office, Spokane, Wash. |
| M. & Dev., Ltd | Big Manitou M. & Dev., Ltd Rainy River, Ont | Ι, | 5.00 | Wabigoon, Ont | | Registered April, 1898.
Owns and is dev. location h.p.
222. Dist. of Rainy River. |
| l & Copper, Ltd | Big Six Gold & Copper, Ltd Trail Dist., B.C | 1,500,000 | 1.00 | 1.00 Rossland, B.C | | Ont. Formed to purchase the 'Ajax, '' Maggie No. III.' ' Lottie May, '' Red Rock,' ' Daisy' and ' Lost Horse' |

Supplementary List of Gold Mining Companies.—Continued,

| | | CAPITAL. | IT. | CANADIAN | Mines Mode | |
|---|--|-------------|---------------------|---------------------------------|----------------------------|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | AGENT. | REMARKS. |
| Big Three, Ltd | = | 3,500,000 | : | Rossland, B.C | R. Dalby Mor-kill, SecTre. | Rossland, B.C R. Dalby Mor Owns and is dev. the 'Mas-kill. SecTre. cot.' 'Southern Relle"; and |
| black Creek Hydraulic of Cariboo, Ltd | Cariboo, B. C | 300,000 | 5.00 | 5.00 Vancouver, B.C. E. Malcon. | E. Malcon | 正 |
| Black Prince, Ltd | . Trail Dist., B.C | 1,000,000 | I.00 | I.oo Rossland, B.C. | | Creek, Cariboo Dist., B.C. Owns the 'Black Prince,' 'King of the West' and |
| Blue Eyed Nellie, Ltd | Porcupine Creek, B. C
N Fork Kettle River | 1,000,000 | 1.00 | 1.00 Rossland, B.C | | 'Queen of the Valley'
claims, Trail Dist., B.C.
No information. |
| | B.C | 1,500,000 | I.00 | I.oo Grand Forks, B.C. | | Owns the 'Bonanza', Moun- |
| Boundary Creek M. & M., Ltd. Greenwood, B. C \$1,500,000 \$1.00 Greenwood, B. C. Sansom & Hol-Ownsthe big Ledge, the O. B., brook the D.A., the S.F., J.A.C., the D.A., the S.F., J.A.C., the D.A., the S.F., J.B.C. and Fred D. dains, Provi | Greenwood, B. C | \$1,500,000 | \$1.00 | Greenwood, B. C. | Sansom & Holbrook | Camp, N. Fork of Kettle
River, B.C.
Ownshe Big Ledge, the O.B.,
the D.A., the S.F., J.A.C.,
the G.A.R., the S. H. B.
and Fred D. claims, Provi- |
| Boundary Falls Mining, Ltd | B.C | 200,000 | 1.00 | 500,000 I.00 Vancouver | | dence Camp, Kettle River, |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | | | |
|--|----------------------------------|----------------|---------------------------------|---------------------------------|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue Shares. | MINE M'G'R, OR AGENT, | REMARKS. |
| Boundary Helen G. M., Ltd Greenwood, B.C | Greenwood, B.C
Greenwood, B.C | 300,000 | 300,000 I.oo Greenwood, B. C. | F. Keffer, Supt. | 1.00 Greenwood, B. C. F. Keffer, Supt. Ownsandis developing No.7, the Lake, |
| Bright Prospects G.M.Dev., Ltd Wild Horse Ck., B.C | Wild Horse Ck., B.C | 1,000,000 | 1.00 Rossland | | Clasgow, McGregor, Helen, Fannie H. in Central Camp and the Mother Lode claim, Deadwood (Camp, Boundary District, B.C. Owns the Eldorado & Mena claims on the south slope of |
| British American Gold M., Ltd. Nelson Div., B.C | Nelson Div., B.C | 1,500,000 I | 1,500,000 1.00 Rossland | | Ymir Mt., Wild Horse
Creek, Nelson Dis., B. C.
Owns the Copper King and
Diamond King. Nelson |
| British Col. and New Find Gold
Field Corporation, Ltd | B. C | £500,000 £1 | | Head Office:
Portland House, | Head Office: Portland House, Basinghall St., E., London. |
| B. C. Bullion Extraction Rossland, B.C. | Rossland, B.C | | Rossland, B. C. | . L. H. Webber. | Rossland, B. C L. H. Webber. Conducting electro-chemical reduction works on the line of Red Mountain Ry., near |
| British Columbia Gold Fields Exp. and Con., Ltd | ields B. C | \$500,000 \$5. | \$500,000 \$5.00 Vancouver, B.C | | To carry on business in B.C. |

Supplementary List of Gold Mining Companies.—Continued.

\$500,000 \$5:00 Vancouver, B.C.. To carry on business in B.C.

| | | CAPITAL. | /L. | | Masse Mich | |
|--|--|--|------------------------------|--|--|--|
| COMPANY. | DISTRICT. | Authorized. | Раг Value
Shares, | OFFICE. | OR AGENT. | REMARKS. |
| British Columbia Gold Dis., Ltd B. C | В. С. | £100,000 £1 | | Not known | Head Office: 9
New Broad St.
London, E.C., | Head Office: 9 Formed to acquire mines, New Broad St. and mining rights in B. C. London, E.C., |
| British Columbia Gold Pros., L. d B. C
British Columbia Gold Syn., Ltd B. C | B. C | \$250,000 | 25 cts. | \$250,000 25 cts. Victoria, B. C \mathcal{E} 5,000 \mathcal{L} 1 Not known | England
Head Office:90 | No information. |
| British Columbia Gold Trust, Ltd B. C., British Columbia Exp. and Gold | B. C | 2,000 | I | Not known | Cannon St. | Cannon St Londor, E.C., England. |
| | Cariboo, B. C | 200,000 | I | Not known | or rielen's Pice | Property embraces 3m.dredge- |
| British Gold Mining, Ltd Trout Lk, Yale, B.C. \$1,000,000 \$1.00 Vancouver, B.C | Trout Lk, Yale, B.C. | \$1,000,000 | \$1.00 | Vancouver, B.C | | ing ground on Quesnelle
River, Cariboo, B. C.
Owns the Cobbler claim near
Trout Lake, Vale District. |
| British Lion M. & M., Ltd Trail Div., B. C
British N.American M.& M., Ltd Trail Div., B. C | Trail Div., B. C | 600,000 | 1.00 | Rossland G. A. Fraser | G. A. Fraser | British Columbia. No information. Owns the Fraser and Loraing |
| British N. America M. & D., Ltd Trail Div., B. C Brown Bear G. M. & Dev., Ltd British Columbia Bruce Gold Mining, Ltd Trail Div., B. C Buckingham Gold Mining Trail Div., B. C | Trail Div., B. C
British Columbia
Trail Div., B. C
Trail Div., B. C | 2,500,000
500,000
1,000,000
500,000 | 1.00
1.00
1.00
1.00 | Rossland, B. C
Donald, B. C
Rossland, B. C
Rossland, B. C | Not known
Not known | ctaims on Sopina Mountain, Trail Jistrict, B.C. No information. No information. Owns the Norway min. claim. Reg. 12th March, 1898. |
| | | | | | | , |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | r. | | | |
|---|---|-------------|---------------------|--|-----------------------------|---|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | MINE M'G'R. OR AGENT. | REMARKS. |
| Buffalo Gold Mining, Ltd Trail Div., B. C | Trail Div., B. C | 1,000,000 | | Rossland, B. C. | A.M.Whiteside,
Secretary | Rossland, B. C A.M.Whiteside, Owns the Buffalo, Ontario Secretary and Great Britain No 1 |
| Buffalo Min. and Dev., of Rat
Portage, Ltd Lk. of the W'ds.Ont
Bunker Hill and Sullivan, Ltd Nelson Div., B.C | Lk. of the W'ds.Ont
Nelson Div., B.C | 1,500,000 | 1.00 | 1.00 Rat Portage, Ont. Not known. 1.00 Rossland, B. C Not known. | Not known | Claims on O.K. Mountain, near Rossland, B.C. Registered 4th January, 1898. Owns the Bunker Hill, Sullivan and Ffdelity claims, Nateson Div. vv. ty. |
| Burley Gold M., of Ottawa, Ltd Lk. of the W'ds. Ont Caledonia Con. G. M., Ltd Trail, B. C | Lk. of the W'ds. Ont
Trail, B. C | 1,000,000 | I.00
I.00 | I.oo Ottawa | N.W.Fraser, Sec | Ottawa |
| Caledonia G. M. Ass'n., Ltd., Omenica Dis., B. C. | Omenica Dis., B. C. | 1,500,000 | 1.00 | Vancouver, B.C | Capt. C. Clarke | 1.00 Vancouver, B.C Capt. C. Clarke Holds certain leases of mineral ground on Germansen Ck. |
| Calefornia Gold Mining, Ltd Trail, B.C. | Trail, B.C | 2,500,000 | 1.00 | Rossland, B. C | O. G. Labaree. | I.oo Rossland, B. C O. G. Labaree. Owns the California mineral |
| Cambridge Gold Mining, Ltd Trail, B.C | Trail, B.C
Lemon Creek, B. C. | 1,000,000 | 1.00 | 1.00 Rossland, B. C R. J. Bealey | | cdam. Owns the Cambridge claim. Owns the Cameronian and. Radnorian claims on Lemon Creek. Slocan Dist. B. C. |
| | | | | | | |

Supplementary List of Gold Mining Companies.—Continued.

| 25 | | | | | | |
|--|----------------------|-------------|---------------------|----------------------------|-----------------------|---|
| | | CAPITAL. | Ľ | | | |
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | MINE M'G'R. OR AGENT. | REMARKS. |
| Camp Hewitt, M. Dev., Ltd Camp Hewitt | Camp Hewitt | 1,000,000 | 1.00 | 1,000,000 I.00 Vernon, B.C | | Owns the Lake View, Mountain View, Gladstone, Stag, Rhodesia, Dandy, Queen, Crown, Coddstream, Moss |
| Caribou Gold Mining, Ltd Caribou, N. S | Caribou, N. S | \$ 500,000 | | St. John, N.B | J. Fenwick Fra- | 2 |
| Carnes Creek Con. G.M., Ltd Revelstoke Dist | Revelstoke Dist | 1,000,000 | 1.00 | I.00 Revelstoke | Director. | 0 |
| Cassiar, Cariboo and Kootenay
Mining, Ltd | New Westminster | | | Vancouver, B.C | | senic and 'Imperial' mineral claims, Revelstoke Div. of W. Kootenay, B.C |
| Castle Mountain M.& Dev., Ltd Christina Lake, B.C. | Christina Lake, B.C. | 2,000,000 | 8.1 | Vossland, B.C S | . G. Abbott | Golden Leaf, 'Dandy' and 'Nonpariel' claims, on Harrison Lake, Dist. of New Westminster, B.C. Westminster, B.C. Yestminster, Commodity on Castle Nountain, South-east of Christina Lake, B.C. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | ز | Canapian | MINE M'G'b | |
|--|----------------------------------|------------------------|---------------------|---|------------|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | AGENT. | REMARKS. |
| Cayoosh Creek Mines, Ltd Lillooet, B. C | Lillooet, B. C | 200,000 | 1.00 | I.oo Vancouver, B.C | | Formed to acquire 5 claims known as the 'British Col- |
| C.B. & Q. Gold M. & Dev., Ltd Trail, B. C | Trail, B. C | 1,000,000 | | 1.00 Rossland, B.C M. Simpson. | M. Simpson | Owns the 'C. B. & Q. claim, |
| Central Rawdon Mining, Ltd Rawdon, N.S | Rawdon, N.S | 120,000 | 1.00 | I.oo Windsor, N.S J. C. Gelder | + | To *80m tunned driven sko fi |
| Clark-Seattle Gold Mining, Ltd North Fork, Kettle River, B.C | North Fork, Kettle
River, B.C | 000,000 | 1.00 | 1.00 Grand Forks, B.C. | Secretary | to cut lode at 200 ft. level. to cut lode at 200 ft. level. Owns the Seattle, Bettie, and Drumlommand claims, |
| Cliff Gold Mining, Ltd | Harrison Lake, B.C. | 500,000 | I.00 | 500,000 I.oo Vancouver, B.C | | Seattle Camp, N. Fork,
Kettle River, Vale Div, B.C.
Owns 4 claims on east side of
Harrison Lake, B.C. |
| : | Lake of the Woods, | 1,000,000 | 1.00 | I.00 Rat Portage | | No information. |
| | boro, N.S. | | | Cochrane Hill,
Guysboro, N.S. | | 20 persons employed in 1897 |
| Colcleugh Gold Mining, of Rat Portage, Ltd | Trail, B.C | I,000,000
I,000,000 | I.00 | 1.00 Rat Portage Rossland, B.C G. Pfunder 1.00 Trail, B.C | G. Pfunder | developing mine. No information. Formed to purchase the Mol- |
| | | | | | | ley and Little Joe No. II,
claims, Cariboo Creek, Na-
kusp Divn., B.C. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | ز | | | |
|---|-----------------------------|-------------|---------------------|-------------------------------------|---------------------------|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE, | MINE MGR.
OR
AGENT. | REMARKS. |
| Combined Gold Mines, Ltd., or Ontario | Ontario
Trail Dist., B.C | 1,000,000 | 1.00 | 1.00 Hamilton, Ont
Rossland, B.C | W. J. Harris | 1,000,000 1.00 Hamilton, Ont No information. No information. No information. No information. No information. 1,000,000 Rossland, B.C W. J. Harris Owns the Commander claims |
| Commonwealth M. Dev., Ltd Lardeau Dist., B.C. | Lardeau Dist., B.C. | 1,000,000 | 00 I | 1,000,000 I oo Rossland, B.C | | B.C. Owns some 10 mineral claims in the Lardean Dist B.C. |
| Consolidated Alberni G. M. Ltd Alberni, B. C. | Alberni, B.C. | 900,000 | 1,00 | 500,000 I.oo Toronto, Ont | Thos. Dunn | Owns Location W. R. 40,
Nipissing Dist., Ont.
Owns the Alberni, Warspite. |
| Consolidated Lake Mining Gold Lake, N.S | Gold Lake, N.S | 400,000 | : | . Halifax, N.S J. B. Neily | : | Victoria and Chicago claims
at Alberni, Vancouver Island, B.C. |
| Consolidated Goodenough and Ruby Gold Mining, Ltd Nelson Divn., B.C | Nelson Divn., B.C | 1,500,000 | 1.00 | I.00 New Westminster. | | Gold Lake, Halifax County,
Nova Scotia.
Owns the Goodenough and |
| Consolidated Seven Mines, Ltd Trail Dist, B.C | Frail Dist, B.C | 1,000,000 | 1.00 1 | 1,000,000 I.00 Rossland, B.C | ٠ | Nuty Fraction claims, on
Morning Mountain, Nelson
Division, B. C.
Owns the Copper Bar, Magna
Charter, Single Standard, |
| | | | | | | Numeration, Grace Dar-
ling, Magician and Open
Sesame claims. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | ľ | CANADIAN | MINE M'G*R. | |
|--|--------------------------|-------------|---------------------|---------------------------------|--------------|---|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | OR
AGENT. | REMARKS. |
| Portage | Lake of the Woods, | 40,000 | 1.00 | 40,000 1.00 Rat Portage | | No information. |
| Cow bay Gold Mining | Co., N.S | : | : | Cow Bay, Halifax | | In 1897 the gold yield was 377 |
| C.P.F. Mining Associates | Mount Uniacke, N.S. | | : | Mount Uniacke, | | oz. 2 dwt. 23 grs. from 412 tons milled. |
| Cream Pot Gold Mining | Cranberry Head, N.S | | | Cranberry Head,
N.S | | dwt. from 584 tons milled. Gold yield 1897, 46 ozs. 14 dwr from 70 tons milled. |
| Ltd | Lake of the Woods, | | | Rat Portage, Ont. | | No report received. |
| Deep Cave Gold, Lid | Harrison Lake, Yale, B.C | 250,000 | .25 | .25 Vancouver, B.C | | Mineral claims on Silver |
| Delacola Gold Mining, Ltd Trail, B.C. | Trail, B.C | 1,000,000 | | I.oo Rossland, B.C H. Kingsmill | H. Kingsmill | Owns the Delacola claim 1/2 |
| Ltd | Trail, B.C | 1,000,000 | 1.00 | I.oo Rossland, B.C G. Pfunder | G. Pfunder | Owns the Detroit Fraction,
and the Iron Oueen, No. I |
| Dollarocracy M.& Smelting, Ltd Trail, B.C. | Trail, B.C | 1,000,000 | I.00 | 1.00 TrailLanding, B.C | | claim, Trail Creek, B.C.
Owns the Pete and Lulu
claims on Pend D'Orielle |
| | | | | | | River, 3 m. from its junction with the Columbia River. |

Supplementary List of Gold Mining Companies.—Continued.

with the Columbia River.

| | | CAPITAL. | T. | CANADIAN | MINE M'c'e | |
|--|-----------------------|-------------|---------------------|---|--------------|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | OR
AGENT. | REMARKS. |
| Dominion Gold Dredging & Placer M., Ltd | & Lillocet | 40,000 | I.00
I.00 | I.oo Toronto & Lillooet S. Gibbs I.oo Rossland, B.C | S. Gibbs | No information. Owns the Parker group of claims, 1½ m. N.E. from Quartz Creek, Nelson Dis., |
| Dundurn Gold Mining, Ltd Trail, B.C | Trail, B.C | 1,000,000 | 1.00 | I.oo Rossland, B.C | | B.C.
Owns the Dundurn, Kahanee
and Benbow claims, Trail |
| Eastville Gold Mine | . Mount Uniacke, N.S. | | : | Mount Uniacke, | | District, B.C. Gold yield in 1897, 128 ozs. 11 dwt. 12 grs. from 48 |
| East Waverley Tunnel | Waverley, N.S | | : | Halifax, N.S T. R. Gue. | F. R. Gue | Owns and is developing the |
| Eldorado Placer Gold Mining,
Ltd. | Lillooet | 200,000 | 1.00 | 200,000 Vancouver, B.C F. S. Taggart | : | at Waverley, N.S. Own: the Double. L placer |
| Elk Gold Mining of Cariboo, Ltd Caribou, N.S | Caribou, N.S | 300,000 | 1.00 | 300,000 1.00 Caribou, N.S | | Lillooet, B.C.
Gold yield 1897, 606 ozs. 18
dwt. from 878 tons rock |
| Empire Mining & Milling, Ltd. Trail, B.C. | Trail, B.C | 1,000,000 | 1.00 | I.oo Rossland, B.C | | owns the Empire claim, near |
| Empress Gold Mining, Ltd Trail, B.C. | Trail, B.C | 1,000,000 | 1.00 | I.oo Victoria, B.C | | Owns the Empressclaim, Trail District, B.C. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | I. | | | 1 |
|--|-----------------------|-------------|---------------------|--|-------------------------------|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | CANADIAN
OFFICE. | MINE MGR. OR AGENT. | REMARKS. |
| Empress of India Mining, Ltd Nelson, Div., B.C English and French Gold Mining, Ltd | Ltd Nelson, Div., B.C | 1,000,000 | I.00 | 1,000,000 1.00 New Westminster, B.C. 2,000,000 Grand Forks, B.C. | | Owns the Empress claim on Porcupine Creek, Nelson Div. B.C. Owns the Napoleon Bona- |
| Essex Gold Mine | Tangier, N.S | | | Tangier, N.S John Murphy | John Murphy | party, Cropatta, Mark Antony, Mayflower, Grand Forks Belle, Bonanza, and Bess, Brown's Camp, N. Fork of Kettle River, B.C. Produced 258 ozs. 19 dwt. |
| Rossland | Trail Dist., B.C | 1,500,000 | 1.00 | I.oo Rossland, B.C | | Formed to purchase Ethel No. I, Elk No. I, Tenderfoot, Ada I. Iron King No. IV |
| | | | 5 | | | and Blue Bell No. I, on
the divide between Murphy
Creek and the East Fork of
Sheen, Creek Trail Dist |
| Eureka Consolidated Mining, Ltd Trail Dist., B.C | Trail Dist., B.C | 200,000 | I.00 | Rossland, B.C | ohn M. Burke. | 500,000 I.00 Rossland, B.C John M. Burke. Owns the Eureka, Evening, |
| Evangeline Gold Mining, Ltd Goldenville, N.S | Goldenville, N.S | 125,000 | | Goldenville, N.S. Head office: Geo. Brackett, S. | Head office:
Geo. Brackett | ead office: claims, Trail District, B.C. Geo. Brackett Sec. 229 Congress St. Boston. |
| Excelsior Gold Mining, Ltd Lillooet, B.C. | Lillooet, B.C | 200,000 | 00.1 | Vancouver, B.C. | . D. Byrne, Sec | 500,000 I.00 Vancouver, B.C. I. D. Byrne, Sec Owns the Excelsior claim, Lilloet, B.C. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | T. | | M 167.3 | |
|--|---------------------|-------------|---------------------|-------------------------------------|---------------------|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | MINE MGR. OR AGENT. | REMARKS. |
| Exchequer Gold Mining, Ltd Toad Mountain, B.C. | Toad Mountain, B.C. | 1,000,000 | | I.oo Nelson, B.C. | | Owns the Exchequer, and Cleopatra claims, oo acres. |
| Falstaff Gold Mining, Ltd Trail, B.C | Trail, B.C | 1,500,000 | 1.00 | 1,500,000 1.00 Rossland, B.C | | Gold Mountain, B.C.
Owns the Bonnie Doon, Dan
Webster, Falstaff, Ben Hur |
| Favorite Gold Mining & Dev Osoyoos Dis | Osoyoos Dis | 5,000,000 | I,00 | I.oo Greenwood, B.C | | No. II, Bonner, White Elephant No. III, Trail District, B.C. Owns the Southern Belle, Queen of the Hills, Viola, Bay State, Bowis, Ace |
| Finance Gold Mining, Ltd Trail Dis., B. C | Trail Dis., B. C | | 1.00 | I,000,000 I.00 Rossland, B. C | | High, Royal, Mogene, Henritetta, R. Seattle, Butte, R. Belle, Emma & Chickerman in the Greenwood, Clark and Summit Camps, B. C. Owns the Finance, Big Whale and Echo claims near |
| Fire Lake Gold Mines, Ltd New W'minster, B.C. | New W'minster, B.C. | 1,000,000 | 1.00 | I.oo Vancouver, B.C., R. J. Leckie, | : | Rossland, B.C. President.] Owns the Hard- |
| | | | | | | Horse, Morning, Noonday,
Snowshoe, Crown Point |
| | | | | | | Mountain, N. Westminster division, B.C. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | | CANADIAN | Mine M'o'e | 7 |
|---|------------------------------------|-------------|----------------------|-------------------------------|------------------|--|
| COMPANY. | DISTRICT. | Authorized. | Par Value
Shares, | OFFICE. | AGENT. | REMARKS. |
| Forest Rose & St. George, Hyd. Cariboo | Cariboo | | | Barkerville, B.C James Innes. | James Innes. | Working claim on Williams' |
| Freeborn Gold Mining, Ltd Trail, B.C. | Trail, B.C | 500,000 | : | Victoria, B.C | | Owns the Freeborn claim, |
| Golden Cache Ext. G. Min., Ltd Lillooet, B. C. | Lillooet, B. C | 000,000 | 1,00 | Cayoosh Ck., B.C. | H.O. Vancouver | 1.00 Cayoosh Ck., B.C. H.O. Vancouver Owns the Blue Pete and |
| Golden Cache Mines, Limited. Lillooet, B. C | Lillooet, B. C | , 000,0005 | - : | Cayoosh Ck., B.C. | Head Office: | 500,000 Cayoosh Ck., B.C. Head Office: Vancouver.] Owns and oper- |
| | | | | | | Golden Stripe, Ruby and
Jumbo claims at Cayoosh |
| Golden Chain Pros. & Dev., L'd Harrison Lake, B.C. | Harrison Lake, B.C. | 2,000,000 | I.00 | I.oo Nelson, B.C | | Claims, Harrison Lake dis., |
| Golden Eagle Mt. G. Min., Ltd Lillooet, B. C
Golden Lode Mining, Ltd Mt. Uniacke, N.S. | Lillooet, B. C
Mt. Uniacke, N.S | 30,000 | 0.1 | Cayoosh Ck., B.C.
Halifax | A. M. Jack, Sec. | Cayoosh Ck., B.C. See Golden Cache, Ext., Ltd Halifax A. M. Jack, Sec. See Manual 1897. Worked |
| Golden Star Min. and Exp., Ltd Seine River, Ont. | Seine River, Ont | | i | Mines Centre, Ont | Head Office : | Mines Centre, Ont Head Office: A. E. McMannis, Secretary, |
| | | | | | 1 | Minn. Owns and is developing locations A. L. 114 |
| | | | | | | and A. L. 116, 80 acres,
Seine River district, Ont. |

Supplementary List of Gold Mining Companies.—Continued.

| 6 | | CAPITAL. | T. | Canapian | MINE M'c'e | |
|--|----------------------|-------------|---------------------|--------------------------------|---------------|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares, | OFFICE. | AGENT. | REMARKS. |
| Gold Explorers of Canada, Ltd L. of the Woods, Ont £ 100,000 £ 1 Rat Portage Head Office : F. Fuller, Sec., Tower Chambers, Finsbury Pavement, London, E.C. Registered | L. of the Woods, Ont | £ 100,000 | ٣ 1 | Rat Portage | Head Office : | F. Fuller, Sec., Tower Chambers, Finsbury Pavement, London, E. C. Registered |
| | | | | | | zour Oct., 90, to acquire property in the Lake of the Woods, and to adopt an agreement with the Mines Contract Co., Ltd. Purchase |
| Golden Wedge Mining, Ltd Trail, B.C | Trail, B.C | 1,500,000 | 1.00 | 1.00 Rossland, B. C | | consideration £80,000 payable in fully paid shares. Formed to purchase the Ida Fraction and the Spotted Tail claims on Crown Point |
| Gold Hill Quartz Mining Co. of Fairview, Limited Fairview, B.C | Fairview, B.C | 750,000 | | I.oo Victoria, B. C W. A. Dier | W. A. Dier | Mt., Trail Creek, B. C. Owns the Gold Hill claim, |
| Goldie-Rene Mining, Ltd Trail, B.C | Trail, B.C | 1,000,000 | 1.00 | 1,000,000 I.00 Rossland, B.C | | Fairview Camp, B. C. Owns the Goldie and Rene claims, Sullivan Ck., Trail |
| Good Friday Gold Mining, Ltd Nelson Div., B.C. | Nelson Div., B.C. | 1,000,000 | 1.00 | 1,000,000 1.00 Rossland, B.C | | district, B.C. Owns the Lucky Boy and |
| Gopher Gold Mining, Ltd Trail, B.C. | Trail, B.C | 1,000,000 | 1.00 | I,000,000 I.00 Rossland, B.C | | Owns the Gopher claim, Trail |
| | | | | | | *************************************** |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | | | | |
|--|--|---------------------------------------|---------------|--|-----------------------|---|
| COMPANY. | DISTRICT. | Authorized | slue
ires. | CANADIAN
OFFICE. | MINE M'G'R. OR AGENT. | REMARKS. |
| | | T T T T T T T T T T T T T T T T T T T | Par/
Sha | ŧ | | |
| Grace Darling Gold Mining, Ltd Trail, B.C | Trail, B.C | 150,000 | IO | Io Rossland, B.C | | Owns Grace Darling Faction, |
| Grand Forks Gold Mining, Ltd River, B.C | North Fork, Kettle
River, B.C | 1,500,000 | 1.00 | 1.00 Grand Forks, B.C. | | digo claims, Trail district. Owns the Little Volcanic, Mascot and Indian Oneen |
| Great Northern Gold Min and | | | | | | Brown's Camp, N. Fork,
Kettle River, B.C. |
| Dev. Ltd., of Rat Portage, Lake of the Woods
Great Western Mines, Ltd Up. Arrow Lk., B.C. | Lake of the Woods
Up. Arrow Lk., B.C. | 90,000 | 50.00 | 50.00 Rat Portage, Ont. 1.00 Revelstoke, B. C. | | No report.
Owns the Great Western |
| | 5 | | Ţ. | | | group of claims on Upper
Arrow Lake, about 6 miles
N.E. of Arrowhead. |
| Guncy-Jennings Mining Co Carlbou, N.S | Caribou, N.S | | : | Caribou, N. S | | Owns and is working the Lake Lode mine at Caribou, Hali- fax County N. S. (See |
| Halifax Mining, Ltd | Salmon Riv., B. C | 1,000,000 | 1.00 | I.oo Rossland, B.C | | Manual, 1897.) Owns the John Halifax, Ursulla, Variety and Combina- |
| Hamilton & Rossland G. M.Lid Trail, B.C | Trail, B.C | 1,000,000 | I.00 | Rossland, B. C | ` ! | tion claims, N. Fork Sal-
mon Riv., Nelson div., B.C,
Owns the Mississippi claim, |
| High Ore G. M. & Smelt., Ltd Trail, B.C | Trail, B.C | 500,000 | i | Rossland, B. C | Head Office : | 500,000 Rossland, B. C Head Office 201 Mohawk B'd'g., Spokane. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL | II. | | | |
|--|----------------------------|-------------------------------------|----------------------|--|------------------------------|--|
| COMPANY. | DISTRICT. | Authorized. | Par Value
Shares. | CANADIAN
OFFICE. | MINE M'G'R. OR AGENT. | REMARKS. |
| Homestake Gold Mining, Ltd. Trail, B.C | Trail, B.C | 500,000 | | Vancouver, B.C | O. Plunkett | Vancouver, B.C O. Plunkett Sec.] Owns the Homestake |
| Hopewell Gold Mining, Ltd Stormont, N. S | Stormont, N. S | 15,000 | 50.00 | 50.00 Hopewell, N. S. | | In 1897 produced 278 ozs. |
| Hub Gold Min. & Dev., Ltd Tp. Rathburn, Ont. | Tp. Rathburn, Ont. | 000,000 | 1.00 | 600,000 I.00 Sudbury, Ont | | tons milled. Owns Lot 3, 3rd Con. Rath- |
| Ibex Mining, Ltd Trail, B. C. Ida Queen Gold Mining, Ltd Trail, B. C. Imperial Gold Mining, Ltd Trail, B. C. | Trail, B. C
Trail, B. C | 1,000,000
1,000,000
1,000,000 | 1.00
1.00
1.00 | Rossland, B. C G. A. Pfunder
Rossland, B. C J. R. Clark | G. A. Pfunder
J. R. Clark | burn, Nipissing Dis., Ont. No information. Owns the Ida Queen claim. Owns the Imperial and Boyce |
| Indian Chief Gold Mining, Ltd L. Arrow Lk., B.C. | L. Arrow Lk., B.C. | 1,000,000 | 1.00 | I.oo Rossland, B. C | | claims. Owns the Indian Chief, Pap- |
| Iron Colt Gold Mining, Ltd Trail, B. C. | Trail, B. C | 1,000,000 | I.00 | I.oo Rossland, B. C | | Lower Arrow Lake, Nelson
Division, B.C.
Owns the Iron Colt claim. |
| Iron Horse Mining and Mil., Ltd Trail, B. C | Trail, B. C | 1,000,000 | 1.00 | 1.00 Rossland, B. C J. D. Farrell. | | Trail District, B.C. Owns the Iron Horse claim |
| Iron Mask Gold Mining, Ltd. Trail, B. C. | Trail, B. C | 200,000 | 1.00 | I.oo Rossland, B. C | | on Monte Cristo Mountain, Trail District, B.C. F. E. Lucas, Spokane, Sec. Owns the Iron Mask claim, Trail District, B.C. |
| | | | | | | |

Supplementary List of Gold Mining Companies.—Continued.

| Authorized. |
|---|
| £ 120,000 £ 1 Victoria, B. C C. T. Dupout, Reg. 23rd July, 1896, to ac- |
| 1,000,000 |
| 1,000,000 |
| 500,000 |
| 500,000
1,000,000
1,000,000 |
| |
| |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | T. | | Mess Mess | |
|---|--|-------------------------------------|---------------------|--------------------------------|-----------------------|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares, | OFFICE. | MINE M G K. OR AGENT. | REMARKS. |
| Kookanee Mining Ltd Kaslo Creek, B.C | Kaslo Creek, B.C | | 1.00 | 1,000,000 I.00 Vancouver, B.C. | | Owns the Lake View, Royal City and Mayflower claims on Kookanee Creek; Six Friends and Volunteer on South Fork of Kaslo Creek; Mountain Flower & Golden Bazaar, N. Fork of 10 Mile Creek; Royal Arthur |
| 7 Comment of 1 Co. 1 | D 6 | | | 90 | i i | and Charmer, 2nd N. Fork
Lemon Creek; and a half
interest in Hungry Five
claim, S. Fork of Kaslo
Creek, W. Kootenay, B.C. |
| Rootenay Gold F. Syn., Ltd British Columbia
Lady of the Lake Gold Min. of | british Columbia | £ 20,000 | بر
1 | неад Ошсе: 39 | Lombard Street, | £ 1 Head Office: 39 Lombard Street, London, E. C.] Nointermation |
| Ottawa, Limited Lk. of the Wd's. Ont | Lk. of the W'd's. Ont | \$ 500,000 | 1.00 | Ottawa | F. W. Bindon. | \$ 500,000 I.00 Ottawa F. W. Bindon. Owns mining location 157 K, Lake of the Woods, Ont., on waich development is |
| Lake Koo-Ka-Gaming Min. and Exploration, Limited Ontario Lake of the Woods G. M., Ltd. Lk. of the W'd's., Ont Lake Superior Mines Dev., Ltd Algoma, Ont | Ontario
Lk. of the W'd's., Ont
Algoma, Ont | I,000,000
I,000,000
I,000,000 | 1.00
I.00 | | G. A. Graham. | Toronto, Ont No information. Rat Portage No information. Ft. William, Ont. G. A. Graham. Owns the Empress gold mine |
| | | | | | | at Jackfish, on which con-
siderable exploration work
has been done; at last re-
port closed down. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | L. | | | |
|--|------------------------------------|-------------|---------------------|--|-------------------------|---|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | CANADIAN
OFFICE. | MINE M'G'R. OR AGENT. | REMARKS. |
| La Regina Gold Mining, Ltd Trail, B. C
Lardeau Goldsmith Mines, Ltd Lardeau, Div., B.C. | Trail, B. C
Lardeau, Div., B.C. | 750,000 | 1.00
IO | 1.00 Rossland, B.C | | Owns La Regina claim. Formed in 1898 to buy the Ophir and Oregon claims |
| Lightning Creek Gold Gravels and Drainage, Ltd Cariboo, B. C | Cariboo, B. C | 1,000,000 | | Ashcroft, B. C | O. Harvey, Sec. | Ashcroft, B. C O. Harvey, Sec. Operates under lease a claim on Lichtning (1. C. c. c. c. d. c. c. c. c. d. c. |
| Mining, Ltd Kettle River, B.C | Kettle River, B.C | 2,000,000 | 1.00 | I.00 Grand Forks, B.C. | | Formed to purchase the Loyal Canadian, Comstock. |
| Lucky Boy Min. and Dev., Ltd N.Fk.Salm. R., B.C | N.Fk.Salm. R., B.C | 000,000,1 | 00.1 | 1,500,000 1.00 Rossland, B.C | | Piastre, Briton and the North Seattle Fraction claims, Seattle Camp, N. Fork Kettle River, B.C. Owns the Snow Bird, Lucky Boy, Winfield, Branson and Kingston claims on |
| Mackenzie Lake of the Woods Lake of the Woods, Gold Mine, Lid | Lake of the Woods, | 200,000 | | 500,000 Toronto, Ont E. MacKenzie. No information. | E. MacKenzie. | Sullivan Creek, Trail Dis.; and the Monday Morning, S. L. Myers and Waffer on the N. Fork Salmon River, Nelson, B.C. No information. |
| Ltd | Ontario | 250,000 | .25 | .25 Berlin, Ont | | No information. |

Supplementary List of Gold Mining Companies.—Continued.

250,000 | .25 |Berlin, Ont |No information.

| | | CAPITAL. | T. | CANADIAN | Mive Wo'e | |
|--|-----------------------|-------------|---------------------|--|------------------|---|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | OR AGENT. | REMARKS. |
| Mandarin Gold M. of Ont., Ltd. Ontario Manitou Gold M., Ltd Manitou, C | Ontario | 300,000 | 1.00 | 1.00 Toronto, Ont Toronto, Ont 103 Bay Street. No information. | o3 Bay Street. | No information.
No information. |
| Ont | Jackfish, Ont | 100,000 | : | Toronto and Jack-fish, Ont | | Owns Location AL 227, at |
| McConnell Mining Stormont, N.S | Stormont, N.S | | : | . Stormont, N.S | | Jackfish, Ont.
Gold yield 1897, 1,028 ozs. 3 |
| McGoun Gold Mining, of Parry
Sound, Ontario | Parry Sound, Ont | | 1.00 | 1,000,000 1.00 Parry Sound, Ont. Thos. McGoun. Being explored. | Thos. McGoun. | milled. Being explored. |
| Alberni, Ltd. | Alberni | 750,000 | : | Victoria | Dier & Davidson | 750,000 Victoria Dier& Davidson Owns the Standard, Daisy, |
| Minnie-ha-ha Gold Mining Camp | Camp McKinney,
B.C | | : | Toronto, Ont F | I. Kiteley, Sec. | Boy, and Northern Light claims, Alberni, B.C Toronto, Ont H. Kiteley, Sec. Developing Minnie - ha - ha |
| Caribou, Ltd Cariboo, B.C | Cariboo, B.C | 250,000 | : | Quesnelle, B.CT | . Drummond | 250,000 (Quesnelle, B.C T. Drummond Owns 16 Placer claims, covering 2,000 acres, below |
| Moose River Gold Mining Moose River, N.S. | Moose River, N.S | | | Moose River, N.S. | | Forks of Quesnelle, Cariboo Dist., B.C. Gold yield 1897, 355 ozs. 2 dwt. 18 grs. from 2,310 |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | T. | CANADIAN | Maxim Mich | |
|--|--------------------------|-------------|----------------------|--|----------------------|--|
| COMPANY. | DISTRICT. | Authorized. | Par Value
Shares. | OFFICE. | MINE MIGK. OR AGENT. | REMARKS. |
| Murphy Creek Gold M., Ltd Trail, B.C | Trail, B.C | 1,000,000 | | I.oo Rossland, B.C | | Owns the Rocky Point, Rocky
Mountain, Negannee, and
Lucky Seven claims, on |
| oo G. M. of Ottawa, Ltd | Lake of the Woods, | 1,000,000 | | I,000,000 Ottawa, Ont A. W. Fraser No information. | A. W. Fraser | Murphy Creek, Trail Dist.,
B.C.
No information. |
| Nest Egg & Fire Fly Gold M. | Lake of the Woods, | 1,000,000 | : | Wabigoon, Ont | F. W. Guernsey, | 1,000,000 Wabigoon, Ont. F.W. Guernsey, Claim being developed. |
| Ltd. | West Kootenay, B.C. | 1,000,000 | | I.oo Victoria, B.C | | Owns Nest Egg, and Fire Fly |
| New Victor Mining, Ltd Nelson Div., B.C | Nelson Div., B.C | 175,000 | .25 | Vancouver, B.C | | Owns the New Victor, Royal, and Excelsior claims, Wild Horse Creek, Nelson Div., |
| Nitinat Gold M. and Dev., Ltd. Vancouver B.C | Vancouver Island,
B.C | 1,000,000 | 1.00 | I.oo Victoria, B.C | | Owns the Louise, and Lucile claims, Victoria Mining |
| Nobiesse Gold M., Ltd Trail Dist | Trail Dist | 150,000 | oI. | .10 Rossland, B.C | | Div., Vancouver Island, B.C. Owns the Mayflower, and Last Chance claims, on Sulfivan Creek. R.C. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | IT. | | Messes Miles | |
|---|---------------------------|-------------|---------------------|------------------------------|---------------|---|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | AGENT. | REMARKS. |
| Noonday Mining, Ltd | Salmon River, B.C. | | 1.00 | I,000,000 I.00 Rossland, B.C | | Owns Noonday, Copper Belle
and Irine claims on Salmon
R Nelson Diminion W |
| North Fork Mining, Ltd Salmon River, B.C. | Salmon River, B.C. | 125,000 | .25 | .25 Vancouver, B.C. | | Kootenay, B.C. Owns Aberdeen, Inverness, and Hammill claims N |
| Northern Light Gold M., Ltd., Goat River, B.C
Northern Ontario Gold M., Ltd., Lake of the Woods. | Goat River, B.C | 250,000 | 1.00 | 1.00 Victoria, B.C | | Fork Salmon River, B.C.
Owns Northern Light claim. |
| Northup Gold Mining. Ltd. | Ont | 1,000,000 | 1.00 | I.oo Rat Portage | | No information. |
| Ď. | Hants Co., N.S | 100,000 | 100.00 | Windsor, N.S | C. H. Dimock. | 100,000 Vindsor, N.S C. H. Dimock. Owns 80 gold areas at Central Rawden; opened by 4 shafts |
| Nugget Gold M., of Rat Portage. Lake of the Woods, On: | Lake of the Woods,
Ont | 50,000 | I.00
I.00 | 1.00 Rat Portage | | man shaft 450 ft.; No. I S, 100 ft.; No. II S, 100 ft.; No. III, 40 ft10 stamp battery and good mining plant. 35 persons employed. No information. 6 claims on Observation Mountain, and 2 claims on Hardy Mountain, near Grand Forks, B.C. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | ز | CANADIAN Meye Wide | 1 |
|--|--|-------------|---------------------|---|--|
| COMPANY. | DISTRICT. | Authorized. | РагVаlue
Shares. | | REMARKS. |
| Oland Gold Mine | Montague, N.Std. N. Fork Salmon R. B.C | 1,000,000 | 1.00 | Halifax, N.S Oland Bros | stamps, gave 515 oz. 17 dvt. from 91 tons milled. Claims Old Dominion, and |
| Old Gold Quartz & Placer M.,
Ltd | r M.,
Nelson, Div., B.C | 1,500,000 | | Rossland, B.C | El Dorado on E. Fork of N. Fork, Salmon River, Nelson Div., B.C. 6 claims N. Fork Salmon R., and the Lillian Ray and |
| Old Ironsides Mining, Ltd | Greenwood Camp,
B.C | I,000,000 | | Creenwood, B.C. A. L. White, Owns the Old Ironsidesclaim. | Venture claims on Whiskey Creek, Nelson Div. of W. Kootenay, B.C. Cowns the Old Ironsidesclaim. |
| Old Provincial Gold Mine Killag, N.S | Killag, N.S
Lake Catcha, N.S | 125,000 | | Killag, N.S
Musquodoboit Har
bor, N.S G. J. Partingto | illag, N.S Gold yield 1897, 567 oz. 7 dusquodoboit Har bor, N.S G. J. Partington 63 gold areas at Lake Catcha. |
| Pacific Con. Gold Mining | Alberni, B.C | 200,000 | 1.00 | I.00 Victoria | for returns and equipment, see MINING MANUAL 1897. Owns the Minerva Casad and |
| Palo Alto Gold Mining | . Trail District, B. C. | 1,000,000 | 1.00 | I.oo Rossland, B. C C. D. Mason, Sec., Victoria, B. C.] | 1, Sec., Victoria, B.C.] Owns |
| Pathfinder Mining, Red. and Investment | N. Fk. Kettle R. B.C. | 1,000,000 | 1.00 | 1,000,000 I.00 Grand Forks, B.C. | the Palo Alto claim. Owns the Pathfinder claim. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | II. | | | |
|---|--|----------------------|---------------------|----------------------------------|----------------------|---|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | MINE MGR. OR AGENT. | REMARKS. |
| Phenix Gold Mining, Ltd | Stormont, N.S | . 20,000 | 50.00 | New Glasgow | as. A. Fraser | 20,000 50.00 New Glasgow Jas. A. Fraser Developing gold areas, Forest |
| Pictou Dev. and Mining | Renfrew, N.S | | : | New Glasgow | | Hill, Stormont Dis., N.S.
120 tons milled in 1897 gave |
| Pine Ridge Gold M. & M., Ltd. Nelson Dis., B. C | Nelson Dis., B. C | 1,000,000 | 1.00 | Rossland, B.C | | Owns the Elpro, Nako and |
| P'tsburg & Cariboo G. Dreg. Ltd Cariboo, B. C Pittsburg Gold Mining, Ltd Trail Creek, B. C | Cariboo, B.C | 200,000 | | Barkerville, B. C. F. Rossland | F. E. Young, | |
| Poorman Gold Mining, Ltd
Primrose Gold Mining, Ltd | Trail District, B.C
Trail District, B.C | 500,000 | 1.00 | Rossland | | Vellow Copper claims. Owns the Poorman claim. Owns the Minnie II on Red |
| Queen Bee Gold Mines, Ltd. | Nanaimo, B.C | 250,000 | 25 | 25 Vancouver, B.C | | Mountain. Bully Boy and Queen Bee |
| Queen Bee Gold Min. of Ottawa Lk. of the W'ds., Ont Queen of the Lakes Gold Mining | Lk. of the W'ds., Ont | 1,000,000 | \$1.00 | \$1.00 Ottawa, Ont A. W. Fraser, | A. W. Fraser, | naimo District, B. C. |
| and Dev. of Ontario Lk. of the W'ds., Ont | Lk. of the W'ds.,Ont | 1,000,000 | 1.00 | Rat Portage, Ont J | F. Howard, Winnipeg. | 1,000,000 1.00 Rat Portage, Ont J. F. Howard, Owns certain claims being de-
Winnipeg, veloped in the Lake of the |
| Rainy Day Gold Mining, Ltd Trail District, B.C Rainy River Gold Mining, Ltd. Rainy River, Ont | Trail District, B.C
Rainy River, Ont | 600,000
I,000,000 | 1.00 | 1.00 Rossland, B.C John A. Kirk. | | Woods District, Ont. Owns the Rainy Day claim. Formed to mine in the Rainy |
| Red Eagle Gold Mining, Ltd Trail District | Trail District | 1,200,000 | 1,00 | I.oo Rossland, B.C. V | Wm. Bennison. | River District, Ontario. |

Supplementary List of Gold Mining Companies.—Continued.

| The second secon | | | | | |
|--|------------------|-------------|---------------------|--|---|
| | | CAPITAL. | L. | CANADIAN MINE M'G'R. | |
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OR
AGENT. | REMARKS. |
| Red Horse & Salmon Riv.M.Ltd Nelson Div., B.C | Nelson Div., B.C | 1,000,000 | | 1.00 Vancouver J. C. McLagan Owns Red Horse and Blue | lorse and Blue |
| Red Mt. Ida Mt. M., Ltd Trail, B.C | Trail, B.C | 1,000,000 | 1.00 | 1,000,000 1.00 Rossland, B. C. O. Lalonde. Owns Ida May claim on Red | ny claim on Red |
| Red Mt. View Gold Min., Ltd Trail, B.C R. E. Lee Gold Mining, Ltd Trail, B. C | Trail, B.C | 1,000,000 | I.00 | Rossland, B. C I. N. Campbell Owns the View claim. Rossland, B. C D. M. Linnard, Owns R. E. Lee and Maid of | w claim.
Lee and Maid of |
| Revelstoke Mining, Ltd Revelstoke, B. C | Revelstoke, B. C | 000'01 € | 27 | Revelstoke, B.C. Head Office: St. Clements House, Cle- | s House, Cle- |
| | | | | Eng. Form | Eng. Formed to acquire |
| | | | | certain prope | of a company of the same |
| | | | 6 | name (in liq
liquidator of | name (in liquidation). The liquidator of the old com- |
| | | | | pany was to | pany was to receive for dis-
tribution among the old |
| | | | | shareholders | shareholders 1,352 fully |
| | | | | paid new pr | paid new pref. shares and 2,000 new ordinary shares. |
| Rio Grand G. and S. Min., Ltd Nelson Div., B.C | Nelson Div., B.C | 1,600,000 | 1.00 | 1,600,000 1.00 Rossland F. M. Davis Rio Grande, | Rio Grande, Shampane, |
| | | | | _ | S. |
| Rock Creek Gold Mines, Ltd., Osoyoos | Osoyoos | 200,000 | 25 | Victoria, B.C R. P. Rithet. Owns Victoria claim, Osyoos | wns Victoria claim, Osyoos |
| | | | | form of a family form o | fornia claim, Rock Creek, |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | L. | CANADIAN | Wive We's | |
|---|-------------------|---|---------------------|-----------------------------------|-----------------------------------|---|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | AGENT. | REMARKS. |
| Roderick Dhu Gold Min., Ltd. Trail Dist., B.C | Trail Dist., B.C | 1,000,000 I oo Rossland | 1.00 | | D. M. Linnard. | D. M. Linnard, Ownsthe Roderick Dhu claim
on Deer Park Mountain, |
| Rossland and Green Mountain
Gold Mining and Dev., Ltd Trail, B.C. | Trail, B.C | I,000,000 I.00 Rossland | I.00 | | J. J. Moynahan | |
| Rossland Eastern Gold Min., Ltd Trail, B.C. | Trail, B.C | I,000,000 I.00 Rossland | 1.00 | | D. W. McLeod | D. W. McLeod Ownsthe Monarch, Gladstone Australia, Last Chance and |
| Rossland Homestake G.M., Ltd Trail, B.C. | Trail, B.C | 1,000,000 I.oo Rossland. | 1.00 | | D. M. Linnard. | D. M. Linnard. Owns Homestake claim, lot |
| Rossland La Belle Mining and Developing, Ltd Trail, B.C. Rossland Red Mt. G. M., Ltd. Trail, B.C. | Trail, B.C | 1,000,000 1.00 Rossland 1,000,000 1.00 Rossland | 1.00 | | E. S. Topping.
F. Lewis Clarke | E. S. Topping. Le Belle claim. F. Lewis Clarke Sec., Spokane, Wash. Jowns |
| Salisbury Gold Min., Ltd Montague, N.S. | Montague, N.S | 50,000 | : | Kentville, N.S P. L. Price, | | Sec.] Owns 50 gold areas, |
| Salmo Con. G.M. and Dev., Ltd Trail, B.C. | Trail, B.C | 1,500,000 | I.00 | I.oo Rossland, B. C | | White Cloud, Blue Jack,
Vellow Jack and Sitting |
| Salmon River Gold Mining | N.Fk.Salmon R.B.C | | 1.00 | 1,500,000 1.co Rossland, B. C | | Bull claims. Dinner Pail, Bulla, Jennings Fraction, Genevieve, Iron |
| Salmon River Valley Mining Nelson Div., B.C | Nelson Div., B.C | | 1.00 | 1,000,000 1.00 Rossland, B. C | | Claims Guttenburg claim. |

Supplementary List of Gold Mixing Companies.—Continued.

| Canadian OFFICE. 1.00 Rossland, B. C. 1.00 Victoria. Mine Centre, Ont. 1.00 Victoria. 1.00 Victoria. 1.00 Victoria. | | | CAPITAL. | Γ. | | | |
|---|---|-------------------|-------------|---------------------|---------------------|--|--|
| ### 1,000,000 1.00 Rossland, B. C | COMPANY. | DISTRICT. | Authorized. | ParValue
Shares, | CANADIAN
OFFICE. | MINE MGR. OR AGENT. | REMARKS. |
| ### 1,000,000 1.00 Rossland, B. C ################################ | | Kettle River, B.C | 1,000,000 | 1.00 | Rossland, B. C. | | Owns the Samson, Head |
| ### Mine Centre, Ont. #### Mine Centre, Ont. ################################### | San Joaquin Gold Mining | | 1,000,000 | 1.00 | Rossland, B. C | C. Redden
Hon. Dewdney | 0 |
| ## \$150,000 10 cts. Rossland | Seine River Gold Mines of
Ontario, Ltd | Rainy River, Ont | 100,000 | - | Mine Centre, Ont. | Head Office: 62 | 0 |
| ### \$150,000 10 cts. Rossland | | | | | | Broad St., Ave.
London, E.C.,
England. | 110 and 111, and K. 223, situate between Bad Vermillion and Shoal Lakes and |
| ### \$150,000 10 cts. Rossland ############################## | | | | | | | chase consideration £60,- |
| nt I,000,000 I.00 Ingersoll, Ont I,000,000 I.00 Victoria | Shandon Bell G. Min. and Dev7 | Trail District | \$150,000 | Io cts. | Rossland | | Being developed. Shandon Bell and Bon Ac- |
| 1,000,000 1.00 Victoria | Shebandowan G. Min. and Dev 7 | Thunder Bay, Ont | 1,000,000 | 1.00 | Ingersoll, Ont | | Creek. Creek. Owns Mining Location Block On Vo. 1 Shebandouren |
| Joseph I. O Nossialid, D. C. | Silver Bow Quartz Mining, Ltd | Fairview, B.C | | I.00
I.00 | 3.C. | Dier & Davidson (H. C. McDonald | Dien & Davidson Owns the Silver Bow claim. H.C. McDonald Sec., Spokane, Wash.] Owns the Silverine and Sec., Spokane, Wash.] |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | T. | CANADIAN | Mive We'e | |
|---|---------------------------------------|-----------------------------------|---------------------|--|-----------------|---|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | AGENT. | REMARKS. |
| Skeena River Mining, Ltd Skeena River, B.C | Skeena River, B.C | 100,000 | 1.00 | Victoria, B.C | R. P. Rithet | 1.00 Victoria, B.C R. P. Rithet Owns the Emma Mine, the Indian In L. and the Kendall Group claims near Kitsellass Canyon, Skeena River, |
| Sophia Mountain Gold Mining. Trail Dis | Trail Dis | 1,000,000 | 1.00 | I,000,000 I.00 Rossland, B. C | | B.C. |
| Ontario, Ltd. Sovereign Mining Co., Ltd. Lk. of the Wds.Ont Starmount Gold Mining, Ltd. Silverton, B.C. | Lk. of the W'ds.Ont
Silverton, B.C | 2,500,000
1,000,000
500,000 | 1.00
2.00 | Toronto, Ont Rat Portage, Ont Victoria, B. C | Robt, H. Nunn | Owns the Starmount claim |
| Sudbury Gold Mining, Ltd Nipissing, Ont Sultana Gold Min. of B.C., Ltd Trail, B.C | Nipissing, Ont | 1,000,000 | I.00
I.00 | 100,000 1.00 Sudbury, Ont | | wood Pet claim on the
Galena Farm. |
| Sutherland Gold Mining Shet brooke, N.S | Sherbrooke, N.S | | | . Sherbrooke, N.S. | | out Mountain. Four months' crushing in 1807 gave 43 ozs., 2 dwt. |
| Sweden Gold Mining, of Ont Rainy River, Ont | Rainy River, Ont | 5000,000 | | 5000,000 Rat Portage | | 12 grs. from 209 tons
milled. |
| Ltd. Tavada Kirk I aka Cald Mina | Texada Island, B.C. | 80,000 | 10,00 | 80,000 IO.00 Nanaimo, B.C Alfred Raper | Alfred Raper | |
| Ltd Ltd | Texada Island, B.C. | 000,009 | 1.00 | Victoria, B.C | W. L. Challoner | 600,000 I.oo Victoria, B.C W.L. Challoner Owns the Victoria, Climax, and Texada claims. |

Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | ij | CAMADIAN | Max Work | |
|--|--|-------------|---------------------|--|------------------|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE, | AGENT. | REMARKS. |
| Texada Silver King Gold Min-
ing, Ltd | Texada Island, B.C.
Nipissing, Ont
Kettle River, B.C | Ι, | 10 cts.
1.00 | 100,000 10 cts. Victoria, B.C
800,000 1.00 Thessalon, B.C | | Owns the Silver King claim. Owns the Tidal Wave, the Contact. |
| Tin Hern Quartz Mining, Ltd Fairview, B.C. Toronto and Boundary Creek Mining, Ltd Boundary, B.C. | Fairview, B.C | 200,000 | 25 cts. | 200,000 25 cts. Fairview and Vic-
toria, B C | Dier & Davidson | airview and Vic- toria, B.C Dier & Davidson Operates the Tin Horn claim. |
| Ltd | Nelson Division, B.C | 1,000,000 | 1.00 | Rossland, B. C | S I. A. Garland. | Owns the Toronto, Nil Des- |
| Touquoy Gold Mining, Ltd Moose River, N.S | Moose River, N.S | | i | Moose River, Caribou, N.S | | perandum and Drill claims,
near the Salmon Siding.
During 1897, 5211 tons milled |
| Trail Creek Gold Syndicate, Ltd. Trail, B. C. Trail Creek Hidden Treasure G. | Trail, B. C | 1,000 £1 | | | Head Office, 110 | Head Office, 110 Cannon St., London, E.C., |
| M., Ltd | Trail, B. C | \$1,000,000 | \$1.00 | \$1,000,000 \$1.00 Rossland, B.C | | Owns the Hidden Treasure, |
| Troy Gold Mining, Ltd Trail, B. C | Trail, B. C | 100,000 | 5c. | 5c. Victoria, B.C | | Owns the Nanaimo Enter-
prise, on the east side of |
| | | | | | | Union Hill; the Home-
stretch, on north-east stope
of Monte Cristo Mountain. |

Supplementary List of Gold Mining Companies.—Continued.

stretch, on north-east stope of Monte Cristo Mountain.

| 28 | | | | | | | |
|-----------------|---|---|-------------------------------------|----------------------|---|-----------------|---|
| | | | CAPITAL. | II. | CANADIAN | MINE M'C'R | |
| | COMPANY. | DISTRICT. | Authorized. | ParValue
Shares, | OFFICE. | OR
AGENT. | REMARKS. |
| Tu | Tulameen Hydraulic & Improve-
ment, Ltd Tulameen R., B.C. | Tulameen R., B.C | 000'09 | | 60,000 NWestm'ster, B.C. W. J. Walker, | W. J. Walker, | FG |
| Tu | Tulameen Mining, Ltd | Tulameen, B.C | 20,000 | : | Vancouver, B.C W. L. Hogg, | W. L. Hogg, | meen Kiver. |
| | Trading, Ltd | Rainy River, Ont. | 2,000,000 | 1.00 | I.oo Dinorwick, Ont | A. Trudo, M. | Farringer W 44 H W 47 10 and H H |
| OP | Uphaz Gold M. and Dev. of Ontario, Ltd Lake of the Woods. | Lake of the Woods. | | | | | W.II, comprising 269 acres |
| Vai | Van Anda Copper and Gold, Ltd Texada Island | Ont | 1,000,000 | I.00 | I.oo Rat Portage | Head Office Se- | |
| | | | | | | attle, wash | attle, wash E. Blewitt, Fresident. Owns the Copper Queen (Van Anda) and Little Billie |
| Val | Vancouverand Lillooet Gold M., | Tilloost R.C. | 000 | ž. | and the topolity | | claims on Texada Island,
Nanaimo District, B. C. |
| Var | Meteor Mining, | and Meteor Mining, Ainsworth, B.C | 300,000 | \$1.00 | couver, B.C | .M.Mackinnon | 500,000 \$1.00 Vancouver, B.C. J.M.Mackinnon Owns the Meteor and Van- |
| Vic
Wa
Wa | Wabigoon Gold M., Ltd. Trail Dist., B.C
Wabigoon Gold M. of Ontario . Rainy River, Ont
Warrington M. and Dev., Ltd. Harrison Lake, B.C. | Trail Dist., B.C
Rainy River, Ont
Harrison Lake, B.C. | I,000,000
I,000,000
I,000,000 | 1.00
1.00
1.00 | Rossland, B. C D. B. Bogle
Rat Portage, Ont. | D. B. Bogle | couver claims. |

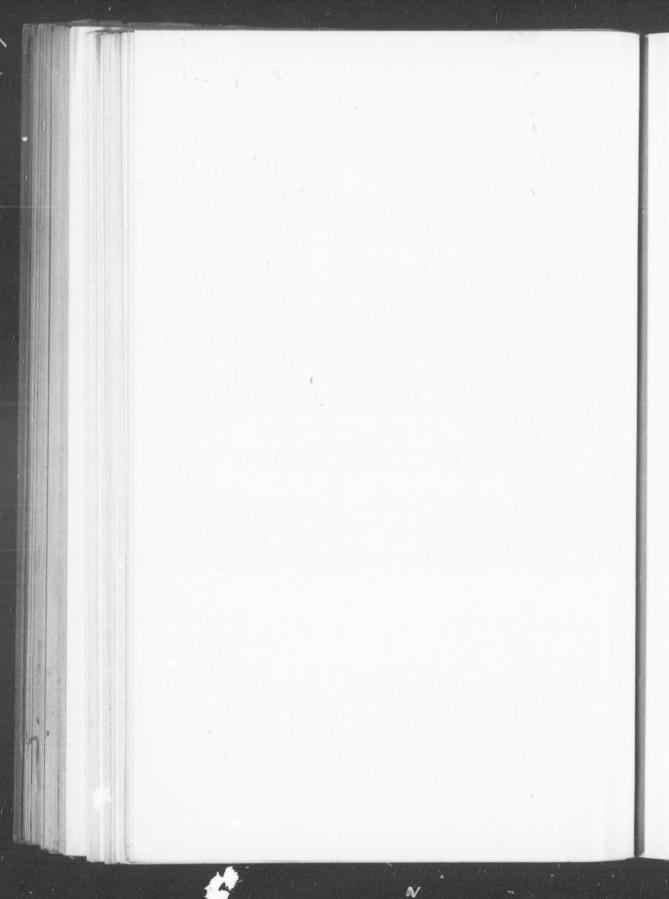
Supplementary List of Gold Mining Companies.—Continued.

| | | CAPITAL. | L. | | | |
|---|---|-------------------------------------|---------------------|---|-------------------------|---|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares, | CANADIAN
OFFICE. | MINE M'G'R. OR AGENT. | REMARKS. |
| Wellington Square Gold M. and Smelting | N. Fork Kettle R. B.C. | 2,000,000 | 1 00 | 1 00 Grand Forks, B.C. | | Owns the Snow Bird, Well. |
| Western Algoma Gold M. of Wabigoon, Ont | Rainy River, Ont | 1,000,000 | I.00 | I.oo Wabigoon, Ont | | ington Square, Silver Knot,
and Mayflower claims. |
| Western Ontario Mining, Ltd Lake of the Woods, | Lake of the Woods,
Ont
Lake of the Woods, | 750,000 | I.00 | 750,coo I.oo Rat Portage | | |
| White Bear Gold M. and Milling, Ltd. Trail Dist., B.C. White Bird Gold Mining, Ltd. Trail Dist., B.C. Trail Dist., B.C. | Ont | 1,000,000
2,000,000
1,000,000 | 0.11.00 | Rat Portage
Rossland, B. C
Rossland, B. C | John Y. Cole | Rossland, B. C John Y. Cole Owns the White Bear claim. Rossland, B. C Nouv Weekington |
| 0 | | 0000000 | 3 | B.C. | Thos. J. Trapp. | B.C. Thos. J. Trapp. Owns the White Pine, and |
| Wild Horse Gold M., Ltd N. Fork Wild Horse | N. Fork Wild Horse
Creek, B.C | 2,000,000 | | Rossland, B. C | John L. Parker. | 1.00 Rossland, B. C John L. Parker. Owns the Molly F. Nebraska |
| | | | | | | lying between Wild Horse
and Porcupine Creeks; the |
| | | | | | | M. E. F., near Quartz
Creek, and the Louie Allan,
N. Fork of Wild Horse |

Supplementary List of Gold Mining Companies.—Continued.

N. Fork of Wild Horse Creek, B.C.

| | | CAPITAL. | IL. | | | |
|--|---|-------------|---------------------|--|-------------------------|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | MINE M G K. OR AGENT. | REMARKS. |
| Winchester Gold Mines of Fair-
view, Ltd | Fairview, B.C | 250,000 | 25 cts. | 250,000 25 cts. Victoria, B.C | Dier & Davidson | 250,000 25 cts. Victoria, B.C Dier & Davidson Owns the Winchester claim. 1.00 Rossland, B.C Eureka, Tenderfoot, Treas- urv. and Shamnock claims |
| Withrow Gold Mine | South Uniacke, N.S. | | | South Uniacke, | | Cariboo Creek, Slocan
District.
Gold yield 1897, 1,342 ozs. |
| Wolverine Gold Mining | Trail, B.C | 500,000 | | I.oo Trail, B.C E. S. Topping | E. S. Topping | from 1,308 tons milled. Owns the Yale claim. |
| M | Tale, B.C. | 400,000 | 25 cts. | 400,000 25 cts. Vancouver, B.C F. C. Innes | | Owns Homestake, Trouble- |
| Yellow-Jacket Gold M. of Seine
R., Ont. | Rainy River, Ont | 300,000 | .i. | 300,000 I.oo Toronto | | tum, Lytton, Eureka, and
Baryta claims. |
| Vum Yum Gold Mining Lake of the Woods, Zilor Gold Mining, Ltd Trail Dist., B.C | Lake of the Woods,
OntTrail Dist., B.C | 1,000,000 | I.00
I.00 | I.oo Rat Portage R. Flaherty | | Rat Portage R. Flaherty Rossland, B. C T. P. Gower, Sec Owns the Zilor claim. |
| | bis | | | | | |



SILVER AND LEAD.

SILVER AND LEAD.

The production of these metals, as in 1896, is practically confined at present to the West Kootenay District of British Columbia, the total output of silver for the year 1897 being computed at 5,472,971 ozs. of a value of \$3,272,836, as against 3,135,343 ozs. of a value of \$2,100,689 in 1896; the production of lead was also increased to 38,841.135 lbs. of a value of \$1,390,517, as against an output of 24,199,977 lbs. of a value of \$721,384 in 1896. Towards the end of the year a small shipment of argentiierous galena was also made from a mine on Calumet Island, Pontiac, Que., and as this property is being systematically developed, it is not unlikely that this Province will add to some extent to the increase of these metals in 1898.

Of the Divisions of West Kootenay, the four leading silver producers are the Slocan, Ainsworth, Nelson and Kaslo. Trout Lake Mining Division, Illecillewaet, Lardeau, and Cariboo Creek are coming producers and are actively developing their prospects and building roads and trails.

We are indebted to the *Mines Report*, B.C., for the following tables showing the net smelter returns of ore from the Slocan district sold during the years 1895-6-7. The tonnage is the dry weight of the crude ore and concentrates shipped, i.e., with the moisture deducted. The silver and gold values represent 95 per cent. of the assay values, and the lead 90 per cent. as the smelters do not pay for the balance. The average values of New York have been taken, or for silver for 1896, 67 cents, and for 1897, 59.8 cents per ounce. For lead for 1896, \$2.98 per 100 lbs.; for 1897, \$3.58.

| YEARS. | Tons 2,000 lbs. | Silver Oz. | Lead, lbs. | Gold, Oz. | Values. |
|----------------------|-----------------|-------------------------------------|---------------------------------------|-----------------|---------------------------------------|
| 1895
1896
1897 | | 1,122,770
1,954,258
3,641,287 | 9,666,324
18,175,074
30,707,705 | 6
152
193 | \$1,045,600
1,854,011
3,280,686 |
| Totals | 59,650 | 6,728,315 | 58,579,103 | 351 | \$6,180,297 |

ACTUAL YIELD VALUES PER TON.

| YEARS. | Silver. | Lead. | Value. |
|-----------------|---------------------------------|----------------------------|-----------------------------|
| 1895 | 118.0 oz.
118.0 "
108.5 " | 50.8 %
54.9 "
45.7 " | \$109 90
111 95
97 71 |
| For 59,650 tons | 111.12 oz. | 49.1 % | \$103 60 |

DIVIDENDS.

The actual amount paid in dividends cannot be stated as some of the producers do not make their profits public, such as the Payne mine, but the total amount is stated (Mines Report, 1897) to be at least \$1,800,000, of which \$960,000 were paid in 1897.

nt to

year

,343

ed to

of a

nt of Que.,

this

e the

vaet,

their

g the

-6-7.

with

assay

The

d for

3.58.

S.

600

686

297

95

71

60

The following dividends have been given public:—Slocan Star, \$400,000; Reco, \$287,500; Idaho, \$220,000; Rambler-Cariboo, \$40,000; Goodenough, \$32,500; Last Chance, \$37,000.

SLOCAN ORE DEPOSITS.

The following description of the ore deposits of the Slocan is given by Mr. W. A. Carlyle*:—There are four distinct kinds of veins in the Slocan:

1. The argentiferous galena, with zinc blend, and some grey copper in a gangue or matrix of quartz and spathic iron. These veins cut across the stratified rocks, and through the dykes of eruptive rock, where, in many cases, there is a good body of ore, and they also occur in the granite area, and with even the limited amount of prospecting, some have been traced from 3 to 4,000 feet along the strike, and one for nearly 2 miles. In the Slocan slates, it has not yet been proven, that as the vein cuts through shales, slates, limestones or quartzities, that any one of the series has been more favorable to the formation of ore-bodies than another, as in the different veins it will be seen that good ore shutes may have the wall of any of these rocks mentioned. The ore has been deposited along fissures, both in the open fissure cavities, and by impregnation of the country rock, and in the cavity-filled veins can be seen the banded structure described elsewhere, or the solid, usually big-cubed galena, shows lines of foliation parallel with the walls, but it is evident that further motion has occurred along some of these vein fissures, after ore has been deposited.

Most of the veins are narrow, varying from 2 and 3 inches to 15 and 20 inches in width, with occasional widenings to 3 or 4 feet of solid ore, and even much more, as seen in the Slocan Star and the Alamo-Idaho veins. The ore shutes are not persistent herizontally, as is characteristic of nearly all veins, but ore is often continuous for several hundred feet, and where it then pinches, a thin streak of oxides is the index usually followed in the search for more ore, which seldom fails to re-appear with more or less work. The mistake is made sometimes of following along a slip-wall or crevice that may cross the vein crevice at a flat angle, and thus lead the miner astray. Besides the solid ore, some veins have associated with them 2, 3 or more feet of mixed ore, gangue and country rock, or a brecciated mass, which may be of such grade as to pay well for concentration; and already there are three concentrators, the Alamo, Slocan Star and Washington, doing very satisfactory work, and the Noble Five mill almost completed, with the erection of two, at least, contemplated this year. The product or concentrates is silver-bearing galena, but any value contained in the decomposed material that may enter the mill, will in all probability not be saved, likewise that in much of the gray copper, which apparently slimes badly and escapes.

^{*}Report of Minister of Mines, B.C., 1896.

The ore is shipped as "crude," or the solid or unaltered sulphides, or as "carbonates," i.e., the decomposed ore, consisting of oxides and carbonates of iron, lead and silver, the mass having a reddish-brown color, with more or less yellow material; those carbonates with a soft, velvety feel, assaying highest in silver. All material about these veins should be carefully assayed before being relegated to the waste-dump, where good ore, unsuspected, has already been thrown, especially soft, iron-stained decomposed rock or vein matter.

While most of the veins are not wide, the richness of their ores greatly compensates, as may be seen from the lead and silver values as per smelter returns from a few of the mines as:

| Slocan Star | 8o to | 95 | ozs. | silver | per | ton, | 70 | to | 75% | lead |
|-------------|--------|-----|------|--------|-------|------|----|----|------|------|
| Reco | 83 to | 730 | 6.6 | | 66 | | 19 | to | 67% | 6.6 |
| Good-enough | 167 to | 507 | 66 | | 66 | | 15 | to | 67% | 66 |
| Noble Five | 62 to | 543 | 4.6 | | 66 | | 30 | to | 75% | 66 |
| Last Chance | 135 to | 238 | 66 | | 4.6 | | 35 | to | 78% | 66 |
| Wonderful | 113 to | 133 | 66 | | 66 | | 70 | to | 76% | 6.6 |
| Ruth | 40 to | 125 | 66 | | 66 | | | | 73% | |
| Monitor | 142 to | 367 | 66 | | 4.6 | | 32 | to | 57% | 6.6 |
| Wellington | 125 to | 328 | 4.4 | | 66 | | 10 | to | 55% | 66 |
| Whitewater | 72 to | 326 | 66 | | 66 | | | | 65% | 66 |
| Dardanelles | 149 to | 470 | 6.6 | | 6.6 | | 15 | to | 55% | 6.6 |
| Enterprise | 155 to | 180 | 6.6 | | 66 | | - | | 30% | 66 |
| Two Friends | 248 to | 380 | 66 | | 6 . | | 38 | to | 52% | 66 |
| etc., | etc. | , | | 6 | etc., | | | | etc. | |
| | | | | | | | | | | |

METHODS OF MINING AND TREATMENT.

In a recent paper before the Federated Canadian Mining Institute, Mr. Howard West, A.R.S.M., gives the following particulars of the methods of mining and treatment:—

The slate wherein most of the shipping mines are found is extremely soft and easy or working, and therefore it is not surprising to find that rocks drills are in little demand; in addition, the veins usually contain small but rich chutes of ore, and the object is to extract these with as little breakage as possible. In the granite area, where drills would be an unquestionable advantage, more especially in driving long cross-cuts, few mines are as yet sufficiently advanced to warrant their introduction, but doubtless in the future we shall hear of many properties, in the working and development of which they are destined to play an important part. The only instances of the contemplated use of rock-drills in the Slocan which have come under my notice are at the Galena Farm and the Slocan Star. Each of these mines is equipped with a four-drill compressor, but in the former instance no drills have so far been connected, although the ground is fairly hard, while at the Star, they have, I understand, only been employed intermittently, more as an experiment than anything else.

2. Hoisting and Pumping.— These two are considered together, because conditions which affect the one almost invariably affect the other also. On account of

the sloping nature of the ground which exists at practically all the mines, neither hoisting nor pumping is necessary. In some few instances where winzes are sunk, having no connection with the surface except at the upper end, a bucket attached to an ordinary hand windlass is sufficient to cope with the water, and also to raise the ore and waste. True shafts are, generally speaking, conspicuous by their absence, but may be observed at the Arlington, Galena Farm and the Dardenelles. A boiler has been recently conveyed to the former, which it is proposed to use for hoisting and pumping purposes, but as yet the plant has not been fully installed. The work at the Galena Farm, however, presents many features of interest, which are certainly deserving of more than passing mention.

Whatever may be said or thought about the merits of the mine, or the action of the promoters in floating the property with such an enormous capital, there can be no doubt that, given opportunities, the company is prepared to operate on a liberal scale. They intend evidently to mine in the true acceptance of the word, therefore do not hesitate as so many do about necessary preliminary expenses. Their splendidly timbered double compartment shaft, now down to a depth of 230 feet, would be hard to beat in any district, and a visit to the shaft house, which is unique in the Slocan as regards equipment, well repays the trouble involved in making the trip. Until quite recently buckets only were used in raising the stuff to the surface, but the limit having been reached where these could be economically employed, a single deck cage of the usual platform typefor vertical shafts has been installed, on which the car is raised, being held in position during the operation by two hooks, one of which is caught in a loop hole on each side of the car. The cage is supported by a round wire rope of medium size, which passes over a five foot grove pulley at an elevation of 42 feet above the shaft head to a drum four feet in diameter. This latter, on which the rope is wound, is of the flat type, having a flange at each end. Power is imparted by means of two water wheels, a Pelton and a Risdon, which correspond in measurement, being each six feet across, and are both connected on the same shaft with the drum. The power house also contains a boiler and a four-drill compressor, for use when occasion demands. Water is brought from the creek underground in an eighteen inch pipe, which tapers to sixteen where it enters the bulkhead, two hundred feet distant from the shaft. From here it is conducted in nine inch pipes to where it impinges on the wheel through inch and a half nozzles. With a head of 320 feet, 150 h.p. can be readily generated, which is ample, not only for hoisting and pumping, but will suffice ro run the concentrator when erected.

I regret that I have had no opportunity of personally visiting the Dardenelles, but I am informed that a Knowles pump is also in operation there. The shaft exceeds two hundred feet in depth.

I inadvertently omitted to mention before this, that water raising appliances at the Farm consist of two small force pumps, one a Cameron and the other a Knowles, which furnish a continuous discharge through a two inch pipe. It is probable, however, that machinery of greater capacity will be required as work progresses.

2. Ventilation. — Natural ventilation is relied on almost exclusively, and in the present stage of development where the levels mostly reach daylight is all that can

ward and

car-

lead

erial;

erial

ined

pen-

a few

and little I the area, long tion, de-

nces otice with con-

con-

be desired. In one instance which came under my notice at the Enterprise mine, a small fan stationed at the foot of an upraise is propelled by power obtained from water which is conducted direct from the surface. This furnishes quite a current of air, and being inexpensive and extremely simple of construction, might, I should imagine, be copied with advantage at other mines.

3. Transportation. - The ore is hand sorted as a rule at the mouth of each tunnel, and there being no necessity to concentrate it all at one point on the surface, chutes are generally employed to conduct the material from the stopes to the level below, and very rarely is local hoisting gear of any description required. For clearing out the tunnels wheelbarrows are mostly used in the initial stages, but as the workings become more advanced, and the necessity arises, rails are put down. Sometimes these consist merely of strap iron laid flat on the runner, but more frequently perhaps of rectangular steel rails standing on edge. The common guage is twenty inches, to suit the waggons, which are made of steel, and hold something less than a ton, depending on the specific gravity of the material trammed. Some slope to the front, and are so arranged that they can be tipped at both end and sides; others again are almost square in longitudinal section, the front heing designed to open on hinges, while when closed it is kept in position by a vertical bolt. Human power only is used for underground transport, and can hardly be improved upon under present conditions. To convey the ore down the mountain side to the railway, packing on mules' backs was the primitive method originally employed, and is still used to some extent. An exception was made in the winter, when raw-hiding was permissable if the trail was in sufficiently good condition. With the construction of waggon roads to the mines this was improved upon to hauling in waggons in the summer and in sleighs in the winter. As the mines developed and became capable of larger and more regular production, a new and enlightened era began to dawn on the industry, which gradually burst from its cloud of obscurity, and invoked the aid of machinery in lessening the expenses incident to these old-fashioned methods. It is but natural that any developments should take place along the line of the utilization of gravity, and the arrangement which has found most general acceptance so far is the three-rail gravity tramway, which in the eyes of mine owners would appear to present marked advantages over others, judging by the frequency of its adoption. Those already constructed may be seen at the following mines: The Slocan Star, Payne, Washington, Alamo and Alpha. The arrangement differs in no particular from that ordinarly employed elsewhere. A wire rope, to which the cars are attached, passes over a drum at the upper end, being supported on the ground by wooden rollers. Switches are made at suituable intervals for the cars to pass, and the weight of the descending car filled with ore suffices to pull up the empty on the other end, which may be loaded up to a certain limit with materials for the mine. A brake is of course attached to the drum above, and the speed can be regulated at will by the operator. It is sometimes found inconvenient to have the rope too long, and for that reason the line at the Alamo is divided into two portions, each about 3,500 feet in length, the ore being dumped down a chute into the car below, at the junction of the sections.

ne, a

from

nt of

ould

tun-

face.

l be-

ring

ork-

me-

ntly

entv

an a

the

hers

on

wer

nder

vay,

still

was

n of

the

able

n on

aid

It

liza-

far

r to

tar,

ular

are

by

and

the

A

will

and

500

tion

Another method of transportation which is gaining favor, owing to its adoption and successful operation by the Noble Five Co. at Cody, is the bucket system or aerial ropeway. There are, as everybody is aware, many types of wire tramways, but the time at my disposal will permit of no more than a hurried reference to the one here mentioned. It is built on what is known as the Finlayson plan, and consists of two stationary ropes, on which the bucket carriers run, and an endless rope below directing the motion, attached to which are the buckets themselves. The total length of the tramway is, roughly, 6,000 feet, the supporting towers being erected at suitable intervals, varying of course with the nature of the ground passed over, amounting, in one exceptional case, to as much as 900 feet. The usual height of the towers is from 50 to 75 feet. The buckets carry from four to six hundred pounds weight, and are suspended at intervals of 250 feet. The whole action is automatic, from the loading to the unloading of the ore, the rate of speed being controlled by powerful brakes on the drums. When run to its full capacity over four hundred tons can be handled in a day of 24 hours, at an approximate expense, exclusive of wear and tear, of considerably less than twenty-five cents per ton, which contrasted with the old style is an enormous reduction.

4. Preparation of the Ore for the Market. - Rough sorting is carried on underground to the extent usually of sacking the likely looking material, and keeping it distinct from what is undeniably waste. At the entrance to the tunnels as beforesaid ore sorters are stationed, who effect a more complete separation by means of an operation known in Cornwall as cobbing, which consists merely of breaking the ore on a rock bed with a small hammer, which is held in the right hand, and picking out the valuable material, which in this case is immediately sacked ready for shipment. While this arrangement has its advantages in a small mine, where sufficient ore is not available to warrant the erection of a concentrating plant, and serves to prevent what might otherwise be absolute loss on a shipment, the tedious and wasteful nature of the performance is at once apparent, and it is therefore natural to find that the richer mines and those having large reserves of low grade ore which it is impossible to convert into a shipping product by these means, have either already adopted, or intend to do so at no distant date, some form of mechanical concentrator. Four such plants are now in operation at the Slocan, namely, at the Slocan Star, Noble Five, Alamo and Washington mines, and if half those who have already announced their intention of so doing really erect concentrators, at least six more will have to be added to the number before the end this year.

Those above mentioned have all been designed and built by the same man, Mr. Thos. L. Mitchell, and consequently we shall not be surprised to find in each a degree of similarity in details of construction. Power is supplied in each case from a Pelton water-wheel, although the water supply is occasionally found insufficient, and at rare intervals freezes, necessitating a temporary closure. At the Star a 40 h.p. engine and boiler provides against any such contingency. The heads of water obtainable at the different works are as follows: Alamo, 224 feet; Star, 471 feet; Noble Five, 562 feet; the Washington measurement I have been unable to obtain.

The ore is delivered to the mill by means of a wire ropeway at the Noble Five, while at each of the other a three-rail gravity tramway is employed.

Bins from 150 tons capacity at the Star and Noble Five, to 1,500 at the Alamo, receive the ore, which then passes over a grizzly direct to the crusher. This consists of a nine by fifteen Blake (Reliance pattern) at the Star and Noble Five, of a four by ten Blake at the Washington, and a small Comet at the Alamo.

As it would be tedious to describe each mill in detail, I will give a general description of that at the Star, which I recently had the honor of inspecting thoroughly, and explain wherein the others differ. After passing through the crusher into a receiving bin below, the ore is supplied to two sets of coarse rolls by means of an automatic cam feeder; from here it is raised through an endless elevator to a revolving screen, which separates it into four products. That passing through the smallest mesh of three m.m. is conveyed at once to hydraulic classifiers, which effect a separation into three parts.

The material from here is sent direct to six Collum jigs, the overflow being carried to V shaped settling vats, which supply two double-decked slime tables of the circular type, being each eighteen feet in diameter. The other three sizes from the trommals pass respectively to two Hartz jigs. The middling from the four coarser jigs are then put through middling rolls, and pass again to the elevator, while those from the other two go to fine rolls, and thence to elevator No. 2, from which it is delivered to the classifiers. The middlings from the Collum jigs are passed through the finest rolls, and thence to elevator No. 2 on their way to the classifiers again. The finished material is taken to bins, where it is allowed to drain thoroughly before being sacked, preparatory to shipment.

The Noble Five mill differs little in general principles from that at the Star. The one at the Washington, which gained distiction from being the first built in the Slocan, is also of somewhat the same pattern. At the Alamo a Comet crusher is employed in lieu of the Blake at the others. Another difference consists in the fact that the middlings from the jigs pass to a Huntington mill for further comminution instead of rolls. Lake Superior classifiers are used and there are four double decked slime tables as against two in the newer mills. The introduction of Collum jigs as auxiliaries to the Hartz, is only to be observed in the later patterns. The Star and Noble Five mills have a daily capacity of 150 tons of crude ore for the twenty-four hours, but the other two being smaller, are only designed to put through one-third of this amount.

One feature worthy of mention in view of recent controversy on the subject, is that all are situated on side hills and are carefully arranged so as to obtain the maximum assistance from gravity in transporting the ore from one operation to another.

All of the concentrators work satisfactorily on the class of ore for which they are intended. There is unfortunately sometimes a lamentable though unavoidable loss of silver in the tailings, due to the fine state of subdivision and the friable nature of the associated minerals, particularly certain varieties of copper and antimony. At one time the tailings from the Star were reported in the local papers to assay up to

twenty-two ounces in silver, but this was doubtless exaggerated, as much of the original ore is of lower grade than this. The loss of lead is trifling and the separation from zinc-blende leaves little to be desired. The degree of perfection obtained necessarily depends largely on economic considerations, and there seems little prospect in the near future of effecting a more thorough saving in values than is done at present. The zinc in most cases would not pay for shipment even if it were in sufficient quantity, and the mills could be adapted to retain it. The flouring of the gray copper and antimonial combinations can hardly be avoided and there is a consequent loss, to recover which is next to impossible.

SILVER PRODUCTION.

(As per Geological Survey Returns.)

| Calen- | Ont | ario. | Que | bec. | British C | olumbia. | To | tal. |
|--------------|-----|---------|------|--------|-----------|-----------|-----------|----------|
| dar
Year. | Oz. | Value. | Ozs. | Value. | Ozs. | Value. | Ozs. | Value. |
| | | \$ | | \$ | | \$ | | |
| | | 190,495 | | | 11,937 | 11,937 | 349,330 | 349,330 |
| | | 208,064 | | | 37,925 | 37,925 | 395,377 | |
| | | 162,309 | | | 53,192 | 47,873 | 383,318 | 343,84 |
| | | 166,652 | | | 70,427 | 73,948 | 400,687 | 420,72 |
| | | 221,120 | | | 3,306 | 3,241 | 414,523 | 406,23 |
| | | 36,072 | | | 77,160 | 66,935 | | |
| | | 8,689 | | | | 195,000 | | |
| | | | | | 746,379 | 470,219 | | |
| | | | | | 1,693,930 | | | 1,158,63 |
| | | | | | 3,135,343 | 2,100,689 | 0, 00,00 | |
| 1897 | | | | | 5,472,971 | 3,272,836 | 5,472,971 | 3,272,83 |

LEAD :- PRODUCTION.

| | | | | | (| C | al | er | nd | la | r | Y | e | aı | r. | | | | 1 | | | Pounds. | Value. |
|-----|---|--|-----|--|----|---|----|----|----|----|-----|---|---|----|----|--|--|------|---|-----|--|----------------|-----------|
| 890 | | | | | | | | | | | | | | | | | | | | | |
113,000 | \$ 5,805 |
| 891 | | | | | ٠. | 0 | | | | | | | | | | | | | | | |
588,665 | \$ 5,805 |
| 892 | ٠ | | | | | | ٠ | | | | | | | | | | | | | . , | |
1,768,420 | 72,500 |
| 893 | | | | | | | | | | | | | | ٠ | | | | | | | |
2,135,023 | 78,966 |
| 894 | | | | | | | | | | , | | | | | | | |
 | | | |
5,703,222 | 185,355 |
| 895 | | | | | | | | | | ٠ | | | | · | | | | | | | | 23,075,892 | 749,966 |
| 896 | | | , , | | | | | | | | , , | | | | | | |
 | | | |
24,199,977 | 721,384 |
| 897 | | | | | | | | | | | | | | | | | |
 | | | |
38,841,135 | 1,390,517 |

Five,

nsists or by neral

eting isher isher is of

the effect

oeing

f the
the
arser
hose
it is
ough
gain.

Star.

the er is fact ation cked gs as

and four of of

the on to

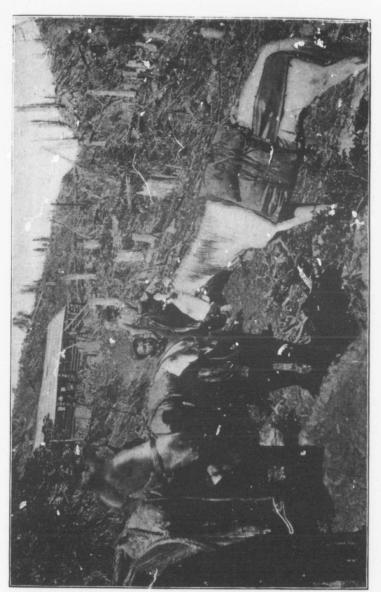
oss of the one p to

IMPORTS OF LEAD.

| E - 1 V | | crap and
lig. | | Blocks,
eets. | Va | lue. |
|--------------|------------------|-------------------------------|--------------------------|----------------------------|----------------------------|-------------------------------|
| Fiscal Year. | Cwt. | Value. | Cwt. | Value. | Cwt. | Value. |
| 188o | 16,236 | \$,6,919 | 18,222 | \$70,744 | 30,298
34,458 | \$124,117 |
| 1882
1883 | 36,655
48,780 | 120,870 | 10,540
8,591 | 35,728
28,785 | 47,195 | 156,598 |
| 1884 | 39,409 36,106 | 103,413 | 9,704 | 28,458 | 49,113 | 131,87 |
| 1886
1887 | 39,945 | 110,947 | 9,793 | 28,948 | 49,738 | 139,89 |
| 888 | 68,678 | 196,845 | 14,957 | 45,900 | 83,635
88,396 | 242,74 |
| 890 | 101,197 86,382 | 283,096 | 19,083 | 59,484 | 120,280 | 342,580 |
| 892 | 97,375 | 254,384 | 11,299 | 32,368 | 108,674 | 291,25 |
| 894
895 | 70,223
67,261 | 149,440 | 8,486 | 32,286 | 78,709 | 169,89 |
| 896
897 | 72,433
65,279 | 139,290
173,162
158,381 | 6,739
8,575
10,516 | 16,315
23,169
29,175 | 74,000
81,008
75,795 | 155,605
196,331
187,556 |

IMPORTS OF LEAD-Continued.

| | Pip | e. | Sh | ot. | Other N.E.S |
|------------------------|------------------|----------------|-----------------|------------|--------------------|
| From. | Lbs. | Value. | Lbs. | Value. | Value. |
| 1896.
Great Britain | 33,885
13,266 | 1,052
738 | 39,841 | 1,149 | \$18,307
14,243 |
| Total, all sources | 47,151 | 1,790 | 40,886 | 1,219 | 39,769 |
| 1897.
Great Britain | 79,733
38,670 | 2,566
1,660 | 25,233
2,240 | 842
128 | 15,500 |
| Total, all sources | 118,403 | 4,226 | 31,673 | 1,189 | 40,154 |



ue.

,117,663,598 ,598 ,544,871 ,434,895 ,223,745 ,614 ,580 ,253,752 ,807 ,891 ,556

S.S.

07 43 69

Mount Adams Mine, Sandon, B.C.—Pack Train shipment of Galena Ore to Omaha Smelter.

RECAPITULATION OF IMPORTS OF LEAD, 1896-1897.

| | 181 | 96. | 97- | | |
|---|-------------------------------------|---|---------------------------------------|---|--|
| | Quantity. | Value. | Quantity. | Value. | |
| Old, scrap and pig cwt. Bars, blocks and sheets " Pipe lbs. Shot " Other N.E.S. " | 72,433
8,575
47,151
40,886 | \$173,162
23,169
1,790
1,219
39,769 | 65,279
10,516
118,403
31,673 | \$158,381
29,175
4,226
1,189
40,154 | |
| Total value | | 239,109 | | 233,125 | |

ADAMS BRITISH COLUMBIA CO., Limited.

Registered in 1897. Authorized Capital, £100,000, in shares of £1.

Directors:

Wilberforce Bryant. G. D. Jennings.

W. C. Houstoun. Capt. R. C. Adams.

Head Office :

A. G. Beeston, Secretary, 28 Gracechurch Street, London, E.C.

CANADIAN OFFICE: Capt. R. C. Adams, Midway, B. C.

Formed to acquire and work the following mineral claims: Skylark, on Kootenay Lake, near Ainsworth; Bon Ton, Jackson Creek Basin, 16 miles west of Kaslo; Mount Adams Group, North Fork of Adams River; Cordick, Boundary Creek; and the Divide Group, near Osoyoos Lake, in the Okanagan division, Yale district, British Columbia. Work has been carried on steadily since July last year, with the result that the lowest tunnel on the main vein, is now in 600 feet on the north side of the snmmit, over which the claims lie and through which the vein passes. This tunnel has shown several chutes of ore which appear to be continuations of ore chutes found on the surface and opened by a tunnel higher up on the vein, giving from 300 to 700 feet of stoping ground. This vein can be traced for 1,500 feet and has been opened by adits and tunnels on both sides of the summit. A second vein which dips towards the main vein has been tunneled on, and good showings of pure galena are found on it. This will probably be opened up from the low tunnel at its intersection with the main vein. The ore on the property is mostly that suited for concentration, though a portion of it can be shipped direct to the smelters. A trial shipment of 14 tons during the fall of '97 gave returns of 95 ounces of silver and 65'5 per cent lead. When fully developed an aerial tramway can be erected to Sandon, 11/2 miles away, or down the south side of the mountain to Four Mile Creek, at either of which points a concentrator can be erected.

BYRON N. WHITE CO., Limited.

Incorporated 1893. Authorized Capital, \$500,000.

Officers:

Angus Smith, Milwaukee, Wis., President. Byron N. White, Sandon, B.C., Vice-President. I. Hoyt Smith, Milwaukee, Wis., Sec.-Treas.

Mines Office: Bruce White, Sandon, B.C.

Head Office: Milwaukee, Wis.

Formed to acquire and work the Slocan Star and other mineral claims in the Province of British Columbia. The Slocan Star is situated on Sandon Creek, in the Slocan District, B.C. It was discovered in August, 1891, and has been worked continuously since.

Ore Body.—"The vein," says Mr. Carlyle in his annual report, "cuts across the steep, heavily timbered mountain side and nearly at right angles to the well stratified slates, quartzites and silicious limestones of the Slocan slate series, with an east and west strike and a dip of 54° to the south. While this vein has been traced through and beyond this property into other claims, it has not yet been traced continuously, nor has it any constant width, varying from a width of a few feet to 20 or 30 f.et, with in other places no signs of mineralization at all along the fissure along which the country rock has been more or less shattered, and the ascending mineral-bearing solutions have formed large deposits or shutes of fine ore. A large porphyry dyke runs nearly parallel with the vein and in places in the mine is found in it, but evidently effected by the fissure.

Along this fissure is seen much brecciated slate cemented together by the gangue materials, galena and blend, and in many other parts of the mine was noticed more or less parallelism in the deposition of the different minerals; but one interesting peculiarity noticed was the fact that many samples of ore clearly showed by the separation by the quartz of corresponding parts that the sulphides, as galena or blende, after deposition, had been shattered, perhaps, by further movement along this line of break, and then cemented into the present mass by quartz.

It is doubtful if two well defined walls can be traced in this mine, for while the hanging or fissure wall is very distinct, the ore merges into the country rock towards the supposed foot-wall, but more time could not be spent in very careful observation. In the mining of this one large ore shute, as has been opened up and exploited upon the Slocan Star, the ore body has been found to vary from a few feet to 25 feet in width of mixed but pay ore, and a large amount of ore has been mined from bodies 2 to 3 and 10 feet wide of solid galena.

The first-class ore consists of the nearly pure galena, both fine and coarse-grained, carrying some grey copper and some blende, but not enough to pass the excess line,

ie.

381

175 226 189

154

st of

dary

Yale

year,

1 the

sses.

ore

ving

and

vein

pure

t its

l for trial

65.5

don,

k, at

or 10 per cent. of zinc. Average value 95 ounces silver per ton, 72 to 75 per cent. lead. This ore is sacked and shipped direct to the smelters. The concentrating ore consists of the mixed ore or the spathic iron quartz gangue with galena, with a little grey copper, and in all the ore there are evidently some of the silver sulphides. The large amount of mixed ore taken from the upper workings and kept separate, became available on the construction of the concentrator, and was being sent down the hill. In concentrating most of the blende is removed so that the concentrates carry not more than 6 per cent. zinc. Average value of concentrates, 80 ounces silver per ton, 70 per cent lead.

This main ore shute has been developed for a distance of 430 feet along the vein, and to a depth of nearly 350 feet from the surface down on the dip, and from it several small bodies of ore have formed along divergent crevices.

Tunnel No. I was first run into the large surface exposure for 50 feet, and then stopes were run to the surface, or 30 feet.

Tunnel No. 2 is a cross-cut for 100 feet, and then a drift for 100 feet, with a stope up to No. 1, 80 feet long and four to 10 feet wide.

Tunnel No. 3 is 70 feet below No. 2, and in cross-cutting at 70 feet, intersecting a leader of ore drifted upon for 25 feet, and then passing through the slates, more or less mineralized, cut the main lead at 150 feet. A drift 150 feet to the west, through low grade ore, entered a splendid body of high grade ore, which on being stoped back 110 feet to the east, had led back to within a few feet of connecting with the short drift run at a 70-foot mark in the tunnel, thus leaving a pillar nearly 40 feet wide of what promises to be low grade, but paying, concentrating ore. This stope is now 180 feet long and 4 to 7 feet wide, and is worked up for most of the distance to the upper level, while the drift has a total length of 430 feet, along most of which is much concentrating ore. But this shute has developed its largest and most productive ore body between the level and No. 4, below which no work will be done until tunnel No. 5 reaches the ledge.

Tunnel No. 4 was the main working entry at the time of visit, and here were erected the ore bins at the upper terminal of the gravity tramway to the concentrator. At a distance of 575 feet this tunnel entered the vein, where it was 10 to 12 feet wide, and to the west a drift of 75 feet long had been encountered, a fault which had not been explored, but up along which a stope had been extended a short distance in, 8 to 10 feet of mixed ore. Easterly from the tunnel, at 100 feet, an up-raise had been made 210 feet to the next level, and all the way in good but mixed ore, with 14 to 16 feet of concentrating ore at the foot or tunnel level. At 150 feet in this east level a cross-cut showed up a width of over 25 feet of mixed ore with several feet of solid galena, but at the face, or 225 feet, the shute was then narrowed to three feet. A large amount of stoping had been done for 70 or 80 feet below level No. 3, where the body of clean ore had been 8 to 10 feet thick, but a large amount of ore was still showing in all the limits of these stopes.

Tunnel No. 5 was in 200 feet in the slates, with 600 feet remaining to reach the vein 210 feet on the dip below level No. 4. The ground was all ready for the building and air compressor plant, i.e., 4-drill Rand and an 80 h.p. b iler, and rapid pro-

Byron N. White Co.-Concentrator at Slocan Star Mine, Sandon Creek, B.C.

cent.
ng ore
a little
The
became
e hill.
ry not

rom it

er ton,

with a

d then

secting hore or hrough stoped ith the 40 feet stope is ance to which is st pro-

e were
ntrator.

12 feet
ich had
nnce in,
ise had
with 14
nis east
feet of
ee feet.
, where

ach the e buildoid pro-

as still

gress would be made with the machine drills in the extended exploration of this claim along this level.

On the "Silver King" to the east, near the vein exposure in the creek, a tunnel had been driven in 80 feet, but although there was considerable ore for some of the distance, the ground was much broken up. To the west, on the "Silversmith," ore was exposed in some shallow cuts, but this claim has in reality been but very little prospected.

Timber and water are abundant for mining purposes—the timber being of large size, and immediately at the mine, where the stopes are timbered up with heavy

stulls and lagging.

A steep waggon road from Sandon climbs up past the mill to tunnel No. 3, 4 and 5, but all ore is sent down to the mill by the 3-rail gravity tramway, about 1,600 feet long, covered where necessary by show-sheds, the concentrating ore being automatically dumped into the mill bins, the sacked first-class ore being loaded into ore waggons or sleighs, and drawn, also the concentrates, half mile to the railroad at Sandon, at a cost of 80 cents per ton. Number of men employed 83, of which 55 were in the mine and 10 at the mill.

Concentrating Plant.— This mill, designed and constructed by Mr. T. L. Mitchell, Sandon, is situated at the foot of the tramway, and is 46 by 102 feet, with four floors.

Bins.—There are two, 150 tons capacity each, one for the coarse ore from the mine, the other for crushed ore below the crusher for supply.

Power.—(a) A Pelton wheel, a 3-foot steel disk, with a 176 inch nozzle, supplies, when the water is sufficient, ample power, and is situated on the upper floor, so that the water from it, after going through a 12-mesh screen, may be used for washing in the operation of the mill.

(b) When water is scarce, an auxiliary steam engine will be used, or a 40 h. p.

engine with a 50 h.p. boiler.

Water.—(a) A flume 3,000 feet long in two branches, brings from Sandon and another small stream, water that flows down through 1,200 feet of spiral rivetted steel pipe, the lower 250 feet 7 inches in diameter, with a total head of 471 feet at the wheel. (b) Another flume from Cody Creek, 9,650 feet long, 2 x 2 feet, on a 0.2° grade, costing \$7,400, now supplies water for washing purposes in the mine, but has no head for power.

Machinery comprises—A Blake crusher, Reliance pattern, 9 by 15 inches; four sets of rolls, Reliance pattern, 14 by 26 inches; six Hartz jigs, i.e., 2 double 2-compartment, and 1 double 3-compartment jigs; six 2-compartment Collum jigs; elevators, trommels, classifiers and settling tanks, etc.; two double-decked round slime tables, 18 feet diameter.

The ore from the crusher is automatically fed by a camfeeder to 2 sets of coarse rolls, whence the material is elevated by elevator No. 1 into one revolving screen with 3 sizes of screens, from which (a) the refusals of the screens passes to two coarse Hartz jigs; (b) the material from the 16 m.m. (.64 inch) screen, to two coarse Hartz jigs; (d) the material from the 7 m.m. (.28 inch) screen, to two coarse Hartz jigs; (d)

the material from the 3 m.m. (.12 inch) screen, passes to 2 three-compartment hydraulic classifiers, which give three separations, each of which goes to two of the double-compartment Collum jigs, while the overflow passes on to the V-shaped settling tanks, or species of spitz-kasten, from which each of the four sizes of fine stuff goes to its own slime table.

The pitch of each slime table is different, so as to conform to the size of the fine sand fed to it, and by using two water sprays, three separations are here made, the heads, middlings and tails, of which the middlings pass back by elevator No. 2, to the hydraulic classifiers.

The middlings from four coarse jigs pass to the course set of middlings rolls, and thence back to ekvator No. 1, the 7 m.m. middlings to middlings rolls, and thence to elevator No. 2, while the fine middlings from six Collum jigs go to fine middlings rolls, which discharge into elevator No. II. The automatic discharge material from six coarse jigs and the sieve work from the six collum jigs, and the heads from the tables, pass by the concentrate sluices to the concentrator bins below, whence they are shoveled into sacks of 155 pounds to 160 each, while the overflow, carrying much fine material, goes into the settling tanks in the slime house.

Capacity of mill is up to 150 tons of ore per 24 hours, the ratio of the concentration varying of course, with the grade of the ore sent down from the mine.

The product is very clean galena, with seldom over 6 per cent., and never up to 10 per cent. of zinc, but there is a considerable loss of silver, some of which is carried away in the blende, while the greatest source of loss is believed to be in the grey copper, much of which escapes in the finest slimes.

Cost was, for building, \$12,700; for machinery, not including engine and boiler, \$17,000.

BRITANNIA MINING CO., Limited.

Directors:

Chas. de W. Smith, President.

A. E. Shaw, Secretary. E. Churchill. Leander Shaw, Superintendent.

G. L. Holmes.

Mines Office: Leander Shaw, Ainsworth, B.C.

Owns and operates the No. I mineral claim, located two and a half miles west of the Town of Ainsworth, Ainsworth Mining Division, Province of British Columbia. "This," says Mr. Caryle, "is one of the earliest worked mines in West Kootenay, considerable work having been done at the time of Dr. Dawson's visit in 1889. The ore body, as now developed by large stopes that are from 4 to 12 feet between walls, and nearly 300 feet long, would require very careful study with complete maps and models to explain its formation and relation to the enclosing rocks, which belong

claim

f the

little large heavy

3, 4 about being

l into oad at ich 55

r. L.

m the sup-floor,

o h. p.

on and d steel at the a 0.2°

s; four

s; ele-

coarse coarse Har'z gs; (d) to the Slocan slates series that at this point consists of limestones and shales and slates. The existence of many faults of very different strikes and dips has certainly served to increase the apparent irregularity of the ore body, which, while having a general dip throughout the workings, is in places lying flat or dipping in exactly the opposite direction to the main direction, while in one part of the mine the ore-shute, divided into two flat-lying chutes, which the men worked out, leaving but a few feet of barren rock between. The ore is almost unique in its character. In the early workings considerable rich "carbonate" ore was mined, or the decomposed part of the ore-body immediately amenable to surface influences, but now the ore has a quartz and calcite gangue, or rather, the country rock is replaced in part by quartz and iron pyrites and some zinc blende, but very little galena, the silver value being in direct ratio to the amount of iron pyrites present, first-class, or shipping ore, averaging 75 ounces of silver, 3 to 8 per cent. lead, and seldom over 10 per cent. zinc limit. The mine is now worked through a tunnel running N. 75° W. 375 feet, when it turns and follows along a fault wall 157 feet (West 15° E.) and connects with a winze to the stopes, 35 feet above. This drift is to be continued, and when in 100 or 120 feet, will probably intersect the ore zone, and by connecting with an incline from the stope, now down 35 feet along the footwall, which here has a 45° pitch, the further exploration of the property should be made much easier while giving a much better outlet for the ore, the present means, by the rapid advance of work having become unhandy. The mill ore-bins, are just below this tunnel level.

The surface improvements consist of several log cabins, boarding-house, office, assay laboratory, stables, and the concentrating mill that has cost \$16,000 to \$17,000.

Concentrator—For six months of the year sufficient water for milling purposes is available, and by putting in a flume to tap another small stream, it is expected that then there will be water for the whole year for the mill, with enough, part of the time, to supply power generated in the low-water season by the present steam engines. While some first-class ore is shipped direct, most of the product of the mine goes to the mill, the capacity of which is 18.20 tons per 24 hours, concentrating 8 to 1, yielding concentrates that average 295 to 300 ounces in silver, 4-8% lead, and usually less than 10% zinc. Experiments have shown that ore assaying 15 to 20 ounces silver per ton can be mined and concentrated with a good margin of profit.

The mill is 45 by 75 feet, with an addition along one side 15 feet by 75 feet, and is supplied with (a) 100-ton ore bins, (b) 1 Dodge ore crusher, (c) 2 7-foot trommels giving three sizes, (d) geared rolls, (e) 4-4 compartment Hartz jigs and 2 4-compartment slime jigs (Hartz), (f) elevators and hydraulic classifiers, (g) 1 Frue vanner 6 by 12 leet, and one Embrey or end-shake vanner 4 by 12 feet, and settling tanks. This machinery was supplied by Fraser and Chalmers, of Chicago, and the Colorado Iron Works, Denver, while (h) the 35 h.p. engine and boiler came from the Phoenix Iron Works, Meadowsville, Pa.

The output in 1897 was 115,000 ounces silver: about 600 tons concentrates and crude ore shipped. 30 persons employed.

CANADIAN PACIFIC MINING AND MILLING CO.

Incorporated 1895. Authorized Capital, \$500,000.

and

inly ng a

ctly

the

har-

ned.

nflu-

ntry

but

rites

ent.

gh a

157

drift

one.

foot-

l be

eans,

just

ffice,

000.

es is

that

ime,

ines.

s to

to 1,

ually

inces

and

mels

com-

van-

tling

d the

n the

rates

Head Office: Minneapolis.

Mines Office: J. R. Hardie, Superintendent, Ainsworth, B.C.

Owns and operates the "Amazon," "Budweiser," "Superior," and "Wake-field" claims at Woodbury Creek, near Ainsworth, Province of British Columbia. The following details of the development and plant are from the report of the Minister of Mines for the year 1896:

Budweiser—One of the tunnels was in 65 feet, and following along a fault plane above which the rock is much fractured and seamed with little quartz veins, carrying a small amount of copper and iron pyrites and some galena, also \$3.5 in gold. Upon the face of the cliff could be seen a quartz vein, following along this line of break, while 25 feet to the north is a small parallel vein of galena. Between these two veins or 25 feet, this rock, carrying a small percentage of sulphides, is said to be concentrating ore, but this has yet to be proven by mill tests.

Two other prospecting tunnels are on this claim, one 60 feet long, in the wash, from which large boulders of brecciated rock have been taken, carrying a very fine grained galena, assaying 30-40 oz. in silver. Another tunnel, 45 feet, followed a small vein of large cubed galena.

Amazen.—This tunner being run with a machine drill, was in 120 feet, following a galena blend vein dipping also southerly 70° to 75°, with, in places, 8 to 14 inches of solid ore in quartz and calcite. This vein can be seen running up the face of the cliff, and in places is four fe.t wide, and what is rather unusual the ore carries considerable pyrrhotite. On another vein, 14 to 20 inches wide, two tuunels have been run in on either side of the creek, one for 140 feet, the other for 120 feet.

Wakefield—On the top of the bluff a shaft has been sunk 140 feet in another vein of mixed galena ore, 4 to 24 inches wide, that gives good assays in gold.

There has been built, at a cost of \$6,000, a splendid flume 1,200 feet long, 3½ ky 4 feet, to the mouth of the creek, where the water enters a 36-inch penstock or pipe, which at the bottom has a connection to two Pelton wheels, under a head of 75 feet. A 42-inch Pelton is now running a 12-drill air compressor, made by the Ingersoll-Sergeant Drill Co., Montreal, while the mill will be run by a 6-ft. wheel, both wheels having a 5-multiple nozzle. Along the top of the covered flume runs the air pipe and track, and 500 feet farther to the farthest present workings from the mill.

The mill, situate one-quarter mile from the lake, is being built by Mr. M. A. Halman, of Carterville, Missouri, U.S., who is equipping the mill with crushers, rolls, jigs, etc., from that place, and is following the Missouri method, or by exclusive use of jigs without vanners or slime tables. The ore bins are immediately below the tramway, and the capacity of the mill will be 75 tons for 24 hours. A tramway has been built for 1,400 feet to the lake side where is deep water, and ore and concentrates will be easily loaded into the steamers. Cost of mill, \$12,000.

CORINTH MINES, Limited.

Registered 2nd April, 1897. Authorized Capital, £100,000, in shares o' £1.

Directors:

A. C. M. Innes. | R. de la Bere. | J. O. Maund.

Head Office: J. W. Clark, Secretary, 16 George Street, Mansion House, London, E.C., England.

Formed to carry into effect an agreement with M. M. Campbell, and to acquire certain mining claims, covering 82¼ acres, in the Slocan District, British Columbia.

DARDANELLES MINING AND MILLING CO., Ltd.

Incorporated 30th November, 1896. Authorized Capital, \$1,000,000, in shares of \$1.00.

Officers:

Hon. Edgar Dewdney, President.

A. F. McClaine, Vice-President

W. H. Adams, Sec .- Treas.

Directors:

Hon. E. Dewdney. | A. F. McClaine. | J. B. McArthur. | W. H. Adams. Sir Charles H. Tupper, M.P. | Hon. F. Peters | J. Trethewey.

Head Office: W. H. Adams, Sec.-Treas., Kaslo, B.C.

Mines Office: W. J. Trethewey, E.M., Kaslo, B.C.

Owns and operates the Dardanelles, Diamond Cross, Dardanelles No. 2 Okanagan, Bosphorous, Gibralter, and Lady of the Lake Fraction mineral claims, comprising 175 acres in the Dardanelles Basin, within our miles of the town of Sandon, Slocan Mining Division, British Columbia.

On the vein of the Dardanelles, cutting across the Slocan slates and the porphyry dykes, a shall has been surk 440 feet and 2,600 feet of drifts and raises run, and from these workings over 325 tons of high grade ore were shipped that averaged 265 ounces of silver per ton and 26% lead, while several hundred tons of second class ore, said to assay over 75 ounces of silver and 16% lead, were piled on the dump, 76 tons of which were shipped to the Pilot Bay smelter, giving the above returns. From a copy of the smelter returns the ore is seen to have run from 145.8 to 470.2 ounces of silver per ton, and from 15 to 56% lead; one shipp ent of 10 tons giving this highest return, while 115 tons yielded 300 ozs. of silver per ton. The ore carries a few units excess of zinc above the 10% smelter limit.

Other veins have been slightly prospected upon the Okanagan and Diamond

Cross, but these will now be properly opened up. In the old shaft the small plant of a 7 h.p. boiler and a No. 6 Knowles pump, was quite inadequate to handle the water. There is a good supply of timber for mine purposes; and for transportation at present a trail 1½ miles leads out to the Washington waggon road and thence to McGuigan's Siding on the Kaslo and Slocan Railway.

A 60 h.p. compressor plant has been established 2,300 feet lower down the mountain in the vicinity of ample wood for fuel, and the air is conveyed by pipes to the mine.

use,

uire bia.

td.

es

ıms.

. 2

inis,

San-

nyry

rom

nces

d to

hich

the

per

urn,

cess

ond

THE GALENA MINES, Limited.

Registered December, 1896. Authorized Capital, £550,000 stg., in shares of £1.

Directors:

Col. Robert Baring. | Capt. H. French. | Andrew Haes.

Col. Robert Baring. | Capt. H. French. | Andrew Fred. Burdett. | Patrick Comiskey.

Head Office: P. F. Dietz, 20 Threadneedle St., London, E.C., England.

Canadian Office: Silverton, B.C.

Formed to acquire and work one of the properties formerly owned by the Vancouver and British Columbia General Exploration Co., Limited, comprising six silver lead mining claims known as the "Grover," "Peerless," "Currie," "Currie Fraction," "Stevenson," and "Kate," locally known as the Galena Farm or Currie Group, containing about 193 acres, and situated on the east side of Slocan Lake, about 2 m. from the town of Silverton, district of West Kootenay, British Columbia.

T₁₁ purchase consideration was £500,000, payable as to £475,000 in shares, and £25,000 in cash. Mr. W. A. Carlyle (Mines Report, 1896), has the following to say of these properties:—

"On the 'Currie' claim this vein was seen to have a strike east and west (mag.) and a north dip of 50° to 65°, and on the surface, and an outcrop now traced for 1,600 feet, with, in places 12 to 14 feet wide, of milk-white quartz, spathic iron, fragments of slate and granite, and some zinc blende and galena. In an old shaft, at a depth of 50 feet, a short cross-cut entered the vein at 12 feet, and there a drift was run 60 feet east and 70 feet west, exposing a large body of con entrating ore for all this distance, and along the smooth hanging-wall a good body of solid high-grade galena. In the west drift 35 feet from the cross-cut, a winze was being started, since sunk 45 feet, in four feet of solid fine-grained galena. In an open working 500 feet west of the shaft, were 16 inches of solid galena along a smooth foot-wall with considerable concentrating material.

"Since the time of visit a two-compartment working shaft, now down 65 feet, has been sunk west of the old shaft and 140 feet north of the outcrop, with the

expectation of striking the lead at 130 ft., but at 41 ft. what is believed to be a cross-ledge running north and south was entered, dip 60° west, and down to 51 feet, the shaft was in concentrating ore, that by tests made by Mr. Callahan, concentrating 5 to 1, yielded 123 ozs. of silver per ton and 62 per cent. lead. This cross-lead is now thought to be traceable for 800 feet. The shaft, equipped with requisite steam hoisting plant and pumps, will be now sunk 500 feet, with cross-cuts to the vein at every 100-foot station, and when sufficient development justifies it a 150-ton concentrating plant will be built, from which the water from Eight-Mile and Gold Creeks is expected to supply 600 ins. under a 500-foot head. The ore is essentially a milling ore, but a test shipment of assorted assayed 98 ozs. of silver per ton and 57 per cent. lead. A good waggon road, 1¾ miles long, has been constructed from the mine to Silverton, whence the concentrated ore will be shipped to the smelters, and suitable bunkhouses, &c., have been erected.

GRAND CALUMET MINING CO. OF OTTAWA, Limited.

Incorporated 1897. Authorized Capital \$475,000 in shares of \$5.00.

Officers:

W. J. Poupore, M.P., President. Arthur McConnell, B.C.L., Secretary. P. W. Resseman, Vice-President. Leopold Meyer, Mining Engineer.

Directors:

R. C. Van der Meulen. W. J. Poupore. Arthur McConnell.

Leopold Meyer. P. W. Resseman. R. McRitchie.

E. P. Cowan.

Head Office: C. L. Meyer, 362 Bank Street, Ottawa.

Mines Office: Leopold Meyer, M.E., Bryson, Que.

Formed to carry on mining on the Grand Calumet Island, Pontiac County, Province of Quebec. The company has purchased the W. halves of Lots 9 and 10, and Lots 11 and 12 in the Fourth Range, and has secured favorable options on some 2,000 acres of adjacent lands. In his report to the shareholders, under date of 1st March, Mr. Leopold Meyer, mining engineer, says:—

Shaft No. 1, on Middle Vein.—As shown on the plan attached to this report, a shaft has been opened on the outcropping of a galena vein on lot No. 12, about 300 feet from the southern limit of the company's property; which shaft is equipped with a 24 horse-power boiler, engine, and Ingersoll steam drills, a hoist and all requisites for efficiently working to a depth of 300 feet. The building in which this machinery is placed is provided with a tower covering the shaft, thus permitting of continuous work throughout the winter as well as summer. The direction of the vein at its out-

ross-

the

5 to

now

oist-

very

ting

s is

lling

ent.

e to

able

A,

eer.

nty,

ome

Ist

t, a

300

vith

ites

ery

ous

out-

cropping where the shaft is sunk is 35 degrees N.E. with an incline or dip of 35 degrees E., disappearing from the shaft as depth is reached, and its width not less than 10 feet, though not yet fully determined. Ore obtained from the surface proves the existence of an argentiferous lead deposit, with 35 ounces of silver and 25 per cent. of lead to the ton. The mineral capable of being easily concentrated, making a product containing about 66 per cent. lead, and 100 ounces of silver to the ton. Depth on the vein demonstrates increased richness; at 16 feet the shaft had left the vein; at 23 feet a cross-cut was made east to the wall of the vein, where mineral was procured, thus establishing its inclination, and that it will be reached again by projected levels at greater depth.

At 40 feet a second three-foot galena vein crosses the shaft with about the same inclination as the first mentioned, in which galena is found of equal value to that in the middle vein. The metalization of this vein is more compact, and its character so well defined, that at this depth it will produce paying galena.

At the present depth of the shaft, 70 feet, it passes through a quartz vein, the outcroppings of which for a long distance can be traced on the surface, where it is devoid of mineral, but at this date galena is appearing in the bottom, also demonstrating with depth the increased value of this vein.

Shaft No. 2.—A second shaft on an incline, now fifteen feet deep, has been started on what is termed the "West Vein," work upon which was temporarily suspended during the winter season, though, that done, fully demonstrated the vein to be a true fissure contact, with the foot wall trap and the hanging wall syenite, so that this one may be considered as extending to a very great depth. The vein matter also increasing in value at the bottom of this shaft is argentiferous blende and galena, in great mass, heavily metalized and easy of extraction, though parts of the ore will require to be crushed and separated at the mouth of the pit.

The East Vein.—About 50 feet east of shaft No. 1, is a fourth vein, called the "East Vein" on the plan, upon the working of which we are justified in believing our greatest expectations will be realized. From a surface hole, 24 tons, containing 66 per cent. lead, 200 ounces of silver and \$3.00 per ton in gold were taken. The mineral is exceptionally pure galena, the finest to be found. The people who effected this opening were utterly inexperienced in mining, who having extracted the exposed ore, did not push their investigation in the right direction; but careful examination proves the existence of an important vein which will form the hanging wall of the whole of this vein formation.

Other Veins. — Between the east and the west parallel veins, all of which are in syenite, is a net work of intersecting cross veins, running east and west, at the intersecting points of which are found remarkable ore bodies.

In former reports I carefully avoided making an estimate of the probable output, development work not then having been sufficiently advanced to enable me to make such calculations. Since then, however, with the present development, no doubt exists in my mind as to the existence in the company's properties of large bodies of rich ore, upon which I have no scruples in establishing the probable production.

Confining myself to a valuation of the estimated output of the "Middle and

West Veins," the character of which is defined by the recently executed work, I shall proceed upon the hypothesis of a concentrator to be erected, capable of treating 75 tons of mixed mineral daily.

Fifty tons of ore concentrated will produce 12 tons net of galena per day, containing 66 per cent. lead, and 100 ounces silver per ton, worth \$ 750 00 Vein No. 2 will readily produce 20 tons of blende per day, worth \$10

\$ 950 00 From this is to be deducted for costs of extracting and concentrating.... 200 00

I do not venture to calculate the production of the "East Vein," fearing my estimate might seem exaggerated, suffice it to say, that one ton of this ore, after deduction of mining, concentrating, treating and transporting charges, is of the value of \$120. The mineral in this vein is in fact of such compact mass, that it can be shipped without concentration. Basing a calculation upon this value with an output of ten tons per day, would give the additional net profit of \$360,000 per year, or a total net profit from the whole property of \$585,000.

If as we proceed in depth rich galena is found, as on the surface, 10 tons per day would be a moderate output, which estimate I make reserving sufficient margin, as a factor of safety, my report being intended to be based on certainties, not on probabilities, however surely calculated.

Plan of Operations. — The actual work now proceeding is on shaft No. 1, which will be sunk to a depth of 120 feet, where the first level will be opened. There is a 60-foot ceoss-cut to the west will meet the vein of shaft No. 2, while a simultaneous 54-foot cross-cut to the east should open the whole of this vein formation to the hanging wall of the middle vein, intersecting the network of branching veins. At about 115 feet from shaft No. 1, we may expect to cut the principal or east vein referred to. The above work is now being prosecuted under most favorable conditions, and will be completed in about two months. The first level at 120 feet should give 100 feet of stopeing ground, and the second level will be at 220 feet. The company has in addition to the equipment above mentioned, another complete plant, consisting of boiler, hoist, engine and steam drill with all machinery necessary to operate a second shaft, or operate upon other properties for which the company is negotiating, to which I do not at present wish to make further reference, but anticipate being in a position to do so at an early date.

Cost of Concentrating Plant.—To operate the mines on the most favorable conditions, and procure the best results, a concentrating plant with a capacity of treating 75 tons per day should be erected in the spring, which would take three months, at a cost of about \$15,000.

Hall Mines Limited.—Smelter at Nelson, B.C.

I shall

50 00

50 00

50 00

after value an be output a total

er day , as a

which
we is a
neous
hangabout
ed to.
I will
o feet
has in
ng of

ng, to

e coneating , at a

HALL MINES, Limited.

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. cumulative 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 all called up; and of the ordinary £250,000 has been subscribed, and all 175,000 shares having been issued to the vendor fully paid up. 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. Trutch, K.C.M.G., Chairman.

J. R. Brown. | J. R. Drake. | R. Day. | D. H. Gibb.

Walter Neilson. | Flint Ramsay.

Head Office:

A. E. Ashley, Secretary, Leadenhall, Bdgs., Leadenhall Street, London, E.C.

H. E. Croasdaile, General Manager, Nelson, B.C.

M. S. Davis, Mine Superintendent. | R. R. Hedley, Superintendent of Smelter.

Formed to acquire copper and silver mining properties situated in the West Kootenay District, British Columbia.

The following properties are owned and operated by the Company: Silver Copper Bearing—"Silver King," "Kootenay Bonanza," "American Flag," "Koh-inoor," "Lake Side." Gold Bearing—"Daylight," "Britannia," "J.M.B." "Bid," "Grand," "Jessie." For Mineral Location—"Eureka," "Rose," "Thistle," "Shamrock," "National Emblem," "Horse Shoe." For Iron Flux—"Iron Hand."

The following is excerpted from the report submitted to the shareholders 15th December, 1897:

DIRECTORS' REPORT, 1897.

"This balance sheet shows a gross surplus of income over expenditure amounting to £30,357 8s. od., which, together with £1,930 6s. 4d. brought forward from 1896, makes a sum of £32,287 14s. 4d. Out of this amount the Directors have already appropriated £1,750 to the payment of a dividend of 7 per cent. on the preference shares, which appropriation you are asked to confirm, and out of the balance remaining, after writing off the sum of £5,489 15s. 8d. for depreciation on buildings, plant and machinery, they recommend that a dividend of 10 per cent. be paid upon the ordinary shares of the company, which will absorb £25,000, and that the balance remaining, viz., £47 18s. 8d., be carried forward to the credit of the account for the current year.

Hall Mines Limited.—Hallidie Tramway for conveying Ore from Silver King Mine to Smelter at Nelson.

shares of shares al, and ration ribed, all ion to ector's

E.C.

welter. West

Silver Soh-i-

Bid,"
stle,"
and."

from have prelance ings, upon

ance the "The result of the year's working is, in the opinion of the Board very satisfactory, when it is remembered that for the first nine months the difficulty of obtaining a regular supply of ore prevented continuous work at the smelter, and that it was not until 31st July that the second smelter started work, and that the impediments in the way of obtaining a free supply of ore from the stopes opened up in the mine were removed.

"The wire tramway has continued to give satisfaction, and in May advantage was taken of the opportunity afforded by the closing down of the blast furnace, pending a replenishment of the stock of ore in the ore bins, to renew the wire rope, and by the introduction of an improved clip-strap, permanence and regularity in the working have been assured.

"The work of opening up the mine has been intelligently and vigorously proceeded with, though the Board have limited the mine superintendent to the prosecution of work in the main tunnels only, with a view to developing the ore bodies already proved. No work has therefore been done on the gold lead in the "Daylight" claim, referred to in the Directors' report last year, but under the favourable conditions upon which we enter upon the business of the current year, the Directors contemplate resuming work upon this claim very shortly.

"For full particulars of the mining operations, the Directors refer the share-holders to the report of the mine superintendent, appended hereto, and would add that the work which he recommends for the current year has been in progress since the end of September with satisfactory results.

"The new blast furnace, which was completed in July, has since then been working most successfully and with considerable saving in the cost of smelting.

"The refining works were completed in May, and have since then done good work, but experience has shown that, in order to reap full benefit from them, it will be necessary to erect a second Reverberatory Furnace and Roasting Oven; these are now in course of construction, and when completed will have a capacity of outturn of about 10 tons of copper bullion per day."

OUTPUT-YEAR ENDED 30TH SEPTEMBER, 1897.

From the Mine Superintendent's report we find the total quantity of ore mined in 1896-7 to have been:

| | 49,540 tons. |
|-----------|----------------|
| 2nd grade | . 950 " |
| 1st grade | . 45.823 tons. |

ACCOUNTS .- (Year ended 30th September, 1897.)

Dr

| To ore and matte in stock at 30th September, 1896 Ore purchases | £10,850
7,938 | 5 | 5 |
|---|------------------|----|---|
| | 18,788 | 12 | 6 |

ory,
g a
not
the

age ndand ork-

ies ayble ors

reidd nce

een

ood vill are of

red

| 10 |
|-----|
| |
| |
| |
| |
| |
| 6 |
| 1 |
| |
| (|
| - |
| 5 |
| |
| 4 |
| 2 |
| 6 |
| II |
| C |
| |
| 5 |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| 6 |
| 6 8 |
| |

| To Creditors—Preference shareholders, for dividend. Bank overdrafts | 1,691
36,638
2,269 | 9 | 5 | -0 | |
|--|--------------------------|---------|---------------|----|----|
| By Income and Expenditure Account—Balance at 30th September, 1896 Deduct dividend at 7 per cent. per annum on cumulative preference shares to 30th September, | 5,592 | 14 | — 40,599
6 | 18 | 7 |
| 1896 | 3,662 | 8 | 2 | | |
| Add surplus income over expenditure for the year | 1,930 | 6 | 4 | | |
| ending 30th September, 1897, as per account | | 8 | 0 | | |
| Deduct dividend at 7 per cent. on cumulative preference shares for the year ending 30th Sept., 1897.£1,750 o | 32,287 | 14 | 4 | | |
| Depreciation written off building, plant and machinery, tramway, smelter and office furniture 5,489 15 8 | | | | | |
| | 7,239 | 15 | 8
25,047 | 18 | 8 |
| | | | £354,533 | 17 | 5 |
| PROPERTY AND ASSETS | | | | | |
| Cr. By Mines Cost Account—As at 30th September, 1896. | £212 125 | 2 | | | |
| Add further expenditure during the year ending | | 3 | | | |
| 30th September, 1897, prospecting | 1,329 | 15 | 5 | | |
| Deduct part payment for water rights written off. | 137 | 19 | | 15 | 10 |
| By Buildings, Plant and Machinery - As at 30th | | | ,,,, | , | |
| September, 1896 | 8,487
6,679 | 7
15 | - | | |
| Deduct depreciation written off | 15,167 | | 10 | | |
| By Tramway from Mone — As at 30th Sept., 1896 Deduct depreciation written off | | | 6 | | 4 |
| By Smelter Account—As at 30th September, 1896
Expenditure during year ending 30th Sept., 1897. | | | | 17 | ð |
| Deduct depreciation written off | 31,421 2,827 | | _ | 9 | 10 |



Hall Mines Limited.—Ore Bins at Smelter.

| By Lands Purchased-As at 30th September, 1896. | 637 | | | | | |
|---|---------|-------|----|---------|----|---|
| Additions during year ending 30th Sept., 1897 | 1,076 | 2 | 8 | 1,713 | 10 | 0 |
| By Office Furniture in London-As at 30th Sept., '96 | 118 | 11 | 6 | | *9 | 9 |
| Additions during year ending 30th September, '97 | 103 | 7 | 9 | | | |
| | 221 | 19 | 3 | | | |
| Deduct depreciation written off | 22 | 3 | 11 | 199 | 15 | 4 |
| By Stores and Tools on Hand Per inventories received | from Br | itish | 1 | 199 | 13 | 4 |
| Columbia | | | | 12,762 | 11 | I |
| By Ore, Matte and Metallurgical Products in Stock.—Pe | r valua | tion | | | | |
| of manager, in British Columbia | | | | 14,855 | 10 | 2 |
| Open shipments of matte and copper bullion | | | | 54,803 | 0 | I |
| Sundry debtors | | | | 124 | 10 | 8 |
| Cash at bankers and on hand | | | | 463 | 4 | 8 |
| | | | £3 | 354,533 | 17 | 5 |
| | | | _ | | | _ |

REPORT ON MATTE SMELTING. (From Mines Report, B.C., 1897.)

"The matte smelting blast furnace in use at the works connected with the Hall Mines in British Columbia is probably the largest furnace of its kind in North America, which is equivalent to saying in the world. It has now been in blast sufficiently long to demonstrate its capabilities, and the following description will be undoubtedly of interest:—

"The furnace was blown in September 5th, and had worked to November 5th, the day of writing, 60 days. During that time it smelted 14,676 tons of charge, of which 1,587 tons was barren flux, chiefly limestone. This shows an average of 244.9 tons smelted daily. Under favorable circumstances, it is possible to smelt 300 tons per day, as proven by the 24 hours ending 6 a.m. November 5th, the actual tonnage passed through the furnace being 273.9 tons ore and 30.1 tons limestone, and again, on October 30th, 277.2 tons of Silver King Ore and 30.8 tons of limestone. The average tonnage for the seven days ending November 5th was 282.5 of charge. In addition to this, note may be taken of the fact that 200 lbs. of slag are added to every ton of charge.

"The percentage of coke varies between 14½ and 16%, according to the quality of the coke and the amount of sulphur in the charge.

"The matte produced during the period of 60 days mentioned was 1,029 tons, averaging about 49% copper, wet assay. The concentration is about 14.25 parts of charge into one of matte, but the furnace has run successfully with a concentration of 20 to 1. A great point in favor of this furnace is that it will handle a very large proportion of fine ore.

"The character of the ore is chalcopyrite, bornite, tetrahedrite, and kindred minerals in a variable gangue, which gives an average composition of silica, 33 p.c.;



Kootenay Mining and Smelting Co.—Smelter at Pilot Bay, B.C.

9

4

8

Hall merently edly

5th, e, of 44.9 tons

nage gain, The

In d to

ality
ons,
ts of

on of arge

dred

ferrous oxide, 9.5 p.c.; manganese oxide, 8 p.c.; lime, 7.5 p.c.; magnesia, 4 p.c.; alumina, 15 p.c.; copper, 4 p.c.; sulphur, 3.2 p.c. Limestone, the only flux generally used, carries 10 p.c. silica, and the resultant slag has a composition of silica, 43 p.c.; lime, 15 p.c.; ferrous oxide, 12 p.c.; manganese oxide, 9 p.c.; alumina, 18 p.c. Slags have averaged for two months 0.345 p.c. copper and 1.15 silver per ton.

"This furnace was designed and erected by Mr. Paul Johnson, late superintendent of the works. Its dimensions are: At tuyeres, 144 in. by 44 in.; at top of jackets, which are 5 ft. 6 in. high, 144 in. by 64 in.; and at feed-floor, 160 in. by 72 in. The top height of the columns is 12 ft. 6 in., but the charge is generally maintained 4 ft. lower, varying, however, with conditions of charge, etc. The tuyeres, eight in number on each side, are reduced from 6 in. to 4¾ in.; the centre of the tuyere is 24 in. above the bottom, as originally constructed. The bottom is supported by a cast-iron plate, resting on six jack-screws carried by a truck, and consists of a coil of 2-in. water pipe bedded in steep (brasque), and a course of fire-brick on end. On this the furnace makes its own bottom, which probably is now about 4 in. higher.

"Provision is made for tapping on the side, but the end tap only is used. The flow is practically continuous, separation being made in a large conical pot of special manufacture. A second settler is used, of similar form but smaller, and thence the slag flows into a powerful stream of water. It would be interesting to know if there are other furnaces in service that have dimensions similar to this, and what their capacity is."

During the past year, to December 31st, 47,560 tons of "Silver King" ore have been smelted, yielding 954,585 ounces of silver and 3,453,644 pounds of copper, and a little gold. Hence the average yield of the ore for the year per 2,000 pounds has been 20.7 ounces of silver, .04 ounces of gold, and 3.63 per cent. copper, or \$16.81 per ton.

While guaranteed dividends of seven per cent. have been paid on the preference shares, the first dividend of ten per cent. upon the ordinary stock was declared, or a total dividend of \$133,750 for 1897, or \$160,000 in all to date.

LAST CHANCE MINING AND MILLING CO.

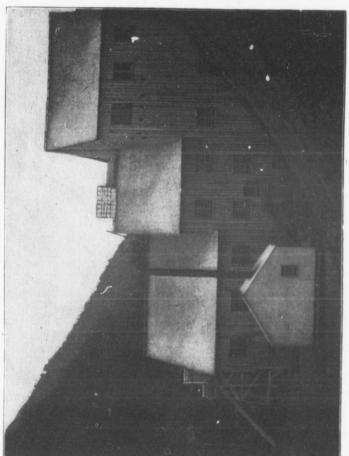
Incorporated 1896. Authorized Capital, \$500,000, in shares of \$1.00.

Head Office: Spokane, Wash.

Mines Office: T. A. Woods, Manager, Sandon, B.C.

The claims owned and operated by the Company comprise the "Starlight," "Last Chance," "Starlight Fraction," "Blizzard," and "Little Widow."

There are two small parallel veins running N.E. by S.W., one standing vertical, the other dipping S.E. 50°, and two tunnels 100 ft. apart in elevation. The upper tunnel is 240 ft. long with cross-cuts and drifts on smaller veins that lead off from the



Concentrator at Lanark Mine, Laurie, B.C.

.c.; ner-, 43 p.c.

teno of y 72 ain-eres, the rted of a

end.

her. The ecial the here

ave and has 5.81

ence or a

nt,

cal, per the

main one, while the lower, a cross-cut tunnel, intercepts the inclined vein at 180 ft., along which drifting has been done for 150 ft., with an upraise to the upper workings. This tunnel was being continued to strike the other vein but had not done so at 100 ft., but it was in the works between these two tunnel levels that the character of the ore and the vein was best seen, as from an incline started down on the vein near the mouth of the upper tunnel, and when about midway between the levels extended as a drift, very high grade ore has been mined where the vein, varying in size from a few inches to 3 ft. of solid, rich silver-bearing galena was found to have, where galena was not solid, a quartz gangue with galena, forming good concentrating ore. Within surface influences the veins have suffered the usual alteration, and rich "carbonate", ore has also been stoped out. While so far most of the work has been directed toward the development of this mine a quantity of excellent ore has been sent down by rawhiding to Sandon, and thence shipped to the smelters, as in 1895, about nine car-loads of ore assaying 166 to 191 ozs. in silver per ton and 71 to 78 per cent. lead, and in 1896 17 car-loads averaging 182 ozs. in silver per ton and 62 per cent. lead were sold. This property is another example of many which have paid for themselves from the beginning, and during 1897 a dividend of \$37,000 was paid.

CO. OF SLOCAN, Limited.

Incorporated 1897. Authorized Capital, \$1,000,000, in shares of \$1.00.

Officers:

J. F. McLaughlin, *President*. J. J. Franklin.

Robert Scott.

Head Office: Thos. McLaughlin, Secy., Gooderham Bdg., Toronto, Ont.

Mines Office: Slocan City, B.C.

Owns and is developing the "Legal Tender" claim, situated half-way between Slocan City and Lemon Creek, Slocan District, British Columbia.

LONDON HILL DEVELOPMENT AND MINING CO., Limited.

Incorporated 1896. Authorized Capital, \$150,000.

Directors:

Oliver T. Stone.

John C. Hay.

Hamilton Byers.

T. G. Proctor.

Head Office: C. W. McAnn, Secretary, Kalso, B.C.

T. G. Proctor, President,

C. Von Moerkerke, Superintendent.

Noble Five Con. Mining and Milling Co. Cody, B.C.

oft., ings. f the the few

was ithin

ward raw-oads d in sold.

T

Ont.

een

G

ent.

Owns and operates the "London," "Third of July," "Pompeii" and the factional claim "Round-up," situate west of Carpenter Creek, about three miles from the K. & S. R. R., Slocan District, Province of British Columbia.

Near the summit of a ridge two tunnels have been driven, in one of which, over 40 feet long, is a 4-foot quartz vein, carrying grey copper ore and silver sulphides. On the other side of the ridge, 250 feet below the summit, a tunnel 320 feet long is being driven to tap the vein in depth, in which several small quartz veins, traversing the slates and quartzites were cut. Three lots of high grade ore, or about 40 tons, have been shipped, on which the smelter returns were 190 ozs., 267 ozs. and 150 ozs. of silver per ton respectively. As in other veins of this character of ore, there is much 2nd class ore that will have to be milled near the mine, but the method to be adopted will be decided upon after more underground work has been done.

NOBLE FIVE CONSOLIDATED MINING AND MILLING CO., Limited.

Incorporated August, 1896. Reorganized, 1897.

Directors:

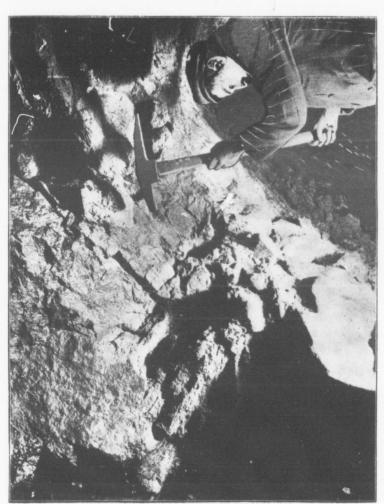
James Dunsmuir, President. J. D. Porter, Vice-President. C. E. Pooley. J. G. McGuigan. B. J. Perry.

Head Office: F. J. Holman, Secretary, Spokane, Wash.

Mines Office: G. B. McDonald, Assist. Secretary, Cody, B.C.

Owns and operates the Noble Five, Knoxville, Bonanza King, World's Fair, Maud E., Deadman, Wild Goose and Lucetta claims, located about 3½ miles from the town of Sandon, Slocan District, British Columbia. Mr. Carlyle, Provincial Geologist, describes the property as follows:—

Noble Five Vein.—On the surface in a rocky gulch scoured by snow-slides, are large croppings of iron rock, which on being broken into is found to consist of galena, blende, and spathic iron, while in the mine the ore is arranged along a smooth, slickensided wall that is sometimes on the hanging and then on the footwall side, in bands arranged in one drift with four bands, i.e., spathic iron, blende, spathic iron, and then galena, with fragments of slate scattered through the ore-shute and spurs of ore running off into the country rock. In the early history of this mine, when the costs and difficulties of shipping were excessive and changes of management often, small drifts were run in on the ledge and the ore extracted in an unsystematic manner, but under the new management the property is being developed in a thorough manner, and the mine placed in a proper condition for its best development and most economical working. On the most southerly claim, the Noble Five, a tunnel 65 feet long and short cross-cuts were driven, resulting in the finding of some good ore, but



North Star Silver Mine, Fort Steele, B.C.—Solid Ore body in North-west Drift, 30 ft. level.

facfrom

over des. ng is sing ons, ozs.

ozs. uch oted

air, om

are na, th, in

of the en, er,

ost eet

out

as this was a dangerous place for snow-slides this work has not yet been extended to prospect this part of the vein. On the Knoxville and Bonanza King has been done most of the mining, consisting at the time of visit (Aug. 18, 1896) of tunnels aggregating 1,380 feet in length and opening up the vein vertically to a depth of 600 feet. In these workings but little high grade ore was left in sight, although much ground remained to be prospected, but there were stopes 6 to 8 feet wide, while the amount of concentrating ore exposed, consisting mostly of galena in decomposed material, was considerable, and in some of the drifts, 7 to 7 feet wide. The mine was not in a condition at that time to show up or do justice to this large and strong ledge, but the three main tunnels to be run and connected by winzes will put this property on a proper working basis. About 200 feet below these workings the main tunnel has been started in a place perfectly safe from slides and cross-cutted to the vein which on the surface at this point had a strong out-crop of galena. This tunnel will be extended well into the mountain along the vein and connected with the upper tunnels, thus enabling all ore to be brought down to the mouth of this main level, where will be the ore-bins at the head of an aerial rope-tramway, 6,100 feet long, vertical drop 2,100 feet, now being built to the concentrator at Cody.

On the Deadman and Wild Goose claims are several large dykes and tongues of "porphyty," and the Deadman vein is about 400 feet east of the Noble Five vein and parallel to it. No work is being done in any of the three tunnels; in two of which that were entered but little ore had been left in sight, but several faults were in evidence. Ore has been shipped for three years from this vein, or 26 car-loads in all, of ore that assayed 63 ozs. in silver per ton and 15 per cent. lead for the "carbonates," and up to 255 ozs. of silver per ton and 69 per cent. lead for the solid galena ore.

Concentrating Plant.—A flume brings water from Cody Creek, and in the conveyance of ore from the mine automatical devices have been introduced throughout. At the main working tunnel of the mine bins of 600 tons capacity automatically discharge into the buckets of the Finlayson double rope tramway, and at the lower terminal the ore drops into the bins of 260 tons capacity, and thence automatically to the 9 x 15 in. rock crusher, and thence to the mill. The capacity of the tramway will be 20 tons an hour. The machinery for the mill has been purchased from the E. P. Allis Campany, of Milwaukee, Wis, and the first-class ore and concentrates will be loaded into the cars of the K. and S. R. R., which has a branch line running to Cody.

NORTH STAR MINING CO., Limited.

Registered 9th May, 1894, Authorized Capital, \$100,000 in shares of \$1.

Directors:

D. D. Mann, Montreal, *President*.

J. M. Browning, Vancouver. | E. P. Davis, Vancouver.

Head Office: Vancouver, B.C.

Mines Office: N. O. Curran, Manager, Fort Steele, B.C.

The property owned by this company comprises the "North Star," O. K," "Dreadnaught," "Buckhorn," "Rowan," "Daffodill," "Cromarty," "Notre Dame," "Dorval," "Maverick," "Good Luck," "Canton," "Full House," "Brandon," "Stemwinder" and "Ontario" mineral locations, situated near Fort Steele, East Kootenay, British Columbia.

The Ore.—(a) Is primarily very clean, solid, argentiferous galena, rather finegrained, with only a small amount of zinc blende, while underlying it along the footwall is the "iron ore," or iron and manganese oxides, assaying about 20 ozs. in silver per ton. The assay value of the ore as per smelter return is:—

Silver, 23.5 ozs. to 45.3 ozs. per ton; lead 53 to 68 per cent.

(b) The upper part of the ore-shute has been decomposed to a mass of reddish brown black and yellow oxides and carbonates of iron and lead, with beautiful specimen of moss-like metallic silver and crystals of cerussite. There is a large amount of this ore, and unlike the "carbonate ore" in the Slocan, it carries a higher silver value than the crude or solid galena ore, the values from smelter returns being:—

Silver, 52 to 60.8 ozs. per ton; lead, 49 to 57 per cent.

In shipping ore a mixture is made of both kinds of ore and then sacked in jute sacks (made in Montreal) so that 16 sacks of the ore weigh one ton, and this is not low grade ore by any means, as is shown by the smelter returns on between two and three thousand tons sold during the past season, when the net or yield values averaged per ton:—

Silver, 30 ozs.; lead 55 per cent.

to

at-In

nd

nt

as a

he

a

as

on

ed

us

be

op

of

nd ch

in

11,

,

n-

ıt.

is-

r-

he

be

be

The large size of the ore body is shown in the mine workings. Shaft No. I was sunk 67 ft., and at 30 ft. a short cross-cut to the west entered the ore, and along this level for a distance of 290 feet north and south a solid body continues, with fine ore in both breasts of the drift, with a thickness of 8 to 20 feet of ore, consisting of solid galena overlaid by decomposed "carbonate" ore, which in one place was fully 15 feet thick. Along the dip this shute is known to be continuous for a width of 40 to 60 feet, and a large amount of ore now stands ready to be broken down. A cross-cut tunnel, 300 feet long, strikes this shaft at a depth of 60 feet, and continues west in barren ground 90 feet, the rock in the tunnel to the east, i.e., in direction of the dip of the lode from a point 25 feet from the shaft changing from its very hard solid character to a soft decomposed material with no ore, but at 105 feet east of the shaft the tunnel passed through a body 1½ to 3½ feet wide, strike north and south, dip east 60°, of soft yellow-coloured material, assaying 20 to 25 ounces of silver per ton, with no assay made for lead. Shaft No. 2, sixty-five feet north of No. 1, is sunk to the main work level, and then follows down the foot wall for 22 feet along which the ore-body is 6 to 8 feet wide.

Contracts for the shipment of 7,000 tons to American smelters have been entered into at date of report.

PAYNE GROUP.

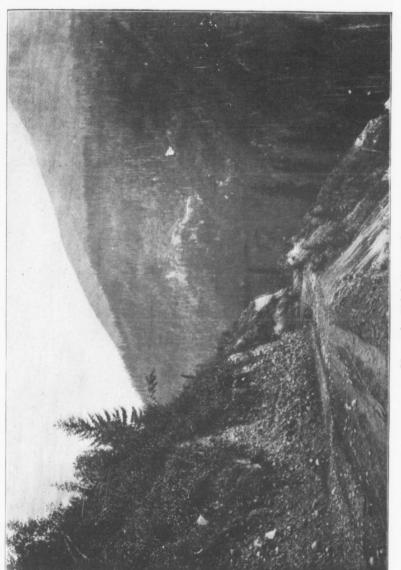
Owners:

A. W. McCune, and others.

Mines Office: Three Forks, B.C.

The property comprises the "Payne," "Mountain Chief," "Maid of Erin" and "Two Jacks" mineral claims, situate about three miles east of the town of Three Forks, Slocan Mining District, Province of British Columbia. The workings are described in Mr. Carlyle's report for 1896, as follows: "The Payne was the first location made in the Slocan District, and the locators believing the trend of the vein would follow the strike of the country rocks as at Ainsworth, put in their stakes accordingly, and in reality made their location across the vein. Until lately this ground had been opened up by Mr. Bailey, and on the Payne a tunnel had been run in for over 300 ft., with ore continuous for nearly all that distance, the vein strike, N.E. by S.W., having a quartz gangue, but with a maximum width in parts of solid high grade galena of 3 ft. Substantial mine buildings were being erected at this tunnel mouth, to supplement those already built, and on the Maid of Erin to the south, a tunnel lower down had been begun and extended into the Payne claim. To the north of this claim, on the Mountain Chief, tunnels had also been run in on the vein, and ore stoped out to the grass roots, but the main mining operations will be conducted from the southern side of the mountain, on which slope is a fair amount of timber suitable for mining purposes; fires having destroyed most of the wood supply. It is reported (Sept., 1896) that over \$100,000 worth of ore has already been sold from this vein, the carbonates assaying 80 to 100 ozs. silver per ton, and 35 to 40 per cent. lead, and the galena ore 175 ozs. of silver and 70 p.c. lead, or an average net value on all ore sold of over \$100 per ton."

The Mines Report for 1897 says: "A little over a year ago the half interest in the Payne and adjoining claims was purchased for \$87,000, by the owners of the other half, and since then this mine, the first located in the Slocan, has taken first place as a shipper, and for the past year has paid its owners, who are very reticent, the largest dividends of any silver mine in the Province. Today there is said to be now opened up by tunnels and raises, a very long shute of ore, from which a daily shipment of fifty tons can be easily maintained for a long period. The cost of mining is very low, and for transporting ore to both K. & S. and the C. P. Railways probably the longest 3-rail gravity tramway in the world has lately been completed. This tramway is 6,000 ft. long, with a vertical drop of 2,500 ft.; steel cable, 5% in.; load per car, 5 tons."



Mountain Chief Silver Mine.

and hree are first vein ordhad over W.,

W., lena i, to ower this ore

rom able rted

ein, and ore

the first ent, be aily

ably This

QUEEN BESS PROPRIETARY COMPANY, Limited.

Incorporated 1897. Authorized Capital, £120,000, in shares of £1.

Directors:

Capt. R. B. Needham, R.N.
Capt. E. Ironside Bax. Edward Hart.
John V. Miller. Chas. E. Shepheard.
Sir Francis Blackwood, Bart.

Head Office: Walter Smith, Secretary, Moorgate Station Chambers, London, E.C.

Canadian Office: C. K. Milbourne, Managing Director, Nelson, B.C.

Mines Office: Robert Butcher, A.R.S.M., Mine Manager, Three Forks, B.C.

Formed to acquire and work six mineral claims, known as the "Queen Bess" group, comprising about 220 acres, Slocan District, Province of British Columbia. These properties consist of the "Queen Bess," "Young Dominion," "First Extension," "American Girl," "Concord," and "First Extension Fraction," and are situated on Howson Creek, $3\frac{1}{2}$ miles from New Denver, and $1\frac{1}{2}$ miles from Three Forks. The vendor companies (The Dominion Mining, Development and Agency Co., Ltd., and the Duncan Mines, Ltd.) have fixed the purchase price at £85,000 stg., stipulating that £33,333 shall be paid by the issue to them of fully paid shares, and the balance, £51,667, in cash or shares at the option of the directors. £15,000 is reserved for working capital.

Reporting upon the property Mr. R. C. Campbell Johnstone, M. E., says:

"Past Development.— Up to date there has been driven over 2,000 feet of tunnels and upraises. A fair amount of clean ore, probably 200 tons has been shipped. The workings have never been plotted out before, nor the veins systematically exposed and opened out in a miner-like way. Most of these workings, therefore, are of little benefit for future use, except as a means of stoping out ore between levels. Future operations will therefore have to be commenced on a given plan, namely, at a depth by tunnels, so that all ores can be delivered to the lower levels from above by chutes, thus cheapening all undertakings.

"Description of Queen Bess."—This claim is undoubtedly the most developed of the group, and runs down both sides of the top of the mountain. There are four distinct veins already proven to exist, and other workings point to the existence of more. On vein 1, the most easternly, four tunnels have been driven more or less along the vein.

"Vein 1, Tunnel 4.— The lowest, No. 4 tunnel, has been driven 333-6 feet, with 57-7 cross cuts, and an old abandoned drift. The first 164 feet is all the way in

zinc ore. Then 52 feet is mixed ore, giving 18 ounces of silver and some lead. This ore in places can probably be run through the concentrator, but has not been calculated as ore in sight. At 216 feet a streak 24 inches across for thirty feet in length is exposed of the value of 23 ounces of silver and 13 per cent. lead per ton. cut at station 3A shows 51 feet on the dip of the ore, 16 inches across of an average of 281/2 ounces of silver and 19 per cent. lead. For the next forty feet there is the same vein matter as the first, low grade vein matter giving 18 ounces silver. At station 7 for 24 feet and 22 in thes across a chute appears averaging 35 ounces of silver and 53 per cent. lead. This unitedly is the same continuous chute met with in the cross-cut at station 3A, and is at least 100 feet in length along the strike. A tunnel at a lower level would meet this chute at 160 feet in, and block out a large reserve of clean galena and mixed concent ating ore. However, below the level exposed this chute cannot be taken as ore in sight till a given depth is proven. The chute, though, can be put down to speculative value as a large item. This chute exposed for 51 feet along its dip in the cross-cut at station 3A, and cropping up again at station 7, taking the average width of vein at 20 inches, would total up 1,400 tons of galena and concentrating ore at an average value of \$33 per ton, and would give a value of at least gross returns \$46,000.

" Vein 1, Tunnel 3. - Thirty-two feet to the east on the surface, a tunnel has been put in for 37 feet, showing vein matter all the way. The ground is not sound enough yet to determine its value. It would appear that this is another undeveloped vein further east than No. 1, or else a fork. Tunnel 3 has been driven for 431-2 feet, with 232-5 feet of upraises and cross-cuts. In this tunnel at station 3, 71 feet from the mouth, lead ore begins, the first part being all in zinc ore. At station 3 to the surface above there is a deposit of concentrating ore giving eight ounces of silver and six per cent. of lead-this is not in the estimate. At station 3 there is No. 1 cross-cut driven for 22-7 feet, showing the vein for 15 feet on the dip, 48 to 30 inches in width of this concentrating value. At the breast of the cross-cut, 15 inches across the vein, the average value is 351/2 ounces of silver and 29 per cent. lead, or roughly the same value and the same chute as that occurring in tunnel 4, 79 feet below on the dip. Twenty feet beyond on station 5 a small cross-cut to the west has been driven, showing no ore and no purpose. At station 5 to 12 feet beyond station 6 there is an old drift for 68 feet in country r. k, now mostly filled up by waste. At station 4 cross-cut No. 2 was put in the country rock for 44 feet to the west in order to catch another vein. No results yet. Fourteen feet beyond station 13 a cross-cut is in 8 feet to the west, and at station 14 a cross-cut the same to the east-both of no value. At station 5 an upraise to the tunnel about 65.8 feet, at a dip of 51 degrees, has been put in and ore stoped out to some extent for 30 feet up and 10 feet across and more. However, there are forks in the vein here, and a horse of shale comes in. The under fork has been untouched, and shows up on the surface at the mouth of tunnel No. 2 continuously for 64 feet across, with no shale filling. This gives a value of 8 ounces of silver and 6 per cent. lead of concentrating ore in an enormous body, and appears continuous to station 9 in the roof and sides of tunnel 3. At station 9 an upraise has been put up 62 feet under tunnel 2. Here is shown the same concen-

ed.

ss "

pia.

en-

are

ree

ncy

000

es,

000

7S:

ın-

ed.

ex-

re-

en

ın,

els

of

our of

ess

et, in trating ore 30 inches across, and on the breast gives 83 ounces of silver and 49 per cent. lead, corresponding in value from station 8 to 10 in tunnel 2 above. Cross-cut No. 4 at station 11 shows wide vein matter, and 23 feet in 2t the breast gives 53 ounces of silver and 28 per cent. lead. This has a connection with station 7 in tunnel 4 below, and would point to a good body of ore between the levels. At station 13, cross-cut No. 5, 15 feet in, shows ore the same as in cross-cut No. 4, showing the continuity of the chute. In the main tunnel from station 11 to 14, and narrowing to the face of the tunnel, the average of the concentrating ore is 23 ounces of silver and 24 per cent. lead. Estimating ore exposed by this tunnel, No. 3 and down to tunnel No. 4 would give 3,450 tons of all kinds at an average value of \$30 per ton. This would amount to a gross value of about \$103,500.

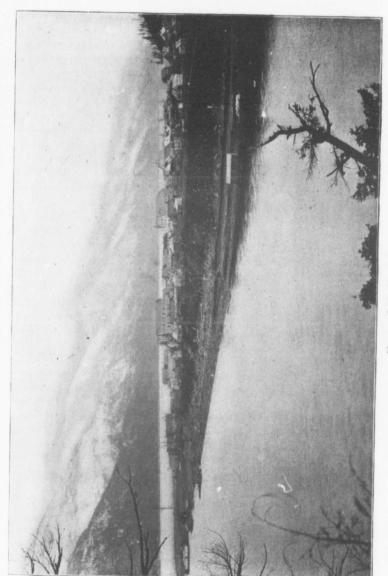
"Tunnel 2, Vein 1.- This tunnel has been run in 249-3 feet with 90 feet of cross-cuts. Ten feet from station 1, to 10 feet beyond station 4, there is exposed 24 inches of ore in width, and 80 feet in length, averaging 76 ounces of silver and 64 per cent. lead, of a value of at least \$70 per ton as it lies. This has a connection with the upraise from below, being probably one of the streaks of the fork. As the extent of the chute in depth and length is not ascertained, the total value cannot be taken, but the concentrating ore from tunnels 3 to 2, must be taken instead. Crosscut I at station 3, 20 feet in, shows at the breast 12 inches of ore across, giving 82 ounces of silver and 49 per cent. lead. Vein matter continues all the way in the tunnel to station 5, when another rich chute 15 inches across and 13 feet in length occurs, averaging 71 ounces silver, and 51 per cent. lead. It is difficult to connect all these chutes with the ore below, but there is certainly a rich streak in the vein, continuous between levels for 200 feet in length by 65 feet high. At station 8 there is a bunch of good concentrating ore exposed 6 feet long. Twelve feet beyond station 8 to station 9 there is a seam of ore 30 inches wide, and 36 feet long, averaging 81 ounces of silver and 45 per cent. lead. Station 10 to breast there is concentrating ore 12 inches and less across.

"At station 8 the vein forks, and there is concentrating ore all the way to station IIa. As mentioned above, the outcrop at the mouth of tunnel No. 2 is 64 ft. across, all to be concentrated. It is difficult and uncertain to come to a close estimate of the value between tunnels 3 and 2, but one of 3,042 tons at \$69 per ton, equal to \$105,000, would be conservative.

"Vein 1, Tunnel 1.— This tunnel is in 40 feet along vein matter, carrying a little clean ore, which gives 131 ounces of silver, and 81 per cent. lead. Whether this is the main No. 1 vein remains to be proved. Vein No. 1 in all, on a most conservative valuation, gives a value of \$220,000, and an enormous speculative value into the bargain.

"Vein 3.— Vein 3 has been exposed to the west of the "Queen Bess" by two tunnels driven in, No. 2 the lower one is 211-8 feet long, with 89 feet of upraises and cross-cuts. The upper one, No. 1, is driven for 93-8 feet, 13 feet beyond the upraise.

"In tunnel No. 2, the first part is in zinc matter, but from station 4 to 6, there has been high grade ore averaging 133 ounces of silver, and 76 per cent. lead. This was stoped out 30 feet in length, by 40 feet in height, between levels, with only 15



Town of Kaslo, B.C.

per -cut

5 53 7 in At 4, and nces

and \$30 t of

64 tion the t be oss-

82 the ngth

nect ein, here

ation g 81 ating

ation s, all al to

ng a ether con-

two and aise.

This y 15

feet of ore left below tunnel 1. The owners believe they have lost the vein in tunnel 2, but cross-cut No. 2 shows a good streak of vein matter, which probably is the main one.

"In No. I tunnel a thin streak of ore was found all the way, and stoped out to the surface. There will be no difficulty in opening up this vein systematically at lower levels on the "Concord" claim, and higher up on the "Queen Bess."

"Vein 4.—Vein 4 is shown by a tunnel 58 feet long, course N. 46 degrees E. along vein matter. More work is necessary to open it up.

"" Concord.'—This claim is valuable as holding the continuation at lower levels of veins 3 and 4. It carries good timber and a fine site for a concentrator and water rights. No prospecting for other veins or for those already exposed above has been effected.

""American Girl."— No work has been done on this claim. It holds the dips of all those exposed, and no donbt energetic prospecting would discover the veins being worked on adjoining property.

"Young Dominion.'—On this claim No. 2 vein has been exposed for 26 feet across in many places. In one place the strike has been stripped on the surface for 150 feet in length, and opened by tunnels at several levels. On the surface and as far as proven it is a large zinc vein like the outcroppings and the mouths of the tunnel in No. I vein. Former owners did all the tunnelling and certainly showed how mining should not be done, and how money could be wasted. This vein, however, is a most promising one to operate on in a miner-like way. Large masses of galena float ore from it have been dug up in the surface debris.

"First Extension' and Fraction.— A continuation of one of the two veins," No. 1 or No. 2, has been exposed by open cuts on this claim. The veins of the 'Idaho' company all point to cross it. The existence of the veins exposed on the 'Queen Bess' on the one side and the 'Idaho' on the other side, corresponding in all points to each other, and seemingly the same, all this gives a splendid speculative value to the 'Young Dominion,' 'First Extension' and 'Concord' claims and there can be no hesitation in deciding that development work will show up good results.

"Proposed Operations.— In Howson Creek, below the present cabins, a vertical depth of 1,000 feet can be gained below the summit of the mountain where the veins cross. Here it is proposed to run in a double tramway tunnel along the vein No. 2 at once to serve ultimately as the main working tunnel by which most ore will be taken out.

"When this tunnel is in 200 feet, a cross-cut to No. I vein will be put in and No. I vein worked through No. 2 with its double tramway. Vein 3, 530 feet to the west above, should also be exposed on Howson Creek, and a single tramway tunnel driven in to work veins 3 and 4. As required 150 feet levels above all these tunnels will have to be put in for ventilation and stoping up the whole side of the mountain. While these developing works are progressing, a lower tunnel should be driven under tunnel No. 4 on vein I, 100 feet down on the dip to obtain a straight working tunnel to stope out all the exposed ore in vein I. Upraises to No. 4 and to No. 3 will be required. A lower tunnel on vein 3 will have to be put in, in a straight line along

its general course, and cross-cuts made to discover its bearings. The present tunnels are all too crooked for the cheap handling of ore, and it is as cheap to run new ones as it is to straighten out the old ones.

"Mill Site. — There is a good mill site for a concentrator on the 'Concord' claim at the lowest point of elevation on the property. Water can be taken below the junction of Howson and Alamo Creeks, and a fall of 100 feet obtained for the mill. There is enough water all the year round to feed the jigs and enough to work the mill by water power for six months of the year.

"Costs.—The average contents of the ore, whether as clean, concentrates, or galena, can be put at 80 ounces of silver per ton, and 60 per cent. lead. Silver at 50 cents per ounce, and 95 per cent. paid for will give \$38; the lead equal to 1,200 lbs. per ton, at 3.5 cents per lb., less 1.5 cents per lb. duty, and 90 per cent. paid for gives \$21.60 or a total of \$59.60 per ton.

"Cost of mining \$3.00 per ton; delivery 40 cents; concentrating 60 cents, transportation to railway and sacking \$2.00; freight and treatment \$23,00; total on concentrates of 6 to 1 is \$49.00 or a profit of \$10.60; on a 100 ton concentrator \$176.60.

"On the clean ore undressed, the cost is only \$28.40, or a profit of \$31.20 per ton.

"Taking six car loads of clean ore per week and four of concentrates, at 20 tons per car, this estimate is to be filled in less than a year as soon as the mine is opened up, this output will give a profit of over \$4,500 a week, or £45,000 per year.

"These market prices, with the duty for lead, are the very worst possible, and on a local smelter being established will increase the profits from \$15 to \$20 per ton."

RAMBLER AND CARIBOO CONSOLIDATED GOLD AND SILVER MINING CO., Ltd.

Incorporated 20th May, 1896. Authorized Capital, \$1,000,000, in shares of \$1.00.

Officers:

J. B. McArthur, Rossland, B.C., President.

A. F. McClaine, Kaslo, Secretary. L. D. Wolfard.

nel

the

to

at

E.,

els

ter

ips ins

oss

as

nel

ow

er,

ena

ns,

the

all ive ere

lts.

ical

eins

. 2 be

o. I

vest ven

will

ain. der

inel

be

ong

J. J. Humphrey, Vice-President. Richard Shea.

Head Office: Spokane, Wash.

Mines Office: Kaslo, B.C.-Richard Shea, Mine Manager.

Owns and operates the Rambler, Cariboo, Antelope, Tiger and Best Fraction claims, near Kaslo, in the Slocan District, Province of British Columbia. Mr. Carlyle, in his report to the Minister of Mines, describes the property as follows:—

"Although the ground embraced within the limits of this property has hardly yet begun to be prospected, two different series of veins have been discovered and are being worked. The veins first found were two quartz veins in the same granite as the Best, with the same character of ore, but when building a trail a narrow streak,

a finger-width of red and brown iron oxides, betrayed the existence of a typical silver-galena vein, running through the Slocan slate series and porphyry, close to the contact with granite area, and since following this streak 3 ft. of solid high grade ore have been found in one of these tunnels. Galena ore in good quantity has been found in other veins on which a little work had just been done, and every indication pointed to the high value of this property.

(A.) Veins in the Granite.—About half way up the slope of the ridge of the granite, two strong quartz veins 200 ft. apart, traceable to the summit 400 to 500 ft. above, had been entered by two tunnels, and the strike of each was about N. 20° E., by S. 20° W., nearly at right angles to Best veins, a short distance away. In one tunnel, 20 ft. along the vein, dipping easterly 70°, consisted of a very white crystalline quartz, with druses, 3 to 20 inches wide, with parts of the vein strongly impregnated with grey copper and jamesonite, and in the other tunnel, 75 ft. long, the vein, dipping easterly 40° to 50°, was continuous with a width of 2 to 20 inches of very fine looking tetrahedrite or grey copper ore from a small slope in which, it was stated, 18 tons shipped to the Pilot Bay smelter had assayed 499 ounces of silver per ton, \$7.50 in gold, and 2 per cent. copper. No work was being done on these veins at time of visit, but large and commodious cabins, ore-house, etc., were being erected, there being a good supply of large timber in the basin.

(B.) Silver Lead Veins. - The vein material mentioned above had been traced on the surface for over 400 ft. by cuts, and tunnel No. 1, after being run as a crosscut for 78 ft. through porphyry and slate, had been drifted for 30 ft. (Sept. 6th) along a vein of solid galena ore, in places a few inches wide, in others 12 to 24 in., and at one point in the drift there were two bands of galena along what made the walls of the drift, with crushed country rock between. Along the planes of bedding and fracture in the rock there were iron pyrites and galena, and the country rock was impregnated with pyrites. In tunnel No. 2, 170 ft. long and 50 ft. above and 115 ft. beyond the face of No. 1 drift, the vein varies from 3 to 4 inches to 2 and 3 ft. in width, but at the face the ore was scattered through the country rock. On the ridge a small tunnel exposed 2 ft. of solid ore, of which 15 tons had been piled outside, and this vein appeared to be traceable for several hundred feet to some stopes made by some leasers in 1893 on the Antelope ground on the slope of the ridge overlooking the Dardanelles basin. Although these stopes were badly caved in, the vein was seen to be lying very flat, with 2 to 3 ft. of mixed ore, and in one place 2 ft. of solid galena ore, and during the present winter this vein will be properly prospected and put in shape for mining."

The galena ore shipped, as per smelter returns, has yielded from 79.6 to 273.3 ounces of silver per ton, and 31 to 64 per cent. lead, one lot of 27 tons netting \$185.12 per ton, while the carbonate ores, running 22½ per cent. lead, assayed 166 to 178.5 ounces per ton of silver.

Official returns of the output to date show:—1896, 9 cars; 1897, 43 cars; to April 27, 1898, 29 cars (average value on board cars at McGuigan, \$1,769.51 per car); 10 carloads were shipped by former lessees. The plant comprises one upright 38 h. p. boiler; two rock drills; one hoisting engine; one Cameron pump.



Town of New Denver, B.C.

vertact ave

the oft.
E.,
one line ated ein,
very ted,

ted, ton, as at ted,

oss-6th) in., the ding was

t. in idge side,

king seen lena it in

73·3 ting 166

; to per right

RECO MINING AND MILLING CO., Ltd.

Incorporated 10th November, 1896. Authorized Capital, \$1,000,000. Dividends paid, \$287,500.00.

Directors:

J. M. Harris. | F. T. Kelly. | S. M. Wharton. | G. C. Wharton. C. J. Smith.

Head Office: J. M. Harris, Managing Director, Sandon, B.C.

F. T. Kelly, Secretary-Treasurer.

Owns and operates the "Reco," "New Denver," "Clifton," "Texas," and "Ephraim" mineral claims in the Slocan District, British Columbia.

Two distinct silver-lead veins are being worked, i.e., (1) Big vein and (2) the Small or Goodenough vein, and in all probability veins lying in contiguous claims will be discovered, on prospecting, to extend into this territory. This mine affords another example of the opening up and development, and the purchase of other claims without any capital save that got in mining, from the beginning of work, of rich ore. On the Big vein have been run three tunnels, from which has been taken most of the ore extracted from this lead, save that from one small stope that yielded over \$16,000; and in tunnels Nos. I and 3, the former 650 ft. long, and the other 900 ft. long, connected by a raise 125 ft. long in the vein; the veins consist mostly of decomposed vein matter, in places a few inches wide, in others several feet. Work on this vein so far has been confined to purely development during the past year, but in 1895, four carloads of galena, the ore yielded on an average 178.8 ozs. silver per ton, and 71 per cent. lead (smelter returns), while the carbonate ore, or nine carloads, yielded from 89.3 to 161.6 ozs. silver per ton, and 23.2 to 37.1 per cent. lead.

From the Small or Goodenough vein, lying several hundred feet to the east, has come the richest silver-bearing galena yet found in Kootenay, the silver evidently occurring as argentite, although much ruby silver is found in some of the solid galena. The mining operations are being carried on in co-operation with the 'Goodenough mine, and three tunnels, Nos. 2, 4 and 6, have been driven to and then extended both ways along the vein in each of these properties; the vein being from 2 to 3 in. wide up to 20 in. of solid ore, with in places only a narrow streak of iron-stained matter. The ore so lies that generally the ground can be mined out along it, leaving the ore to be afterwards broken down clean. The ground is faulted in one place with a lateral throw of the vein for 10 ft., and where the vein passes through the porphyry dykes the ore shute is found, generally, to be about the most productive part of the vein. From these tunnels several hundred feet of drifting have been driven, the vein being not always productive, but in the miners' term "in and out," and these levels will be continued much further before reaching the limits of the claim.

This ore, while mined from a small vein, is very profitable, and in August several tons of rich ore were piled at each tunnel mouth, and the following data from smelter returns will give some idea of the value:—The galena ore has run from 225 to 730 ounces of silver per ton, and 67 per cent. lead; one lot of 21 tons assaying 730 ounces of silver per ton and 67 per cent. lead; and two shipments in 1896, or 45 tons, yielded net (or 95 per cent. of assay) 24,820 ounces of silver, and 27 tons of lead, or \$340 per ton, after deducting all charges.

The carbonate ore from this vein, for 20 carloads, has yielded from 230 to 337.8 ounces of silver per ton, and 19 to 28 per cent. lead.

At date of report a concentrator, of a capacity of 120 tons, and a wire rope cable-way had been contracted for.

Tunnels 2, 4, 6, on the No. 2 vein, have been extended to about 1,000 ft. each, and No. 8, now being run to tap the vein, is now in about 700 ft. Concentrator and tramway will be built as soon as the mine is sufficiently developed to keep them in continuous operation.

RUTH MINES, Limited.

Registered 1897. Authorized Capital, £120,000 stg., in shares of £1.

Officers:

H. W. Foster, M.P., Chairman. | George Alexander, Managing Director.
 H. B. Alexander, Mine Superintendent.

Head Office: 2 Suffolk Lane, London, E.C., England..

Canadian Office: Kaslo, B.C. Mines Office: Sandon, B.C.

Owns and operates the "Ruth," "Despair," Hope," "Ruth Fraction" and "Wyoming" claims, in the Slocan District, West Kootenay, Province of British Columbia. Average size of vein worked, four feet; dip 60° to 70°; average value of mineral, silver 120 oz., lead, 70 per cent.; opened by four tunnels having, at date of report, a total length of 4,000 feet; one shaft, 160 feet; 60 to 70 persons employed in 1897.

Output of ore in 1897, 5,000 tons.

The mining plant comprises :-

ds

nd

he

er

of en

ed

er

of rk

ut

ls,

as

a. gh

ed

n.

ed

ng

th

ry

he

els

er

Boilers :- One "Monarch," and "Economic," 60 h.p.

Air Compressor :- One Ingersoll-Sergeant, five drill.

Rock Drills :- Five Ingersoll-Sergeant.

Hoisting Engine: - One Weber-Gasoline, 24" drums.

Other Plant:—One saw-mill having a capacity of 20 M. per day, made by Wm. Hamilton Manufacturing Co.

STAR EXPLORING AND MINING CO., Limited.

Incorporated 1896. Authorized Capital, \$50,000, in shares of \$1.00.

Directors:

George W. Bement. | Louis Duenweg. | Carl Stahl. | A. Schember. Lawrence Heinl. | J. Meinecke.

Head Office: Julius Meinecke, Secretary, Terre Haute, Ind.

Canadian Office: Victoria, B.C.

Owns and is developing the Star group of mineral claims, in the Vale Mining District, British Columbia, situate about 23 m. N. E. of the town of Hope. The property shows two veins, one averaging about four feet; assays of surface ore showing from 20 per cent. to 70 per cent. lead, 25 to 115 oz. silver, about 3 per cent. copper and from 80c. to \$2.00 in gold. Claim being opened by a small force, a tunnel having been driven in, at date of report, 65 feet.

SCOTTISH COLONIAL GOLD FIELDS, Limited.

Registered in Edinburgh, Scotland, 12th March, 1896. Authorized Capital, £100,000 stg., in £1 shares.

Directors:

A. Johnstone Douglas, J.P., *Chairman*.
R. S. Hardie.

James Galloway, jr.

W. W. Slater.
Frank M. H. Young.

Head Office: Charles H. Turnbull, S.S.C. 13 Rutland Square, Edinburgh, Scotland.

Canadian Office: Three Forks, B.C.

Owns and operates the "Alamo," "Idaho" and "Cumberland" silver-lead claims at Twin Lake basin, in the Slocan District, Province of British Columbia. In this vein (Alamo) has been found one of the largest and most productive ore shutes yet mined in the Slocan. This vein strike, east and west (mag.) dip south 70° to 60°, crosses a deep spur from the main ridge, and thus offers the the best of facilities for

the driving of tunnels along it at different levels. Along this line of fissuring in the slates is much brecciated country rock, quartz, lime spar, spathic iron and ore, of which 8 to 9 feet of solid galena, interspersed with grey copper, have been stoped out, also carbonate ores, while much mixed or mill ore has been sent down to the concentrator. In some of the levels there has been encountered a cross-fault of considerable throw beyond which the ore shute has since been picked up. Tunnel No. 4, the lowest, extends west for 300 feet along the vein which here carries little ore, and the fault being met, the drift was run north-west 130 feet, then south-east 34 feet, striking again, apparently, the ledge. In tunnel No. 3, in 340 feet, and No. 2, a large amount of ore has been stoped out up to the Idaho side-line, the ore shute being 4 to 6 feet wide, the ore breaking to two smooth walls between which is both solid ore and ore mixed with shattered slates and quartz. Tunnel No. 1, 240 feet below the summit of the spur, was in several hundred feet, and the stopes from the lower levels continue on up for 30 to 40 feet above this level, when it pinches above where has been found the greatest width of ore in the mine. There is ample room for other tunnels below No. 3, and such will yet be driven in to exploit a large area of the vein. Ore is being found on other claims on this group, and men were at work prospecting and developing these other leads.

er.

ing he

w-

nt.

gh,

ead

In ites

Transportation—(a) From tunnel No. 3 a 3-rail tramway, 340 feet long, ends in the ore bins at (b) a very good waggon road, 3 miles long, dropping down 1,700 feet to the ore-bins at the head of (c) the exceptionally long 3-rail gravity tramway, 7,100 feet long, which is in two sections, 3,400 feet and 3,700 feet long respectively, and dropping 1,675 feet, delivers the ore into the bins at the mill at the C. P. R. track. The waggon road also runs down to the mill.

The Concentrator—From the supply bins of 1,500 tons capacity, the ore is trammed into the mill, which is built large enough to permit, if needed, the doubling of the present plant of machinery. On the upper floor, after passing over a grizzly, the ore is fed to a Comet breaker, whence it passes to 16 by 30 inch rolls, and thence by elevator to 3 5-foot trommels, delivering 4 sizes to the jigs on the next floor, of which there are (1) 1 coarse two-compartment Hartz jigs, (2) 2 three-compartment Hartz jigs, and (3) 3 four-compartment Hartz jigs. The middlings pass to a 5-foot Huntingdon mill, and for classifying the fine stuff, Lake Superior classifiers are in use, the tailings going into V-shaped settlers, that feed to 4 double-decked 18-foot round tables. The power is got from a Pelton wheel generating 80 h.p., with water under a 224-foot head in a 12-inch penstock, from a flume that runs about 2 miles to the head gates on the south fork of Carpenter Creek, the water of Howson Creek being also utilized. The sacked concentrates are then loaded directly upon the railroad cars.

The Mines Report for 1897, states that "the concentrator has had some radical changes made, and at the present time 2,000 tons of high grade ore are ready for shipment."

VANCOUVER AND BRITISH COLUMBIA GENERAL EXPLORATION COMPANY, Limited.

Registered 25th April, 1896. Authorized Capital, £25,000, in shares of £1 each; all the shares having been issued 10s. per share paid up.

Directors :

Patrick Comiskey.

Andrew Haes.

Fred. Burdette.

Head Office: Philip J. Dietz, Secretary, 20 Threadneedle St., London, E.C.

Canadian Office: Silverton, B.C.

Formed to acquire certain properties in the Slocan District, British Columbia. (See notice of Galena Mines, Ltd.) The following statement of the affairs of the company was submitted at an extraordinary general meeting of the shareholders held in London on 14th October, 1897:—

The Chairman and that, although the time had not arrived for holding the annual meeting, the directors had thought it advisable to call the shareholders together, and let them know the present position of affairs
It would be remembered that after the formation of the company they were fortunate in securing two very good options, one of a property called the Reade and Tenderfoot, and another known as the Galena. The Board paid more attention to the Galena farm than to any of the other properties, because they looked upon it as the most important property they had. Having secured a bond on the various properties forming the group, they made considerable developments, and after some time decided that it was desirable to close the bond and purchase the property. Having done this, their engineer and manager, who was supposed to be a first-class miner, decided on the course of action, and everything tended in one direction-namely, that this was a very valuable property. Consequently operations were begun on a large scale and a shaft was started and sunk a depth of 200 ft. Crosscuts from this shaft at the 100-ft. level and also at the 200 ft. were made, but he was sorry to say that, so far as the exploration had gone, the developments had not been so satisfactory as they had anticipated. It appeared that the lode at that end of the property became broken or twisted, with the result that this shaft had proved not to be in as good a position as it ought to have been placed. This had thrown things back to a large extent, and they had been compelled to drive from the shaft towards the old workings, where the original good prospects were discovered. The driving had been pushed on as rapidly as possible, and they were now at the 100-ft. level, getting under what was called the old shaft, where the lode had been proved to a depth of 75 ft., and where they had driven on it for some distance, and got what was considered to be a fine body of ore. There could not be much doubt that the reports in the first instance were exaggerated, whether purposely or not he could not say. While a large body of the ore contained a considerable quantity of galena, it now turned out that it also contained a high percentage of zinc.

This zinc practically made the working of the mine most difficult, and interfered with the treatment of the ore so much that it destroyed its value to a great extent. This was a serious point in connection with the treatment of the ores, but at the present moment they were negotiating with some gentlemen who stated they could treat the zinc ore, separating it from the other ore by a new process, of which the secret was only known to themselves. The Board had tabulated the figures and reports of the property, and were going to hand them to the gentlemen who owned this process. There were other ways of treating zinc, and one of the shareholders present in the room had a system by which it could be profitably treated, provided the ore was rich enough to pay the costs, and leave a margin of profit. He had referred more particularly to the position of the Galena farm, inasmuch as it was the most important property the company possessed, though they had other properties in various districts, which had been opened, some of them showing moderate prospects and others very good prospects indeed. The time the company had held the properties, however, was too short to do anything with them, and now that the snow was practically upon them some of the outlying options would have to be locked up for the winter. They had secured the titles, and they hoped to commence with a very early examination of these properties next spring, so that until then very little money was being spent upon Some remarks had been made as to the Board having purchased this property without going further into details, and taking sufficient precautions. The directors had taken every possible precaution, and had had the property reported on by their own people; they had also had an independent report, and several private reports from men who had been on the property, all of whom spoke in the same way of the Galena farm. Every paper wrote in the same strain, and they were led to believe that they had a property which was immensely valuable. Mr. W. A. Carlyle, the Provincial mineralogist to the Bureau of Mines, Victoria, British Columbia, had in his official report given his opinion on the Galena mines, and the development which had taken place up to his arrival. Mr. Carlyle had visited the Galena farm, and had expressed himself in the same way as the others. He need hardly say that the evidence of such a man was very convincing to the Board, so much so that they had not a shade of doubt as to the nature of the property. The shareholders had only to read Mr. Carlyle's report to the Government, copies of which were to be had in the room, to conclude at once that it was considered to be a most valuable property. In addition to this, the Board made inquiries about Mr. Carlyle and found him to be a very capable and reliable man, who was trusted not only by the Government, but by all those who knew him in British Columbia. After all these various reports tending in the same direction, the Board had no reason to doubt the value of the property, endorsed as it was by Mr. Carlyle and other gentlemen. With all these facts before them the Board were not without hope that the Galena farm might yet turn out to be a very good property, although they had been unfortunate in commencing operations at the wrong end of the ground. He did not know that there was any person to blame for this, because the shaft was sunk on the spot where it was considered to be most centrally situated for the general development of the property, which was a very large one. They were now driving towards, and were at the 100-ft. level, under the

\L

ch;

.C.

oia. the

and the one na.

ies,

seble and was

ing ise· k a ft.

the hat hat

ed. ive ere ere

the me be

ely

nc.

old workings, and it was possible they might any day get into good ore, while the zinc might disappear, which sometimes occurs in mining in British Columbia. They could not, however, build too much hope on this, but must do the best they could, and test the property in other directions. He did not think he need say more about the Galena farm, except to state that operations were being carried on economically and under good guidance at the present moment. They must, therefore, wait for the result, and they could only hope that it might be more satisfactory than it had been up to the present. The company had a lot of outlying properties, and they had just received a letter from the manager who had been inspecting these claims, together with the company's agents. Although the time had been short, they had examined them as carefully as they could. In one particular case—the Granite Creek section they had several interests in different claims. These claims showed what was called ironstone cappings, which was a very favorable indication of gold and silver. The assays from these various interests were many of them very good, giving traces of gold up to 5 ounces to the ton. They could not, however, say much on this point, for the ground was only just broken. They could only hope that the results might be favorable, in which case their business might become a very profitable one. The Board had done all that they could to further the interests of the company, and the best proof of their earnestness he could give was to state that the directors, with two or three of the original founders of the syndicate, with whom they were associated, held one-half of the stock of the Vancouver Syndicate, while the directors themselves held nearly onefourth, which they had kept throughout. The shareholders might rest assured that every effort would be made to put affairs on a proper footing, and to see that the management was straightforward and honest.

A shareholder asked whether the Board had received any communication from Mr. Carlyle since his report; also why the engineer, about whom they had received such excellent testimonials, could have given such a report?

The Chairman replied that the Board had not had any direct communication with Mr. Carlyle. He was a Government officer, and they could not approach him. His reports had been taken as they appeared in the Blue Book of the Colony. What he had stated had been endorsed by many people who had gone over the property. The surface was really covered with vein matter, carrying a large percentage of galena and silver, but if the large quantity of zinc in the ore had been recognized, it would have saved a great deal of trouble.

Mr. Greive considered the Chairman's statement was a somewhat bald one. They had come that day, expecting to hear all about the options they had, but they had

been told very little.

The Chairman replied that he had already stated they had several options, and had given the names of some. Some of these options were being carefully opened up, but there was nothing of sufficient importance to report upon. When work was recommenced they would know more. As to the Reade and Tenderfoot group—the same thing applied to these claims as to the properties in the outlying districts—they had been compelled to stop operations until early in the spring. They had rich ore there, but were also affected by the presence of zinc. They had never heard a word about the zinc until lately. Four groups of properties had been Crown-granted to the company, which meant that they were practically freehold, without labor conditions.

WASHINGTON MINES.

Owners:

J. L. Montgomery, New York. | J. L. Retallack, Kaslo. and others.

the

They

bout

cally

the

just

ined

on-

illed

The

gold

the

vor-

had

of of

the

f of

onethat

the

rom

ived

tion

nim. Vhat

erty. lena

ould

They

had

and

ened

was the

they

ore

vord d to

con-

Mines Office: Kaslo, B.C.

The property is situated near the town of Kaslo, Slocan Mining District, Province of British Columbia. Vein from 3 to 12 feet worked. Mr. Carlyle, in his report, says: "In the upper tunnel, No. 1, 77 feet long, there was considerable mill ore, but most of the ore came from tunnel No. 2, 200 feet below and 275 feet long, over which was a large stope 150 feet long and 30 feet high, with a good quantity of concentrating ore in sight, which on being broken was sent down to tunnel No. 3, 300 feet long, in which the ore-shute is much smaller and completely cut off at the face by a fault not yet explored. From the mouth of this tunnel-level the ore passes down through a shute 180 feet long, to a 3-rail gravity tramway, 1,450 feet long, which leads to the shute down to the strong log ore-bins of the concentrator, where an excellent waggon road—one of the best seen in West Kootenay—three miles long, runs to McGuigan's siding on the K. & S. R. R.

THE WHITEWATER MINES, Limited.

Registered 1897. Authorised Capital, £125,000 stg, in shares of £1.

Directors :

Henry W. Forster, M.P.
Oliver Wethered.

Richard Popkiss.

A. Johnstone Douglas.
A. C. Mitchell Innes.

Head Office: E. R. Tasman, Secretary, 3 Lawrence, Pountney Hill, London, E. C.

Mines Office: Whitewater (K. & Slocan Ry.) B.C.

Formed for the purpose of acquiring the Whitewater mines, situated in the Slocan District, B.C., comprising the Whitewater, Irene, Myrtle R, and Tennie C claims, covering an area of 109.5 acres.

This property has been secured by the London and British Columbia Goldfields, Limited, upon the advice of their manager and engineers in British Columbia.

In view of the profits being made and of the prospects of the mine, an effort was made to obtain the property by payment of cash only, but the owners interested in one-third insisted on receiving their consideration exclusively in shares. These original owners also reserved to themselves the right of being proportionately repre-

sented on the directorate; but whether as local directors or members of the London board has not yet been determined.

The following dividends have been declared since the beginning of October, and the mine continues to yield large profits:—

| October 15th, 1897 | \$24,000 |
|---------------------|-----------|
| November 15th, 1897 | 30,000 |
| December 15th, 1897 | 30,000 |
| January 15th, 1898 | 30,000 |
| Total | \$114,000 |

By a special examination of the mine accounts made by a firm of independent accountants, it has been found that the net profits produced by the Whitewater mine during the four months ending December 31st, 1897, amounted to \$136,907, which averages \$34,226 or more than £7,000 profit per month.

Mr. Kendall in his report states that an output of 25 tons per day of \$50 ore can be obtained at a working cost of \$16 per ton. Taking 300 working days to the year, works out to over £50,000 per year profit.

Mr. Kendall has based his cost of production on the present method of working the mine, and has not included in his calculations the economies which will result from working the mine with the modern machinery and appliances for the supply of which £15,000 is provided by the subscription of this issue.

If the increased profits from this economical working be added to the revenue which will accrue from working the concentraling ores already opened up but not as yet treated, it is clear that still larger monthly profits may be expected.

The very satisfactory results in the past have been obtained, notwithstanding the comparatively primitive method of working, and the low price of silver; but such is the richness of the ores in this mine, that based upon the figures given in the accompanying reports, it is estimated that profits could still be made even though silver fell below 12 pence per ounce.

The London and British Columbia Goldfields, Limited, are re-selling to the company at a profit, have fixed the price to be paid for the property at £110,000, payable in cash and shares as in the agreement for sale mentioned.

The following has been excerpted from the report of Mr. S. S. Fowler, M. E., under date 8th Jan., 1898:—"Through the claims two or more veins are known to extend; but only one has been considerably developed. This vein is found in a fault plane or zone of much sheared argillites, interbedded with which are found bands of siliceous limestone. These metamorphic rocks have a general strike of about N. 65 degrees W., while the shear zone has a trend of N. 80 degrees W., and a dip varying from 35 degrees to 50 degrees S. No considerable irregularities and no faults have so far been met with, while the vein is easily followed. This vein so far as shown by the existing workings varies in width from three to over twenty feet. In it occur (a), on the footwall side, a virtually coutinuous band of dull, dark coloured and fine grained galena which varies from an inch or two to thirty inches in thickness; (b), a very persistent layer from six inches to five feet in thickness

of a stiff, plastic and highly comminuted slate which is now practically a clay but is locally called talc, in which are found, beside quartz and other foreign matter, bunches, nodules and particles of all sizes of the above mentioned galena, together with some of the following: (c), a lustrous and coarser grained and softer galena which is somewhat uncertain in its occurrence, is never continuous, as is the footwall galena, but is frequently accompanied by tetrahedrite of very high grade in silver. This class of ore is found generally towards the hanging wall side of the vein, but occasionally is seen mixed with siderite below the footwall ore.

Although the latter class is often in such abundance as to be profitably hand sorted and has formed a large part of the product of the mine, the main portion of that product has been derived from the footwall ore. The hanging wall ore, however, is quite little known because of the fact that development work has been carried on along and partly in the footwall, and very few crosscuts have been run to the hanging. In the absence of a concentrating plant, therefore, it has not been advisable to exploit systematically the hanging wall side of the vein. This ore and the talc will be alluded to farther on.

Development.—As the "Whitewater" claim lies principally on a quite steep mountain slope, development has been carried on by means of tunnels driven directly on the vein, the outcrop of which runs diagonally up the slope. These tunnels are six in number, they vary in length from 212 feet to 485 feet and their aggregate is 1,930 feet. The highest is 340 feet higher than the lowest, and since the vein has an average dip of about 42 degrees; the extreme tunnels are 525 feet apart in the plane of the vein. They are connected by winzes and rises and ventilation is therefore complete.

By reason of the yielding nature of the material overlying the footwall ore, and the small dip of the vein, the various openings have been closely timbered and lagged soon after being made; therefore it is very difficult to arrive at a satisfactory conclusion as to the average width of ore throughout the deposit. At the present time, however, in the bottom of the lowest tunnel there are sufficient exposures of ore to enable me to say that along the inner half (225 feet) the average thickness of footwall ore is at least ten inches. From this examination and several previous visits to the property, I may place the average thickness of the same class at fully eight inches throughout the stopes and various other workings.

Value of Ore.—Nearly all of the present development was done during the eighteen months ending with April last. Up to that time only about 7,500 square feet of stoping had been done; but since then not only has no development been carried on, but stoping has been vigorously pushed with the result that to January 1st instant, about 5,900 tons of hand sorted ore had been shipped. Of this amount 1,300 tons had still to be settled for by the smelters at the time of my inspection. Of the balance, 1,278 tons shipped up to 1st of January, 1897, yielded \$73,919. This ore averaged 124 ounces silver to the ton and 31.1 per cent. lead.

During 1897 to the date of last shipment settled for 3,283 tons yielded \$156,762, averaging 104'3 ounces silver and 33'4 per cent. lead.

As illustrating the character of recent shipments, the November returns show the metal contents to be 110 ounces silver and 31 per cent. lead which fairly represents

don

and

lent

nine

nich

can

ear,

ing

sult

y of

nue

as

ing

uch

the

ugh

the

00,

E.,

to

ult

of

65

dip

and

ein

nty

ull,

irty

ess

the average available ore. Such ore, with silver at 55 cents per ounce and lead at 3½ cents per pound, has a gross value per ton of \$82.20. Under the present conditions the total expenses per ton of ore are as follows:—

| Mining and all local expense | \$11 | 00 |
|-----------------------------------|--------|----|
| Freight and smelting | . 18 | 75 |
| Metal deductions and zinc fine | . 8 | 20 |
| U. S. duty 1.5 cents per lb. lead | . 9 | 30 |
| Total expenses | . \$47 | 25 |
| Net profit per ton | . 34 | 95 |

Metal prices remaining as above, this profit will be increased by \$1 per ton after April 1st next, on account of a reduction of freight rates which went into effect 1st January, but as the mine is under contract with the smelter until April 1st it cannot receive the above benefit until that time.

The talc ore which is not now utilized at all, has a considerable value as concentrating material, for three samples taken by me averaged silver 25.5 ounces and 6 per cent. lead, gross value \$18.10. With proper plant this ore should yield at least \$5 per ton net profit.

Ore in Sight.—I have previously stated that on account of the condition of the workings, it is somewhat difficult to arrive at an estimate of the average thickness of ore in the various drifts. From what may be seen in them, however, and in the stopes now being worked I feel that I am perfectly safe in saying that on the 3rd of January the total of footwall ore actually blocked out was 2,205 tons, which at a net value of \$34.95 will yield approximately \$77,000 profit.

The hanging wall ore can not be estimated, but this talc which has been blocked out or broken down in the mine, together with the second class or concentrating ore on the dumps, aggregates, at an estimate of only 12 inches thickness about 20,000 tons. This material, after the establishment of concentrating facilities, will yield a minimum profit of \$100,000.

Value of Mine.—In coming to a conclusion as to what value may be placed upon this property, the foregoing will make it clear that there is a large but not well known portion of the mine which unquestionably will ultimately afford a great part of the mine's product. As to this material, although I cannot give it a specific value, it should certainly be considered as favorably influencing the general life of the mine. But limiting ourselves to the foot wall ore and tale, and mining the former at the rate of twenty tons daily for fifteen months, and the latter at seventy tons daily for thirty months, I consider the value of the "Whitewater" ground only to be \$315,000 as due to the former class of ore, and \$270,000 as due to the concentrating ore—\$585,000 total value.

In this connection I desire to allude especially to the three adjoining fractional claims of the group. Although less than \$2,000 has been expended upon work upon these claims, sufficient has been shown, as I know from several visits to the ground, to prove that the "Whitewater" vein extends unbroken into, and quite to the western limits of this ground. The various openings on these fractions prove the

presence of ore quite as good as that so far yielded by the "Whitewater" ground; in fact all that is known of the fractions, tends to show that it is perfectly within reason to believe that this part of the property contains an ore body, equal in importance to that of the "Whitewater" claim itself. This is the more so because of the fact that the apex is on considerably higher ground, and the total backs are therefore of greater extent. Besides this it is only just to allude incidentally, to the fact that a property which lies but a short distance beyond this group has produced a large amount of ore which is considerably higher in average grade than the "Whitewater" product.

on-

fter

Ist

not

end 6

east

the

of

the

of net

ked ore

000 d a

pon

the, it

ne.

rate

irty as

e —

nal

pon

nd,

the

the

The present methods employed in exploiting the "Whitewater" are not altogether such as should be practiced. Without further mentioning the fact that considerable improvements might be introduced which would materially reduce the present cost of extraction, what strikes me as of even greater importance, is the erection of a well designed and properly located concentrating plant having a capacity of 75 to 100 tons daily. By means of this it will be feasible to avoid all expenses of hand sorting, and as well possible to save all that part of the value which now is for the time being wasted in the process of mining. It will also make it expedient to mine the whole vein from wall to wall, thus utilizing what may be called the latest value of the property, which is not possible of being estimated.

The cost of the improvements necessary in this connection will probably be under \$50,000.

WONDERFUL GROUP MINING CO., Ltd.

Incorporated 1896. Authorized Capital, \$1,000,000.

Head Office: H. C. Bell, Secretary, Spokane, Wash. W. W. D. Turner, President.

Mines Office: E. J. Field, Manager, Sandon, B. C.

Owns and operates the "Wonderful," "Lookout" and "Columbus," situate near the town of Sandon, in the Slocan Mining District, Province of British Columbia. Mr. Carlyle, in his report to the Minister of Mines, thus describes the operations on the property: "The property had been under bond to Jno. A. Finch, who had done over 2,000 feet of underground work, mostly along the supposed course of a vein, but with not very successful results, only two carloads of ore being shipped from these workings in 1895. Ore was found scattered through the wash and the much shattered slates near the surface, so the company decided to prospect the claim by bringing water from one of the small streams in a small flume, and then letting it cut its way down through the wash to bed-rock as it rushed down the mountain side to Miller Creek. Water was turned on June 18th, and it was found that pieces of galena ore were being left in the bottom of the cut, and this prospecting then developed into

hydraulic mining, the water being allowed to run for several hours, when there would be a "clean-up" of tons of high grade ore, with the result that over \$25,000 were thus won. As the work proceeded it was seen that the mineral-bearing wash or debris was not more than 100 or 120 feet wide, while the real "pay dirt" had a much less width than this, and as the channel cut down it left on either side conntry rock apparently in place. In the pay dirt there was not only the solid ore but decomposed mineral, all of which of course was swept away, only the boulders of galena, with all the surface decomposed, remaining; one of solid galena weighing over 13 cwt. While some believed that the ore had been brought down from a vein higher up on the mountain side, the fact that this ore was found only in a narrow channel, and that immediately above the slope of the mountain ran back with a gentle rise, led to the belief that the washing was being done very close to the vein, if not immediately above it, and this conclusion then arrived at has apparently been confirmed in that this washing is now reported by the manager to have disclosed the solid vein in place, with a strike S.W. and N.E., and regular underground mining has been begun."

A good wide track or trail, 7,500 feet long, was built from the mine to Sandon, and the ore is packed out to the railroad, the ore assaying from 113 to 133 ounces of silver per ton, and 70-76 per cent. lead, and Mr. Field has succeeded not only, as he claims, in uncovering the vein by this method of prospecting, but has recovered 400 tons of first-class ore from the debris.

Supplementary List of Silver Mining Companies.

ld re is ss ek ed all t. on at ne ly at e,

of ne

| | | CAPITAL. | .L. | | ; | |
|---|----------------------|--------------------------|---------------------|--|-----------------------|---|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | MINE M'G'R. OR AGENT. | REMARKS. |
| Alpha | Slocan, B.C | | : | Silverton, B.C F | . McNaught. | Silverton, B.C F. McNaught. Owners: Jas. McNaught. A. |
| es of Sandon, Ltd | Slocan, B.C | \$100,000 | \$1.00 | \$100,000 \$1.00 Sandon, B.C J. C. Ryan | . C. Ryan | McKenzie, Jas. Mackenzie. |
| Armington | Slocan, B.C | | : | Slocan City, B.C. | | Developing Argo and Belt |
| Bear Lake Con. Mining, Ltd . Slocan, B.C. Blue Bird Mining Slocan, B.C. | Slocan, B.C | 200,000 | 5.00 | 500,000 5.00 Victoria, B.C | Taylor Man | Claims. |
| Bondholder Mining, Ltd Slocan, B.C. | Slocan, B.C | 1,000,000 | 1.00 | I.oo Vancouver, B.C., R. G. Tatlow | G. Tatlow. | Carpenter Creek. Bondholder Dine I on I one |
| | | | | | | Star and Rosebud claims, |
| Bozedown Silver Mining, Ltd., B. C. | B. C | £3,000 stg. | £.20 st. | £3,000 stg. £20st. Victoria. B.C. W I Taulor | V I Toylor | Mile Creeks. |
| Carbonate Mount'n M. & M. Ltd. Kootenay, B.C | Kootenay, B.C | \$100.00 | | Vancouver B C F F Pares | Barrister | Organized 1898. |
| Carbonate Silver Mining, Ltd., Ainsworth, B.C | Ainsworth, B.C | I,000,000 | \$1.00 | 1,000,000 \$1.00 Bossland B. C. | Nand | and Number One claims. |
| | | | | | | claim on Spring Creek, |
| Cariboo Creek Mining, Ltd | . Illecillewaet, B.C | 50,000 | | Illecillewaet, B.C. D | avid Woolsey. | Illecillewaet, B.C. David Woolsey. Maple, Quebec and Corona |
| Dry Belt M. & M., Ltd | Slocan, B.C | 1,000,000 | 1.00 | I,000,000 I.00 Sandon, B.C | | claims. Owns the Cordelia, N. Fork. |
| Ellen Silver Miring, Ltd B. C | 3. C | 1,000,000 1.00 Rossland. | 1.00 | | O. Reddin. | C. O. Reddin. Incorporated 24th Jan., 1898. |

Supplementary List of Silver Mining Companies.—Continued.

| | | CAPITAL. | T. | CANADIAN | MINE M'c'e | |
|---|---|---|-------------------------------|--|-------------------------------|---|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | AGENT. | REMARKS. |
| Elkhorn Silver Mining, Ltd Slocan, B.C. Eureka Concentrating and M B. C Fisher Maiden Con. M.&S. Ltd Slocan, B.C. | td Slocan, B.C
d MB.C | 1,000,000
500,000
1,000,000 | 1.00 | Kaslo
Kaslo, B.C | W. R. Winstead | W. R. Winstead Incorporated 30th Jan., 1898. No information. Developing Fisher Maiden |
| Galena Farm Mining, Ltd B.C Gibson Mining & Milling, Ltd. Slocan, B.C. | td B.C | . 100,000 | IO :: | Vancouver, B.C M. Hicks. | | group.
Noinformation.
Owns the Gibson and Palouse |
| Goodenough Mines, Ltd Slocan, B.C
Hastings Silver-Lead Min, Ltd Hastings Co.,
Kaslo Development, Ltd Slocan, B.C
Kaslo Slocan Development, Ltd Slocan, B.C
Kokanee Creek Min. & Mil., Ltd Slocan, B.C | Goodenough Mines, Ltd Slocan, B.C
Hastings Silver-Lead Min, Ltd Hastings Co., Ont.
Kaslo Development, Ltd Slocan, B.C
Kaslo Slocan Development, Ltd Slocan, B.C
Kokanee Creek Min. & Mil, Ltd Slocan, B.C | 800,000
50,000
1,000,000
250,000 | 1.00
10.00
1.00
1.00 | Kaslo, B.C
Toronto, Ont
Kaslo, B.C
Kaslo, B.C | A. Goodenough
H.ADrummond | A. Goodenough Being developed. H.ADrummond |
| Lucky Boy Min., Mil. & Dev. Ltd Ainsworth, B.C. | ev.Ltd Ainsworth, B.C | | : | Ainsworth, B.C W. W. Warner | W. W. Warner | |
| Montreal and Kootenay, 1 | Montreal and Kootenay, M., Ltd Ainsworth, B.C | 20,000 | | Montreal | R. T. Hopper & | R. T. Hopper & Owns the Tam o'Shanter and |
| Mountain Chief Slocan, B.C. Mt. Mabel Min. & Smelt., Ltd Slocan, B.C. | Slocan, B.C | 1,500,000 | | I.00 New Denver, B.C.A. J. Hughes | . 80 . | South 1 am claims. Glenwood, New Brunswick, St. George, Mable May and |
| | | | | | | Star of Hope claims on the divide between Fir.nell and Ten. Mile Creek. |
| Native Silver Bell Min., Ltd B.C. Neosho Mining, Ltd Slocar | Ltd B.C | 1,000,000 | I.00
I0.00 | 00,000 1.00 Rossland, B.C Clive Pringle. 50,000 10.00 Head Office: | Clive Pringle
Head Office: | . 01 |

Supplementary List of Silver Mining Companies.—Continued.

So, coo 10.00 | 11eau Ollice : | ZIO Jesler D g., Seattle, Wash

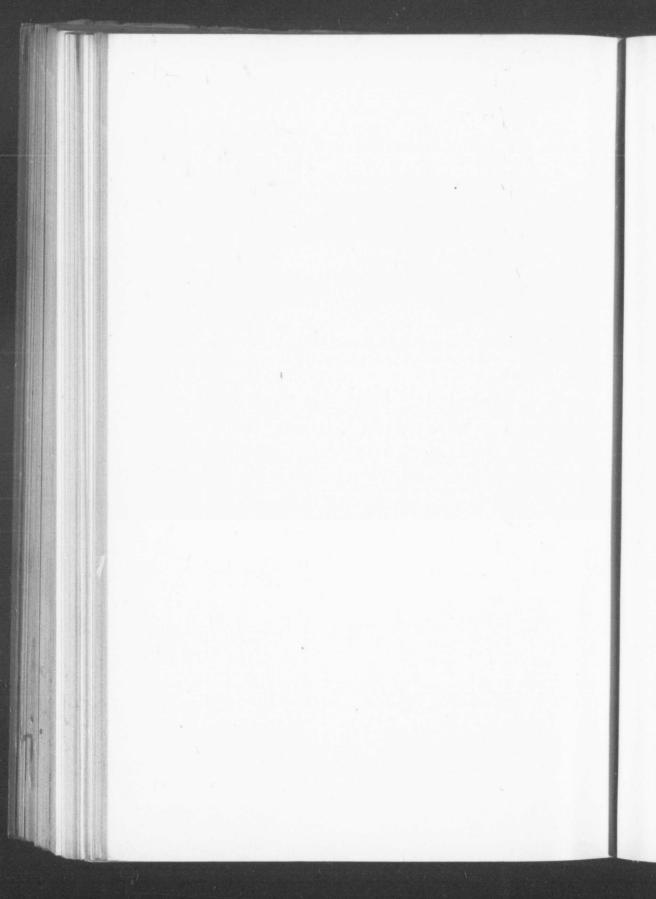
| COMPANY. DISTRICT. Authorized, $\frac{2}{54} = \frac{2}{10}$ OFFICE. AGENT. And Milling, Ltd Slocan, B.C | | | CAPITAL. | T. | | | |
|---|---|----------------|-------------|---------------------|-----------------------------------|-----------------------|--|
| Slocan, B.C. 1,000,000 1.00 Sandon, B.C. 600,000 1.00 Sandon, B.C. 600,000 1.00 Sandon, B.C. 600,000 1.00 Sandon, B.C. 600,000 1.00 Sandon, B.C. 74 74 Wharf Street, M.C. 600,000 1.00 80 60 <th>COMPANY.</th> <th>DISTRICT.</th> <th>Authorized.</th> <th>ParValue
Shares.</th> <th>OFFICE.</th> <th>MINE M'G'R. OR AGENT.</th> <th>REMARKS.</th> | COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | MINE M'G'R. OR AGENT. | REMARKS. |
| Slocan, B.C. 500,000 1.00 Sandon, B.C. S. H. Fleming. C. Slocan, B.C. 1,000,000 1.00 New Denver. S. H. Fleming. C. Slocan, B.C. 1,000,000 1.00 Sandon, B.C. R.C. Slocan, B.C. 250,000 25 Sandon, B.C. O. Slocan, B.C. 25,000 25 74 Wharf Street, O. Ainsworth, B.C. 1,000,000 1.00 Rossland, B.C. C. O. Reddin | '97 Mining and Milling, Ltd | Slocan, B.C | I,000,000 | 1.00 | Sandon, B.C | | Ownsthe N.P., Alma No. III. the Animon and No. III. claims N. Fork Carpenter |
| Slocan, B.C. 1,000,000 1.00 Ottawa S. H. Fleming. Slocan, B.C. 1,000,000 1.00 New Denver S. H. Fleming. Slocan, B.C. 1,250,000 1.00 Sandon, B.C. Sandon, B.C. Slocan, B.C. 250,000 25 74 Wharf Street, Street, Ainsworth, B.C. 1,000,000 1.00 Rossland, B.C. C. O. Reddin. | Ocean Min. and Milling, Ltd | Slocan, B.C | 500,000 | I.00 | Sandon, B.C | | Creek. Ocean claim on Bayne Mt. |
| Slocan, B.C. 1,000,000 1.00 New Denver. F Slocan, B.C. 1,250,000 1.00 Sandon, B.C. 0 Slocan, B.C. 250,000 25 74 Wharf Street, Victoria, B.C. 0 Ainsworth, B.C. 1,000,000 1.00 Rossland, B.C. 0 | Ottawa & Ivanhoe Silv. M., Ltd | Slocan, B.C | 1,000,000 | 1.00 | | S. H. Fleming. | near Three Forks, B.C.
Owns the Ottawa and Ivan- |
| Slocan, B.C 250,000 1.00 Sandon, B.C Owns the Sunrise and M. III claims. Slocan, B.C 250,000 25 Sandon, B.C Owns the Sunrise and M. III claims. Owns the Little Stella tion, Gracie, Minnie, Slocan, B.C 250,000 25 74 Wharf Street, Owns the Silver Band toon Gracie, Minnie, Owns the Silver Band toon Eight Mile Creek on Eight Mi | Roulette Min. & Milling, Ltd | Slocan, B. C | 1,000,000 | I.00 | New Denver | | Mountain. Formed to acquire the Roulaitte Board. |
| Slocan, B.C 250,000 1.00 Sandon, B.C Owns the Sunrise and M. III claims. Slocan, B.C 250,000 25 Sandon, B.C Owns the Little Stella tion, Gracie, Minnie, Slocan, B.C 252,000 25 74 Wharf Street, Owns the Silver Band and Hope claims. Ainsworth, B.C I,coo,000 1.00 Rossland, B.C C. O. Reddin Formed to purchase the Slocan Lall Fear Claim. | | | | | | | Mountain Lily and Lucky
Move claims on the N. Fk. |
| Slocan, B. C | Sandon Min. and Milling, Ltd | Slocan, B.C | 1,250,000 | 1.00 | Sandon, B.C | | Carpenter Creek.
Owns the Sunrise and Mascott |
| Slocan, B.C 252,000 25 74 Wharf Street, Owns the Silver Band on Eight Mile Creek on East side of Slocan Lal Ainsworth, B.C 1,000,000 1.00 Rossland, B.C C. O. Reddin Formed to purchase the Street East side of Slocan Lal Ainsworth, B.C C. O. Reddin Formed to purchase the Street East Silver East Slocan Lal Ainsworth, B.C C. O. Reddin Formed to purchase the Street East Slocan Lal Ainsworth and the Street Eas | Selkirk Min. and Milling, Ltd | Slocan, B.C | 250,000 | 25 | Sandon, B.C | | III claims. Owns the Little Stella Frac- |
| Ainsworth, B.C 1,coo,ooo 1.oo Rossland, B.C C. O. Reddin | | Slocan, B. C | 253,000 | 25 | 74 Wharf Street,
Victoria, B.C | | nado and Hope claims, Owns the Silver Band claim on Eight Mile Creek on the |
| | Silver Bear M. & Concentrating,
Ltd. | Ainsworth, B.C | 1,000,000 | 1.00 | Rossland, B. C | C. O. Reddin | east side of Slocan Lake. Formed to purchase the Silver |

Supplementary List of Silver Mining Companies.—Continued.

| | | CAPITAL. | L. | CANADIAN | Mrsrs Mich | |
|---|----------------|-------------|---------------------|----------------------------|---|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | AGENT. | REMARKS. |
| Silver Hill Mining, Ltd Slocan, B.C. | Slocan, B.C | 200,000 | .50 | .50 Slocan City, B. C. | | Owns the Silver Hill and Old |
| Silver Hill M. & Milling, Ltd Slocan, B. C. | Slocan, B. C | 1,000,000 | 1.00 | | Head Office: | Chum claims. |
| Silver Hustler Mining, Ltd Slocan, B. C. | Slocan, B. C | 300,000 | . 25 | Victoria, B. C | Spokane, Wash. | No information.
Owns the Silver Bell and |
| Silver Leaf M. & Smelting, Ltd. Slocan, B. C. | Slocan, B. C. | 1,000,000 | 1.00 | 1.00 Rossland, B. C | | Hustler claims on Idaho
basin, West Kootenay, B. C.
Owns the Maple Leaf on the |
| Slocan and Maple Leaf M. and Dev., Ltd. | Slocan, B. C | 1,000,000 | I.00 | Vancouver | | Divide between Springer
Creek and Ten Mile Creek
Owns the Maple Leaf claim |
| Slocan Belle M. and Mill., Ltd. Slocan, B. C. | Slocan, B. C | 1,000,000 | 1.00 | Kaslo, B. C | | on Wilson Creek. Owns the Northern Belle on |
| Slocan Beauties Silver M., Ltd. Slocan, B. C Slocan City Mining, Ltd Slocan, B. C | Slocan, B. C | 300,000 | .25 | Vancouver | | McGuigan Basin.
No information.
No information. |
| Slocan Lake M. and Dev., Ltd. Slocan, B. C. | Slocan, B. C | 250,000 | .25 | Vancouver, B. C. | | Owns the Ferry No. 2 claim,
Wilson Creek. |
| Slocan Mines Itd | Slocall, D. C. | 1,500,000 | 00 1 | | 1 . | No information. |
| | Slocan, B. C | 50,000 | 1.00 | oo vancouver | O. Flunkett
Head Office:— | |
| Slocan Queen M. and M., Ltd. Slocan, B. C. Slocan Silver-Lead Synd., Ltd. Slocan, B. C. | Slocan, B. C | 1,000,000 | 1.00 | 1,000,000 1.00 Sandon, B.C | Spokane, Wash. No information.
B. M. Walton. No information. | No information.
No information.
No information. |

Supplementary List of Silver Mining Companies.—Continued.

| | | CAPITAL. | IL. | CANADIAN | Mrs. Wiele | |
|---|------------------------------|-------------|---------------------|---|--|--|
| COMPANY. | DISTRICT. | Authorized. | ParValue
Shares. | OFFICE. | MINE MIGK. OR AGENT. | REMARKS. |
| Snowbird M. and Dev., Ltd Slocan, B. C | Slocan, B. C | | 1.00 | 1,000,000 1.00 Vancouver | O. Plunkett | O. Plunkett Snowbird claim on Dayton |
| Star M. and Milling, Ltd Slocan, B. C | Slocan, B. C | | : | I,000,000 Sandon | J. M. Harris | J. M. Harris Rabbit Paw and Heber cl'ms |
| Sunshine Mining, Ltd Slocan, B. C Twin Silver Mining, Ltd Ainsworth, B. C | Slocan, B. C Ainsworth, B. C | 50,000 | 1.00 | 50,000 1.00 Three Forks W. C. Yawkey. | W. C. Yawkey.
A. L. McClaine | 50,000 I.00 Three Forks W. C. Yawkey. I,000,000 I.00 Kaslo, B. C A. L. McClaine Owns the Twin claim two m. north of the Town of Airs. |
| Wellington Silver Mining, Ltd. Slocan, B. C | Slocan, B. C | 300,000 | | 300,000 Kalso, B. C | Head Office:—
S. H. Fleming,
Ottawa. | worth. S. H. Fleming, and other ciaims on Wellorton Ottawa. Ingron Mountain, 20 miles from the town of Kaslo, B. C. |
| | | | | | | |



GAS AND OIL.

GAS AND OIL.

PETROLEUM.

The petroleum field of the County of Lambton in western Ontario continues to be the only considerable source of supply of this important product yet developed in Canada. Oil was first obtained in this district at Oil Springs in 1861 from surface wells dug to a depth of 40 to 60 feet in the neighborhood of peculiar deposits, locally, known as "gum beds," formed by the evaporation of the petroleum which found its way to the surface. These primitive attempts were quickly followed by wells drilled in the rock, some of which were extraordinarily productive. The oil was reached at a depth varying from 100 to 240 feet, and the first gush in some wells yielded as much as 6,000 barrels per 24 hours. The famous Black & Mathewson well flowed at the rate of 7,500 barrels per day for a short time. This enormous output, owing to the low price of oil and insufficient methods of controlling the wells and storing the product, went almost wholly to waste. It has been calculated that during the spring and summer of 1861 not less than 5,000,000 barrels of oil flowed off on the waters of Black Creek—a quantity equal to five or six times the present annual production.

The Petrolia field was opened in 1865, and the period of greatest production was reached in 1866, when the noted King wells were struck, yielding 400 barrels per day. The Oil Springs and Petrolia fields are situated in the Townsnip of Enniskillen, and comprise the main producing district. They are both of small extent. The former has an area of about 21/2 square miles, and the latter of about 26 square miles. The area of production is, however, gradually enlarging, and during the past year experienced an addition of 3 or 4 square miles by the resumption of operations in the old Bothwell field, which was abandoned in 1866 on account of the fall in the price of oil and the flooding of the wells by salt water. There appears to be an anticlinal in the Township of Zone which extends into the Township of Orford, and it is on this that the recent wells have been sunk, some of which have at the start yielded as much as 100 barrels per day. A well drilled in June, 1898, on lot 5, in the first concession of Zone, yielded at the rate of 1,000 barrels a day. The anticlinal runs pretty nearly due east and west, and so far as delineated seems to be about 5 miles long by 1/2 a mile wide. Three separate horizons of oil-bearing rock are met with. The first is at the top of what is locally known as the great limestone, at a depth from the surface varying from 150 to 200 feet, according to the depth of the drift; but this source, though yielding a good deal of oil for a short time, is not a permanent one. The next is at a depth in the great limestone of from 50 to 100 feet, and this also occasionally yields largely for a short fime. The permanent supply is found in a reddish sandstone underlying the limestone, at a depth of about 400 feet from the surface. Some of the wells yield 30 barrels per day, some 20, 15 or 10, but the majority average 5 or 6. The re-opening of the Bothwell field bids fair to add considerably to the output of petroleum in Ontario. Oil was found in 1895 on Pelee Island, and since

then several wells have been sunk, in three or four of which oil has been struck, but the value of the field has not yet been proven.

The average yield of the wells in the Lambton district has steadily decreased since the field was opened, and instead of the great gushers which were common at the beginning, wells now opened rarely give more than a barrel or a barrel and a half per day for a month or six weeks, when they sink to a yield of eight or ten barrels per month, which is about the average production of wells in the district. Old wells are constantly being abandoned and new ones put down. The long life of the wells and their great number to a large extent offset the decrease in their yield. The field shows little sign of exhaustion, and its output remains comparatively steady from year to year, the annual return being from 800,000 to 1,000,000 barrels. In 1891 the production was 894,647 barrels; in 1892, 800,000 barrels; in 1893, 973,000 barrels; in 1894, 997,500 barrels; in 1895, 821,721 barrels; in 1896, 782,300 barrels, and in 1897, 730,188 barrels. A barrel contains 35 Imperial gallons.

s to

in

face

lly,

its

lled

at a

uch

the

the

ıct,

ım-

ack

vas

per

nt.

are

ast

in

he

is

ed

h.

e.

The oil-bearing rock is the corniferous limestone, which at Petrolia lies at a depth of about 400 feet below the surface, and in all cases the oil is found in what is known as the "lower vein," which occurs at a depth of about 65 feet in the formation. At Oil Springs the depth of the borings is somewhat less, oil being found at 370 feet from the ground and about 60 feet below the surface of the corniferous limestone. The Trenton limestone, which is the great oil-bearing formation in Ohio, underlies the corniferous in Lambton County, being separated from it by various other members of the Silurian system, and in the opinion of some geologists it is not unlikely that the petroleum originates in the Trenton and finds its way up to the corniferous. Dr. Selwyn, late director of the Geological Survey of Canada, has stated that "in all probability there is a very large area of petroleum-bearing strata under central Ontario which has as yet never been reached, and which corresponds with the Ohio petroleumbearing strata."* The deepest boring yet made in the oil district reached a depth of 1,505 feet, but it probably ended in the Onondaga formation, a long distance above the Trenton, and it has yet to be proven by actual demonstration that the latter is an oilbearing system in the present petroleum region, or indeed elsewhere in Ontario.

Like all petroleum derived from the limestone rocks, the Ontario product carries a good deal of sulphur, being in this respect more akin to the Ohio than to the Pennsylvania article. The following analyses show approximately the comparative composition of the Ontario and Ohio petroleum:—

| Ontario. | Ohio. |
|------------------|--------|
| Carbon 83.94 | 84.57 |
| Hydrogen | 13.62 |
| Sulphur LOI | .72 |
| Specific gravity | . 3381 |

The crude petroleum of Ontario is thick, and dark in color, and its treatment for the production of high grade illuminating oil was at first beset with a good deal of difficulty, owing chiefly to the trouble experienced in eliminating the sulphur. But

^{*}Report Royal Commission on Mineral Resources of Ontario, 1890, page 69.

[†]Composition of the American Sulphur Petroleums, by Prof. C. F. Mabery, pp. 25, 39.

by introducing the method of redistillation and various other improvements, the Ontario refiners have been enabled to place on the market an oil very little, if at all inferior, to the best American. The percentage of illuminating oil now recovered from the crude is also greater than formerly; in 1897 the average was 42.62 per cent., as against 38.67 per cent, in 1892. The Pennsylvania crude is much richer in illuminating oils than the Canadian, but the latter yields a greater proportion, and, it is asserted, a better quality of lubricating oils. These form about 8 per cent. of the crude oil, and are produced in many grades, to suit the purposes for which they are intended. All other products, except paraffin, make up 35 per cent.; these include benzine, gasoline, naphtha, vaseline, etc. From the paraffin wax, of which a gallon of crude oil yields about .08 lb., candles and other articles are manufactured. A complete enumeration of the products of evaporation would be about as follows: Illuminating oil, 43 per cent.; gas oil, 17 per cent.; tar, 15 per cent.; waste, 10 per cent.; water, 6 per cent.; coke, 9 per cent. In 1897 the total quantity of crude petroleum treated (including quantity used for fuel) was 25,556,591 imperial gallons, valued at \$1,067,128, from which there were manufactured 10,891,337 gallons illuminating oils worth \$1,131,083; 1,959,810 gallons Inbricating oil worth \$199,755; 8,021,633 gallons all other oils worth \$281,035; 2,139,278 lbs. paraffin wax worth \$88,378, and a quantity of fuel product. The price for Canadian crude showed a steady decline for some years prior to 1894, and in May of that year it reached a minimum of 93 cents per barrel, when a rapid recovery of value set in, and the year 1895 closed with crude oil worth \$1.70 per barrel for Petrolia, and \$1.72 for Oil Springs, and in active demand. Prices were fairly steady in 1896, closing at \$1.52 for crude at Petrolia. In 1897 the average price was \$1.46 per barrel.

The business of refining is now mainly centred at Petrolia, where four refineries are in operation, with a capacity more than equal to the entire output of the oil field. The oil is distilled in large sheet iron retorts. The heat is furnished by a spray of mixed petroleum and steam injected into the fire chamber below the retort, which is lined with fire brick. The distillate is carried through tubes immersed in long vats of water. As the different distillates make their appearance at various stages of the process, they are led into different troughs and flow into separate tanks. First, the incondensable gases, gasoline and naphtha, come off; then the illuminating oil; following that the intermediate and wool oils, and lastly the lubricating oils; while an incrustation of carbonaceous matter or coke is left in the retort, which makes a good fuel. All the grades of the distillation are divided at will, either by stopping the process at various stages or by subsequent redistillation and treatment, into an almost endless variety of lighter and highly combustible intermediate illuminating oils, and also into such solids as vaseline, paraffin, etc. To refine the illuminating oil it is agitated with a 2 per cent. sulphuric acid for the purpose of removing the free carbon or tarry materials, which are drawn off below, then after washing it with water, caustic soda and litharge are added. The litharge combines with the sulphur and forms lead sulphide. Flowers of sulphur is then added, which precipitates the lead and other impurities, and the oil is left cleared, but with still a small proportion of sulphur. To overcome this for the higher grade of oils, re-distillation is resorted to, after the

the l inrom as mit is the are ıde lon A VS: per ıde ns, mi-5; rth l a la ear Dil 52

ies d. of is of ()he 1n d 0st d is n C d

Shooting an Oil Well, Petrolia, Ont.

litharge and caustic soda have been added and before the flowers of sulphur has been put in. The greater part of the remaining sulphur is thus got rid of, being left in the retort in combination with the lead. The result of this process is an excellent quality of illuminating oil.

Six distilleries were employed in 1897 in treating the crude, viz., those of the Imperial Oil Company, the Bushnell Company, the Petrolia Crude Oil and Tanking Company, and the National Oil Works at Petrolia, the works of the Empire Oil Company at London, and the works of the Bushnell Company at Sarnia. The latter, however, was operated only during the months of October, November and December.

The crude oil is collected from the individual wells by waggon tanks and delivered at receiving tanks, whence it is pumped to the refineries. A method of storing the oil has been adopted which is peculiar to this field. Eighteen or twenty feet below the surface is found an impervious blue clay, and excavations are made in this 60 ft. deep and 30 ft. in diameter. A wooden lining extends 30 ft. down into the tank, and the crude oil is kept in this way without danger of fire or leakage. Another characteristic method of the district is that of raising the oil from the wells. They have all to be pumped, and as the yield is small economy forbids the employment of a separate engine for each well. The "jerker" system of pumping was therefore introduced and is now in universal use. A 12 h.p. engine operating a horizontal wheel, with which a combination of pump rods is connected, so arranged that their weights about balance one another, suffices to raise the oil from a large number of wells—as many as 90 in some cases.

In the Province of Quebec borings for petroleum have been carried on for a period covering many years in the County of Gaspé. Latterly the work has been done by the Petroleum Oil Trust, Ltd., of London, England, chiefly on the left bank of the York River. A light green oil, said to resemble that of Pennsylvania, has been struck in several of the wells at a depth of about 2,000 ft., and a certain number of barrels have been got out as samples, but no regular work of production has yet been begun. A remarkable and extensive series found along the Athabasca River, in the District of Athabasca, N.W.T., and known as the "tar sands," contains a large proportion of bitumen, and drillings have been undertaken by the Dominion Government to ascertain whether supplies of petroleum exist in the underlying Devonian rocks. No decisive results have yet been reached. Petroleum has also been found in the South Kootenay Pass, B.C.

NATURAL GAS.

It is true of natural gas, as of petroleum, that the Province of Ontario is she only portion of the Dominion where it has been found in large quantity, and so far as is known the supply is limited to two fields. One occupies a small area along the north shore of Lake Erie, chiefly in the township of Gosfield South, in the County of Essex, where the gas-bearing formation is supposed to be either a Clinton or Niagara limestone and is reached at a depth of 1,050 ft. In this field there are eight producing wells, whose capacity is estimated at 60,000,000 cubic ft. per day. The gas is supplied to the neighboring villages of Kingsville, Ruthven and Leamington, but the

main outlet and place of consumption is the City of Detroit, Mich., to which the gas is piped through the intervening distance of 35 miles, and across the bed of the Detroit River. The towns of Windsor, Walkerville and Sandwich, on the Canadian side are also supplied from the same line. The Ontario Natural Gas Company and the Kingsville Natural Gas and Oil Company are the two concerns which operate the wells and control the gas territory in this district. The other gas field is in the Counties of Welland and Haldimand; and is stated to extend from the village of Ridgeway in the former county to the village of Cayuga in the latter, a total length of 35 miles. The field, however, is probably not productive for the whole of the length. The principal gas-bearing rock is in the Medina sandstone at a depth of about 850 ft.; but west of the Welland canal the supply seems to come from the overlying Clinton limestone at a depth of about 700 ft. The owners of wells in Cayuga, Dunnville, Port Colborne and Humberstone village supply the needs of their respective localities, but the main producers of gas are the Provincial Natural Gas Company and the Erie Natural Gas Company, which deliver nearly the whole of the output of their wells in the Townships of Bertie and Humberstone to the City of Buffalo, N.Y. The length of the former company's pipe line from the centre of their gas field is 14 miles. The Welland gas field has been in operation for nearly six years, and under the continuous demands upon it is giving signs of approaching exhaustion, the rock pressure, which stood originally at about 570 lbs., having fallen to one-fifth of that amount, or less. Gas began to be delivered at Detroit from the Essex field early in 1895, and is now going into that city in large volume. There are grounds for supposing that notwithstanding the limited area covered by the wells in Essex, the field is really of large extent, and perhaps underlies a portion of the bed of Lake Erie. The total output of natural gas in Ontario in 1893 was valued at \$238,200; in 1895 it was worth \$282,968, and in 1897 \$308,448, of which \$212,370 worth came from the Welland field, and \$96,078 from the Essex field.

Natural gas is found in greater or smaller quantities wherever petroleum is found, but the former often occurs where the latter is present in small quantities only, or even is wholly absent. The Trenton limestone, the great natural gas bearing formation of Ohio, underlies a large part of southern Ontario and Quebec, and in many places where it has been reached by borings in the former Province small flows of gas have been struck, but no large or continuous yield has yet been obtained from it. In the counties of Kent and Elgin, in Ontario, gas is quite commonly found in the drift above the bed rock, but the quantity is small and soon exhausted. Small flows have been obtained from the Trenton at St. Gregoire and elsewhere in Quebec, and it is regarded as probable that its exploitation at other points would lead to further discoveries. In several of the other Provinces of the Dominion and in the Northwest Territories natural gas has been found, but so far the discoveries have not seemed of sufficient promise, or have been too far from means of utilization, to warrant large exexpenditure of money in developing them.

The conditions which must be present in a petroleum or gas-bearing formation to constitute a productive field are (1) sufficient porosity to afford storage accommodation for the oil or gas, whether generated in the formation itself or in underlying strata,

n

ie

y

(2) continuity of the beds and an absence of faults or fissures through which the oil or gas might escape, and (3) an impervious covering of shale or clay to confine the product within the limits of the formation. The strata must be unaltered and sedimentary in character, and the localities most likely to prove reservoirs of gas or oil are the anticlinals, or dome-like configurations, usually present in fields of large supply. the origin of petroleum and natural gas various theories have been propounded, though all authorities agree in assigning them, at least for the most part, a common source. One is that they are of purely inorganic origin, and are formed by the action of water on heated carbides of the metals in the interior of the earth, but the prevalent opinion is that they are the result of the decomposition of animal and vegetable remains enclosed within the rocks. Under the former view, oil and gas are in continuous process of production, and we may hope for a constant and almost unlimited supply; under the latter the quantity of both is practically fixed, and no more can be looked for from a field that is contained within it when first opened. The partial, and in some cases, total exhaustion of oil and gas fields in the United States and elsewhere seems to point to the conclusion that, like mineral deposits in general, the accumulations of petroleum and natural gas are already complete, and are therefore in the strictest sense limited and exhaustible.

DUTY.

Illuminating oils composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon, 25 per cent. ad valorem.

Lubricating oils composed wholly or in part of petroleum, and costing less than 25 cents per gallon, 5 cents per gallon; all other lubricating oils, N.E.S., 25 per cent.

OIL PRODUCTION OF 1897.

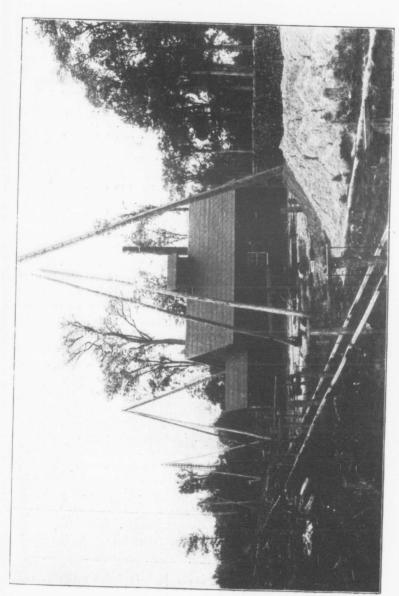
(Reported by Ontario Bureau of Mines.)

Crude petroleum to the amount of 25,556,591 imperial gallons and valued at \$1,067,128 was distilled in the Province last year, being in amount 397,352 gallons more but in value \$55,980 less than in the previous year.

The following table gives the distilled products of the six refineries for the year, and the value of each product:

| Illuminating oil | Imp. gal. 10,891,337 | \$1,131,083 |
|-----------------------------|----------------------|-------------|
| Lubricating oil | 1,959,810 | 199,755 |
| Benzine and naptha | 949,341 | 77,340 |
| Gas and fuel oils and tar | 8,021,633 | 281,035 |
| Paraffin wax and candles lb | 2,139,278 | 88,378 |

The total value of refined products is \$1,777,591, which is \$710,463 more than the value of the crude petroleum. In 1896 the value of distilled products was \$1,955,295, which was \$832,187 more than the value of the crude. The percentage of appreciation by treatment in 1896 was 74 per cent. and in 1897 it was 67 per cent. The cause is thus stated by the president of one of the companies: "The tariff changes reduced crude values, and reductions in articles entering into cost manufacture carried a relatively greater reduction in refined, and products generally." The main item of decrease is observed to be in illuminating oils, which in quantity were



or ict in tito

gh e. ter

on eness ler for me ns of

est

ıl,

an ıt.

ge t.

Jerker in the Petrolia Oil Field, Ont.

451,543 gallons and in value \$132,147 less in the latter year than in the former. There is little change to note in the cost of labor, the average earnings in 1897 being \$540.83 and in 1896 \$541.33. The average number of workmen employed last year was 364, being 13 more than in the previous year, and the total amount of wage earnings was \$196,955.70.

AVERAGE PRICE OF CRUDE OIL ON THE PETROLIA OIL EXCHANGE.

| 1886 | 88.68 per | barrel. | 1892 | 126.50 per | barrel. |
|------|-----------|---------|------|------------|---------|
| 1887 | | 66 | 1893 | | " |
| 1888 | | 66 | 1894 | | 66 |
| 1889 | | 66 | 1895 | | 66 |
| 1890 | | 66 | 1896 | | 6.6 |
| 1891 | 133'77 | 66 | 1897 | | 66 |

NATURAL GAS PRODUCTION IN ONTARIO IN 1897.

(Reported by the Bureau of Mines.)

There is nothing new to note in connection with natural gas, except that the value of the output is larger than in any previous year. This is due no doubt to the greatly increased number of consumers following upon the laying of pipes under Detroit river to supply the citizens of Detroit. The territory, both in the Essex and Welland fields, continues to be about the same as in previous years, and although a number of wells were bored in both fields last year the number of producing wells continues to be very nearly the same—some of the old wells apparently having become exhausted.

The Welland field, which embraces parts of Haldimand, has in all 106 producing wells and 140½ miles of pipe line. Last year 10 new wells were drilled, only six of which were producers. The value of its yield of gas was \$96,078, and the business gave employment to an average of 38 men throughout the year whose total wage earnings were \$22,630. In the Essex field 46 men found regular employment, and the amount paid them for wages was \$19,708. The length of pipe line in that county is 156½ miles, the number of producing wells 34, and the value of gas supplied to consumers was \$212,370. Nine wells were bored during the year, three of which proved to be dry holes. It should be stated however that eight of the so-classed producing wells are sealed up, awaiting a market, and therefore the whole supply was drawn from 26 wells. The town of Leamington, which owns its own wells, derived from them last year a revenue of \$12,000. It has now 11 miles of pipe line laid within the corporation to serve consumers.

| Schedule. | 1893. | 1894. | 1895. | 1896. | 1897. |
|---|---------|---------|---------|---------|---------|
| No. of producing wells. Miles of gas pipe Workmen employed Value of gas product Wages for labor | 107 | 110 | 123 | 141 | 140 |
| | 117 | 183½ | 248 | 287 ¼ | 297 |
| | 59 | 99 | 92 | 87 | 84 |
| | 238,200 | 204,179 | 282,986 | 276,710 | 308,448 |
| | 24,592 | 53,130 | 73,328 | 47,527 | 42,338 |

BERTIE NATURAL GAS COMPANY.

Incorporated 21st February, 1891. Authorized Capital, \$8,000 of which to date about \$4,000 have been paid up.

Directors:

H. N. Hibbard.

B. M. Disher. John Young.

r.

ar

id

0

d.

ng

SS

g

n

I. L. Pound. 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 deep; 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 3 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. I 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.

Reporting Ist Jan., 1896, the Secretary writes: "The product of gas from these two wells is yet sufficient to supply the village, though a decrease of pressure is noticeable—not, however, running so low as to allow the water to enter or to necessitate "blowing off." The gas is used economically and is indeed a boon to the village. About 120 houses, stores, hotels, etc., are supplied with fuel from the two wells. The Standard Oil Company—controlling the gas field here—pipe the product to Buffalo. Our little local company is struggling to save for our own people a share of the vanishing luxury—natural gas. The output of great wells around us goes by our village at high pressure. The effect of the heavy drain begins to show, as during some months our wells have steadily decreased, and the water must be "blown off" at regular intervals to prevent flooding the regulators."

In October, 1897, a third well was drilled, which proved a very light producer.

The product from each well is now regulated by itself in order that one may be rested while the other two are used. In very cold weather all three are required. The pressure is still falling off.

BOTHWELL OIL AND GAS CO.

Incorporated 1896. Authorized Capital, \$250,000, in shares of \$5.00.

Directors:

H. A. Walker, Walkerville, Ont.
W. T. DeGraff, Detroit, Mich.

Hiram Walker, Isle aux Peche, Ont.

Head Office: Walkerville, Ont.

Formed to drill and operate for petroleum and gas in the Province of Ontario. Being organized at date of report.

BRITISH COLUMBIA OIL CO., Limited.

Registered 20th January, 1898. Authorized Capital, \$10,000.

Head Office: Vancouver, B.C.

Formed to produce crude petroleum, to buy and sell petroleum, to refine petroleum, and to carry on all the business incidental thereto.

THE BUSHNELL COMPANY, Limited.

This company acquired in 1897 the Refinery formerly operated by Messrs Fairbanks, Rogers & Company.

Canadian Office: Petrolia, Ont.

Carry on the business of oil refiners at Petrolia, Ont. The annual capacity of the works may be stated to be as follows:—

| Crude oil (barrels) | 75,000 |
|--|-----------|
| | 1,000,000 |
| Benzine and naptha (galls.) | 150,000 |
| Paraffin oils (galls.) | 130,000 |
| Lubricating oils, gas, oil and tar (barrels) | 30,000 |
| Paraffin wax (lbs.) | 170,000 |

CROWN WAREHOUSING CO., Limited.

Incorporated 1885. Authorized Capital, \$50,000, in shares of \$100. Paid up Capital, \$33,000.

Directors:

John D. Noble, Vice-President. | Robert D. Noble.

Head Office: Petrolia, Ont.

This company operates 16 wells at Petrolia, and a similar number at Oil Springs, Ontario, producing about 375 barrels per month. Length of pipe lines, 15 miles. Receiving stations at Petrolia and Oil Springs, having a storing capacity of 50,000 barrels of underground tankage for holding crude oil.

DUNNVILLE NATURAL GAS CO.

Incorporated 1891. Authorized Capital, \$20,000, in 600 shares of a value of \$25.00 each.

Directors:

J. Brown.
Dr. G. A. McCallum
T. Armour.

F. J. Ramsay, President.
J. Carmody.
J. Mahle.
J. A Congdon.
W. D. Swayze.
W. F. Haskins.

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 County, Province of Ontario. The secretary writes that at date eight 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 feet 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 feet. A third and fourth well were afterwards put down. At last report six wells had been completed and the seventh was down about 100 ft. The flow in the fifth and sixth wells was similar to No. 1, and larger than either No. 2, 3 or 4. 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. Writing under date of 26th January, 1896, the Secretary says: "The rock pressure does not exceed 200 lbs., and volume of flow is gradually decreasing, being now about 50 per cent. less than three years ago."

IMPERIAL OIL CO., Limited.

Head Office : Petrolia, Ont.

Incorporated May, 1880. Authorized Capital, \$500,000 in shares of \$100.

Officers:

F. A. Fitzgerald, President. J. L. Englehart, Vice-President. Wm. Pratt, Secretary.

Directors:

F. A. Fitzgerald, President.

J. L. Englehart, Vice-Pres.
H. Waterman.
Frank Ward.

T. H. Smallman.
Frank Smith.
T. D. Hodgens.

Probably the most important oil refining company in Canada.

ANNUAL CAPACITY.

| Illuminating
Benzine and | oils | | | | | | | | * | | |
9,500,000 | gallons |
|-----------------------------|---------|-----|----|--|------|--|-----|-----|---|---|--|---------------|---------|
| Dana Con - 11 | naupta | | ٠. | | | | | | * | * | |
000,000 | 66 |
| Latalilli Olis | | | | | | | | | | | | T 200 000 | 6.6 |
| Gas and luci | OHS | | | | | | | | | | | 4 000 000 | 6.6 |
| Lubricating | ons and | tai | | | | | , , | | | | | 4,200,000 | 6.6 |
| Paraffin wax | | | | |
 | | | - 4 | | | | 2,000,000 | 1he |

ANNUAL CONSUMPTION OF CHEMICALS.

| Sulphuric acid | 3,500,000 | valued at | \$45,500 | 00 |
|-----------------|-----------|-----------|----------|----|
| Littlaige | 150 000 | 66 | 5,500 | |
| Caustic soda | 250 000 | 66 | 7,500 | |
| Sulphur | 10.000 | 4.6 | 6 | |
| Other chemicals | | | 2,500 | 00 |

IRISH PROPRIETORY OIL FIELDS OF GASPE CANADA, Limited.

Registered 1896. Authorized Capital, £100,000 in shares of £1.

Directors:

George Carr Glyn.
Robert Lee, M.D.
C. B. K. Carpenter.
John A. Walker, J.P.
James Foley.

Head Office: Edward S. Elvey, Secretary, 13 Trinity St., Dublin.

Formed to acquire, carry on and develop certain mineral lands at Gaspe, in the Province of Quebec. A contract has been entered into for the purchase by the company of an area comprising 1,500 acres, and 500 acres of mining rights in perpetuity. The purchase price, as fixed by the London and Dublin Finance Corporation, Limited, who were the promoters and re-sold at a profit, was £66,000, payable as to £33,333 in fully paid ordinary shares, £2,500 in cash, and the balance in cash or shares, at the option of the directors.

KINGSVILLE NATURAL GAS AND OIL CO.

Incorporated 30th October, 1890. Authorized Capital, \$43,740, all subscribed and one-ninth paid up. Shares, \$20 each.

Directors:

Dr. S. A. King, President.

Jas. Brown, Vice-President. Curtis Green.

Ira Loop. Sol. Wigle.

Dr. Allworth, Treasurer.

Head Office: Jas. W. King, Secretary, Kingsville, Ont.

This company was first known as the Kingsville Citizen's Natural Gas Oil Association. Four wells have been put down in 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 Rutven, 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 $1\frac{1}{2}$ 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 woollen 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 fuel for burning lime, the stone for which is brought here from Pelee Island." Reporting on 13th January, 1896, the secretary writes: "We have added to our list of consumers about 50 stoves, the South Essex preserving factory, a basket factory, and a foundry. The supply at date is entirely taken from one well which has been in use for over five years, and the pressure shows no sign of diminution, notwithstanding there are two 8 inch lines taking gas out of the field supplying Walkerville, Windsor and Detroit." Writing under date 28th June, 1898, the secretary says: "The supply of gas is as great as ever, in fact one of the strongest wells in the field was drilled last week."

LAKE ERIE OIL AND GAS COMPANY, Ltd.

Incorporated 1896. Authorized Capital, \$45,000.

Directors:

A. M. McIntyre.

James Poole. | D. C. Clay.

Colin S. Leitch.

Head Office: Dutton, Ont.

Formed to drill for gas and oil in the townships of Aldborough, Dunwich, Southwold, and the village of Dutton.

LONDON OIL COMPANY, Limited.

Incorporated 1897. Authorized Capital, \$3,000, in 60 shares of a value of \$50 each.

Directors:

E. Scatcherd. | C. W. Leonard. | J. M. Piper. | L. Meredith. | J. McDonald.

Head Office: London, Ont.

Formed to prospect, drill and operate for petroleum, oil, gas, or other minerals.

MUTUAL NATURAL GAS COMPANY 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:

John Reeb, President.

Menna A. Reeb, Vice-President. | Eugene Reeb, Manager. | William Reeb.

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 25 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 1,500,000 cubic feet of gas. It supplies the village of Port Colborne, the number of consumers being about 285. Among other industrial consumers are 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.

NATIONAL OIL COMPANY, Ltd.

Incorporated 15th July, 1892. Authorized Capital, \$150,000, in shares of \$100.00.

Invested Capital, \$110,000.

Directors :

James Fiddes.

John McDonald.

W. E. Langford.

Head Office: John McDonald, President, Petrolia, Ont.

W. Langford, Secretary.

Engaged in the business of oil refiners at Petrolia, Ont. Eighteen persons employed.

ANNUAL CAPACITY.

| Illuminating oils | (gallons |). | | | | | | | | | | 2,520,000 |
|----------------------|----------|----|------|--|--|--|--|--|--|--|--|-----------|
| Benzine and naptha | | | | | | | | | | | | 478,000 |
| Paraffin oils | 66 | | | | | | | | | | | 315,000 |
| Lubricating oils and | tar " | | | | | | | | | | | 2,961,000 |
| Paraffin wax, lbs | | |
 | | | | | | | | | L.134.000 |

ANNUAL CONSUMPTION OF CHEMICALS.

| Sulphuric acid | 705,004 | lbs., | valued at | \$9,519.16 |
|----------------|---------|-------|-----------|------------|
| Litharge | 154,966 | 66 | " | 4,617.09 |
| Caustic soda | 37,465 | 4.6 | 6.6 | 859.79 |
| Sulphur | 16,384 | 6.6 | 6.6 | 267.46 |

NATURAL GAS AND OIL CO. OF ONTARIO, Ltd.

Incorporated 1894. Authorized Capital, \$500,000, in shares of \$50.00 each.

Hiram Walker, Detroit.

S. A. King, Kingsville, Ont. Thos. Reid, Walkerville, Ont.

C. M. Walker, Walkerville, Ont. Hiram A. Walker, Walkerville, Ont.

Head Office: S. T. Copus, Secretary, Windsor, Ont.

Formed to acquire in the County of Essex lands or interest in which to sink wells for natural gas, oil and other minerals. The company has about twenty producing wells, from which the Town of Walkerville, City of Windsor, Ont., and the City of Detroit, Mich., are supplied; the plants being fed by two lines, one an 8-in. extending 33 miles, and another, a telescope of 8 and 10 inches.

ONTARIO LANDS AND OIL COMPANY, Limited.

Directors:

J. W. Maclure, M.P., Chairman.

Maj. A. E. Baldwin. | J. W. Brigstock. G. Rogers, Secretary.

J. F. H. Read.

Office: I Pinner's Hall, Great Winchester Street, London, E.C.

The company was registered June 28, 1892, to acquire the properties of the Western of Canada Oil Lands and Works Company, Ltd., registered Dec. 23, 1871, and reconstructed in 1877. In the 1892 reconstruction of the old company, the share

capital was reduced largely, the old debentures being converted into shares. The authorized capital is £135,000, £60,000 being in 6 per cent. preference shares of £10, £60,000 in ordinary shares of £10, and £15,000 in deferred shares of £2 10s. After payment of the preference dividend the ordinary shares take 6 per cent. per annum, and any surplus is to be divided, half amongst the ordinary, and half amongst the deferred shares. Of the preference capital, £55,440, and a similar amount of ordinary, together with £10,330 of the deferred, have been subscribed and paid up. There is also a loan of £1,900. The accounts are made up annually to June 30, and submitted in November. Debit balance for 1892-3, £1,003, increased in 1893-4 to £4,762, in 1894-5 to £5,757, and reduced in 1895-6 to £4,398, and converted in 1896-7 into a credit balance of £69.

PELEE GAS AND OIL CO. OF ONTARIO.

Incorporated 1895. Authorized Capital, \$30,000.

Directors:

Geo. Jasperson, S. L. McKay, Herman Dey, W. A. Smith, H. Mosher, W. A. Nelson, Bon. Jasperson, A. Wigle.

Head Office: Bon. Jasperson, Managing Director; S. L. McKay, Secy-Treas., Kingsville, Ont.

Formed to acquire and work gas and oil wells in the Township of Pelee and at the village of Kingsville in the County of Essex, Province of Ontario.

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. £368,310 has been allotted and paid up, £315,000 having been issued to the vendors. The shares were formerly of £10, but in 1897 each share was divided into ten. The preference dividend, guaranteed for three years by the Charing Cross Bank has been regularly paid in June and December. Balance sheet not obtainable, but it is officially reported that there was a profit for 1895-6 of £13,906.

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.

Works and Wells: C. B. K. Carpenter, Supt., Gaspe, Que.

Formed to acquire properties in the Gaspé districts and elsewhere in the Province of Quebec, covering an area of 40,137 acres freehold, with mining rights over 10,220 acres in addition. At 10th January, 1896, the company had 26 derricks, some of the wells being put down to a considerable depth. A number of the wells are reported to be pumping oil of a very superior quality. Ten new derricks have recently been constructed and are now drilling. The oil is found at depths varying from 1,300 to 3,000 feet, and is of a light green color, perfectly ordorless.

In 1896, 5,041 acres of land were sold to the Société Belge des Petroles du Canada, for 7,750,000 francs in fully paid shares of 500 francs each of that Company.

DIRECTORS REPORT, 1897.

The following is excerpted from the Directors Report, issued April, 1897:-

The Directors have further to report that 21 drilling derricks have been erected in the neighborhood of the prospecting wells; 14 wells are sunk to the petroleum deposits in the overlying porous sandstone. Eight are pumping wells, with a daily average output of about 8,000 gallons. Six others contain oil which will flow without pumping when connected by short pipe lines to the main pipe line to receiving tanks. It is estimated that the daily output from these six wells will average 7,000 gallons. Seven other wells are in the course of being sunk, and are at the depths of from 900 to 3,090 ft. As these wells reach the oil deposits the output will be largely increased. Three more new derricks recently erected in the amber oil district are being fitted with the drilling plant necessary for reaching the oil.

The Directors, in view of the increased output from additional wells, consider it most important, and in the interests of the shareholders, to construct, at the Company's wharf property, a refinery capable of treating up to 40,000 gallons of crude oil daily; and this the Directors have now under consideration.

PETROLIA CRUDE OIL AND TANKING CO.

Incorporated 1874. Capital Stock, \$50,000, divided into 1,000 shares of \$50 each, of which, to date, \$49,986.17 has been subscribed and paid up.

Directors:

Chas. Jenkins, President.

J. D. Noble,
R. D. Noble,
R. L. Bradley,
C. O. Fairbank,
John Fraser.

Head Office: Chas. Jenkins, President, Petrolia, Ont

The company owns and operates 67 wells, situate on lot 12-12 and 13-12 Con. Enniskillen, Lots 13-11, 12-11 and 14-11, Petrolia, and lot 16-2nd, Oil Springs;

average depth 465 ft.; average daily capacity about half a barrel. Near the close of 1896 the company bought the entire property of the Producers Tanking Co. The company has now storing capacity of 350,000 barrels; receiving stations in Moore Township, Marthaville, Oil Springs, and three in Petrolia. Owns 34 miles of pipe line.

The following statistics have been kindly furnished by the secretary:-

| | 1884 | | | | | | | | | | | | , | | | | | | | | | | | | Bbls. Receiv
255,768 | ed. | Bbls. Shipped. 184,214 |
|-------|-------|---|----|---|---|---|----|---|----|---|-----|----|----|----|---|---|---|----|---|-----|----|---|----|----|-------------------------|------|------------------------|
| | 1885 | | | | | | | | | | | | | | | | | | | | | | | | 299,407 | | 312,554 |
| | 1886 | | | | | | | | | | | | | | | | | | | | | | | | 255,022 | | 240,134 |
| | 1887 | | | | * | | ٠. | | ٠ | | | | ٠, | | * | | | | | | | | | ٠ | 244,979 | | 360,300 |
| | 1888. | | ٠. | | ٠ | ٠ | ٠. | | | | ٠ | ٠ | | | | | | | , | . , | | | | | 285,013 | | 240,950 |
| | 1889. | | ٠. | | | | | | | | | | ٠. | | | | | | | | | | | | 298,806 | | 341,346 |
| | 1890. | ٠ | | | * | 1 | | | | | | | | | | | | | | | | | | | 288,330 | | 333,052 |
| | 1891. | ٠ | ٠, | | ٠ | | | | ٠ | | | | | | | | | ٠, | | | | | | | 294,222 | | 311,215 |
| | 1892. | | ٠. | ٠ | | | | | | * | | | | | ٠ | | | | | | ٠ | | | | 309,898 | | 296,796 |
| | 1893. | * | ٠. | | | | | | | | | | | | | | | | | | | | | | 273,966 | | 274,352 |
| | 1894 | | ٠, | | | | | | | | | | | | | | | | | | | | | | 238,055 | | 257,609 |
| | 1895. | | ٠. | | ٠ | | | | | | , , | | | ٠ | | | | | | | | | | | 240,939 | | 247,702 |
| | 1896. | | | | | | | | | | | | | | | | | έ. | | | | | | | 228,363 | | 220,666 |
| | 1897. | | | | | | | | | | | | | | | | | | | | | | | | 304,401 | | 279,094 |
| Estir | nated | V | al | u | e | 0 | f | m | na | c | h | in | le | ry | 7 | a | n | d | p | ol | aı | n | t, | 10 | \$110,000. | 19 n | nen 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 22 acres of land, situate in the Township of Enniskillen, in the Country of Lambton, in the Province of Ontario. It also operates 48 wells, each of an average depth of 460 feet, and yielding in the aggregate six barrels of crude oil per diem. The company also manufactures the celebrated "Jacques Cartier" brand of refined oil; also refined benzine, gasoline and lubricating oils, at Petrolia, Ont.; and they have made arrangements for barreling oil at Ottawa and Montreal for distribution in those districts. They also do a large lubricating oil business. Fourteen men employed. Estimated value of machinery, plant, buildings, etc., \$13,000.

PRODUCTION OF CRUDE OIL TO DATE.

| 1883 | bbls. | 1891 | bbls |
|------------|-------|------------|------|
| 1884 2,518 | 66 | 1892 930 | 66 |
| 1885 | 66 | 1893 918 | 66 |
| 1886 2,090 | " | 1894 876 | 66 |
| 1887 1,653 | | 1895 1,871 | 66 |
| 1888 1,626 | 66 | 1896 | 66 |
| 1889 | 6. | 1897 | 66 |
| 1800 | 66 | 27 | |

Managing Director: John D. Noble, Petrolia, Ont.

PROVINCIAL NATURAL GAS AND FUEL CO. OF ONT., Limited.

Incorporated 1890, under letters patent from the Federal Government of Canada.

Authorized Capital, \$240,000, in shares of \$40.

Directors:

Hon. Peter McLaren, Perth, Ont., President.

N. A. Coste, Amherstburg, Ont. Daniel O'Day, New York. C. N. Payne, Oil City, Pa.

D. McGillivray, Port Colborne, Ont. Samuel Rogers, Toronto, Ont. E. Strong, Oil City, Pa.

Head Office: D. A. Coste, Supt.—Thos. Nicholl, jr., Assist. Sec.-Treas., 56 Coal and Iron Exchange Bdg., Buffalo, N.Y.

The company now holds under lease a property containing about 15,000 acres in the County of Welland. Total wells drilled 133, of which 71 are connected to the two 8-inch pipe lines to Buffalo, N.Y., Fort Erie, and Bridgeburg, Ont. The company at 1st January, 1897, owned 125 miles of pipe lines of a size varying 8 to 1 inch. 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 cents a thousand. Tha 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 lines are now furnishing gas simply with the natural rock pressure of the gas.

QUEEN CITY OIL CO., Limited.

Formerly carried on business under the title of the Samuel Rogers Oil Company. Re-organized 1896. Paid up Capital, \$200,000.

Directors:

Joseph P. Rogers.

Samuel Rogers.

Albert S. Rogers.

Head Office: 30 Front Street, Toronto.

Conducts a manufacturing and jobbing business at Toronto, the premises being known as the Queen City Oil Works, and is associated with a group of firms operating in the Petrolia and Oil Springs fields. The trade of these joint concerns is stated to be about 85,000 barrels of refined oils, Canadian and American; and 50,000 barrels of lubricating and other oils.

STRATHROY PETROLEUM CO., Limited.

Incorporated 1894. Authorized Capital, \$90,000, in shares of \$100.

Directors:

G. A. McGillivray.

Dr. W. B. Lindsay, President.

Chas. Grist

Head Office: Chas. Grist, Secretary-Treasurer, Strathroy, Ont.

Owns and operates about 100 oil wells, averaging in depth about 500 feet, in the Petrolia District, Lambton County, Ontario. Small force employed.

TILBURY PENINSULAR OIL AND GAS CO., Ltd.

Incorporated 1895. Authorized Capital, \$20,000, in shares of \$50.

Directors:

W. C. Crawford. | C. C. Kippen. | F. M. Scarff. | Geo. E. Gurd. | N. Mills.

Head Office: F. M. Scarff, Tilbury, Ont.

Formed to search for oil, natural gas, etc., in the Province of Ontario. Holds under lease some 9,000 acres in the Counties of Essex and Kent. One well was put down in 1897 1,000 feet; struck salt water.

WALLACEBURG GAS AND OIL CO., Limited.

Incorporated 1896. Authorized Capital, \$40,000, in shares of \$50 each.

Directors:

D. A. Gordon.

John Cooper.

J. W. Steinhoff.

Head Office: Wallaceburg, Ont.

Formed to drill for gas and petroleum in the Province of Ontario. The operaions are to be carried on the Townships of Dover, Chatham, Sombra, and the Town of Wallaceburg. ASBESTOS.

ASBESTOS.

The total production of asbestos and asbestic for the year 1897 is estimated by the Geological Survey of Canada to have been 25,262 tons, of a value of \$324,700, as compared with 12,250 tons, valued at \$429,856, in 1896, and 8,756 tons of a value \$368,175 in 1895.

RAILWAY SHIPMENTS.

The following returns show the shipments by rail during the years 1895-6-7:—

| From | 1895. | 1896. | 1897. |
|---|-------------------------------|---|----------------------------------|
| Black Lake, via Quebec Central Ry Tons Thetford Mines (* " " " Broughton " " Gatineau Valley Ry" Danville " Grand Trunk Ry" Pointe au Chene " | 735½
5,235¼
35
2,310 | 996
4,640
63
172
4,939
784 | 510
8,055
79
Not given. |
| Total shipments by rail | 8,3151/4 | 11,594 | Incomplete |

EASTERN TOWNSHIPS SHIPMENTS.

The following figures are from the books of the Quebec Central Railway and show the shipments from the mines at Thetford and Black Lake from the beginning of the industry to date:—

| 1881 — 6 | months ending | Dec. | 31st | 617,635 | lbs. | |
|----------|---------------|------|------|------------|-------|--|
| 1882—12 | 6.6 | 66 | | 1,358,820 | 66 | |
| 1883—12 | "" | 4.6 | | 1,429,850 | 66 | |
| 1884-12 | 6.6 | 66 | | 1,935,525 | 6.6 | |
| 1885—12 | 6.6 | 66 | | 2,735,140 | 66 | |
| 1886—12 | 6.6 | 66 | | 4,306,925 | 66 | |
| 1887-12 | 66 | 4.6 | | 6,962,875 | 66 | |
| 1888—12 | 4.6 | 66 | | 8,030,950 | 66 | |
| 1889—12 | 66 | 6.4 | | 11,747,580 | 66 | |
| 1890—12 | 66 | 66 | | 15,651,250 | 6.6 | |
| 1891-12 | 66 | 6.6 | | 14,672,180 | 6.6 | |
| 1892-12 | 66 | 6.6 | | 8,674,560 | 66 | |
| 1893—12 | 66 | 66 | | 10,677,900 | 66 | |
| 1894—12 | 66 | 6.6 | | 14,683,055 | 66 | |
| 1895—12 | 66 | 66 | | 5,970 | tons. | |
| 1896—12 | 66 | 66 | | 5,699 | 6.6 | |
| 189712 | 66 | 6.6 | | 8,565 | 66 | |

OUTPUT AND VALUE.

The returns of the production and value of Canadian asbestos is very well shown in the following table prepared by the Geological Survey of Canada:—

| ır Vear | I | PRODUCTI | ON. | Exports | Year. | | PRODUCTI | ON. | Exports |
|--|---|---|--|------------------------------|--|---|--|---|----------------|
| Calendar Year. | Tons
(2,000
lbs.) | Value. | Average
Value
per ton. | Average
Value
per ton. | Calendar | Tons
(2,000
lbs.) | Value. | Average
Value
per ton. | Average |
| 1880
1881
1882
1883
1884
1825
1886
1887 | 380
540
810
955
1,141
2,440
3,458
4,619
4,404 | \$ 24,700 35,100 52,650 68,750 75,097 142,441 206,251 226,976 255,007 | \$ cts.
65 oo
65 oo
65 oo
71 98
65 80
58 37
59 64
49 14
57 90 | | 1889
1890
1891
1892
1893
1894
1895 | 9,860
9,279
6,082
6,331
7,630 | 1,260,240
999,878
390,462
310,156
420,825
368,175 | \$ cts. 69 77 127 81 107 75 64 19 49 02 55 15 42 05 35 09 | 75 52
70 07 |

EXPORTS OF ASBESTOS.

The following tables are compiled from Trade and Navigation Returns, published by the Department of Customs, and show the quantity and value of the various grades exported from Canada during the fiscal years 1896 and 1897:—

| YEAR ENDED 30TH | | o. I. | N | o. II. | No. III. | | |
|--------------------|---------------------|----------------------------------|------------------------------|---------------------------------|--------------------|--------------------------------|--|
| June, 1896. | Tons. | Value. | Tons. | Value. | Tons. | Value. | |
| " France | 1,351
120
368 | \$
69,840
14,972
29,757 | 322
1,219
2,945
205 | \$ 22,790 99,927 138,621 15,375 | 96
124
2,566 | \$
4,23,
3,016
72,038 | |
| Total exports 1896 | 1,839 | 114,569 | 4,691 | 276,713 | 3,058 | 91,39 | |

| YEAR ENDED 30TH | N | o. I. | No | o. 1I. | No. | III. |
|--|------------|------------------------|-----------------------|-----------------------------------|---------------------|-------------------------|
| June, 1897. | Tons. | Value. | Tons. | Value. | Tons. | Value. |
| To Great Britain " United States " Germany | 977
702 | \$
58,699
39,998 | 1,719
2,116
485 | \$
128,571
87,639
36,550 | 692
3,606
672 | \$ 49,328 78,915 31,216 |
| Total exports 1897 | 1,679 | 98,697 | 4,320 | 252,760 | 4,970 | 159,459 |

IMPORTS OF MANUFACTURED ASBESTOS.

The following table is compiled from Trade and Navigation Returns:

| Fiscal Year. | Value. | Fiscal Year. | Value. |
|--|--|--|--|
| 1885
1886
1887
1883
1889
1899 | \$ 674
6,831
7,836
8,793
9,943
13,250
13,298 | 1892
1893
1894
1895
1896—Duty 25 % | 14,090
19,181
20,021
26,094
23,900
18,168 |

VARIETIES OF ASBESTOS.

The fibrous material known to commerce under the name of asbestos comprises at least two distinct species of minerals, one of which—a variety of hornblende, is properly called asbestos; the other is chrysotile, a variety of serpentine, and may be readily distinguished from asbestos by yielding water when heated in a closed tube. Both asbestos and chrysotile are found in regions of altered crystalline rocks, and yet each has its own particular associates. The former occurs with metamorphic rocks rich in hornblende, while the latter is found in distinct veins penetrating masses of serpentine.

CHARACTER AND OCCURRENCE.

The mineral which is produced in Canada at the present time properly belongs to the chrysotile variety. 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 the 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 suitable for the manufacture of mill-board and the finer qualities 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 be well 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



Interior of Pit, Danville, Que.

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 Co. of London, Eng.

EASTERN TOWNSHIPS.

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 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 twenty 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 ft. 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 most westerly area in the eastern townships in which the mineral is mined is at the Jeffrey mine, four miles east of Danville village, on Lot 9, Range 3, Shipton. The asbestos here occurs in a rounded knoll, one of a series which extends from Melbourne through Cleveland into the south-east corner Tingwick, and is the only one in which valuable veins have yet been found in this direction. This was first worked in 1884, and has yielded a large amount of asbestos of excellent quality.

OTTAWA COUNTY.

In connection with the Laurentian rocks of Ottawa county, the serpentinuou limestones sometimes carry veins of a pale yellowish asbestos, generally of short fibre, but at times having a length of three-fourths to one inch. In some pieces of rock several of these, six, eight, or more, are found, occupying a breadth of ten to twelve inches, the thickness of the veins ranging from one-fourth of an inch upward. Few attempts have in so far as can learned, been made to work these asbestos veins, some of which, as in Templeton, might, if they were continuous to any extent, afford material of second and third quality, the fibre having scarcely a sufficient length to class it as first. Both the serpentine and asbestos of the Laurentian rocks differ in quality from that of the eastern townships, as might indeed be supposed from their mode of occurrence and from the associated rocks. In connection with some of the phosphate deposits, as at the Emerald mine on the Lievre in Buckingham, considerable masses of the variety of asbestos known as mountain cork are found, but this has yet no economic value.

COMPARED WITH ITALIAN.

The composition of Canadian asbestos in comparison with the product of Italian mines is shown by the following analysis by Donald :

| | Asb | estos. |
|------------------------|-----------|-----------|
| | Canadian. | Italian. |
| | Per cent. | Per cent. |
| Silica | 40.57 | 40.30 |
| Magnesia Ferrous oxide | | 43.37 |
| AluminaVater | . 2.81 | .87 |
| | | 2.27 |
| | 13.55 | 13.72 |
| | 99.33 | 100.53 |

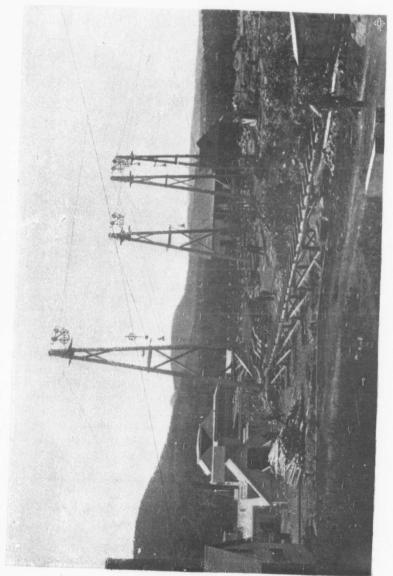
USES OF ASBESTOS.

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. It is used in the manufacture of fire-proof paints, roofing, piston packing, felt packing, fire-proof cements, sheet and roll millboards, flooring, and for a covering for steam pipes and boilers. It is largely used in lining for fire-proof safes, and is also made into yarn, cloth and paper.

One of its special uses is for well plaster. This is a new application which will have a distinct effect in modifying the practice of indoor plastering. Instead of

the ordinary tedious and elaborate preparation of studs and strips, and the use of inferior and dust creating mortar, with it after scoring, which is necessary to give cohesion to the final coat of plaster of Paris, a single coating of the asbestos is laid on. It has a glossy surface that will not crack, as while firm, it is perfectly flexible. It can be put on the raw brick; and a room of which the walls have been built in the morning can, before night, have a smoothly finished interior surface, shining like glass and hard as a rock. A kindred application of asbestos is now coming into vogue in the shape of uninflammable decorations for walls and ceilings. These are used a great deal for the saloons of steamships. They are embossed in very beautiful designs, and can be treated with gold, varnish, lacquers, or any other substance, for the enhancement of their ornamental effect.

Firemen clad in asbestos clothing and masks, as are those of London and Paris, can walk through the hottest flame with comparative impunity. Asbestos fire-proof curtains have reduced the mortality of theatre fires in a very appreciable degree. In torpedoes, the difficulty of dealing with the charges of wet gun-cotton is overcome by enclosing them in asbestos, the employment of which has also, in a great measure, brought the dynamite shell to its present efficiency. Asbestos is made into a cloth available for aeronautical purposes. A balloon made of this uninflammable material escapes one of the most terrible dangers to which an ordinarily constructed balloon is liable. Probably one of the first applications of asbestos in this country was to roofing. To buildings covered with this material, the shower of sparks from a neighboring conflagration involves no danger. The fact that woodwork can, by its use, be made uninflammable has come to be an important factor in the insurance of buildings. One of the largest branches of asbestos manufacture is that of sectional cylinders for pipe-coverings, for retaining the heat of steam and other pipes, felt protective coverings for boilers, frost-proof protections for gas or water pipes, and cement felting, which can be laid on with a trowel, for the covering of steam pipes, boilers or stills. In some of these cases, where it is only necessary to retain the heat, the asbestos is mixed with other substances, but where the protection must be fireproof as well, only asbestos is used. The utility of such a covering is well illustrated in the heating system of railway cars. The main pipe, from which the individual cars draw their respective heat supplies by side mains, if not covered with asbestos, would lose a large proportion of its caloric from the rapid motion of the car through the air. An interesting innovation in this class of manufacture is asbestos sponge. It is not generally known that sponge has great powers of fire resistance. The discovery was made accidentally, not long ago, and the result was that a consignment of scraps of sponge picked up on the southern coasts was ordered for experimental purposes. The sponge was finely comminuted and mixed intimately with asbestos fibre. The combination was found so successful for any covering which had to be fire-proof as well as heat-proof, that the material has become standard. Being full of air cells, it necessarily makes an excellent non-conductor. Another very extensive department in asbestos manufacture is that of packings. Of these there are an infinite number of forms. In these days of high pressure and ocean records it is of supreme importance to marine engineers that they should have jointing and packing materials on which



Surface Works, Danville, Que.

absolute reliance can be placed. In order to meet modern exigencies, every possible form of packing has been constructed, particularly with asbestos and metallic wire, and with asbestos and rubber cores for gland packing. The making of asbestos paper varies from the building up the thickest millboard to the production of a writing paper which, from its indestructability, is invaluable in case of fire for preserving charters, policies, agreements and other important documents.

To the electrical engineer asbestos is absolutely indispensable. Many parts of electrical devices and machinery and wires through which the electrical current passes become heated and, and were it not for the electrical insulation and heat-resisting qualities which asbestos possesses, the apparatus would be completely destroyed, particularly in the case known to electricians as "short circuiting." For such purposes it has been found advisable to combine asbestos with rubber and other gums, and this combination is now used universally for not only electrical, but also steam and mechanical purposes.

A considerable part of an asbestos factory is devoted to weaving, the asbestos being first drawn into thread for that purpose. Here, again, is an apparently endless diversity. There is the fire-place curtain-blower, which, with an automatic spring roller attachment, takes the place in the frame of the fire-place of the less sightly sheet-iron blower; and filtering cloths for many purposes, from straining molten metal to clarifying saccharine juices in beet root sugar refineries. A cloth is made for straining and filtering acids and alkalies in chemical laboratories. This is specially useful when the liquid to be treated is of a caustic or strongly acid nature. The filter can be thrown into the fire, and after the residual matter has been consumed the web is as good as new. For filtering purposes generally, asbestos has a unique adaptability, and in tropical countries it is held in grateful estimation as a cooler and purifier of water. The newest departure in the asbestos field is the construction of electrothermic apparatus. The heating effect of the electric current is utilized by embedding the wire in an asbestos sheet or pad. The pad is used by physicians and nurses for maintaining artificial heat in local applications, and it is said to be already largely used in hospitals. Another application of the same principle is to car heaters. A sheet of asbestos with the embedded wires, is clamped between two thin steel plates, and the portable heater thus provided, or a series if need be, is connected to the car circuit quickly and easily. It gives an even and healthy heat, and can be so regulated as not to overheat the car.

ANGLO-CANADIAN ASBESTOS CO., Ltd.

Registered 14th August, 1889. 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 31st, 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 the debit brought forward, and provided a dividend of 20 per cent.; for 1891-1892 20 per cent. was paid each year; and for 1893, 1894 and 1895 nil. Carried forward, £837.

Directors :

R. T. Hopper, Chairman. R. H. W. Paul.

R. H. Holland. R. W. Potter.

Head Office: R. A. Hudson, Secretary, 11 Poultry, London, Eng.

Canadian Office: R. T. Hopper, Managing Director, 314 Board of Trade, Montreal.

This company owns and operates certain asbestos and chromite-bearing 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: I Duplex Rand 5-drill air compressor, Ingersoll and Beatty hoists, I Northey and I Valley Machine Co. pump, one 60 h.p. and one 35 h.p. boiler, 4 derricks, etc. Well equipped with building accommodation.

ASBESTOS AND ASBESTIC CO., Ltd.

Registered 1897. Authorized Capital, £500,000, in 50,000 shares of £10 each, all of which has been subscribed and called up.

Directors:

Gilbert Bartholomew, Chairman.

Wilberforce Bryant. A. Naylor. Henry Hayman.

Andrew A. Allan. R. H. Martin. Feodor Boas.

CANADIAN OFFICE:

Feodor Boas, Managing Director, Danville, Que.

Head Office: E. E. Hayes, Secretary, 27 Billiter Buildings, Leadenhall Street, London, E.C.

Formed to acquire and work the Jeffrey asbestos mine and other freehold property at Danville, in the Province of Quebec, as follows:—

"Under Contract No. 1, for the consideration of 16,666 fully paid shares of £10 each, and £283,340 in cash, the vendors undertake to transfer to the company free from all mortgages and charges:

1. The freehold asbestos property, about 75 acres in extent, with the factories and buildings situate thereon, and the plant and rolling stock, supplies and tools.

2. Six hundred acres of freehold land with growing timber, near Danville, with saw mill and slate quarry, and about 200 acres of freehold land, with the buildings, machinery and dwelling-houses thereon.

3. The options on the water rights recently acquired by the vendors on the river Nicolet, and all such rights of way as the vendors now have, together with the right to take over their charter, recently obtained, for the proposed branch railway."

The mine is at present worked by three pits, but these will shortly be opened together, making a working face of at least 1,000 ft. long by about 100 ft. high. The material is raised from the pits and carried by a cable-way and derricks worked by large winding engines, direct to a large and well appointed mill thoroughly equipped with a plant of modern construction, comprising crushing, sorting, drying, pulverizing and separating machinery.

DIRECTORS' REPORT, 1897-8.

(For 13 months ended 31st March, 1898.)

"The net profits of the business during that period, after providing for Directors' and Managing Director's remuneration, expenses of management, maintenance and repairs of premises, plant and machinery, and all other expenses in London and Danville, and after writing off the sum of £3,541 2. 4d. as depreciation, amount to £2,180, 13s. od., which amount the Directors recommend to be carried forward to the next account.

"The directors regret that from various causes the output of asbestos during the period has been much smaller than was anticipated, and, as a consequence, the company has not been able even to supply contract quantities to the H. W. Johns

Company, still less to effect sales in other directions.

"It was found necessary, soon after taking possession of the property, to abandon for the present the intention of working the mill by water power, and to undertake the putting down of additional plant and machinery to be worked by steam, in order to increase the output as proposed in the prospectus. This change necessitated the erection of new buildings at a cost of £3,906 18s. Id. The work, however, occupied a long time, and, in fact, was not completed until after the close of this, our first financial period. The putting in of the extra plant and machinery naturally disorganized the whole place and prevented the production of quantities formerly turned out.

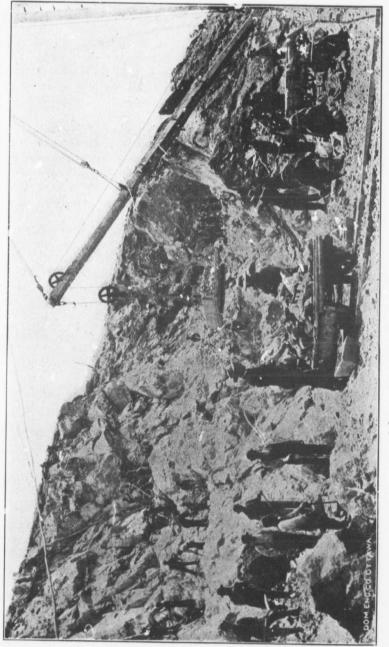
"The railway connecting the company's property with the Grand Trunk main line at Danville was completed within a few months, at a cost, including rolling

stock, of £8,220 13s. 3d.

"The water rights on the river Nicolet have been secured at a cost of £2,856 12s. 3d., and at any future time the company may make use of this water power if found advisable.

"It will be seen that the total expenditure to 31st March last on capital account has amounted to £37,108 13s. 10d.

"The directors do not contemplate any further expenditure on capital account for the present; and, according to the Managing Director's latest report, which is dated 7th May, the works, as now fixed, are capable of producing double the quantity which could be produced when the property was taken over. The asbestos and asbestic produced during the period has cost appreciably more, in consequence of the disturbance and interruption, than the present cost under proper working conditions,



Asbestos Mining at Black Lake, Que.

and the directors expect to produce much larger quantities of asbestos during the current year, at such a reasonable cost as will enable them not only to profitably fulfil the H. W. Johns Company's contract, but also to make satisfactory sales in other directions. The sale of asbestic has slowly developed, and the material, which is admitted to be the finest of all wall plasters, is growing in favor in Europe as well as in the United States and Canada. Selling agencies have been, and are still being, established in many parts of the world.

"The result of the company's operations so far has satisfied the directors that the property is a remarkably good one, and, at the moment, the only drawback is that the marke's are slower and the demand consequently less heavy than was expected. There is reason to fear that the war between the United States of America and Spain will most seriously interfere with building operations in the United States during this year, besides which, high rates of freight to Europe are largely adding to the cost of our product laid down here.

"In view of the present situation, the directors propose to make an extra stocktaking on the 30th of September next, and as soon as practicable thereafter, they will issue a circular letter to the shareholders, informing them of the result of the first half of the current year's operations."

BALANCE SHEET, 31ST MARCH, 1898. Dr.

| Dr. | | | | | | |
|--|---------|----|----|----------|----|----|
| To Capital | £ | S. | d. | £ | S. | d. |
| Authorized— | | | | | | |
| 50,000 shares of £10 each | | | | 500,000 | 0 | 0 |
| Subscribed and Issued— | | | | | | |
| 33,334 shares of £10 each, fully paid 16,666 ditto, fully-paid, issued to vendors | 333,340 | 0 | 0 | | | |
| in part payment of purchase money | 166,660 | 0 | 0 | | | |
| 50,000 | 500,000 | 0 | 0 | | | |
| Less— | | | | | | |
| II shares forfeited | 110 | 0 | 0 | | | |
| 49,989 | | | | 499,890 | 0 | 0 |
| To cash received on account of shares forfeited To sundry creditors— | | | | 5 | 10 | 0 |
| London and Danville-On open account | 3,023 | 13 | 4 | | | |
| Salaries and wages | 766 | 1 | 5 | | | |
| Directors' fees | 1,166 | 13 | 4 | 4,956 | 8 | r |
| To Profit and Loss account— | | | | 4,950 | 0 | |
| Balance at credit, being net profit for the period after charging Directors' and Managing Director's remuneration, all working expenses in London and Danville, and writing off as depreciation, £3,541 2s. 4d | | | | 2,180 | 13 | 0 |
| Note.—There is a contingent liability for calls in respect of share held by the | | | | | | |
| company in the American sbestic Co. | | | | 507,032 | 11 | 1 |
| | | | 7 | 3507,032 | | |
| | | | | | | |

| | | | | | • | , |
|--|---------|------|-----|-----------|----|---|
| Cr. | | | | | | |
| By cash in hand in London and Danville- | £ | s. | d. | £ | S. | d |
| At banks.
In hand. | | 7 19 | | | | |
| | | 3 13 | 5 | 2,561 | 12 | , |
| By sundry debtors— | | | | 4,570 | | |
| On open account | | | | 4,721 | 17 | 5 |
| Aspestos and asbestic | 6 001 | 8 19 | 4 | | | |
| Mine and factory supplies | 4,52 | 1 9 | 5 | | | |
| By horses and buggy
By office furniture— | | | | 11,453 | 8 | 9 |
| London and Danville | | 2 | 8 | | | |
| Depreciation 15 per cent | 41 | 2 | 4 | | | |
| By cost of freehold land, mining rights, buildings, plant and machinery, &c., in Danville, Canada, as taken over under agreement dated 8th Feb. 1897 | | | | 233 | 0 | 4 |
| Sundry realizations 3,352 5 6 | 446,647 | | 6 | | | |
| Add—
Additional expenditure to date— | 440,047 | 14 | 0 | | | |
| New buildings £3,006 18 1 | | | | | | |
| New plant 18,026 14 8 | | | | | | |
| Kailway 8,220 12 2 | | | | | | |
| Water rights 2,856 12 3 | | | | | | |
| Development 4,097 15 7 | 37,108 | 13 1 | 0 | | | |
| | 483,756 | v | _ | | | |
| Less— | 403,750 | 0 | 4 | | | |
| Written off as depreciation | 3,500 | 0 | | | | |
| y investment— | | | - , | 480,256 | 8 | 4 |
| American Asbestic Company's shares at cost | | | | 3,101 1 | 2 | I |
| | | | £ | 507,032 1 | 1 | 1 |
| | | | ~ | , ,,-J- r | - | |

ASBESTOS MINING AND MANUFACTURING CO.

Incorporated April, 1895. Authorized Capital, \$50,000, in shares of a value of \$100.

Directors:

J. Smith. | John L. Armitage. | R. Burrage. | E. Hammell.

Head Office: John L. Armitage, Treasurer, Prudential Bdg., Newark, N.J.

Owns and operates an asbestos property containing 140 acres in the Township of Low, Ottawa County, Province of Quebec, on which a small force is employed.

BEAVER ASBESTOS COMPANY, Ltd.

Incorporated 1890, under Letters Patent from the Legislature of the Province of Quebec. Capital, \$100,000, in shares of \$100 each.

Fully subscribed and paid up.

Directors:

R. H. Martin, New York, President.

H. D. Lawrence. J. W. Woodside. Ias. S. Mitchell, Sherbrooke, V.-Pres. H. J. Williams, Danville, Que.

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 about half a mile from Thetford Station on the Quebec Central Railway. Machinery comprises: 2 boilers, 125 h.p.; 1 single drum and 1 double drum hoist and 1 winding engine, built by the Jenckes Mackine Co.; 4 boom and 1 cable derricks; 4 steam drills (Rand); 1 Blake and 2 Northey steam pumps, etc. Well equipped with suitable buildings.

BELL'S ASBESTOS CO., Ltd.

Registered 4th May, 1888. To take over, as from 1st January, 1888, the business of Messrs. John Bell & Son, asbestos manufacturers, and asbestos-bearing property in Canada. In 1895 the then existing shares of £5 each were subdivided into 5 shares of £1, and the share capital is now £200,000 in shares of £1, of which £120,000 has been issued and paid up in full. There are also a mortgage of £25,000 and 5 per cent. debentures of £100 each to the amount of £51,200 (outstanding balance of £70,000), with interest payable January 1st and July 1st. The debentures are redeemable on or before January 1st, 1913, at 115 per cent. by annual drawings in December, a fixed sum being set aside annually to cover interest and redemption; while the company reserves the right to at any time increase the sinking fund and apply such increase towards the redemption of the outstanding balance, either by purchase in the market, if under 115 per cent., or by additional drawings at this rate. Accounts to December 31st submitted in February. Dividends for 1888 and 1889, 221/2 per cent. each year; 1890, 15 per cent.; 1891, 10 per cent.; 1892, 71/2 per cent.; 1893, 5 per cent.; 1894, 12 per cent.; 1895, 3 per cent.; 1896, 5 per cent.; 1897, 4 per cent.

Directors:

Hy. Heywood, Chairman.

T. B. Lightfoot. | H. A. Bell. | A. J. Burnett. | W. C. Johnson.

CANADIAN OFFICE:

George R. Smith, M L.A., Manager, Thetford Mines, Que.

Head Office: Geo. W. Giles, Secretary, 591/2 Southwark St., London, S.E.

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 hese 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. 280 persons employed. The machinery equipment at date comprises:—

Boilers-Three 20 h.p., two 100 h.p., two 60 h.p., one 150 h.p.

Air compressor-One Norwalk, 12 drill capacity.

Hoisting engines—Three Ingersoll and four Bacon in place; cyl. 8¼ x 10 in.; diameter of drum, 24 x 36 in.

Rock drills-Nine in place; six Sergeant, 31/4 in.; three Ingersoll, 31/4 in.

Derricks-Three cable and five boom.

Pumps-Five in place, Blake and Worthington.

Rock breaker-One Gates.

Asbestos mill equipped with a first-class plant for mechanical separation of asbestos, including rolls, crushers, picking tables, screens and a cyclone mill.

Works lit by electricity.

DIRECTORS' REPORT.

(Year ended 31st December, 1897.)

| The result of the year's operations is a not profit of | 13 | 2 |
|--|----|---|
| Leaving for appropriation. £7,139 | | |

The Directors Recommend—1. The payment on the 16th May of a dividend at the rate of 4 per cent. per annum, free of income tax.

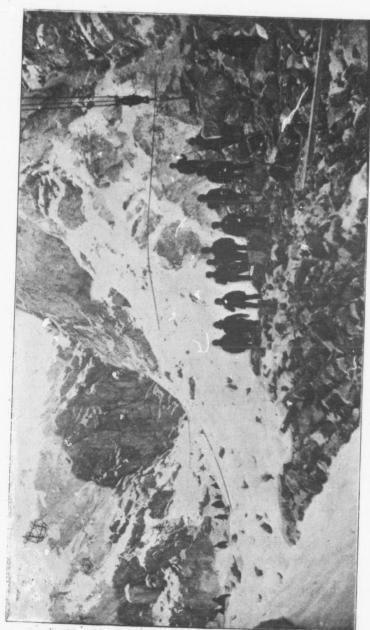
2. To carry forward £2,339 13s. 5d

BALANCE SHEET, 31st DECEMBER, 1897.

Dr.

| Di. | | | | |
|---|----|-----------------|---|---|
| To Share Capital—Authorized—200,000 shares of £1 £200,000 | 0 | 0 | | |
| Issued — 120,000 shares of £1 each fully paid | | £120,000 | 0 | 0 |
| To Mortgage Debentures—(charged upon the undertaking) 512 bonds of £100 each | 0 | 0 | | |
| Interest | | | | |
| Premium on bonds, drawn for payment 360 | | 0 | | |
| | _ | — 52,840 | 0 | 0 |
| Deduct—Cash lodged with trustees for redemption of bonds | 12 | 5 | | |
| A. A. Million and M. M. M. Million and M. | | 49,970 | 7 | 7 |
| | | | | |

| | | | | - |
|---|-----|--------|----|----|
| To Creditors—On bills payable | 2 | | | |
| On open accounts | | | | |
| —————————————————————————————————————— | _ | 16,266 | 4 | 3 |
| To reserve fund | | 65,000 | 0 | 0 |
| To machinery reserve fund | 1 | 3,000 | 0 | 0 |
| To Profit and Loss Account Balance from account, | | | | |
| 31st December, 1896 | 3 | | | |
| Balance from account for the year 5,171 13 | 2 | | | |
| To liability on bills receivable and discounted 4,353 13 | 4- | 7,139 | 13 | 5 |
| 4,333 -3 | £2 | 61,376 | 5 | 3 |
| Cr. | | | | |
| By Cash—At bankers, on current account£ 3,855 I | 0 | | | |
| | 11 | | | |
| 33 4 | | 3,888 | 5 | 11 |
| By bills receivable on hand | | 8,602 | 15 | 3 |
| By debtors | | 41,424 | _ | 11 |
| By sundry sharest | | 1,267 | 3 | 0 |
| By Stock in Trade-London and elsewhere 19,138 12 | II | | | |
| Asbestos estates 6,271 8 | 7 | | | |
| | _ | 25,410 | I | 6 |
| By plant, machinery, fittings, fixtures and furniture | | 12,592 | 6 | 10 |
| By asbestos estates, Canada, at cost, and buildings, | | | | |
| machinery and sundries thereon | | 73,312 | 6 | 0 |
| By freehold premises, Southwark street 50,776 19 | 2 | | | |
| Less mortgage thereon | 0 | 25 776 | 10 | 2 |
| By amount paid for goodwill, patents and trade marks | | 25,776 | 19 | 2 |
| of John Bell & Son | | 69,101 | 81 | 8 |
| | 62 | 61,376 | _ | |
| | 2,2 | 01,3/0 | 5 | _5 |
| Profit and Loss Account. | | | | |
| (For the Year ending 31st December, 1897.) | | | | |
| Dr. | | | | |
| To intenest on debentures, and on mortgage on freehold premises | ·£ | 3,476 | 13 | 4 |
| To remuneration of directors and managing director | | 1,700 | 0 | 0 |
| To premium on debentures drawn for payment | | 360 | 0 | 0 |
| To balance carried to balance sheet | , | 5,171 | 13 | 2 |
| | - | 10,708 | 6 | 6 |
| Cr. | 201 | 0,700 | 0 | |
| | | | | |
| By profit of the year | £ 1 | 0,690 | 0 | 6 |
| By transfer fees | | 18 | 6 | 0 |
| | £I | 0,708 | 6 | 6 |
| | | | | |



0 0

0

Bell's Asbestos Co.—Interior of Main Pit, Thetford Mines, Que.

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.

CANADIAN BOARD:

E. Hanson, Montreal.

E. B. Greenshields, Montreal. | William Ramsay, Montreal.

Glasgow Board:

R. E. Aiken, C.A. | Wm. Jacks, M.P. | W. H. Kidston.

Canadian Office: Black Lake, Que.

Scottish Offices: Messrs. Mackenzie & Aiken, C. A., Secretaries, 68 St. Vincent Street, Glasgow.

Formed to adopt and carry out an agreement with Robert Easton Aiken, 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. 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. boiler, horizontal Erush engine, Blake crusher, set 24 in. Cornish rolls, revolving picking tables, Sturtevant double exhaust blower, screens, etc., the whole at an estimated value of \$50,000.

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:

John Mooney, Inverness, Que. W. J. Samuel J. Johnson, Inverness, Que. A. S.

W. J. Johnston, Clapham, Que. A. S. Johnson, Thetford, Que.

Head Office: A. S. Johnson, Managing Director, Thetford 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 and 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 includes steam drills, horizontal and upright boilers, pumps, single and double hoisting engines, and a complete crushing and separating plant.

KING BROTHERS.

A private company, consisting of the following partners:-

Chas. King.

đ.

re-

m,

ed.

ar-

the

in

hip

the

nts,

nu-The

ian ny. line

ron ntal

rte-

000.

oec.

James King.

E. A. King.

Head Office: 15 Bell's Lane, Quebec, Que.

Mines Office: Thetford Mines, 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 drills), 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; output in 1893, 400 tons; output in 1894, 550 tons, working only one pit; 1895, 850 tons.

REED A BESTOS MINE.

Sole Owner:

Dr. James Reed, Reedsdale, Que.

The properties owned cover 300 acres, and are known as Lots 27, 28 and 29, Range A, Coleraine, Que. The engine and machinery equipment at date includes: two 60 h.p. boilers; one 16 x 24 Ingersoll air compressor) seven 31/8 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 chromite.

UNITED ASBESTOS CO., Limited.

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.

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. J. Hawkridge, Assistant

CANADIAN OFFICE:

John J. Penhale, Superintendent, Black Lake, Que.

Formed in 1880 to take over the business of the Italo-English Pure Asbestos Co., Ltd., the asbestos mines and business of Messrs. Furze Bros & Co. of Rome, the Patent Asbestos Manufacturing Co., and to acquire and work asbestos estates in Italy, Canada, and elsewhere. In 1889 it purchased the property formerly worked by the Frechette Mining Co., 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. Engine and machinery equipment comprises: two seventy horse-power, one fifty horse-power and one twenty-five horse-power boilers; one 16 x 24 straight line Rand compressor with the necessary equipment; one 7 x 10 in. duplex double drum Bacon hoisting engine; 7 x 12 x 15 in. duplex double drum Beatty hoisting engine, and one 12 x 15 x 60 in. duplex winding engine, with drums flanged for winding 4,000 ft, 1/2 in. rope. Dressing mill, 40 x 75 ft., 3 stories equipped with 50 h.p. engine, rock breakers. small crusher, roll and fibreizing apparatus. The Bacon winding engine operates tramway 3,800 ft. 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 boom and two cable derricks. The company also operated in 1897 the Broughton asbestos mine, under lease from the Glasgow and Montreal Asbestos Co. The work has been more in the nature of opening and developing new ground.

MICA MINING.

MICA MINING.

No statistics of this mineral being available beyond the returns of the exports given by the Department of Customs, which are known to be greatly undervalued, it is impossible to give more than an approximate estimate of the value of this mineral produced in 1897, but we believe it to have been in excess of \$100,000, the principal production, as in former years, coming from the Ottawa county mines, in the Province of Quebec.

The demand for the mineral for electrical and other industrial purposes has greatly improved and good prices are realized. The following are the values of the exports, principally to the United States and Great Britain, for the years 1887-1896:

| | | | | | | | | C | A | I | E | 13 | N | D | A. | R | 1 | V | E | A | R. | | | | | | | | | | | 1 | a | lue | | |
|------|---|--|---|-----|------|------|---------|------|---|---|---|----|---|---|----|---|---|---|-----|---|----|---|------|--|-------|--|--|---|--|--|-----|----|----|-----|---|--|
| 1887 | , | | | | | | |
 | | | | | | | | | | | | | | | . , | |
 | | | | | | 107 | \$ | 3 | 48 | ю | |
| 1888 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | 2 | 3 | 56 | 3 | |
| 1889 |) | | | | | | | | | | | | | | | | | | | | | , | | | | | | | | | | 17 | 0 | 59 | 7 | |
| 890 | , | | ٠ | | | |
. , | • | | | | | | | | | | | ř | | | | | | | | | | | | | 2 | 2, | 46 | 8 | |
| 891 | | | | | | | | | ٠ | | | | * | | | | | | | | | | | | | | | × | | | | 3 | 7, | 59 | 0 | |
| 892 | | | | |
 | | | | | | | | | | | | | | | | | |
 | |
* | | | | | | | 8 | 6, | 56 | 2 | |
| 893 | | | | | |
 | | | | | | | | | | | | | . , | | | |
 | | | | | | | | | 7 | 0, | 08 | I | |
| 894 | | | | . , | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | 3 | 8, | 97 | I | |
| 895 | ı | | | | | | | | | | | | | | | | | | | | , | | | | | | | | | | | 4 | 8. | 52 | 5 | |
| 896 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 7, | 75 | 6 | |

The following table shows the various grades and value of the exports during the fiscal year ended 30th June, 1896, as given in the Trade and Navigation returns:

| SENT TO. | CR | UDE. | Сит то | Sizes. | EDGES TRIMMED | | | | |
|---|--------|--------|--------|--------|---------------|--------|--|--|--|
| SERIT TO. | Lbs. | Value. | Lbs. | Value. | Lbs. | Value. | | | |
| United States
Great Britain
Germany | | | | | 3,242 | 1112 | | | |
| Fiscal year 1897 | 37,604 | 3,009 | 1,478 | 253 | 413,633 | 56,702 | | | |

| SENT TO. | UNTR | IMMED, | GRO | UND. | TOTAL. | | | |
|--------------------------------|--------|----------|-------|--------|-------------------------|--|--|--|
| SERI TO. | Lbs. | Value. | Lbs. | Value. | ALL GRADES. | | | |
| United States
Great Britain | 20,370 | \$ 1,601 | 2,510 | \$ 313 | \$ 61,435
443
120 | | | |
| Fiscal year 1897 | 20,370 | 1,601 | 5,931 | 433 | \$ 61,998 | | | |

Note-These values are, it is apparent, greatly undervalued.

orts
ed,
his
he

nas he

6:

OCCURRENCE IN CANADA.

The occurrence of mica in economic quantities is now known at various points over a very extended area. Thus in Ontario the mines of Burgess and the advacent townships yield large quantities, generally of the phlogopite variety. Along the Ottawa river it is found from a point nearly 100 miles west of Ottawa, to the township of Grenville, 60 miles east of that city; while on the Gatineau river, which flows into the Ottawa at the city of Ottawa, mines have been located and worked for 80 miles north from its mouth, and the mineral is reported from points many miles farther north along that stream. To the east of Quebec it is known on the branch of the Saguenay called the Manonan, and in the townships of Escoumains, Bergeronnes and Tadousac, situated east of the mouth of that river, as well as at several other places along the river St. Lawrence. The mica found in this district is chiefly muscovite. Discoveries of workable deposits are also reported from British Columbia on the Canoe river and Tete Juan Cache Districts.

The principal areas where the mineral is at present worked are in the belt which extends north from North Burgess in Ontario, into the territory adjacent to the Gatineau and Lievre rivers, Ottawa county, Que.

PREPARATION FOR MARKET.

Care is taken in mining to avoid drilling through the misa crystals, or to break them unduly. The blocks hoisted from the mine are sent to the stripping room where extraneous matter, as pieces of quartz, feldspar, wall rock, and fragments of mica are removed. It is then taken to the "mica shop," where it is split with knives into sheets of the required thinness, and afterwards sheared into sizes. The workman has on his bench a stationary pair of shears and a large number of blocks or templates of the size to be cut. An experienced mica cutter can tell at a glance the largest size which can be cut from a given piece of split mica; he selects the proper template, holds it on the mica, and shears it on the four sides, using each edge of the block as a straight edge. Each size sheared is set away by itself. The sheets are sheared by further scaling, if necessary, and finally packed in paper in pound packages.

One hundred pounds of good block mica may yield 33\frac{1}{3} pounds cut mica; an inferior block may yield only 5 pounds; the average is 10 to 12 pounds. In the Mineral Resources of the United States it is stated that a hundred pound block from the Flat Rock mine, gave 75 pounds of cut mica. This is a record yield, and is very far above the average.

At the factory of the Mica Manufacturing Co. in Ottawa, this hand labor is greatly reduced and a great saving effected by the use of patented cutting machines operated by electricity. This company has twenty-three power presses for cutting irregular shaped dies and segments. They are of American manufacture; twenty of them from the E. W. Bliss Co., Limited, of Brooklyn, N.Y., two made by the Ferracute Machine Co., of Bridgeton, N.J., and the other manufactured by the Long & Allstatter Co., of Hamilton, Ohio. Eighteen of the Bliss machines are the well known Bench presses, and especially suitable for cutting patterns most in demand at the present time. The dies used in this factory are the most complete at present in use for this purpose, and include some sixteen different patterns, ranging in size from 5¼ x 10 in. to ½ x 3 in., and with a few exceptions are all made in Ottawa. In addition to the cutting presses already mentioned, there are in use ten cutting shears for two-siding and cutting material of unusually large size. The production of merchantable sheets is usually from 4 to 5 per cent. of the block mica brought from the mine, and may run as high as 8 or 10 per cent.

PRICES OF CANADIAN MICA.

The following are the standard prices for Canadian mica, as adopted by agreement by the producers in 1895, on lots of not less than one ton of 2,000 lbs.

Rough split, edges untrimmed. Run of the mine, to cut :-

| Inches | Per lb. |
|--------------------------------|---------|
| Ix3 to 2x4 | \$ 0.06 |
| 2x4 to 3x5 | . 15 |
| 3x5 to 4x6 | 25 |
| 4x6 to 5x7 | . 60 |
| Rough split, trimmed'to cut :- | |
| Inches. | Per lb. |
| Ix3 to 2x4 | \$ 0.10 |
| 2x4 to 3x5 | 25 |
| 3x5 to 4x6 | 50 |
| 4x6 to 5x7 | 1.00 |
| 5x7 and up | |

INDUSTRIAL USES.

The peculiar physical properties of the micas have secured for these minerals very widely extended uses in the arts—the size of the crystals, their highly perfect cleavage, their flexibility and elasticity, transparency and athermancy, chemical stability and imperfect powers of conducting electricity and properties which no other mineral can combine, and which cannot be readily or cheaply imitated by artificial means.

n

ne

ar

is

S

g

ie

g

ıt

n

n

n

Electrical Appliances. - Mica has been used for vibrating plates in the photophone. Edison has employed it also for vibrating plates in the telephone, and as a substitute for glass in the reflectors of electric lamps. The great factor in increasing the consumption of the mineral has been its demand for use in dynamos, electric motors and other electrical machinery. The insulating power of mica is superior to that of any other substance applicable to armatures. An advantage peculiar to itself is its even laminated structure. A piece of ordinary writing paper is about .005 inch; mica layers have been obtained of a thinness of .00003 inch. Mechanical difficulties prevent its being split thinner. By passing it upon a hard surface and splitting it off as much as possible, the remaining fragments are so thin as to become beautifully irredescent. The builders of armatures can therefore split the sheets into any desired and uniform thickness with great ease and accuracy. A valuable property of mica in connection with commutator insulation is its proper degree of hardness, whereby it does not wear away too rapidly under the action of the brushes. If rubber was used for example, even if it did not burn, yet it would wear off and sparking result, because the commutator surface would not be truly cylindrical. The brushes would be set into vibration. Again, mica is capable of the finest pulverization, so that any wearing which does take place does not result in the liberation of gritty particles, which would cause sparking. Mica is probably the best material for use in armatures, if it is desired to obtain not only efficient electric insulation, but also durability under the influence of heat.

Mica for electrical purposes must be flexible and non-conductive; color does not matter, but perfect cleavage is of the highest importance, as "electrical mica" must be of uniform thickness, and is often gauged to the thousandth part of an inch. The size of the sheets vary greatly, 450 different patterns being called for. The price is from 10c. \$2.50 and upwards per lb., and varies with the size of the sheet and difficulty of cutting the pattern.

Canadian mica, on account of its superior cleavage, is preferred by electricians, and after gaining a foothold in the United States, it has more than held its own against the local and foreign product.

An instance of this may be cited in the following communication to the Geological Survey of Canada (see Annual Report Mineral Statistics, 1890), which says: "The bulk of mica used by us is Canadian mica, which is known in the market as 'amber mica,' being of amber color and clear. It is essential that the mica should be smooth, free from wrinkles and crevices, it must split readily and must be flexible, so much so that a piece of mica.010 inch thick would bend to a curvature of about 3 in. diameter without cracking. Mica that has dark spots or spots similar to rainbow colors, or what is known as smoky mica, is not at all suitable for electrical purposes. Mica must also stand a flame of intense heat without crumbling up or showing any disintegration. We give you below the principal sizes of mica used by us, and would say that at the present time we have orders out for some of sizes ranging from 200 to 600 pounds. Commutator mica: $1\frac{1}{2} \times 4$ in., $1\frac{1}{4} \times 6\frac{5}{28}$ in., $1\frac{5}{28} \times 4\frac{1}{4}$ in., $1\frac{5}{28} \times 6\frac{1}{8}$ in., $1\frac{5}{28} \times 8$ in., $1\frac{5}{48} \times 8$ in., $1\frac{5}{48} \times 8$ in., 2×5 in., 2×5 in., 2×7 in., 2×12 in., 2×12 in., 4×4 in., 5×8 in. Binding mica: $1\frac{1}{4}$ in. wide.

Micanite.—One of the most recent uses to which mica is commercially applied, is the manufacture of micanite, by which large quantities of scrap or inferior qualities are utilized, and by means of a patented process small pieces of waste mica are built up into sheets 40 inches square, and larger if necessary. The product can also be made in any desired form, and is largely supplied to the electrical trade for insulating purposes.

Stove Panels.—No artificial transparent substance has, however, been devised to replace the mineral where high degrees or sudden changes of temperature take place. It has, therefore, considerable use in stoves, where it is desirable to obtain the cheer-ul glow of the fire without the direct heat. Its transparency is little affected by the repeated and alternate heating and cooling, and it is not readily attacked by the gases and vapors, although it does not so effectually resist the gases from a bituminous coal, and is, moreover, so quickly blackened by the soot that it soon loses its transparency. Its use, therefore, is confined to anthracite, or to gas asbestos stoves. For this purpose it has to be clear, free from spots, and of a uniform color through the sheet.

Lamp Chimneys.—Chimneys for oil and gas lamps with round burners are sometimes made of mica, especially those outside shop windows, where glass would not stand rain-drop splashes and sudden changes of temperature, while a breakage would involve considerable risk from fire.

Fire Screens.—In consequence of its transparency for light and its capacity for radial heat, we find mica employed as fire screens, in the peep holes of furnaces, and as screens in the laboratory and workshops for observing the processes in a highly heated furnace without suffering from the intense heat.

Glasses and Spectacles.—The best employment of the immense quantities and fragments of waste mica which suggests itself as worthy of a wider field than it now possesses, is the substitution of mica for glass in spectacles worn by workmen, especially stone and metal workers, to protect their eyes from chips and splinters. As already made in Germany these mica glasses are concaved in the shape of watch glasses, and are about one-twenty-fifth of an inch in thickness. The advantages gained by this utilization are greater than would at first sight be imagined. Mica spectacles cannot be broken. Pounding with a sledge hammer merely flattens them; nor does molten metal poured on the mica affect it. The shower of pointed iron particles which issue from lathes merely rebound from the elastic mica glasses.

Paints, Wall Papers and Ornamental Uses.—Another use for mica is its application, where previously colored or metalized, to ornamental purposes. From its unalterable nature the material preserves gilding, silvering or coloring from deterioration; and from its diaphanity, the articles so treated will preserve all their brilliancy. Finely ground mica or colored gelatine also shows handsome effects, and when mixed with a solution of gumarabic, it makes a good silver ink. The gelatine combination is used for inlaying buttons, and this beautiful application of mica is the production of bronze-like colors which bear the names brocades, crystal colors and mica bronzes. Among the advantages of these are that they are indifferent to sulphurous exhalations, are very light in weight, and in some colors are even more brilliant than the metal bronzes. When small particles of mica silver are spread over articles coated with

is

es

ilt

be

ng

e.

er-

he

es

al.

y.

ır-

re

ld

ge

or

nd

ıly

nd

w

ec-

As

ch

res

ca

m;

on

li-

its

ra-

ey.

ed

on

of

es.

ns,

tal

ith

asphalt varnish, the result is a good imitation of granite. The crystal colors are also suitable for calico printing, and the fabrics to which they are applied surpass in brilliancy the heavy bronze and glass dust fancy fabrics of Lyons. Such colors have been used to decorate porcelain and glassware, the articles undergoing a second heating up to the fusing points of their glazing. By suitable dyes the material is colored to a variety of hues.

In India mica is used extensively for decorative purposes, either in its natural state or artificially colored. In the days of ancient Rome the powdered material was scattered over the surfaces of the amphitheatre to obtain a brilliant glistening effect. In India it is used at native festivals, marriages, and in the Mahommedan maharam for processional ornaments, as lamps, and for ornamental pottery, on curtains and cloths, in calico printing, and by the dhobi (washerman) to give a sparkle to cloth, to which the fine particles easily adhere. Colored micas have also been suggested as a substitute for colored glass, but its use in this direction must be limited, and as the colored micas contain larger proportions of iron, they are more susceptible to destruction when exposed to weather. There seems no reason, however, why the quantities. of amber colored biotites, as well as muscovites, with inclusion of magnetic oxide in regular patterns, should not be so exposed in unexposed places. Natives in the Trichinopoly district of the Madras Presidency, and elsewhere, sell a large number of pictures and portraits painted on mica sheets of various sizes. Mr. Edgar Thurstan, reporter on economic products to the Government of India, states that the mica used in that district for painting pictures on, etc., is purchased by the painters from the Marakoyers (class of Musselmen) of Negapatam, who purchase large quantities of mica every year from ships arriving there from Calcutta and other sea-coast towns, for making the big taboots for the Kauthiri festival, and retail some to the painters.

As a Lubricant.—The mineral is somewhat extensively used in the manufacture of mica grease. As a lubricant for railroad purposes its value lies in the fact that it is absolutely anti-friction, and it is claimed with its use hot boxes or journals are impossible.

Boiler Coverings.—Scrap or refuse mica is now used as a most efficient covering for steam boilers and pipes on account of its non-conducting quality, and an important industry has within recent years been established at Toronto for the manufacture of this material, all the product being obtained from Canadian mines.

Other Uses.—Mica has been used on board men-of-war in localities where glass would be broken by the concussion due to the firing of heavy guns. It is made into reflectors, sea compasses, inlaying for wood instead of enamel. It is also used for roofing purposes, and in several patented processes forms a water and fireproof covering for strata of rubber, tar, candles, felt and similar materials. Its most recent application in a powdered state is to the so-called wax-printed cloths. These are made by applying melted wax to the cloth with a stick in free-hand designs, and before the wax is dry powdered mica is sprinkled over it. Under certain circumstances mica would be a convenient substitute for glass plates or celluloid films in photography, if perfectly polished and even plates could be obtained.

BLACKBURN MINES.

Owners:

The Blackburn estate.

Mine Office: Hugh C. Baker, Perkins' Mills, Que.

This property, at present being mined for mica, contains 1,600 acres of land in the Templeton district, County of Ottawa, Province of Quebec. Thirty persons employed in 1898. Equipped with one 30 and one 80 h.p. return tubular boiler; four Ingersoll and one Rand rock drills; four hoisting engines, three pumps and other plant.

MICA MANUFACTURING COMPANY, Limited.

Registered 11th February, 1897. Authorized Capital £80,000 in shares of £1, of which £66,135 has been subscribed and called up, including 6,000 shares issued to vendor.

Directors:

Sir S. Canning. J. S. Green.

Sir W. R. Ogilvy. Sir J. Rivett Carnac.

Head Office: F. Fuller, Tower Chambers, Frisbury Pavement London, E.C.

Canadian Office: Ottawa, Ontario.

Owns and operates the Lake Girard group of mica and phosphate properties in Ontario and Quebec, comprising an area of about 1,700 acres. The vendor received £3,000 in cash and 6,000 shares.

WALLINGFORD MICA COMPANY.

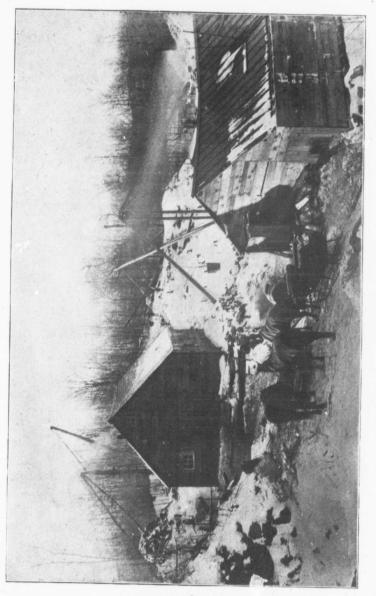
Organized 1st September, 1893. Invested Capital, \$30,000.

Owners:

Edward Wallingford. | N. A. Belcourt, Q.C., M.P. | T. G. Coursolles.

Head Office: T. G. Coursolles, Managing Owner, Ottawa. Edward Wallingford, Perkins' Mills, P.Q., Que., Mine Manager.

Owns and operates a property containing 200 acres of mineral land, situate W 1/2 of lot 16A and lot 16B, and lot 17B, in the 8th Range of the Township of Templeton, County of Cttawa, Province of Quebec. Thirty persons employed.



Wallingford Mica Co.-Pits at Templeton, Que.

CORUNDUM.

In his well known work on the Geology of Canada, published 35 years ago, Logan notes an occurrence of corundum in the township of Burgess, in Lanark county, being on the second lot in the ninth range. There, in contact with crystalline limestone, is a rock made up of felspar, quartz, calcite, silvery white mica and sphene, and disseminated through it were found small grains of a mineral whose color varied from light rose-red to sapphire-blue, while a hardness of greater than topaz showed it to be corundum. Small crystals of light-blue corundum were also found in the limestone of the vicinity. But so little interest did the discovery awaken that for many years the place of occurrence was forgotten and unknown, and it was only the circumstance of a nuch greater and far more valuable find of the same mineral in Carlow township, Hastings county, that led as a matter of curiosity to the re-discovery of the Burgess corundum a few months ago.

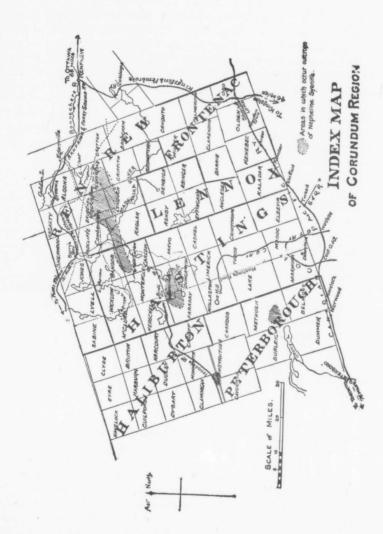
More than 20 years ago a little girl and her father were sitting on the rocks to rest after a walk through the woods at their home in North Hastings, and an oddly shaped stone which she picked up suggested to her mind the form of the glass stopper of a cruet stand bottle. It was a crystal of corundum, which had been weathered out of its matrix; but neither the child nor her father had then a suspicion of its name, nor that it had any relation near or remote to sapphire or ruby.

Still later other discoveries of the mineral were made in the same region, and it was mistaken for apatite or the phosphate of lime. The nearest guess to its identity was made by a University man who had studied mineralogy under Chapman, and he thought it was emery.

Finally it happened that a lot of rocks was sent down to the Geological Survey by some curious collector in Carlow, and having lain for several years in a storehouse there they were turned over by Mr. Ferrier, the lithologist of the Survey, who discovered in one of the specimens a crystal which he identified as corundum. This was two years ago, and it was the beginning of the end of the romance. Mr. Ferrier proceeded from Ottawa to Carlow township under the instructions of his chief, Dr. George M. Dawson, and with Nesbitt Armstrong of the New Carlow mills for guide, he succeeded in finding the corundum in place. This was on lot 14 in the fourteenth concession of Carlow, and although Mr. Armstrong's discovery there was made seven years before he had never been fortunate enough to get a man who could call the mineral by its name, or teil him of its uses and value, if it had any.

A few days later information of the di-covery was communicated by Dr. Dawson to the Bureau of Mines at Toronto, and in view of its importance and the possibilities of other deposits in the district, the mining rights in the lands were withdrawn from sale pending the carrying out of well-planned exploration.

This was late in 1896, and the work could not be undertaken until the following year, when it was placed in the hands of Prof. Willet G. Miller of the Kingston School of Mining. Prof. Miller had the help of two students from his school, and on



beginning systematic work a few days were first spent in a study of the known deposits in Carlow and their associated rocks. As the district is a very hilly one, and as the rocks are to a considerable extent covered with brush and soil, it was at first feared that difficulty would be experienced in making out the relations of the rocks, and consequently that the discovery of new deposits of the mineral would largely depend on chance. But after an examination of two separate ore bodies at some distance from each other—one in Carlow and the other in Raglan—it was found that the mineral occurred under the same conditions in both. After determining the strike of the rocks in both localities it was concluded that the deposits belonged to one band, and subsequent examination showed that this was the case, for the mineral was found at numerous points between the two localities. The tracing of the mineral then became an easy matter, and by the middle of October Prof. Miller had located occurrences throughout seven different townships and over an area of about 100 square miles. These townships are Carlow, Raglan, Bangor and Radcliffe in Hastings, and Brudenell, Lyndoch and Sebastopol in Renfrew.

The length of the corundum belt from east to west is about 30 miles, and its average breadth is about 3½ miles. It embraces over 60,000 acres in all, but a few thousands of which the mineral rights are held by the Crown. Another area has been partially explored in the township of Methuen, in Peterborough county, where corundum of fine quality has been discovered, but the extent of it has not yet been determined. There is also a probability of its being found in the townships of Dungannon and Faraday, where the rock formations are favorable. These several belts are shown on the accompanying map.

The geological formation of the country is described as Laurentian, and the band of rocks in which corundum has been found may be said to be made up of three important kinds, viz., gneiss, syenite and quartz, pegmatite. The gneiss, which is the oldest rock in the belt, is cut through by a series of dikes or masses which consist largely of felspar or felspathoid minerals in which occurs the corundum. Along the greater part of the strike of the dikes the rock has sometimes the character of coarse syenite, but in some cases it passes into nepheline syenite-nepheline playing the part of felspar in the rocks and being a comparatively rare substance in many portions of the world. In general it may be said that the corundum occurs more abundantly in the ordinary syenite than in the nepheline syenite, but the crystals are usually much better formed in the latter than in the former. The dikes of course vary much in width, and it is difficult without long and very careful exploration to form an accurate idea of their extent and of the proportion of ore they carry. At one place Prof. Miller found the corundum rock to have a width of 10 yards and at another place about 50 yards, but often the dikes have a width of only a few feet. Numerous occurrences have been noted by him over the explored area, and on most of them rock may be obtained carrying not less than 15 per cent. of corundum.

Under arrangement made by the Crown Lands Department several tons of ore were mined in November of last year, and taken to the Kingston School of Mining, for a mill test under the direction of the Professor of Engineering, Mr. Courtenay DeKalb. The tests were designed to show not merely the proportion of corundum in

por des \$1 roc WI

the

wh

gai

do

ass

ma

in to ma

tro

too tur clu tha the

> mai eme its i futu suri oxy sche

obn half coru alur say Thr

con cent

96.

und

wn

ind

irst

ks,

ely

lis-

the

of

nd,

ınd

nen

are

nd

its

ew

een

ere

een

ın-

elts

nd

ree

is

he

rse

he

ons

tly

lly

ch

an

ice

ner

ous

ck

ore

ıg,

av

in

the dike rock from which it was mined and the quality of it, but also the methods by which the ore could be most successfully treated to separate the mineral from its gangue and prepared for placing it upon the market. There seems now to be no doubt that operations can be economically carried out upon a commercial scale, and assurances are equally satisfactory as regards the quality of the corundum. The tests made at Kingston show that the rock carries 15 per cent. of corundum, and the proportion might be considerably increased with careful cobbing at the mines if this was desirable. If treated on a large scale the cost of milling the rock ought not to exceed \$1 per ton, and under careful management it might be reduced to 60 cents per ton of rock—or say of 300 lbs. refined corundum, with an average of 15 per cent. ore. What gives assurance of cheap production is the existence of abundant water power in the heart of the corundum belt, on the Madawaska river and its tributaries, which may be electrically developed with a moderate investment of capital.

At present one of the chief uses of corundum is as an abrasive; yet owing to its scarcity and cost no great quantity is available. The best known deposits are in Georgia and North Carolina, but these are limited in extent and are practically controlled by a combine. Emery has accordingly been the chief natural material used as an abrasive, being found in several countries in large abundance. In recent years too, an artificial product known as carborundum has grown into favor, and manufacturers of it are inspired with confidence that they can supply the market to the exclusion of every other kind of abrasive. But experiments recently made go to show that for the best lines of work corundum is much superior to carbonundum, and with the prospect of the opening up of large deposits in the Ontario fields corundum should have nothing to fear in the competition. If cheapness and efficiency can secure the market, the establishment of works in this province may yet drive carborundum and emery to the wall. Corundum almost certainly possesses one great advantage over its rivals, in that it may be put to other uses. As an ore of aluminium it hes a great future if some present difficulties which appear to be only of a trifling character are surmounted. Pure corundum, which is alumina, is composed of 46.8 per ceut. oxygen and 53.2 per cent. aluminium, and in the treatment of ore at the Kingston school of mining corundum has been produced 991/2 per cent. fine. The obnoxious elements consists of silica, sulphur and iron, all three not exceeding the half of one per cent, and means can no doubt be found to separate these from the corundum. At the present time cryolite and bauxite are the principal ores of aluminium, the former carrying about 13 and the latter about 26 p.c. of the metal, or say one-quarter and one-half respectively of the metallic aluminium in pure corundum. Three analyses of the Hastings corundum made by Dr. Goodwin give an average of 96.82 alumina, and the average of corundum concentrates obtained by Prof. DeKalb from a treatment of 1,200 lbs. of rock was over 90 per cent. pure. And besides the corundum, there is recovered from the rock in the process of treatment about 5 per cent. of magnetite, containing 69 per cent. metallic iron suitable for the manufacture of the finest steel, or a quantity sufficient to pay the whole cost of milling.

It is the policy of the Ontario Government in dealing with the lands in the corundum belt to encourage the founding of an industry which will bring the greatest good to the province, and to that end the following regulatious have been framed and adopted:

MEMO. FOR THE COMMISSIONER OF CROWN LANDS.

The mineral corundum having been discovered on lands situated in a number of Free Grant townships in the eastern parts of Ontario, and the mining rights in those lands having by Orders-in-Council been withdrawn from sale or lease pending exploration and the adoption of a scheme for developing the deposits and utilizing the mineral to the best advantage of the Province, the undersigned begs to submit for the consideration of the Commissioner that the disposal of such lands be made subject to the following terms and conditions:

- I. All corundum-bearing lands the mining rights of which have been already or may be hereafter withdrawn from sale or lease, or in which the mining rights are or may be otherwise reserved by the Crown, shall, subject to the general provisions of the Mines Act, except as herein provided, be disposed of under the leasing provisions of the said Act, and shall continue to be held as leasehold lands only.
- 2. During the first period of ten years the lessee shall expend in stripping or in opening mines, in sinking shafts or in other actual mining operations, or in milling or otherwise treating the ore or mineral taken from a lot or location to prepare it for the market, exclusive of all roads, houses, mills, machinery and other like improvements, a sum uot less than at the rate of one dollar per acre per year; and where an area of not more than 600 acres, consisting of two or more separate lots or locations, is held by the same person, partnership, syndicate or company within a block of 4,000 acres or two and one-half square miles, the whole value of the mining operations required to be done in one year may be expended on one lot or location at the discretion of the lessee, and so for every additional 600 acres or fractional part thereof that the same person, partnership, syndicate or company may hold within the same block.
- 3. In the event of failure on the part of the lessee to carry on mining operations as required in the foregoing section in each and every year of the first term of ten years the lease shall forthwith cease and determine, and all interests of the lessee in the land or lands shall revert to the Crown; nevertheless it shall be competent for the lessee to prove that during one or more preceding years of the term the extent of mining operations carried on has been adequate to cover the requirements for the year in default, in which case the lease shall not be cancelled, and the lessee may also defeat forfeiture by an undertaking with satisfactory security to expend the full amount required for working conditions within the next succeeding year, including the expenditure in default.
- 4. At the expiration of the first term of a lease it may be renewed for a further term of ten years at the same rental and under the same working requirements if the covenants and conditions have been performed and fulfilled, and thereafter it may be renewed for successive terms of twenty years on such conditions and at such rent as the regulations may provide.
- 5. The person, partnership, syndicate or company to whom the mining rights may be awarded of any lands which have been located or sold under the Free Grants and Homesteads Act, or sold for agricultural purposes, shall compensate or settle with the owner or locatee of such lands for injury or damage done or to be done to the surface rights thereof before beginning work thereon, and if the parties fail to agree upon the amount or method of compensation, the Director of the Bureau of Mines shall have power to order and prescribe the same.
- 6. The Lieutenant-Governor in Council shall have power to fix and determine the maximum price at which corundum taken from lands leased under these terms and conditions may be sold for use in the Dominion of Canada, whether the ore or mineral be in the natural state as raised from the mines or in any stage of treatment or manufacture.

7. The Lieutenant-Governor in Council shall also have power to require that all corundum mined from lands leased under these terms and conditions shall undergo certain processes of treatment and milling at works to be erected in the Province to prepare it for market; and may further require from time to time, as circumstances appear to warrant, that works be established in the Province for the manufacture of all useful or commercial products for which the mineral or ore is economically adapted.

8. The Commissioner of Crown Lands may receive tenders for mining lands and mining rights in the explored belt to the 15th day of September, 1898, which tenders shall be in the form of a cash bolus to be paid to the Treasury for each lot, part lot or location applied for in addition to the first year's rental; but in considering the bonus so tendered for a lot or location, preference in the selection of mineral lands may be given to parties who will undertake to conduct mining and treating operations on the largest and completest scale, and who can furnish satisfactory assurance that they possess the requisite capital for the proposed operations—including separation of the ore from its gangue, milling for abrasive uses, manufacture of abrasive goods, and the production of aluminium.

A. Blue, Director.

The policy laid down in these regulations should be effective in adding one more to the important mineral industries of the Province. It possesses this distinctive feature, that capital and labor will be employed at home to convert raw material into manufactured product, and there is no apparent reason why the policy should not be successfully carried out, if skill and enterprise are available to meet the opportunity. With the extensive deposits of corundum she is shown to possess, Ontario ought soon to be in a position to supply the world with abrasives and aluminium.

It remains only to say a word on the terms upon which mineral lands in the territory may be acquired. Under the Regulations they can be held only as leased lands—at first for a term of ten years, renewable for a second term of ten years if the conditions as to payment of rent and carrying on of mining operations are complied with, and thereafter indefinitely for terms of twenty years. For the first year the rent charge is 60 cents per acre, and for subsequent years 15 cents per acre, payable in advance; or one-half these rates respectively if the surface rights have been acquired by settlers.

Copy of an Order-in-Council approved by His Honor the Lieutenant-Governor, the 4th day of July, A.D. 1898, and published in the *Ontario Gazette* of 9th July:—

Upon the recommendation of the Honorable the Commissioner of Crown Lands the Committee of Council advise that the accompanying conditions and regulations proposed by the Director of the Bureau of Mines to be adopted and followed in connection with the disposition of corundum-bearing lands in the Province of Ontario be approved of by Your Honor.

Certified,

(Sgd) J. R. CARTWRIGHT,

Clerk, Executive Council.

MISCELLANEOUS MINING COMPANIES.

Aaron's Rod Mining and Development Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: F. Williamson, Geo. Doyle, P. E. Wilson. Head Office: Nelson, B.C.

Adamant Manufacturing Co. of America.—Authorized Capital, \$500,000. E. W. Parmalee, President; G. G. Ruston, Sec.-Treas.; C. G. Root, Vice-Pres. Head Office: 309 East Genesee Street, Syracuse, N.Y. 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. The works at Syracuse, N.Y., are supplied with gypsum, chiefly obtained from Nova Scotia and New Brunswick.

Adams Mining Co., Ltd. -Capital, \$1,000,000. Shares \$1.00 each. Trustees: J. D. Farrel, E. J. Bownian, P. J. Hickey. Head Office: Sandon, B.C.

Adventurers of British Columbia, Ltd.—Registered 30th April, 1897, to carry into effect an agreement with H. E. Newton, and to acquire options over mining properties in British Columbia. Authorized Capital, £25,000, in shares of £1. Head Office: 3, 4 and 5 Queen Street, London, E.C., England.

Ajax Mining & Development Co.—Incorporated 1897. Authorized Capital, \$500,000, in shares of \$1.00. Head Office: Sandon, B.C.

Alabastine Co., Ltd.—Incorporated 1885. Authorized Capital, \$50,000, in shares of \$100 each, of which to date \$34,000 have been subscribed and paid up. Directors: M. B. Church, Grand Rapids, Mich.; J. M. Wheeler, Paris, Ont.; David S. Hopkins, Grand Rapids, Mich.; Abram B. Knowlson, Grand Rapids, Mich.; John Kay, Paris, Ont.; R. E. Haire, Paris, Ont. 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.

Alaska Gold Fields, Limited.—Registered 23rd March, 1898. Authorized Capital, £100,000, in shares of £1 each. Canadian Agent: Charles R. Hamilton, Rossland, B.C.

Alberta and Kootenay Development Co., Ltd.—Capital, \$500,000. Shares \$1.00 each. Trustees: R. G. Bell, W. C. Wells, G. S. McCarter, N. J. Lindsay, G. Ericksen. Head Office: Golden, B.C.

Albert Manufacturing Co., Ltd.—Incorporated 1854. Authorized Capital, \$350,000. Directors: James G. Lindsay, President; J. T. Tomkins, Walter Tomkins, Calvin Tomkins, C. J. Osman. Head Office: C. J. Osman, Superintendent, Hillsborough, N.B. Operates four gypsum quarries and a plaster mill at Hillsborough in Albert County, Province of New Brunswick. In 1896, the shipments of rock plaster amounted to 59,265 tons, while 8,745 tons were manufactured in 61,220 barrels of calcined plaster, land plaster and terra alba. 165 persons employed.

Albion Mining Co., Limited. Registered 4th April, 1898. Authorized Capital, \$1,000,000, in shares of \$1.00. Head Office: H. Geigerick, Ainsworth, B.C.

Algonquin Consolidated Mining and Development Co.—Incorporated 1897. Capital \$1,000,000, divided into 1,000,000 shares of a value of \$1.00 each. Head office: Rossland. Directors: T. M. Daly, A. C. Galt, J. M. Clark, F. A. Brown. Formed to purchase the "Algonquin," "Calumet," "Goegebic," "Buck Horn," "Red Jacket," "Hermit," "Hottentot," "Golden West," "Bryan,"

"Lalla Rookh," including fraction "Keewaydin," "Tartar," "Oberon," "Monarch," "Mirror," "Iriquois," "Arctic," "Allan Bane," "Roderick Dhu," mineral claims, all situate at or near Christina Lake, in the Trail Creek District, British Columbia.

Alliance Prospecting Syndicate of B.C.—Head Office: Vancouver. Directors: H. Bell-Irving, Duncan Bell-Irving and Henry Cline. Formed to acquire mineral lands and to carry on mining in B.C.

Amazon Gold Mining and Milling Co., Limited.—Incorporated 1897. Capital \$1,000,000. Head Office: Rossland, B. C. Directors: R. O'Brien, J. W. Lee, C. Frey. Formed to acquire the "Aurora," "Webfoot," and "Third Day" mineral claims, all situated in Trail Creek Mining Division of West Kootenay, in the Province of British Columbia.

Ambrose Mining and Development Co., Limited.—Capital, \$1,000,000. Shares \$1.00 each. Directors: Samuel C. Wood, Peter M. Campbell, Charles Cameron, Frank E. A. Cott, Lewis Walsh. Head Office: Toronto, Ont.

Amherst Prospecting and Mining Company, Limited. — Incorporated 1898. Authorized Capital, \$50,000, in shares of \$25.00. Head Office: Amherst, N.S. Directors: Wm. Knight, Noel B. Steele, J. A. Black, C. S. McLeod. T. S. Rogers and G. F. Parsons.

Anaconda Consolidated Gold Mining Co., Limited.—Incorporated 1897. Capital \$3,000,000, divided into 3,000,000 shares of a value of \$1.00 each. Head Office: Rossland, B.C. Directors: W. G. Campbell, A. L. Jaffe, J. R. Cranston, all of Rossland. Formed to purchase the "Anaconda," "Treadwell," "City of Toronto," "City of Winnipeg," "City of Rossland" and "Comstock" mineral claims, situated on the east slope of Lake Mountain in the Trail Creek Mining Division of West Kootenay District, in the Province of British Columbia.

Apex Gold Mining and Development Co. (Foreign). — Capital, \$1,500,000. Shares \$1.00 each. Head Office: Spokane, Wash.

Argentine Gold Mining Co. (Foreign).—Incorporated 1897. Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Associated Gold Mines of British Columbia, Limited.—Registered 1898. To acquire and work ninety-six mining claims in British Columbia. Authorized Capital £500,000 in shares of £1. Head Office: W. H. S. Aubrey, L. L. D., I Northumberland Avenue, London, W.C. Consulting mining engineer: W. Pellow Harvey, F.C.S., Vancouver, B.C.

Atlas and Huntingdon Development Syndicate, Limlted.—Registered 18th May, 1898. Authorized Capital, \$10,000, in shares of \$5.00. Head Office: Slocan City, B.C. Formed to acquire the "Atlas" and "Huntingdon" claims, Slocan District, British Columbia.

Atlas Mining and Development Co., Ltd.—Incorporated 1897. Capital, \$1,000,000, divided into 1,000,000 shares of a value of \$1.00 each. Head Office: Rossland, B.C. Directors: A. T. Toney, J. W. Thornton, H. F. Arnold. Formed to acquire and operate the "Monte Cristo" mineral claim situated in the Nelson Mining-Division of the West Kootenay District, British Columbia.

Bath Island Mining Co., Ltd.—Capital, \$750,000. Shares, \$1.00 each. Directors: John Galt, M.E., John Gray, Robt. M. Gray, Ralph K. Burgess, Wm. H. Collison, Jno. Ferguson. Head Office: Toronto, Ont.

B. C. and Dominion Exploration Co., Ltd.—Registered 19th February, 1897, to acquire and deal with mining properties. The authorized capital is £50,000 in shares of £1 each. Head Offices: 10-12 Walbrook, London, E.C., England.

- B. C. Development Co., Ltd.—Registered 11th May, 1896, to acquire and deal with mining rights, &c. The authorized capital is £30,000, in shares of £1; 28,050 shares have been issued, and 15s. per share called up. The capital was originally £5,000, but was increased to its present amount by a resolution passed on the 24th June, 1896.
- B. C. Exploring Syndicate, Ltd.—Registered 11th July, 1896, to enter into an agreement with J. Cobeldick, and generally to prospect and explore lands in British Columbia. The authorized capital is £20,000, in shares of £1; 9,007 shares have been issued, 2,500 being fully paid, and 6,507 having 5s. per share called up. Head Office: J. H. Champness, F.C.A., Secretary, 103 Cannon Street, London, E.C.
- B. C. Gold Fields Exploration, Development and Investment Co., Ltd.—Capital, \$2,500,000. Shares, \$1.00 each. Directors: Hon. Geo. E. Foster, T. Stuart, S. F. McKinnon, Hon. George McKindsey, H. W. N. Murray, Q.C., and Samuel Bassett. Head Office: Toronto, Ont. Formed to acquire and take over the assets and business and good will of the British Canadian Gol + Fields Exploration, Development and Investment Co., Ltd.
- B. C. Syndicate, Ltd.—Registered 1897. Authorized Capital, £30,000, in shares of £1. Head Office: A. Davidson, Secretary, 10 St. Helen's Place, London, E.C.
- Belcher Consolidated Gold Mining Co., Ltd.—Incorporated 1897. Capital, \$1,200,000, divided into 1,200,000 shares of \$1.00 each Head Office: Rossland. Directors: F. Guse, W. R. Ralston, E. Johnson, J. J. Davis, I. Anderson, J. S. Patterson. Formed for the purpose of mining in British Columbia.
- Big Bump Copper Co., Ltd.—Registered 26th April, 1898. Authorized Capital, \$1,000,000, in shares of \$5.00. Head Office: New York. Canadian Office: Frederick Keffer, Mining Engineer, Anaconda, B.C.
- Black Current Mining Co., Ltd.—Incorporated 1897. Capital, \$1,000,000 divided into 1,000,000 shares of a value of \$1.00 each. Head Office: Kaslo, B.C. Directors: C. F. Caldwell, Van B. DeLashmutt and D. Clark of Kaslo, B.C. Formed for the purpose of mining in British Columbia.
- Black Diamond Mining and Development Co., Limited.—Incorporated 1897. Capital, \$600,000, divided into 1,200,000 shares of 50 cents each. Head Office: Kaslo, B.C. Directors: Major S. B. Steele, A. R. Macdonell of Fort Steele, and T. M. Gibson, Kaslo, B.C. Formed for the purpose of mining in British Columbia.
- Bon Diable Mining Co., Limited.—Capital \$75,000. Shares \$1.00 each. Trustees: Alired C. Carew, Chas. E. Costerton, Leopold S. Simons. Head Office: Vernon, B.C.
- Bright Prospects Gold Mining and Development Co., Limited.—Registered 13th June, 1898. Authorized Capital, \$500,000 in shares of \$1.00. Head
- Britannia Mining Co., Limited.—Capital, \$250,000. Shares 25 cents each. Trustees: Alfred J. Andrews, Fletcher S. Andrews, Chas. H. Enderton, Paul Hatch, Harvey L. Fife. Head Office: Slocan City, B.C.
- British America Development Co., Limited.—Registered 12th February, 1898. Authorized Capital, \$100,000 in shares of \$10.00. Head Office: Jersey City, N.J. Canadian Office: H. T. Ceperley, Vancouver, B.C.
- British American Exploration and Gold Mining Co.—Incorporated 1897. Capital, \$10,000,000, divided into 10,000,000 shares of \$1.00 each. Head Office: Victoria, B.C. Directors: J. Murphy, W. II. Berridge, G. J. Harvey and Jas. Murray. Formed for the purpose of mining in British Columbia.

British and Canadian Gold and Silver Mines Co., Limited.—Incorporated 21st October, 1896. Authorized Capital, \$15,000. Shares \$100 each. Directors: N. Clarke Wallace, J. G. Hallett, John C. Thom, S. W. McMichael, J. J. Cook, James Armstrong and John A. Ferguson. Head Office: Toronto, Ont.

British Columbia Agency, Limited. — Registered 30th November, 1896. To acquire mining properties in British Columbia and elsewhere. Authorized Capital, £100,000 in shares of £1. 8,507 shares have been issued, and 10s. per share ha, been called up. Directors: Sir E. R. Pearce Edgecombe, Chariman; H. B. Praeds Barclay Bonthrone, F. A. Gillaim, Dr. Robert Govering. Head Office: 15 and 16 George St., Mansion House, London, E. C., England. Canadian Office: Barclay Bonthrone, M. E., managing director, Vancouver, B.C.

British Columbia and Canada Gold Mining Syndicate, Limited.—Registered 4th February, 1897, by W. C. Walker, 95 Regent St. W., London, England, to carry on the business of prospectors, explorers, miners, smelters, etc. The authorized capital is £80,000, in 6,000 preference shares of £5 each, and 50,000 ordinary shares of £1.

British Columbia Development Association, Limited.—Registered 14th December, 1895, to develop the resources of British Columbia by promoting and carrying out commercial and financial enterprises. The authorized capital is £20,000 in 19,900 preference shares of £1 each, and 100 founders' shares of £1 each. Head Office: Walter Townsend, General Manager, 45 Broad Street Avenue, London, E.C., England.

British Columbia Exploration Co., Ltd.—Capital, \$100,000. Shares \$1.00 each. Trustees: John Thomas, James B. Owens, Ernest Miller. Head Office: Rossland, B.C.

British Columbia Finance and Mining Co., Ltd.—Registered 5th October, 1896, by J. H. E. Mony Penny, 13 Gray's Inn Road, London, W.C., to acquire and deal with mining properties in British Columbia.

British Columbia Financial Trust and General Corporation, Ltd. Registered 10th February, 1897, to carry on the business of a financial, mining, and exploration corporation. Authorized Capital, £250,000, in 245,000 ordinary shares of £1 each, and 5,000 founder's shares of £1 each; all the founder's shares have been issued credited as fully paid, and of the ordinary shares 75,260 have been issued and 10s. per share is called up thereon. Head Office: Percy J. Hays, Secretary, Finsbury House, Blomfield, Street, London, E.C., England.

British Columbia Gold Discovery Co., Limited.—Registered 19th May, 1896. To acquire mines, mining rights, etc., in British Columbia or elsewhere. Authorized capital £100,000 in shares of £1. Head Office: Dashwood House, 9 New Broad Street, London, E.C., England.

British Columbia Gold Fields Mining and Milling Co., Ltd.—Incorporated 1897. Capital, \$20,000,000, divided into 20,000,000 shares of \$1.00 each. Head Office: Victoria, B.C. Directors: R. Hall, G. L. Milne, J. McConnell, all of Victoria, B.C. Formed for the purpose of mining in British Columbia.

British Columbia Gold Syndicate, Ltd.—Registered 11th April, 1896, to carry on the general business of a mining, milling, smelting and trading company in British Columbia or elsewhere. Authorized Capital, £5,000, in shares of £1 each.

British Columbia Gold Trust, Ltd.—Registered 10th March, 1897, to carry into effect an agreement with G. S. Howell, and to carry out the usual objects of an exploring and finance corporation; to secure interests in mining and other properties in the gold fields of British Columbia, and to promote subsidiary companies. An agreement was made with Theodore C. Cotherill to proceed to British Columbia, there to represent the company. The founder, G. S. Howell and T. C. Cotherill, each

received 600 fully paid shares. The Authorized Capital, is £2,000, in shares of £1; 1,100 shares have been issued and are fully paid. Head Office: Louis W. Bloy, 16 St. Helen's Place, London, E.C., England.

British Columbia Land Exploration and Development Co., Ltd.—Registered 28th July, 1896, to enter into an agreement with A. L. Secretan and others, to carry on all kinds of exploration and promoting business. A number of mining properties, comprising about 2,200 acres of Crown grants in the West and East Kootenay districts of B.C., have been acquired and are bein; prepared for resale to subsidiary companies. The Authorized Capital, is £250,000, in 250,000 shares of £1 each. Head Office: A. L. Secretan, Secretary, 13 Austin Friars, London, E.C., England.

British Columbia, London and Kootenay Mining and Development Co., Ltd.—Incorporated 1897. Capital, \$2,000,000, divided into 2,000,000 shares of \$1.00 each. Directors: J. L. Cawthorn, R. Scott, T. M. Rixen and H. Croft. Head Office: Rossland, B.C. Formed for the purpose of mining in British Columbia.

British Columbia Mineral Properties, Ltd.—Registered 1898, with an Authorized Capital of £200,000; 100,000 priority shares of £1 each, and 100,000 deferred shares of £1 each. Formed with the object of acquiring options on mining properties in British Columbia, with a view either to the purchase and development of the said properties, or the re-sale of the same to subsidiary companies. The company at date of report had under option the following properties:—Two claims adjoining one another, consisting of 52 acres each, situated about 1½ miles from the the town of Slocan city. Four claims on Porcupine Creek, Nelson Division of West Kootenay. Three claims on the east side of the First North Fork of Lemon Creek. Head Office: F. G. Stevenson, 57 and 58 Broad St. Avenue, London, F.C.

British Columbia Mining and Development Syndicate.—Authorized Capital, \$2,000,000. Directors: L. W. Curtis, James K. Clarke, P. J. Shields, L. Beaupre, all of Rossland, B.C., and E. J. McClintock, E. B. Wiggias, of Saginaw, Mich., and Chas. E. Sheldon, of Red Wing, State of Minnesota. Head Office: Rossland, B.C.

British Columbia Mining Co, Limited.—Registered 1896. Authorized Capital, £20,000 in shares of £10. Head Office: Suffolk House, Cannon Street, London, Eng. F. Buckley, Secretary.

British Columbian Exploration Syndicate, Limited. —Registered 16th April, 1896. To acquire and deal with mining properties and carry on mining and smelting operations. The authorized capital is £25,200 in 100 ordinary shares of £250 each and 200 deferred shares of £1 each; 87 ordinary and 127 deferred shares have been issued and are fully paid, 34 ordinary shares being issued credited as fully paid, making the paid up capital £21,877. The ordinary shares are first entitled to a dividend of 10 per cent. per annum, and also take all the profits remaining in any year after payment of a similar dividend on the deferred shares for such year. Head Office: H. St. John Hodges, Finsbury House, Blomfield, Street, London, E.C.

British Columbia Ore Sampling Co., Limited.—Registered 6th April, 1898. Authorized capital \$50,000 in shares of \$5.00. Head Office: Vancouver, B.C.

po

ad

cla

eac

British Columbia Purchase, Limited.—This syndicate was registered 4th December, 1896, by Lawrence & Co., 14 Old Jewry Chambers, London, E.C.; to carry on business as capitalists, financiers, miners, smelters, etc. The authorized capital is £5,000 in 4,950 ordinary shares of £1 each and 50 deferred shares of £1.

British Columbia Proprietary Company, Limited.—Registered 20th November, 1896, by S. D. Stoneham, 2 St. Michaels House, Cornhill, London, E.C. To carry on all kinds of exploration business, etc., in British Columbia. The authorized capital is £6,000 in shares of £1.

Britlsh Columbia Prospectors, Limited.—Registered 30th April, 1896. To enter into an agreement with J. M. MacKinnon, and to secure openings for the employment of capital in British Columbia and elsewhere. Authorized capital £10,000 in shares of £1. Head Office: Harry Ellis, Secretary, Broad Street Avenue, London, E.C.

British Columbia Southern Prospecting and Development Co., Limited.—Capital, \$50,000. Shares \$1.00 each. Trustees: Thomas M. Daly, Jno. Sinclair, Alex. B. McLennan, J. A. Payzant. Head Office: Rossland, B.C.

British Columbia Syndicate, Limited.—Registered 7th March, 1896. Authorized Capital, £2,000, in shares of £1. Directors: J. D. Pattullo, W. A. Klockman, Capt. A. C. Bald. Head Office: J. A. Wilkie, Secretary, 30 St. Swithin's Lane, London, E.C. To acquires mines, mining and water rights, etc.

British Columbia Tunnel and Development Co., Limited.—Capital, \$500,000. Shares \$50 each. Trustees: Jas. F. McLaughlin, John J. Moynahan, Wm. A. Campbell. Head Office: Rossland, B.C.

British Dominions Exploration, Ltd.—Directors: Lord Bateman, Sir D. Barclay, Bart., H. McDowell, E. T. Read, and E. Wolseley. Head Office: H. Thomas, Secretary, 18 St. Swithin's Lane, London, E.C. England. Formed to carry on an exploration and finance business. The Authorized Capital is £250,000, in shares of £1. The first issue was for £50,000, and £30,048 has been subscribed and called up. The promoter of the company subscribed for £20,000 of the capital allotted, and has the right to call for the remainder of the capital at par.

British Empire Finance Corporation.—Registered 1896. Authorized Capital, £500,000, in shares of £1. Advisory Board in Canada: Hon. SIr Charles Tupper, Bart., Hon. J. W. Longley, Sir James A. Grant, Rufus H. Pope, M.P. Formed to acquire and work mineral properties in Canada and other portions of the Empire.

British Empire Mining Co., Ltd.—Capital, \$200,000. Shares 10 cents each. Trustees: Paul C. Van Horne, A. W. Sullivan, S. K. Champion, George Hewson. Head Office; Vancouver, B.C.

British Klondyke Mines and Finance Co., Ltd. — Registered 1897. Authorized Capital, \$100,000. Formed to carry on the business of an exploration, trading, finance and agency company in British Columbla, the Yukon and elsewhere. Offices: Blomfield House, 52 New Broad St., London, E.C., England.

British Kootenay Exploration Syndicate, Ltd.—Registered 30th September, 1895. To prospect for and acquire mines in British Columbia. Authorized Capital, £10,000, in shares of £1; 8,000 shares have been issued and are fully paid; 5,500 being issued, credited as fully paid.

British North-Western Development Co., Ltd.—Incorporated 1897. Capital, \$10,000,000, in shares of \$1 each. Incorporated 1897. Head Office: Victoria. Directors: G. L. Milne, A. C. Flumerfelt, and W. J. Dowler. Formed for the purpose of mining in British Columbia.

British Queen Gold Mines, Ltd.—Registered 28th October, 1896. To adopt an agreement with P. Longuehaye, and to acquire and turn to account mining claims and property on Siwash Creek, Yale District, B.C. Authorized Capital, £300,000, in shares of £1. Head Office: 60 Tower Chambers, Finsbury Pavement, London, E.C., England.

Brunswick Mining and Development Co., Ltd.—Capital \$1,000,000. Shares \$1.00 each. Trustees: Chas. D. Rand, Richd. E. Leonard, Geo. L. Fowler, Head Office: Vancouver, B.C.

Buffalo Mining Co., of Slocan, Ltd.—Capital, \$150,000. Shares 25 cents each. Trustees: John M. McKinnon, Chas. C. Bennett, Robt. J. Leckie, Robt.

E. Palmer, Jos. B. Seymour. Head Office: Vancouver, B.C. Formed to acquire by purchase or otherwise the "Buffalo" mineral claim, situate on Four Mile Creek, in the Slocan Mining Division of West Kootenay, Province of British Columbia.

Bunker Hill and Blackwood Mining Co.—Incorporated 1896. Authorized Capital, \$500,000. Head Office: Vancouver, B.C. Directors: Ernest E. Evans, C. T. Dunbar, Osborne Plunkett, and M. M. Campbell. Formed to acquire and work the mineral claims "Bunker Hill No. 2" and "Blackwood," situate on the Fork of Lemon Creek, in the Slocan Mining District, British Columbia.

Burrard Mining Association, Ltd.—Capital, \$50,000. Trustees: Geo. R. Maxwell, A. Althorpe Smith, Arthur Haines, Christopher W. Ford, Thomas C. Alcock, Caleb B. Mansell, Thomas Evans. Head Office: Vancouver, B.C.

Camp McKinney Development Co., Ltd.—Capital, \$600,000. Shares \$1.00 each. Trustees: Frank S. Taggart, C. D. Rand, R. E. Leonard. Head Office: Vancouver, B.C. Formed to acquire the "Wiarton" mineral claim, situated in Camp McKinney, in the Osoyoos Division of the District of Yale, in the Province of British Columbia.

Canada Prospecting and Mining Co., Ltd.—Capital, \$100,000. Shares \$1.00 each. Trustees: Arthur G. Thynne, Osmund P. Skrine, Alfred G. Chaldecott, Head Office: Vancouver, B.C.

Canada Venture Syndicate, Ltd.—Registered 24th October, 1895. To work mines, etc. Authorized Capital, £25,000, in shares of £1. The syndicate has acquired certain patent rights from the Gold Ore Treatment Co. After the process has been proved it is proposed to transfer the undertaking to a larger company. Head Office: S. W. Money, Secretary, 31 Lombard St., E.C. London.

Canadian King Gold Mining Co., Ltd.—Registered 22nd December, 1897. Authorized Capital, \$1,200,000. Head Office: Spokane, Wash. Canadian Office: A. W. Boyd, Mine Superintendent, Erie, B.C.

Canadian Mining Syndicate, Ltd.—Registered in British Columbia, 30th September, 1897. Authorized Capital, £50,000 stg., in shares of £1 stg. Head Office: 23 John William St., Huddersfield, England. Canadian Agent: William Farrell, Vancouver, B.C.

Canyon Gold and Silver Mining Co., Ltd.—Incorporated 1897. Capital, \$800,000, divided into 1,600,000 shares of 50c. each. Head Office: Vancouver, B.C. Directors: P. Judge, G. D. Travis, H. A. Brocklesby, all of Vancouver, B.C. Formed for the purpose of Mining in British Columbia.

Cariboo Creek and Canadian Mining and Development Co., Ltd.—Capital, \$2,000,000. Shares \$1. each. Trustees: E. C. Finch, Thos. Abriel, Jos. B. Dabney. Head Office: Rossland, B.C.

Cariboo Reefs Development Co., Ltd.—Registered 1st June, 1895. To acquire three mining claims known as the Eureka, the Victoria, the Consolidated, all situated on the Princess Maria Lode, and lying mostly on Williams' Creek Mountain, 3 m. S. of the town of Barkerville, B.C. The purchase consideration was £13,324, payable £200 in cash and the balance in fully paid shares. The authorized capital is £20,000, in shares of £1; 17,060 shares have been issued, 13,134 (vendor's) being issued credited as fully paid, and 3,926 having 10s. called up. Head Office: C. R. Fraser Cole, Secretary, 36 Walbrook, London, E.C., England.

C. C. & J. Mining and Development Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: Wm. L. Challoner, D. E. Campbell, Thos. J. Jones, Head Office: Victoria, B.C.

Central Exploration Co., Ltd.—Capital, \$100,000. Shares \$1.00 each. Trustees: R. G. Tatlow, A. G. Thynne, O. P. Skrine. Head Office: Vancouver,

B.C. Formed to purchase or otherwise acquire the mineral claims and properties of "The Grand Central" Mining Company, Province of British Columbia.

Central Ontario Mining Co., Ltd.—Capital, \$49,000. Shares \$10.00 each. Directors: W. H. Robinson, Henry W. Maw, Geo. W. Edgar. Head Office: Toronto, Ontario.

Chandos Mining Co., Ltd.—Incorporated 1895. Authorized Capital, \$199,000 in shares of \$100. Directors: J. A. Handway, New York; J. Robinson, Montreal; R. H. Green, James Pearson, Toronto. Head Office: Toronto, Ont. Formed to carry on mining in Ontario.

Charleston Mining Company, Ltd.—Registered 12th August, 1897. Authorized Capital, \$150,000, in shares of \$1.00. Canadian Office: Kaslo, B.C.

Chehalis Mining Company, Limited — Registered 11th September, 1897. Authorized Capital, \$100,000 in 500,000 shares of 20 cents. Head Office: Vancouver, B.C. Formed to purchase the "Golden Tip." "Gilt Edge," "Lucky Four," "Cliff," "Black Jack" and "Top Notch" mineral claims on Chehalis creek, New Westminster Division, B.C.

Chemical Manufacturing and Mining Company of Ontario, Ltd.—Capital \$500,000. Shares \$1 each. Directors: C. W. Volney, G. H. Weatherhead, John F. Wood, T. Baker and George Taylor. Head Office: Ottawa, Ont.

Christina-Cascade Mining and Development Co., Ltd.—Incorporated 1897. Capital \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Rossland, B.C. Directors: T. M. Daly, John Lane, J. M. Clark, J. M. Robinson. Formed for the purpose of mining in British Columbia.

Chrysolite Gold Mining and Development Co., Ltd.—Registered 18th March, 1898. Authorized Capital, \$1,000,000, in shares of \$1.00. Head Office: Waitsburg, Wash. Canadian Agent: S. F. Grinswold, Rossland, B.C.

Cinnabar Mining Co. of British Columbia, Ltd.—Incorporated 10th July, 1895. Capital, \$100,000. Directors: A. G. Ferguson, R. G. Tatlow, F. C. Innes. Head Office: C. C. Bennett, Secretary, Vancouver, B. C. The company owns five claims on the north shore of Kamloops Lake, Province of British Columbia, at a point about five miles north-east of Savonas, on the main line of the Canadian Pacific Railway.

Cody-Slocan Mining and Milling Co., Ltd.—Capital, \$250,000, divided into 1,000,000 shares of 25 cents each. Directors: G. A. Farini, Toronto; W. E. O'Connell, Sandon; J. K. Clark, Rossland; S. B. Hendee, Sandon; F. L. Christie, Sandon. Head Office: Sandon, B.C. Formed for the purpose of mining in British Columbia.

Coleraine Mining Co., Ltd. — Incorporated 20th November, 1891. Authorized Capital, \$120,000, in 1,200 shares of \$100 each. Directors: 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 asbestors, chromic iron and other mineral lands in the township of Coleraine, in the Province of Quebec, a portion of which are being worked by the company and others on royalty.

Colonial Mines Development Co. of Canada.—Registered 22nd March, 1898. Authorized Capital, \$1,000,000, in shares of \$1.00. Head Office: Barkerville, B.C.

Columbia and Western Syndicate, Ltd.—Registered 8th February, 1897. To acquire mines in British Columbia. Authorized Capital, £5,000, in shares of £1. Head Office: 11 Billiter Square, London, E.C., England.

Columbia Gold Fields Prospecting and Development Co., Ltd.—Registered 28th October, 1897. Authorized Capital, \$1,000,000, in shares in \$1. Head Office: Rossland, B.C.

Columbia Hydraulic Mining Co., Ltd.—Registered 21st January, 1898. Authorized Capital, \$100,000, in shares of \$10.00. Canadian Agent: J. D. Graham, Revelstoke, B.C.

Columbia, Ltd.—Authorized Capital, £2,000 in shares of £1. Registered 6th January, 1897, by Morley, Shirreff & Company, 53 Gresham House, London, E.C., England.

Columbia Mineral and Mine Association, Ltd.—Capital, \$250,000. Shares \$5.00 each. Trustees: Jno. B. Newcomb, Ben. E. Lyster, Jas. Helman, A. C. Brydone-Jack. Head Office: Vancouver, B.C.

Colnmbia Mining Co. of Canada, Ltd.—Incorporated 1896. Capital Stock, \$80,000, in 16,000 shares of a value of \$5.00 each. Directors: Geo. Broughall, Toronto; John McRae, Maggie McRae, Toronto; M. A. M. Henderson and W. J. Christie, Winnipeg. Head Office: Winnipeg, Man.

Columbia Mining Co. of Victoria, B.C.—Capital, \$100,000. Directors: J. C. Davie, B. W. Pearse, A. P. Luxton, F. B. Pemberton, and A. Flumerfelt, all of Victoria, B.C. To carry on mining in British Columbia.

Combination Mining and Milling Co. Ltd.—Registered 30th January, 1898. Authorized Capital, \$600,000, in shares of \$1.00. Canadian Agent: Wm. Monteith, Victoria, B.C.

Comstock Mammoth Quartz Mining and Milling Co. of Farview, B.C.—Registered 1897. Authorized Capital, \$150,000, in shares of 20 cents. Canadian Office: Fairview, B.C. Formed to purchase the "Comstock," and "Mammoth" mineral claims, Yale District, B.C.

Comstock Mines, (British Columbia) Ltd.—Registered September, 1897. Authorized Capital, £50,000 in shares of £1. Head Office: 9 Fenchurch Avenue, London. Canadian Agent: H. Bell-Irving, 432 Cordova Street, Vancouver, B.C. Formed to carry into effect an agreement dated 3rd May, 1897, and made between the Alliance Prospecting Syndicate of British Columbia, Ltd., and Rasmas A. Apenes. To acquire, work and hold the property and rights comprised in the said agreement, etc.

Consolidated Gold Fields of British North America, Ltd.—Registered 17th February, 1897. Head Office: 13 Austin Friars, London, E.C.

Consolidated Gold Fields of Canada and British Columbia, Ltd.— Registered 12th June, 1896, by J. B. Roberts and Wrightson, 73 Basinghall Street, London, E.C. To acquire mining rights in Canada or British Columbia.

Consolidated Mines Co., Ltd.—Capital, \$1,500,000. Shares \$1.00 each. Trustees: Peter Leclair, Duncan McMillan, D. R. Maclean. Head Office: Sandon, B.C.

Consolidated Sable Creek Mining Co., Ltd.—Capital, \$1,500,000, divided into 1,500,000 shares of \$1.00 each. Directors: G. D. Scott, Fred Cope, Vancouver; R. E. McKechnie, of Nanaimo, B.C. Head Office: Vancouver, B.C.

Cornwallis Mining and Development Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: Hector McPherson, John Box, Thomas F. Butcher. Head Office: Nelson, B.C. Formed to acquire the mineral claims "Republic No. 2," "American Eagle," "Bell No. 2," known as the "Republic Group," located about three and a half miles from Slocan City, between Twelve-Mile and Springer Creeks, in the Slocan Mining Division, in the District of West Kootenay, and Province of British Columbia.

Cottonwood River, (B.C.) Alluvial Gold Mining Co., Ltd.—Registered 18th July, 1896. To acquire three mining leases, containing about 240 acres, in the Cariboo District, near the Cottonwood River and on the Fraser River, British Columbia. The company has since taken up an additional block of 1,000 acres. The authorized Capital is £65,000 in shares of £1; all the shares have been issued, 50,000 (vendors') being credited as fully paid. Head Office: O. Wyatt Williams, Secretary, 55 and 56 Bishopsgate Street, Within, London, E.C., England, Manager in Canada: Mr. Chas. Tetley.

Crawford Creek Mining Co., Ltd. — Registered 22nd November, 1897. Authorized Capital, 1,000,000 in shares of \$1.00. Canadian Agent: H. J. Gibbon, Nelson, B.C.

Credit Forks Mining and Manufacturing Co., Ltd. — Incorporated 1896. Authorized Capital, \$200,000 in shares of \$100. Directors: R. Carroll, J. B. Vick, J. H. McKnight, F. J. Beharriel. Head Office: Toronto, Ont. Works: Credit Forks, Ont. Formed to purchase and acquire the business and assets of the firm of Carroll & Vick, quarrymen, limeburners and contractors; to purchase, manufacture, sell and deal generally in lime, cement, brick, terra cotta, etc.; to mine, quarry and generally deal in stone of all kinds, at the Credit Forks, in the Province of Ontario.

Crow's Nest Mining and Development Co. of Ontario, Ltd.—Capital, \$200,000, Shares \$1.00 each. Directors: P. Jamieson, Alex. Buntin, Wm. Stone, Wm. Armstrong, N. Merritt, Wm. M. Platt, Wm. H. Biggar. Head Office:

Crow's Nest Pass Mining Co., Ltd.—Capital, \$75,000, divided into 750,-000 shares of 10 cents each. Directors: W. R. Hall, P. J. Shields, W. J. Noble, L. Becher, of the town of Rossland. Head Office: Fort Steele, B.C. Formed for the purpose of mining in British Columbia.

Daphne Mining and Development Co., Ltd.—Capital, \$1,000,000. Shares. \$1.00 each. Trustees: G. E. Corbould, C. G. Major, Arthur Malins. Head Office: New Westminster, B.C.

Del Ecudor Mines Co., Ltd.—Capital, \$500,000. Shares \$1.00 each. Trustees: Ward DeBeck, Alex. Grant, Jno. McQuillan. Head Office: Vancouver, B.C.

Dellia Mining and Milling Co.—Capital, \$750,000. Head Office: Spokane, Wash. To carry on mining in British Columbia.

Delta Mining and Development Co., Ltd.—Incorporated 1895. Authorized Capital, \$100,000. Directors: John Clark, A. C. McArthur, J. W. Jackson. Head Office: Vancouver, B.C. Formed to acquire and work mineral elaims on Lulu Island, B.C., and recorded as "The Setting Sun," "The Diablo," and "The Valkyrie."

Derby Mining Co., Ltd.—Incorporated 1897. Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Directors: J. Houston, R. E. Lemon, E. T. H. Simpkins. Head Office: Nelson, B.C. Formed for the purpose of mining in British Columbia.

Diamond Hill Mines, Ltd.—Incorporated 1897. Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Directors: T. Mathews, J. Z. Hall, John Mathews, all of Vancouver, B.C. Head Office: Vancouver, B.C. Formed for the purpose of mining in British Columbia.

Diamond Jubilee Exploration Mining and Development Co. of Toronto, Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Directors: Jos. E. Seagram, E. S. Cox, H. S. Mara, John Foy, S. F. Houston, S. D. Lauder, Jno. Laxton. Head Office: Toronto, Ont. The objects for which incorporation is sought are to carry on, in all its branches, the business of a mining, milling, reduction and development company, and for the said purpose only.

Diamond Jubilee Mining and Development Co. of British Columbia, Ltd.—Capital, \$2,000,000. Shares \$1.00 each. Trustees: C. H. MacIntosh, Edward Bowes, F. A. Mackenzie, Thomas M. Daly, W. L. Orde, J. N. Kirchhoffer. Head Office: Rossland, B.C.

Dominion & British Columbia Minerals Syndicate, Ltd.—Registered 8th September, 1896. To search for, examine, and operate mines in British Columbia. Authorized Capital, £3,000, in shares of £1, and 200 founders's shares of £1. Head Office: Broad St. House, London, E.C.

Dominion Developing and Mining Co., Ltd.— Incorporated 1895. Authorized Capital, \$500,000. Directors: G. L. Milne, Victoria, B.C.; John McQuinlan, John J. Banfield, Jonathan Miller and J. P. Carroll, all of Vancouver, B.C. Head Office: Vancouver, B.C. Formed to carry on mining in British Columbia.

Dominion, Fairview and Golden Klondyke Syndicate, Ltd.—Registered 1898. Authorized Capital, £130,000, in shares of £1. Directors in London: Lord Bateman, Sir Thomas Wright, T. Durant Beighton, John J. Spencer. B. C. Board: T. Elliot, Fairview, B.C.; Henry C. Carr, C.E., Fairview, B.C.; D. M. Adamson, Fairview, B.C. Head Office: W. J. Spratling, B. Sc., Secretary, Broad St. House, London, E.C. The syndicate has contracted to purchase four claims known as "Wanita," "Favorite," "Hiram-Walker" and "Golden Gate," and has taken steps to secure the Powis claim in the Fairview camp.

Dominion Gold and Silver Mines Development Co. (Foreign). — Incorporated 1897. Capital, \$2,000,000, divided into 2,000,000 shares of a value of \$1.00 each. Head Office: Toronto. Formed for the purpose of mining in British Columbia.

Dominion Mining, Development and Agency Co., Ltd.—Registered 17th November, 1896. To acquire and deal in mining properties and options chiefly in British Columbia and other parts of the Dominion of Canada. Authorized Capital, £100,000 in shares of £1. In March, 1897, 40,000 shares were offered for subscription. The founders paid all expenses incidental to the formation of this company, reserving in return an allotment of 10,000 fully paid shares. Head Office: Walter Smith, Secretary, 6 Great Winchester Street, London, E.C., England.

Donald Prospecting and Development Co., Ltd.—Capital, \$500,000. Shares \$1.00 each. Trustees: Wm. Ainsworth, John J. Nealon, John H. Maclean. Head Office: Donald, B.C.

Double Eagle Mining and Development Co., Ltd.—Incorporated 1897. Capital, \$1,000,000. Head Office: Kaslo, B.C. Directors: N. F. Mackay, D. J. Young, Kaslo; C. E. Smith, Calgary, N.W.T. Formed for the purpose of mining in British Columbia.

Dragon Creek Mining Co., Ltd.——Registered 3rd February, 1898. Authorized Capital, \$10,000. Canadian Office: Stanley, B.C.; G. Lange, Agent.

Dunlop Mining and Investment Co., Ltd.—Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Rossland, B. C. Directors: H. R. Dunlop, E. E. Dunlop, L. H. Schmidt, Rossland, B.C. Formed for the purpose of mining in British Columbia.

East Kootenay and Elk River Development and Exploration Co., Ltd.—Capital, \$75,000. Shares 25 cents each. Trustees: John Linchany, Geo. K. Leeson, John S. G. Abbott, Wm. R. Hall. Head Office: Fort Steele, B.C.

East Kootenay Exploration Syndicate, Ltd.—Registered 9th January, 1892. The authorized Capital is £67,500 in shares of £1 each; all of the shares are issued and are fully paid, £65,000 being issued as paid. The capital was originally £80,000, but was reduced to its present amount in November, 1892, by cancelling

12,500 shares. There are 6 per cent. debentures to the amount of £15,000. The company owns four blocks of gold-bearing gravel on Wild Horse Creek, B.C. Head Office: F. J. Warner, 358 Mansion House Chambers, London, E.C., England.

East Kootenay Mining and Development Co., Ltd.—Capital, \$1,000,000. Shares \$1.00. Trustees: Geo. S. McCarter, Thomas W. Jackson, Samuel Barber. Head Office: Golden, B.C.

Eastern Townships Chrome Iron Mining and Milling Co., Ltd.—Incorporated 1898. Authorized Capital, \$50,000. Officers: Cuthbert A. Chenevert, M.P.P., President; J. R. Fair, Montreal, and R. Prefontaine, Q.C., M.P., Vice-presidents; Chas. Nelson, Manager; R. K. Thomas, Treasurer. Directors; Col. King, Sherbrooke, Que.; L. F. Morrison, St. Hyacinthe, Que.; John U. Gregory, Quebec; A. Brosnan, Quebec; W. de F. Nelson, St. Paul, Minn.; Gaston Le Grand, Montreal. Head Office: Charles Nelson, Manager, 174 St. James St., Montreal. Mines Office: Chrome Siding, near Black Lake, Que. To carry on the business of mining and particularly to erect and operate a concentrating and reduction plant for the treatment of chromite.

Echo Mining and Milling Co., Ltd.—Capital, \$250,000. Shares \$1.00 each. Trustees: Jno. G. McGuigan, Jno. Martin, D. W. Moore, John J. Lynch, Edward N. Murphy. Head Office: Kaslo, B.C.

Economic Gold and Nickel Pyritic Smelting Co. of Sudbury, Ltd.—Capital, \$300,000. Shares \$1.00 each. Directors: Jas. B. Klock, Thos. Kirkwood, Rinaldo McConnell, John D. Macdonald, Richard W. Demorest. Head Office: Sudbury, Ont.

Elarton Salt Works Co., Ltd.—Incorporated 2nd of July, 1895. 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 $7\frac{9}{10}$ 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.

Emu Mining Syndicate, Ltd.—Registered 28th Tebruary, 1896. To carry on the business of mining. Authorized Capital, £10,000, in shares of £10; 306 shares have been issued, and £6 14s. per share called up. Head Office: E. Baker, 29 Cornhill, London, E.C., England. Canadian Agent: M. McIver Campbell, Vancouver, B.C.

Erie Mining and Milling Co., Ltd.—Capital, \$200,000. Shares 25c. each. Trustees: Henry P. Jackson, Marshall Jackson, Colin McArthur, John McNiven. Head Office: Sandon, B.C. Formed to purchase the "Erie" and "Minneapolis" mineral claims, situate in the Slocan Mining Division of West Kootenay, in the Province of British Columbia.

Eureka Consolidated Mining Co., Ltd.—Registered 14th February, 1898. Authorized Capital, \$500,000, in shares of \$1. Head Office: Spokane, Wash. Canadian Office: Ross Thompson, Rossland, B.C.

Everett and Spokane Mining Co., Ltd.—Registered 8th March, 1898. Authorized Capital, \$100,000. Head Office: Spokane, Wash. Canadian Office: D. H. Holbrook, Greenwood City, B.C.

Exploration and Development Co., of Ontario, Ltd.—Capital \$2,000,000. Shares \$1.00 each. Directors: Hon. F. Clemow, Hugh Blain, Hon. A. W. Ogilvie, A. Ansley, Geo. L. Milne, Oliver A. Howland.

Fairfield Exploration Syndicate, Ltd.—Registered 13th February, 1897. To prospect for gold and other minerals in British North America. Authorized Capital is £3,000, in shares of £1; all the shares have been issued, 500 being fully

paid, and 2,500 having 5s. called up. Head Office: Gilbert T. Ware, Secretary, Winchester House, Old Broad St., London, E.C. Canadian Office: J. J. Lang, M.E., Vancouver.

Falls View Gold and Silver Mining Co., Ltd.—Capital, \$300,000. Shares of 25 cents. Head Office: Kaslo, B.C. Directors: E.C. Pease, S. C. Wing, E. E. Chipman, E. E. and H. B. McIntyre, of Kaslo, B.C. Formed to purchase the "Fall View," "Morning Glory" and "Midnight" mineral claims, situated on Bear Creek, one and one-half miles north of the Kaslo and Slocan Railway, in the Ainsworth Mining Division, Province of British Columbia.

Fennell Mining and Development Co., Ltd. — Capital, \$1,000,000. Shares \$1.00 each. Trustees: A. J. Hill, E. L. Webber, H. J. Stubbs, W. V. Davies, J. L. Card. Head Office: New Westminster, B.C. Formed to acquire the "Para" mineral claim situate on Ten-Mile Creek, Slocan Mining Division of West Kootenay, and adjoining, and other claims, and to sell or otherwise dispose of such claims.

Florence Mining and Development Co. of Slocan, Ltd. — Capital, \$250,000. Shares 25 cents each. Trustees: Samuel B. Steele, Fred. Steele, Wm. J. Tretheway, Alex. R. Macdonell, John Herron. Head Office: Kaslo, B.C. Formed to purchase the Florence mineral claim, situate at the head of Liddle Creek, about twenty miles from the City of Kaslo, and about four and one-half miles from the Kaslo and Slocan Railway, in the Ainsworth Mining Division of West Kootenay District, B.C.

Foley Mines Exploration Co. of Ontario, Ltd.—Capital, \$1,000,000. Shares \$5.00 each. Directors: Rudolphe A. Demme, Samuel S. Babcock, E. H. Hersher, Hans Rutishauser, Arthur St. G. Ellis. Head Office: Windsor, Ont.

Forfarshire Mines, Ltd. — Registered 21st January, 1898. Authorized Capital \$20,000, in shares of \$5.00. Head Office: Vancouver, B.C.

Fraser River Gold Mines, Ltd.—Registered 8th July, 1895. Authorized Capital £10,000, in 40,000 shares of 5s. each. Head Office: Walter Pears, 9 Grace-church Street, London, E.C. Property on Lyall Bar and Sawmill Flat, situated at Lytton, Cariboo District, B.C.

Frederick Arm Mining Co., Ltd.—Capital, \$500,000. Shares \$1.00 each. Head Office: Vancouver, B.C. Directors: W. D. Brydone-Jack, Major A. Whittaker, R. D. Fetherston, G. R. Simpson, F. Cope, G. W. Hutchings, C. S. Douglas, all of Vancouver. Formed to purchase the "Biue Bells," "Gold Bug" and "Dashwood" mineral claims situated on Frederick Arm, Coast District, B.C.

Garcia Gold Company of London, Ltd.—Incorporated 20th October, 1897. Authorized Capital, \$50,000 in shares of \$100. Head Office: London, Ont.

H

Sa

in

of

D

H

un

Giant Mining Company, Ltd.—Registered 28th December, 1897. Authorized Capital, \$2,500,000 in shares of \$1.00. Canadian Agent: C. R. Hamilton, Rossland, B.C.

Gladstone Mining Co. (Foreign)—Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Spokane, Wash. Formed to mine in British Columbia.

Globe Mining Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Head Office: Kaslo, B.C. Directors: J. F. McNaught, C. F. Caldwell and E. Des-Lashmutt. Formed for the purpose of carrying on mining operations in Bitish Columbia.

Gold Bar Mining Co., Ltd.—Capital, \$100,000, divided into 1,000,000 shares of 10 cents each. Head Office: Victoria, B.C. Directors: J. E. Martin, A. E. Belfry and Jas. Murphy. Formed for the purpose of mining in British Columbia.

Gold Exploration and Development Syndicate of British Columbia, Ltd.—Registered 8th August, 1896. To acquire mines in British Columbia. The authorized Capital is £12,000 in shares of £1. In March, 1897, the syndicate floated the Gold Fields of British Columbia, Ltd. (See notice elsewhere). Head Office: Frederick C. Hole, 18 St. Swithan's Lane, London. E.C., England.

Gold Explorers of Canada, Ltd — Registered 26th October, 1896. To acquire certain properties at Rat Portage, Lake of the Woods, Ont., and to adopt an agreement with the Mines Contract Company, Ltd. The purchase consideration was £80,000 payable in fully paid shares. The authorized capital is £100,000 in shares of £1; 81,507 shares have been issued and are fully paid; 80,000 being credited as fully paid. Head Office: Frank Fuller, Tower Chambers, Finsbury Pavement, London, E.C., England.

Golden and Fort Steele Development Co., Ltd.—Capital \$750,000. Shares \$1.00. Head Office: Golden, B. C. Directors: A. Allen, A. McQueen, G. S. McCarter, S. Barber and T. McNaught. Formed for the purpose of mining in British Columbia.

Golden British Columbia, Ltd.— Registered 19th October, 1897. Authorized Capital, £6,000 in shares of £1. Head Office: 6 Queen St. Place, London, England. Canadian Office: W. G. Mitchell Innes, Golden, B.C.

Golden Cr. wn Mining and Smelting Co. (Foreign)—Capital \$600,000, divided into 600,000 shares of \$1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Goldendale Mining Company, Ltd.— Registered 22nd November, 1897. Authorized Capital, \$1,500,000 in shares of \$1.00. Head Office: Spokane, Wash. Canadian Office: R. E. Lemon, Nelson, B.C.

Golden Eagle Consolidated Mining Co. (Foreign)—Capital, \$1,000,000. Shares \$1 each. Formed to acquire the "Golden Eagle" and "Pack Saddle" mines or claims situated about six miles above Grand Forks, B.C., and the "Bluebird" mine or claim situated two miles west of Grand Forks, B.C. Head Office: Spokane, Wash.

Gold Hill Mining Company, Ltd.—Registered 31st January, 1898. Authorized Capital, \$500,000 in shares of \$1.00. Head Office: Spokane, Wash. Canadian Office: J. A. Macdonald, Barrister, Rossland, B.C.

Good Hope Mining and Milling Co., Ltd.—Incorporated 1895. Anthorized Capital, \$500,000, in shares of \$100. Directors: F. Gusé, President; E. L. Hooper, G. Mackie, P. Steep, W. Townsend, J. Maxwell. Head Office: Spokane, Wash. Formed to carry on mining in the Province of British Columbia.

Gore Lawn Mining and Development Co. of Toronto, Ltd.—Registered 15th January, 1898. Authorized Capital, \$20,000, in shares of \$100. The incorporators were Hon. David Tisdale, Simcoe, Ont., W. E. Tisdale, Simcoe, Ont., H. J. Scott, R. Boultbee, A. E. Boultbee, of Toronto, Ont.

Grand Prize Mining Co, Ltd.—Incorporated under the statutes of New Brunswick, 1898. Directors: T. D. Pickard, Revelstoke, B.C.; W. Bedford Dixon, Sackville, N.B.; Charles Pickard, Sackville, N.B. Authorized Capital, \$250,000, in shares of \$1.00. Head Office: Sackville, N.B. Formed to operate in New Brunswick and British Columbia.

Grand River Plaster Co.—Authorized Capital, \$50,000, divided into shares of a value of \$100 each, the whole of which have been subscribed and fully paid. Directors: Dr. Coles, Geo. S. Coutant, M. Albert Scull, Ernest R. Ackerman, Wm. Hamilton Merritt. Marion S. Ackerman, Secretary, 67 William Street, New York. Head Office: Cayuga, Haidimand Co., 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, Ont., upon which are situated the Merritt 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 plasters, etc. Twelve men employed.

Grand Union Mining and Development Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Head Office: Rossland, B.C. Directors: A. W. Smith, M. H. Dobie, A. McNish, Rossland. Formed to purchase the "Grand Union," and "Queen" mineral claims, situated in the Trail Creek Division of the District of West Kootenay, British Columbia.

Great Commonwealth Development and Mining Co., Ltd.—Capital, \$5,000,000. Shares, \$5.00 each. Head Office: Nelson, B.C. Directors: A. B. Buckworth, J. T. McKenzie, M. H. Dobie, J. N. Blake, H. M. Vincent. Formed for the purpose of mining in British Columbia.

Great Granite Gold Mining and Development Co. of Ontario, Ltd.—Incorporated 12th August, 1897. Authorized Capital, \$5,000,000, in shares of \$1.

Great Western Mining Co., Ltd.—Registered 20th December, 1897. Authorized Capital, \$1,000,000. Canadian Agent: C. F. Jackson, Rossland, B.C.

Gypsy Queen Gold Mining Co., Ltd.—Registered 9th February, 1898. Authorized Capital, \$10,000, in shares of \$5.00. Head Office: Victoria, B.C.

Hall Exploration of British Columbia, Ltd.—Registered 21st July, 1896. To carry on, assist in financial, mining works, contracts and undertakings in British Columbia. Authorized Capital, £150,000 in shares of £1; 50,000 shares have been issued and 5s per share called up. Directors: Sir Joseph W. Trutch, K. C. M. G., Chairman; P. G. Hamilton Carvill, M.P., Deputy Chairman; Chas. Harvey, M.E., and J. R. Drake. Head Office: I. R. Berridge, Secretary, 4 Bishopsgate Street Within, London, E.C. Canadian Office: Nelson, B.C.

Hamilton Iron Mining Co., Ltd. — Incorporated 12th May, 1897. Authorized Capital, \$90,000. Directors: John Milne, A. E. Carpenter, Wm. Southam, Henry New, W. Geralton, Henry McLaren, Thos. W. Lester, Thos. Barnes, A. W. Peene. Head Office: A. W. Peene, Secretary, Cor. James and Main Streets, Hamilton, Ont. Mines at Eldorado, Calabogie District; Algoma Mills; and near Kingston, Ont. Mine Superintendents: Wm. Edgar, Sharbot Lake, Ont.; Arthur Coe, Madoc, Ont.; and Thos. Barnes, Algoma Mills, Ont. The output for 1897 was 700 tons, but did not mine during the whole year.

Harrison Black Diamond Mining Co., Ltd.—Capital, \$50,000. Head Office: Vancouver, B.C. Directors: B. E. Lyster, J. B. Newcomb, A. C. Brydone-Jack, all of Vancouver. Formed for the purpose of mining in British Columbia.

Hastings (British Columbia) Exploration Syndicate, Ltd.—Registered 22nd February, 1897. To obtain openings for the employment of capital in British Columbia or elsewhere, and to acquire and turn to account mines and mining rights. Authorized capital, £100,000 in 97,000 A shares and 3,000 B shares of £1 each. Head Office: Dashwood House, 9 New Broad St., London, E. C., England. At date of report had acquired 8 claims in the Fort Steele District, East Kootenay, B.C., known as the "Big Chief," "Little Chief," "Eureka," "Geneva," "Vermont Boy," "Old Baldy," "Blucher" and "Belcher."

Hattie Brown Gold Mining Co., Ltd. — Registered 4th December, 1897. Authorized Capital, \$1,000,000 in shares of \$1.00. Head Office: Spokone, Wash. Canadian Agent: James Morris, Rossland.

Highland Group Mining and Development Co., Ltd.—Capital, \$1,000,000. Share \$1.00 each. Trustees: G. T. Lundy, Hugh McMillan, Isaac S. Freeze. Head Office: Cody, B.C.

Hillside Siver Mining Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: P. G. Nash, Jos. F. Ritchie, Chas. Behrman. Head Office: Rossland, B.C.

Hinckley and Black Colt Mining Co., Ltd.—Incorporated 1896. Capital, \$1,000,000. Head Office: Kaslo, B.C. Directors: J. B. McArthur, P. Porter, R. Shea, W. H. Mellick, Horace Thorne. To acquire the Hinckley and Black Colt mineral claims, situate in the Slocan district and New Denver mining division, in the district of West Kootenay, British Columbia.

Ibex Mining and Development Co. of Slocan, Ltd.—Capital, \$300,000. Shares 25 cents each. Trustees; Sam. B. Steele, R. W. Bryan, D. W. King, W. J. Tretheway, A. M. Jarvis, Chris. Hilliard, Fred Steele. Head Office: Kaslo, B.C. Formed to purchase the "Ibex," "Triangle," "Liddesdale," and "Gilt Edge" mineral claims, situated at the head of Liddel Creek, about twenty miles from the City of Kaslo, and about four and one-half miles from the Kaslo and Slocan Railway in the Ainsworth Mining Division, in the said District of Kootenay, B.C.

Imperial Gold Mining and Development Corporation of Ontario, Ltd.—Capital, \$2,500,000. Shares \$1.00 each. Head Office: Toronto, Ont. Directors: Robert S. King, Jos. Montgomery, Wm. H. Jones, Edward Trousedelle, Fred. D. Vigue, Jno. S. Dignam, Albert E. Jones.

Imperial Mining and Development Co. of Ontario, Ltd.—Capital, \$500,000. Shares \$1.00 each. Head Office: Rat Portage, Ont. Directors: Thos. W. Taylor, Duncan G. McBean, Henry Byrnes, Lendrum McMeans, Geo. A. Glines.

Incorporated Exploration Company of British Columbia, Ltd.—Registered 9th December, 1897. Authorized Capital, £200,000, in shares of £1. This company has been formed and promoted by the British Columbia Development Association, Ltd, to acquire the mining properties of that Association, as well as those of the Slough Creek mining property. The properties are on Williams Creek and on Slough Creek and Willow River, Cariboo District, B.C. The purchase price of the property has been been fixed by the vendor Association at £145,000, payable as to £5,000 in cash, and the balance in fully paid shares, thus leaving £55,000 available for working capital. Head Office: W. W. Ellwood, Secretary, 45 Broad St. Avenue, London, E.C., England.

Incorporated Gold Mines of British Columbia, Ltd.—Registered 5th September, 1896. To enter into an agreement with the British Columbia Development Association, Ltd., and to develop the mineral and other resources of British Columbia. Authorized Capital, £300,000, in shares of £1 stg. Head Office: F. Plumb, Secretary, 45 and 46 Broad St. Avenue, London, E.C., England.

Independent Mining Co.—Incorporated 1896. Capital, \$1,000,000. Head Office: New Westminster, B.C. Directors: J. B. Kennedy, Louis Williams, and H. L. DeBeck, all of New Westminster, B.C.

Industrial Mining Development and Investment Co. of Toronto.—Incorporated 1896. Authorized Capital. \$250,000. Shares \$1.00. Directors: J. K. Kerr, Q.C., Toronto; Hume Blake, Toronto; B. J. Townsend, Toronto; W. A. Charlton, M.P.P., Toronto: John E. Askwith, Ottawa; C. H. Waterous, Brantford, Ont.; Chas. Boon, contractor, Toronto. Head Office: A. J. Truss, Sec., 90 Yonge St., Toronto. B. J. Townsend, Managing Director. Owns and operates the "Robert E. Burns" mine, McMurdo, district of East Kootenay, British Columbia, equipped with 5 stamp-mill and other plant.

Ingersoll Mining Co.—Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Spokane, Wash. Formed to acquire and work the "Ingersoll" mine, situated in the Summit Mining Camp, Vale District, Kettle River Mining Division, British Columbia.

International Development Corporation, Ltd.—Registered 1897. Authorized Capital, £300,000 stg., in shares of £1. Formed for the promotion and development of mining and other industrial undertakings in British Columbia. Head Office: E. M. Crawley, Secretary, 31 Lombard Street, London, E.C.

International Mica and Mineral Co. of Ontario, Ltd.—Capital, \$100,000. Shares \$1,00 each. Head Office: Toronto, Ont. Directors: Horace Thorne, F. P. Brazil, B. J. Thorne.

Inter-Ocean Mining and Prospecting Co. of Toronto, Ont., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Head Office: Toronto, Ont. Directors: Thomas Dunnett, John E. Elliott, William Dineen, Lua. K. Cameron, John M. Cotton.

Investors Mining and Development Co. of Ontario, Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Head Office: Toronto, Ont. Directors: J. W. St. John, R. McGregor, M. A. Donnelly, jr., A. Robinson, Geo. Burness, Alex. McLaughlin, Geo. S. Wallis, Thos. Ainley, Jno. A. Ferguson.

Invicta Gold Mines, Ltd.—Registered 19th August, 1895. To acquire the following gravel gold mining claims:—"Ah Chow," "Jerome Stanley," "Evans," "Schroder," Fun Yei," and "Ah Yow," "Wing Kei," "Goo Quong," "San Qui," Perseverance," and "Griffith's," situated on Wild Horse Creek, B.C. The purchase consideration was £85,000 in fully paid shares. The authorized Capital is £100,000, in shares of £1 each; 95,007 have been issued and fully paid, 85,000 (vendor's) being issued credited as fully paid. The first accounts made up to 31st October, 1896, and submitted on 21st December, 1896, showed a balance of £2,809 16s. 10d. to debit of expenditure account, after deducting £1,204 14s. gold sales and other receipts; cash balances £1,108 7s. 8d.; gold in trausit £905 12s. 4d.; calls in arrear £1,212 10s. (final call of 5s. since made on 10,607 shares) operations had been chiefly confined to development and erection of plant, but trial washings had resulted favorably. Head Office: P. J. Warner, 25 Abchurch Lane, London, E.C., England.

Iowa Mining and Milling Co.—Capital, \$650,000. divided into 650,000 shares of a value of \$1.00 each. Head Office: Seattle, Wash. Formed for the purpose of mining in British Columbia.

Island Mountain Gold Mines, Ltd.—Registered 23rd July, 1896. To acquire the assets, estates, and properties of the Island Mountain Quartz Mining and Milling Company, Ltd., and to carry on mining in British Columbia. Authorized Capital, £120,000, in shares of £1. Head Office: 6 Great St. Helens, London, E.C.

Jackfish Bay Syndicate, Ltd.—Capital, \$99,000. Shares \$1,000 each. Directors: Jas. K. McCutcheon, Wm. Maguire, Jacob M. Staebler, Chas R. S. Dinnich, Louis J. Breithaupt, Mark J. Paterson, Chas. B. Jackes, David Lackie, Robt. Carroll. Head Office: Toronto, Ont.

Jackson Mines, Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees Robert Jackson, Daniel J. Munn, Geo. Alexander. Head Office: Kaslo, B.C. Formed to purchase the "Northern Belle," "Kootenay Star," "Dublin Queen," "Ophir" and "Moore Fraction" mineral claims, situate on Jackson Creek, at the head of Jackson Basin, about twenty miles from the City of Kaslo, and about four miles from Whitewater Station, on the Kaslo and Slocan Railway, in the Ainsworth Mining Division, Kootenay, B.C.

John Dwyer Gold Mining Co. of Toronto, Ltd.—Incorporated July, 1897. Authorized Capital, \$450,000, in shares of \$1. Principals: Elijah Robinson, Mount Forest; W. H. Knowlton, Thos. Davies, Thos. Fitzgerald, C. C. Robinson, L. W. McKeown, S. M. Toy, F. R. A. Bell, C. E. Dyer, J. J. Scanlon, all of Toronto; W. A. J. Bell, Ashton; and J. H. Lea, Township of York. Formed to carry on mining in Ontario.

John E. Redmond Mining Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Directors: John E. Redmond, J. E. Gibson, M. Kuntz and R. Gibson, all of the town of Grand Forks, B.C. Head Office: Grand Forks, B.C. Formed to acquire the "Columbia," the "Iron King," and the "Kupper Queen" mineral claims situated on the North Fork of Kettle River Mining Division, Yale District, British Columbia.

Jubilee Gold Mines, Ltd.—Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: New Westminster, B.C. Directors: J. J. Cambridge, R. McBride, T. J. Armstrong, J. R. Grant, all of New Westminster, B.C. Formed for the purpose of mining in British Columbia.

Kamloops Mining and Development Co., Ltd. — Incorporated 1895. Authorized Capital, \$30,000, in shares of \$1.00. Head Office: Kamloops, B.C. Directors: Harold E. Forster, C. C. Woodhouse, F. M. Wells, H. Symons. Formed to carry on mining in the Province of British Columbia.

Kasier Gold and Silver Mining Co, Ltd.—Incorporated 1897. Capital, \$1,000,000 divided into 1,000,000 shares of \$1 00 each. Head Office: Rossland, B.C. Directors: E. Johnson, M. Schweig, W. H. Lambert, F. H. Young, R. H. Dickson. Formed for the purpose of mining in British Columbia.

Kaslo Montezuma Mining and Milling Co.—Capital, \$1,250,000, divided into 1,250,000 shares of \$1.00 each. Head Office: Seattle, Wash. Formed for the purpose of mining in British Columbia.

Kekionga Mining and Development Co.—Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Trail, B.C. Directors: C. D. Wilt, G. W. Richardson, F. M. McLeod, Rossland, B. C. Formed for the purpose of mining in British Columbia.

Kenneth Mining and Development Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: T. A. Stephen, Clive Pringle, Lome Becher, T. M. Daly. Head Office: Rossland, B.C.

Kettle River Mining and Development Co., Ltd.—Capital, \$1,200,000, divided into 1,200,000 shares of a value of \$1.00 each Head Office: Rossland, B.C. Directors: J. McT. Repass, J. W. Fear, S. T. Langley. Formed for the purpose of mining in British Columbia.

Keystone Gold Mining Co., Ltd.—Capital, \$1,500,000, divided into 1,500,000 of \$1.00 each. Head Office: Rossland, B. C. Directors: J. L. Parker, J. B. Dabney, S. Y. Wooten. Formed for the purpose of mining in British Columbia.

Kimberly Mining and Milling Co., Ltd.—Capital, \$1,000,000, divided into 1,000,000 shares of a value of \$1.00 each. Head Office: Victoria, B.C. Directors: Hon. E. Dewdney, Sir C. H. Tupper, Hon. F. Peters, W. Grant, J. T. Bethune, M. McGregor, A. McLennan. Formed for the purpose of acquiring the "Bunker Hill" mineral claim, situated on the South Fork of Kaslo Creek, in the Ainsworth Mining Division of West Kootenay, Province of British Columbia.

King Solomon Consolidated Mining Co., Ltd.—Registered 29th December, 1897, with an authorized Capital of \$1,000,000, in shares of \$1.00. Head Office: Spokane, Wash. Canadian Agent: Lem. B. Luther, Ainsworth, B.C.

Klondyke & North-West Territories Exploration Co., Ltd.—Registered 1897. Authorized Capital, £60,000, in shares of £10. Formed to acquire and work two gold mining properties in the North-West Territories.

Klondyke Mining, Trading and Transport Corporation, Ltd —Registered 1897. Authorized Capital, £250,000, in shares of £1. Formed to carry on general exploration, mining, banking, trading and transport operations in the Klondyke gold region, North-West Territories. Head Office: W. A. Stearns, 23 Leadenhall St., London, E.C., England.

Klondyke, Yukon and Stewart Pioneers, Ltd. — Registered, 1897. Authorized Capital, £206,000, in shares of £1. Formed to act as a trading, transport, exploration and development company. Head Office: Herbert S. Riant, Finsbury House, Blomfield Street, London, E.C.

Kootenay and Cariboo Mining Syndicate, Ltd.—Registered 27th March, 1896. To carry on the business of a mining, smelting and metallurgical company. Authorized Capital, £5,000, in shares of £1: 1,620 shares have been issued and are fully paid. Head Office: T. P. Penn, Secretary, 33 Finsbury Circus, London, E.C.

Kootenay and Columbian Gold Fields, Ltd.—Registered 1897. To acquire and deal in mining properties in the Klondyke and elsewhere in the Dominion. Authorized Capital, £100,000, in 95,000 ordinary shares of £1, and 5,000 deferred shares of £1. Canadian Board: Hon. J. H. Turner, Hon. C. E. Pooley, Joseph Boscowitz.

Kootenay and North-West Mining Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: Norman L. McInnes, James Hampton, William Drever, Head Office: Rossland, B.C.

Kootenay and Slocan Prospecting and Promoting Co., Ltd.—Capital, \$100,000. Shares \$25.00 each. Trustees: C. A. Holland, John Rayner, O. P. Skrine. Head Office: Vancouver, B.C.

Kootenay (British Columbia) Mining Syndicate, Ltd.—Registered 8th March, 1897. To adopt an agreement with H. J. and E. G. Wilson, and to acquire and deal with certain mining property in the Kootenay District, British Columbia. The authorized Capital is £15,000, in shares of £1. Head Office: Charles S. Good, Secretary, 57 Moorgate Street, London, E.C.

Kootenay Co., Ltd.—Capital, \$2,500,000. Shares \$1.00 each. Trustees: E. G. Prior, A. C. Flummerfelt, J. J. Shallcross, Robt. Cassidy. Head Office: Victoria, B.C.

Kootenay Development Co., Ltd.—Formed in 1897, to acquire, develop and dispose of mining properties in British Columbia. Authorized Capital, £10,000, in shares of £1. Head Office: A. Kennedy, Secretary, 22 Fenchurch Street, London, E.C., England. Canadian Agent: G. D. Mackay, Trail, B.C.

Kootenay Gold Fields Syndicate, Ltd.—Registered 17th March, 1896. To carry on the general business of an exploring, prospecting, mining and trading company in British Columbia. Authorized Capital is £20,000, in shares of £1; 10,000 shares have been issued and are fully paid. Head Office: John Smith and Herbert Mayo, Joint Secretaries, 39 Lombard St., London, E.C., England.

Kootenay Gold, Silver and Copper Mining Co, Ltd.—Incorporated 22nd April, 1895. Authorized Capital, \$100,000, in shares of \$25 each. Directors: Fred. Cope, Vancouver, President; T. R. Morrow, C. J. Mitchell, R. Warmington, Wm. Ralph, Dr. R. E. McKechnie. Head Office: George D. Scott, Secretary, Vancouver, B.C. The company has purchased the mineral claims "Agnes" and "Lucky Jim," situated on Sabre creek, a tributary of Fish creek, West Kootenay district, Province of British Columbia. Assays from the outcrop of the "Agnes" show:—Copper, 15 per cent.; silver from 64 to 103 oz.; gold 24 to 27.50. A small force was employed opening up the claim in 1876.

Kootenay-London Mining Co.—Capital, \$1,000,000 Head Office: Rossland, B.C. Directors: G. Pritchard, W. Bennison, W. A. Campbell, A. J. McMillan, J. W. Cover, C. O. Lalone, J. S. Paterson, H. Kitely and J. W. Boyd. Formed to purchase the "Comet No. 2" and "Annie" (fraction) mineral claims, situated on Red Mountain, in Trail Creek, mining division of West Kootenay district, B.C.

Kootenay Mine Exploration Co., Ltd.—Incorporated 1897. Capital, \$200,000 in 40,000 shares of \$5.00 Directors: G. Gooderham, Toronto; R. H. Pope, M.P., Village of Cookshire, Que.; T. G. Blackstock, Toronto; J. W. Beatty, Toronto, D. Fasker, Toronto.

Kootenay Ore Company, Ltd — Registered 29th July, 1896. To carry on the business of smelters in any part of British Columbia. Authorized capital, £25,000 in 2,500 shares of £10 each. Head Office: J. Steuart, Secretary, 2 Suffolk Lane, Cannon St., London, E.C.

Kootenay Promotion Syndicate, Ltd.—Registered 30th Mry, 1896. To carry on business as promoters, financiers, concessonaires, etc., and is exploring in British Columbia. Authorized capital, £200,000 in shares of £1. There are also debentures to the amount of £4,800. The syndicate is interested in the Pioneer Development Co., Limited. Head Office: W. Cooper, Secretary, 9 and 10 King Street, London, E.C.

Lake Shore Mining Co., Ltd.—Capital, \$1,500,000. Directors: B. B. Johnston, W. A. Lewthwaite, R. Hamilton, T. S. Sisson, J. E. Miller, all of Vancouver, B.C. Formed to acquire the mineral claims known as "Allerton," "Erie," and "Huronite," all situated on Harrison Lake, in the District of New Westminster, British Columbia.

Lardeau Mining and Development Co.—Incorporated 1897. Capital, \$500,000, divided into 500,000 shares of a value of \$1.00 each. Directors: F. B. Wells, John Abrahamson and E. L. Kinman, all of Revelstoke, B. C. Head Office: Revelstoke, B. C.

Lardeau Trout Lake Mining Syndicate Ltd.—Capital, \$500,000, divided into 1,000,000 shares of 50 cents each. Head Office: Victoria, B.C. Directors: G. D. Scott, K. Scott, F. Hilbert, all of Victoria, B.C. Formed for the purpose of mining in British Columbia.

Lee Mines of Slocan, Ltd.— Capital, \$500,000, divided into 2,000,000 shares of 25 cents each. Head Office: Silverton, B.C. Directors: L. Alexander, M. R. W. Rathbone, H. B. Alexander, all of Sandon, B.C. Formed for the purpose of mining in British Columbia.

Legal Tender Mining and Development Co. of Slocan, Ltd.—Capital, \$1,000,000, divided into 1,000,000 shares of a value of \$1.00 each. Directors: J. F. McLaughlin, R. Scott, J. J. Franklin, of Rossland, B.C.; J. C. Hay, Listowell, Ont.; T. McLaughlin, Toronto, Ont. Head Office: Rossland, B.C. Formed for the purpose of mining in British Columbia.

Lexington Mining and Milling Company, Ltd.—Registered 26th August, 1897. Authorized Capital, \$100,000 in shares of \$1.00. Head Office: Rossland, B.C. Formed to acquire the "Kitsop" claim on Lexington Creek, a tributary of Fish Creek, in the Lardeau Division of West Kootenay, B.C.

Lodester Gold Mining and Development Co., Ltd.—Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Rossland. Directors: Jas. Cowan, R. Reddick, H. R. Dunlop, L. H. Schmidt, O. D. Casselman, W. A. Brown. Formed for the purpose of mining in British Columbia.

London and B.C. Alliance Syndicate, Ltd.—Registered 22nd December, 1896. To adopt an agreement with Erbsloh & Fergusson, and to acquire and deal with mining properties. Authorized capital, £15,100 in 15,000 ordinary shares of £1 each and 100 founder's shares of £1. Head Office: W. Griffiths, Secretary, 21 Great Winchester Street, London, E.C.

London and B. C. Corporation, Ltd.—Registered 17th December, 1896, by Cheston & Sons, I Great Winchester Street, London, E.C. To acquire, develop, and turn to account any mines, mining rights, and metalliferous land in British Columbia. The authorized capital is £100 in shares of £1.

London and British Columbia Exploration Co., Ltd.—Registered 24th August, 1896. To carry on exploration and mining operations. Authorized Capital is £7, in shares of £1. W. H. Barber, 24 Clapton Square, London, N.E., England.

London and Vancouver Finance and Development Co., Ltd.—Registered 12th January, 1897. To adopt an agreement made 7th January, 1897, between the Mercantile Company, Ltd., of the one part, and Spencer Garrett Duff, as trustee for the company, of the other part, and to carry on business as financiers; promoters;

bankers, underwriters, &c., and to acquire and deal with mining properties. The authorized Capital is £100,250, in 100,000 shares of £1 each, and 5,000 deferred shares of 1s. each; 11,760 ordinary and all the deferred shares have been issued, the ordinary having 10s. per share called up, and the deferred being fully paid.

Macleod Gold and Silver Mining Co., Ltd.—Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Kaslo, B.C. Directors: S. B. Steele, Macleod Alta; F. Steele, Kaslo; T. M. Gibson, Kaslo. Formed for the purpose of mining in British Columbia.

Maritime Exploration Co. of British Columbia, Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Head Office: Rossland, B.C. Trustees: A. B. McKenzie, Alex. Dick, Frank A. Baird.

Maritime Mining and Development Co., Ltd.—Capital, \$1,000,000 divided into 1,000,000 shares of \$1.00 each. Head Office: Rossland, B.C. Directors: D. C. Blair, Truro, N.S.; F. S. Andrews and Ashton F. Andrews of Slocan City, B.C. Formed for the purpose of mining in British Columbia.

Menominee and Marinette Hydraulic Gold Mining Co.—Capital, \$600,000, divided into 24,000 shares of \$25.00 each. Head Office: Menominee, Mich.

Miller Creek Mining Co., Ltd.—Registered 22nd December, 1897. Authorized Capital, \$1,000,000, in shares of \$1.00. Head Office: Spokane, Wash. Canadian Office: E. J. Field, Sandon, B.C.

Mineral King Mining and Development Co. of Ontario, Ltd.—Capital, \$100,000. Shares of \$1.00 each. Directors: W. T. Strong, E. Meredith, C. B. Hunt, G. B. Kirk and A. H. Brown. Head Office: London, Ont.

Minerals Development of British Columbia, Ltd.—Registered 22nd March, 1897. To prospect, examine and explore mines and lands in British Columbia or elsewhere. Authorized Capital, £10,000, in shares of £1. Head Office: 7 Queen Street, London, E.C.

Minerva Mining and Marble Co.—Directors: Benjamin Raper, President; Alfred Raper, James Raper, Elijah Priest, C.E. Head Office: (Drawer 2) Nanaimo, B.C. The company's property consists of 160 acres, containing a large deposit of black and white streaked marbles; also eight 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.

Miners' and Prospectors' Exchange and Development Co., Ltd.—Capital, \$5,000. Shares \$1.00 each. Trustees: Dan. McDermid, George Owen, J. Howson, T. J. Corrigan, W. A. Galliher. Head Office: Rossland, B.C.

Mines Development Co., Ltd.—Capital, \$1,000,000, divided into 1,000,000 shares of \$1 each. Head Office: Vancouver, B.C. Directors: J. Towers, F. J. Wheeler, G. J. Wonder, all of Vancouver, B.C. Formed for the purpose of mining in British Columbia.

Mines Investment Association of Ontario, Ltd.— Capitai \$100,000. Shares \$100 each. Directors: Geo. A. Cox, Geo. H. Bertram, Albert Horton. Head Office: Toronto, Ont.

Mines Selection Co. of Toronto, Ltd. - Capital, \$200,000. Shares 25 cents each. Directors: C. B. Watts, Jas. Simpson, C. S. Ellis, E. Whaley, J. H. L. Patterson, Wm. Marshall, Geo. S. Wallis, W. C. Fox. Head Office: Toronto, Ont.

Mining and Exploration Co. of British Columbia, Ltd.—Registered 12th June, 1896, by Tippets & Son, 11 Maiden Lane, London, E.C. To search for, explore, prospect, examine and explore mines and land in British Columbia. Authorized capital, £25,000 in 10,000 ten per cent. cumulative preference shares of £1, and 15,000 ordinary shares of £1.

Mines Trust of British Columbia, Ltd.—Registered 31st July, 1896. To search for and obtain information in regard to mines, claims, districts and localities in British Columbia. Authorized capital, £20,000 in shares of £1; 13,000 shares have been issued and 3s. per share called up. Hubert Akers, Manager, 11 Abchurch Lane, London, E.C., England.

Mira Monte Mining Company, Ltd.—Head Office: Lytton, B.C. Formed to take over the California group of claims near Lytton, B.C. Authorized capital, \$100,000, in shares of \$1.00.

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.; S. Stevens, Stanstead Plain, Que.; D. W. Davis, Derby Line, Vt.; 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 and 5) in the 5th range of Stanstead, Que. Thirty to 40 men employed. Quarries situate 2½ miles from Beebe Plain and Stanstead Junction, on the line of the Boston and Maine Railway. Seventy persons employed. At date a branch line is being constructed to connect the B. & M. Railway. Machinery equipment comprises two 50 h.p. boilers, Rand steam drills, eight derricks, six steam polishing machines, one turning lathe, etc.

Monarch Gold Mining Co., Ltd.—Registered 31st January, 1898. Authorized Capital, \$750,000 in shares of \$1.00. A. W. Smith, Rossland, B.C. Canadian agent for the company.

Montana Gold Mining Co. (Foreign) — Capital, \$1,500,000, divided into 1,500,000 shares of a value of \$1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Montreal and British Columbia Prospecting and Promoting Co., Ltd.—Registered 1894. Authorized Capital, \$20,000, in shares of \$5. Directors: F. C. Innes, President; S. O. Richards, Vice-President; J. M. Browning. Head Office: C. C. Bennett, Secretary, Vancouver, B.C. The company has several claims in the Cariboo and Kootenay districts, on which development is being done.

Morning Mining Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: J. D. Farrell, E. J. Bowman, P. J. Hickey. Head Office: Sandon, B.C.

Morrison Gold Mining Co., Ltd.— Registered 10th January, 1898, with an authorized capital of \$1,000,000 in shares of \$1.00. To acquire and work the "Morrison" claim, Deadwood Camp, Kettle River Division, British Columbia. Canadian Office: Fred H. Oliver, Mine Superintendent, Rossland, B.C.

Myers Flat Gold Mining Co., Ltd.—Capital, \$100,000, divided into 400,000 shares of 25 cents each. Head Office: Victoria, B.C. Directors: M. Meiss, A. Calderwood, J. Murphy. Formed for the following purpose:—To purchase the "Elephant," "Jumbo," "Mammoth" and "Nepawa" mineral claims situate at Myers Flat, Fairview District, British Columbia.

Nanaimo-Rossland Mining Co., Ltd.—Incorporated 1895. Authorized Capital, \$500,000. Directors: C. U. Westwood, Nanaimo, B.C.; A. Jenkins, Nanaimo; Jas. McGregor, Nanaimo, B.C.; W. K. Leighton, Nanaimo, B.C.; Thos. Kitchin, Nanaimo, B.C. Head Office: Nanaimo, B.C. Formed to carry on mining in British Columbia.

National Mining and Development Co., Ltd.—Capital, \$650,000. Shares 10 cents each. Trustees: C. Grant, D. D. Birks, J. L. Whitney. Head Office: Rossland, B. C.

National Mining and Development Co., Ltd. - Capital, \$1,000,000. Shares \$1.00 each. Directors, Alex. A. Allan, Andrew Darling, Frederick Wyld, John

Flett, R. Millichamp, Alex. A. McMichael, Alfred D. Benjamin, Hugh Scott, James Pearson, Chas. A. Godson. Head Office: Rothesay, N.B. Formed to acquire the "North Star" mineral claim, situated in Camp Fairview in the Osoyoos Division of Yale District, the "Victoria" mineral claim, situate in the Kettle River, Mining Division, the "Mary Ann" mineral claim, situate in the Kettle River Mining Division, the "Gold Drop" mineral claim, situate in the Trail Creek Mining Division of West Kootenay, the "Charlotte L." the "Margarethe S." and "Irma" mineral claims, situate on the East Fork of the North Fork of the Salmon River, in the Nelson River Mining Division; and especially to enter into a certain agreement in that behalf, between Charles Arthur Godson, and the said company so as to be incorporated, and to operate the said mineral claims.

Nelson and Ontario Prospecting and Development Co., Ltd.—Capital, \$150,000. Shares \$1.00 each. Trustees: E. C. Arthur, Thoburn Allan, E. C. Senkler, B. C. Rainsford. Head Office: Nelson, B.C.

Nelson Development and Improvement Co., Ltd.—Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Nelson, B.C. Directors: H. R. Bellamy, D. LaBau, J. Dover, G. Stanley, F. Irvine, R. E. Lemon, F. L. Osler, all of Nelson, B.C. Formed for the purpose of carrying on a general mining and brokerage business in British Columbia.

Nelson Mining and Development Co., Ltd.—Capital, \$500,000. Shares \$1.00 each. Trustees: Wm. A. McLean, Jno. A. Gibson, D. LaBau, R. Renwick, Colin Brown, Fred. Williamson. Head Office: Nelson, B.C.

Nelson-Poorman Gold Mining Co., Ltd.—Capital, \$250,000, divided into 1,000,000 shares of a value of 25 cents each. Head Office: Nelson, B.C. Formed for the purpose of acquiring "Poorman," "White," "Hardscrabble," "Hardup," "Election" and "Myemer" mineral claims, all situated in the Nelson Mining Division, B.C.

Nelson Salmon Mining and Development Co., Ltd.—Capital, \$2,500,000. Shares \$1.00 each Trnstees: R. A. Chisholm, N. McLeod, J. L. Parker, T. F. Trask. Head Office: Rossland, B.C.

Nelson Slocan Prospecting and Mining Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: Wm. A. Macdonald, F. Fletcher, F. W. Peters, A. Mainwaring-Johnson, Chas. E. Race, H. R. Cameron. Head Office: Nelson, B.C.

New Brunswick Mining and Development Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: Geo. E. Foster, F. A. Baird, T. R. Morrow, A. B. Acorn, Henry Kehoe, F. M. McLeod, Thos. M. Daly. Head Office: Rossland, B.C. Formed to purchase the "R.W.T." mineral claim, situate on the North Fork of Carpenter Creek, in the Slocan mining division of West Kootenay district, in the Province of British Columbia, about eight miles from Three Forks.

Newfoundland and Canadian Exploration Trust, Ltd.—Registered 19th March, 1891. To acquire through the Patents, Mining and Financial Trust, Ltd., the mining rights of the Newfoundland Colonisation and Mining Company, Ltd., over 100 square miles of land in Newfoundland, upon which a lead mine, known as Lamanche, is situated, and to carry on the business of financial agents. The purchase consideration 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 shares, and 25,000 fully paid preference shares in addition to a royalty of 12½ per cent. on the net profits. The authorized capital is £150,000 in 75,000 7 per cent. non-cumulative preference shares of £1 each, and 75,000 ordinary shares of £1; 32,800 preference shares and 32,800 ordinary shares have been issued and are fully paid, 30,100 preference and 29,753 ordinary being issued credited as fully paid. There are 6 per cent. debentures amounting to £25,000. Head Office: W. Gedge, Secretary, Trafalgar Building, Charing Cross, London, E.C.

New Fraser River Gold Mines, Ltd.—Capital, £75,000 divided into 75,000 shares of £1 each. Head Office situated in England. Formed for the purpose of mining in British Columbia.

New Jerusalem Mining Co., Ltd — Registered 13th May, 1898, with an authorized capital of \$100,000 in shares of \$10. Head Office: Ainsworth, B.C.

New Ontario Mining and Development Co., Ltd.—Capital, \$100,000. Shares 10 cents each. Directors: A. G. Elliot, Jno. Murchison, David C. Taylor, James Warren, C. E. A. Thompson. Head Office: Lucknow, Ont.

Newport Plaster Mining and Manufacturing Co., Ltd. — Incorporated 1892. Authorized capital, \$40,000, in 400 shares of \$100. Directors: C. H. Dimock, President; E. N. Dimock, Secretary; J. B. King. Head Office: Windsor, N.S. The company's property contains 156 acres, upon which is operated gypsum quarries at Newport, Hants county, Nova Scotia, within half a 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 Miller's Creek and Walton, and a land plaster quarry known as "Grant's" at Summerville.

New Rockland Slate Co.— Capital, \$150,000, fully subscribed and paid up. Directors: Hon. G. A. Drummond, President; James Ferrier, Sutherland Stayner, F. R. Redpath, A. Dunbar Taylor. Head Office: T. P. Bacon, Secretary-Treasurer, 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 yearly production about 6,500 tons. The manufactures include roofing slates, billiard table tops, mantles, wash tubs, hearth stones, 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.

New York Kootenay Mining Co., Ltd.—Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: New York. Formed for the purpose of mining in the United States and the Dominion of Canada.

New York Slocan Mining and Concentrating Co.—Capital, \$500,000, divided into 5000,000 shares of a value of \$1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Nickel Plate Mining Co., Ltd.—Incorporated 1895. Authorized Capital, \$500,000, in shares of \$1.00. Mines Office: Wm. Fitzwilliam, Superintendent, Trail, B.C. Formed to acquire and work the Nickel Plate and other gold claims in the Province of British Columbia. A shaft has been sunk, and, at the 100 foot level, drifts have been run along the vein in both directions and a cross-cut, after passing through several small seams of good grade ore, has at last tapped a 6 foot ledge. On this vein drifts are being run both ways showing two pay streaks, each about 20 inches wide, separated by comparatively barren ledge matter. Several average samples have gone as high as \$275 to the ton in gold. The drifts on the main vein show good bodies of solid ore, averaging from \$80 to \$100 per ton in gold. About 150 tons of shipping ce are on the dump. A steam hoist and a sinking pump are used.

Nickel Steel Company of Canada, Ltd.—Incorporated by Act of Parliament 1898. Authorized Capital, \$20,000,000, in shares of \$100. The incorporators were: John Maclaren, Brockville, Ont.; George B. Douglas, New York; Alexander Fraser, and David Maclaren, Ottawa; F. F. Vandevoort, Pittsburg; Hon. G. A. Cox, Toronto; Nathaniel Dyment, Barrie; Alexander Maclaren, Buckingham; A. T. Wood, John Moodie, and John Patterson, Hamilton, Ont. Head Office: John Patterson, Secretary, Hamilton, Ont.

Noble Three Mining Co., Ltd — Capital, \$1,000,000, Shares \$1.00 each. Trustees: W. J. Herald, John McKane, Alex. Miller. Head Office: Rossland, B.C.

North American Graphite Co., Ltd. — Capital, \$250,000. Shares \$100 each. Directors: Alex. Lumsden, N. Chas. Sparks, Geo. H. Perley, H. P. H. Brummell, Wm. H. Perley. Head Office: H. P. H. Brummell, Manager, Ottawa, Ont. Owns and operates a property containing 219 acres and situate on Lot 28, R. VI., and Lots 23 and 28, R. V., Township of Buckingham, Ottawa County, Province of Quebec. Equipped with Raymond mill and other plant, including electric lighting.

North American Mining Co., Ltd.—Capital, \$500, divided into 500 shares of \$1 each. Head Office: Buffalo, N.Y. Formed for the purpose of mining in British Columbia.

Northern Giant Mining Co., Ltd.—Incorporated under Ontario statutes 29th January, 1898, with an authorized Capital of \$400,000, to carry on mining in Ontario. The incorporators were: Thos. Sargent, George Palmer, James Chamberlin, F. J. Stewart, and C. C. James, all of Toronto, Ont.

Northern Ontario Development Co., Ltd.—Capital, \$5,000,000. Shares \$1.00 each. Directors: F. G. Morely, S. G. Redway, Jno. N. Lee, G. A. Harper. Head Office: Toronto, Ont.

Northern Prince Mining Co., Ltd.—Incorporated 27th September, 1897. Authorized Capital, \$500,000, in shares of \$1.00. Canadian Agent: Victor Monnier, Rossland, B.C.

North Star Mining and Development Co. of Toronto, Ltd.—Incorporated 1897, with an authorized Capital of \$1,000,000, in shares of \$1.00. President, Sir Adolphe P. Caron, M.P., Ottawa; First Vice-President, Hon. Lyman M. Jones, Toronto; Second Vice-President, R. P. Lonnsbery, New York. Secretary, R. H. Bowes, Toronto; Treasurer, A. A. Taillon, Ottawa. Farmed to engage in the business of exploration and development of mines and mining property.

North-West Pacific Mining and Development Co., Ltd.—Capital, \$500,000. Shares \$1.00 each. Trustees: J. W. Campion, W. Nicol, W. H. Armstrong. Head Office: Vancouver, B.C.

Nova Scotia Gypsum, Co., Ltd.—Incorporated 1894. Authorized Capital, \$2,000,000, in shares of \$20.00. Directors: Vincent King, New York; J. E. Peters, Port Greville, N.S.; J. Taggart, Parrsboro, N.S. Head Office: J. Taggart, Parrsboro, N.S. Formed to quarry gypsum in the Province of Nova Scotia.

Occidental Mining and Exploration Co. of Ottawa, Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Directors: R. H. Preston, R. F. Preston, F. W. Bindon, J. M. Cullies, T. McVeity, A. Hudson, H. Waters, A. Bannerman, W. A. Jamieson, N. A. Goodwin. Head Office: Ottawa, Ont.

Occidental Mining and Milling Co., Ltd.—Capital, \$600,000. Shares \$1.00 each. Trustees: Archibald J. McKay, James A. A. Fraser, Henry T. Sheeton. Head Office: Vancouver, B.C.

Okanagan and Kootenay Development Syndicate, Ltd.—Incorporated 1897, with authorized Capital, £10,000, in shares of £1. To carry on the business of exploration, trading, finance and agency in British Columbia. Head Office: 3 Pancras Lane, Queen Street, London, E. C. Canadian Office: Granville Street, Vancouver, B.C.

Old Flag Gold Mining Co., Ltd.—Capital, \$1,500,000. Shares \$1.00 each. Trustees: Chas. M. Carpenter, Robert Dixon, John B. Henderson, John E. Crane. Head Office: Rossland, B.C. Formed to acquire the mineral claims known as the "Eureka," "Esmeralda," and "Old Flag," situate in the Trail Creek mining division of West Kootenay district, British Columbia.

Olga Gold Mining and Milling Co., Ltd.—Registered 23rd December, 1897, with an authorized Capital of \$1,000,000, in shares of \$1.00. Canadian Office: J. W. Roet, Rossland, B.C.

Ontario and Western Mining and Development Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Directors: Jno. B. Laidlaw, H. C. Dixon, Wm. H. Hall, James R. Roaf, Chas. R. Tounley. Head Office: Toronto, Ont.

Ontario Exploration and Development Co., Ltd.—Registered 19th August, 1897, and is a reconstruction of the Ontario Exploration Company, Limited. Authorized Capital, £150,000, in shares of £1. Formerly known as the Yellow Girl Gold Mines, Ltd. Head Office: 61, 62 Broad Street, Avenue, London, E.C., England.

Ontario Gold Estates, Ltd.—Registered 16th June, 1896. To acquire, develop, turn to account any gold mines, mining rights and lands in Canada. Authorized Capital, £5,000, in 5,000 shares of £1. Head Office: H. B. Milne, Secretary, 3 Lombard Street, London, E.C.

Ontario Gold, Silver and Copper Mining Co., Ltd.—Registered 9th August, 1897. Authorized Capital, \$1,000,000, in shares of \$1. Canadian Office: Waneta, B.C.

Ontario Graphite Co. Ltd.—Incorporated 1896. Authorized Capital, \$200,000, in shares of \$100. Directors: G. P. Brophy, J. P. Brophy, S. H. Fleming, J. W. McRae, Hector McRae. Head Office: Hector McRae, Managing Director, Ottawa. Owns and operates a property, comprising lots 16, 17, 18 and 19, at White Fish Lake, Township of Brougham, Province of Ontario. Worked by open cuts. Output shipped via Calabogie station on the Kingston and Pembroke Railway, to Ottawa, where a small milling plant has been erected.

Ontario Government Gold Concessions, Ltd.—Registered 29th May, 1897. To acquire a concession granted by the Ontario Government; to explore for minerals and develop mines in the Rainy River and Lake of the Woods District, over an area of about 100 square miles. The authorized capital is £80,000, in shares of £1—£70,000 ordinary and £10,000 deferred. The ordinary shares rank first for 10 per cent. dividend, and if any surplus one-half is to go to the ordinary and one-half to the deferred. Of the ordinary capital £45,000 has been subscribed and £22,500 called up, 30,000 shares having 5 s. called and the remainder being fully paid. Directors: Hon. C. M. Knatchbull-Hugesson, Chairman; E. M. Bovill and J. Reid. Head Office; H. St. J. Hodges, Secretary, Finsbury House, London, E.C. Canadian Agent: T. R. Deacon, C.E., Rat Portage, Ont.

Ontario, Ltd.—Registered 31st January, 1895, as the Murchison Gold Fields, Ltd. To deal with mining properties in Western Australia, and reconstructed under the above title early in 1897 and registered 28th January, 1897. The company now owns 110 acres on Shoal Lake, Lake of the Woods, Ont. Authorized capital, £100,000 in shares of 5s., of which £40,109 has been subscribed and 34,865 called up, 20,600 shares being fully paid, and the remainder having 4s. 3d. called up. Directors: Col. W. J. Engledue, Chairman; A. G. Shaw, and A. Q. Twiss. Head Office: A. Hebden Secretary, Blomfield House, London, E. C. Canadian Office: — Engledue, Manager, Rat Portage, Ont.

Ontario Mines Assaying and Smelting Co., Ltd.—Capital, \$75,000. Shares \$1.00 each. Directors: William Henry, William D. Pettigrew, Walter Jordan, Hunter Cooper, George H. West, William S. Grout. Head Office: Rat Portage, Ontario.

Ontario Miners' Development Co., Ltd.—Incorporated 1896. Authorized capital \$150,000, in shares of \$5. Directors: James Connell and G. O. Clavette, Port Arthur; John Flett, Hume B. Proudfoot, A. Wilson and J. Van Scmmer, Toronto; H. N. Kitson, Hamilton, Ont. Head Office: Toronto. Formed to acquire and work mineral lands and mines in Ontario.

Ontario Peat Fuel Co., Ltd.—Incorporated 1892. Authorized capital, \$300,000, in shares of \$100. Directors: A. A. Dickson, President; A. Jardine, W. A. Allan, W. B. Bayly, George H. Perley, Hon. R. M. Wells, J. R. Silliman. Head Office: J. R. Silliman, Sec'y.-Treasurer, room 29, Bank of Commerce Building, Toronto. This company has purchased the right to take and remove all the peat, clay, earth and other material from 5,000 acres of peat land in the county of Welland, paying therefor the sum of \$1,580 per annum for fifteen years and thereafter a rental of 25 cents per ton. Peat moss covers the whole area to a depth of about two feet, and the company has already cut from an area of about three acres, something like 2,000 tons. This moss litter is of a very superior quality for stable bedding, and we understand a contract has been made with an American firm to purchase not less than 1,000 tons for the first year, and to increase the purchase thereafter by not less than 5,000 tons.

Ontario Prospectors' Mining and Development Co., Ltd.—Capital \$1,000,000. Shares \$1.00 each. Directors: Newton C. Westerfield, Neil Campbell, James E. Wickham, Estras B. Truby, George A. Hamilton, James Ogden. Head Office: Rat Portage, Ontario.

Original Swede Boys' Prospecting Co. of Rainy Biver District, Ltd.—Capital \$90,000. Shares \$1.00 each. Directors: John Berg, George Asplund, John Franson, August Franson, Eric Franson. Head Office: Fort Frances, Ont.

Oriole Gold Company of Wabigoon and Saw Bill Lakes, Ltd.—Incorporated 21st July, 1898. Authorized capital \$24,000, in shares of \$50. Incorporators: W. C. Phillips, C. A. Dobson, A. G. Carruthers, of Toronto; W. L. Walsh and Dr. F. W. Lewis, Orangeville, Ont.

Oriole Syndicate Ltd.—Registered 1896. Capital £5,000 in £1 shares. All issued. Directors: J. B. Bryson, A. W. Taylor, A. H. Gower, G. W. Duff, Dr. Moody. Offices: 4 Sun Court, Cornhill, London, E.C. Formed in 1896 to carry on mining operations in Canada in general, and British Columbia particularly. The syndicate has already acquired a group of claims near Barkerville, (B.C.) of which the "Goldfinch" is the chief unit. Satisfactory progress has been made with the development of these claims.

Oro Mining and Milling Co., Ltd.—Registerd 20th April, 1898. Authorized capital \$200,000, in shares of ten cents each. Canadian Office: Oro, B.C.

Pacific Bullion Mining Co., Ltd.—Registered 3rd January, 1898. Authorized Capital, \$1,000,000, in shares af \$1.00. Canadian Agent: F. H. Oliver, Rossland, B.C.

Pacific Mining and Construction Co., Ltd.—Capital, \$20,000, divided into 20,000 shares of \$1.00 each. Head Office: Tacoma, Wash. Formed for the purpose of mining in British Columbia.

Paris Belle Gold Mining Co., Ltd.—Registered 13th December, 1897. Authorized Capital, \$800,000. Canadian Office: J. B. McArthur, Rossland, B.C.

Pavo Consolidated Mines, Ltd.—Incorporated 1897. Capital, \$150,000, divided into 1,500,000 shares of a value of 10 cents each. Head Office: Rossland, B.C. Directors: C. M. Cowper-Coles, Rossland; C. E. Wynn-Johnson, Rossland; O. Plunkett, Vancouver; J. L. G. Abbott, of Rossland, B.C. Formed to acquire the mineral claims "Oregon," "Williamette," "Red Bird," "Phonograph," "Pavo," "Germania," "Nora," all situated near Waterloo Camp, in the Trail Creek Mining Division, British Columbia.

Pay Ore (B.C.) Mines, Ltd.—Incorporated 1897. Authorized Capital, \$250,000, in shares of roc. Head Office: Rossland, B.C.

Pelly-Yukon Gold Mining Co., Ltd. Registered 1st February, 1898. Authorized Capital, \$350,000, in shares of \$1. Head Office: Victoria, B.C.

Peoria Mining and Milling Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: Wm. W. Spinks, Robert J. Bealey, Arthur S. Goodeve, William A. Potter, John E. Crain. Head Office: Rossland, B.C. Formed to acquire the mineral claims known as the "Snowflake," "Harriet," and "Seattle," situate in the Ainsworth Mining Division, and the "Peoria," situate in the New Denver Mining Division of West Kootenay District, British Columbia, from the present owners thereof, either for money or fully paid up shares of the Company.

Phœnix Consolidated Mining Co., Ltd.—Incorporated 1896. Head Office: Sandon, B.C. Directors: John D. Farrell, J. E. Poupore, M. W. Burner, G. McL. Brown and Jas. Burridge. Capital, \$1,750,000. Formed to purchase the "Phœnix," Libby R" and "Alhambra" mineral claims, situate on the north fork of Carpenter Creek, in the Slocan Mining Division, British Columbia.

Phœnix Gold Mining Co., Ltd.—Incorporated 1897. Capital, \$20,000, divided into 400 shares of \$50 each. Directors: G. F. McKay, E. Kennedy, J. A. Fraser, J. Fraser, C. Fraser, all of New Glasgow. Formed for the purpose of mining in Nova Scotia.

Picton Development Syndicate, Ltd.—Incorporated 1896, to acquire the "Picton Mineral Claim," situated in the Nelson Mining Division of the District of West Kootenay. Capital, \$15,000, divided into 3,000 shares of a value of \$5 each. Directors: J. E. Turner, Nelson; S. M. Okell, Victoria; J. F. Pearson, Manchester, Eng. Head Office: Nelson, B.C.

Pilot Bay Mining and Development Co., Ltd.—Zapital, \$1,000.000, divided into 1,000,000 shares of \$1.00 each. Head Office: Rossland, B. C. Directors: J. Cowan, R. Reddick, H. R. Dunlop, L. H. Schmidt, O. D. Casselman, W. A. Brown. Formed for the purpose of mining in British Columbia.

Pioneer Development and Exploration Co. of British Columbia, Ltd.—Registered 17th June, 1896. To acquire mining claims, &c., in British Columbia. Six mining properties have been acquired, including the "Campbell" and the "N. P." The company was promoted by the Kootenay Promotion Syndicate, who undertook to pay all the preliminary expenses up to allottment in consideration of the sum of £5,000, payable in cash and fully paid shares, and the right to take up at par on or before the 30th June, 1898, the further 50,000 shares of the company. Authorized Capital, £150,000, in shares of £1. Head Office: W. Cooper, Secretary, 9 and 10 King St., London, E.C.

Prescott Mining Co., Ltd.—Capital \$300,000, divided into shares of a par value of 25 cents each. Head Office: Vancouver, B. C. Directors: F. C. Innes, O. Plunkett, H. Abbott. Formed for the purpose of purchasing the "Prescott" group of mineral claims situated on Four Mile Creek, in the Slocan District, Province of British Columbia.

Prospecting Syndicate of British Columbia.—Incorporated 1895. Anthorized capital, £10,000, in shares of £1. Directors: Edward Mahon, J. W. McFarland, Gilbert Mahon. Head Office: G. G. Scott, Secretary, 519 Hastings St., Vancouver, B.C. Formed for the purpose of acquiring gold and other mineral properties in that province. The functions of this company will be not only the acquiring of suitable properties, but the working up of connections with the London market for their disposition. The company holds options at date on the Crown Point group (150 acres), gold and silver; Oro Fino group (250 acres), gold, copper; Orphan group (50 acres), gold, copper; Jewel-Denero, (100 acres), gold (telluerides) and silver; one-third interest in the Climax (50 acres), gold, copper; one-half interest in the Lulu (50 acres), gold, and 110,000 shares in the Silver King Mining Co. The above options, upon the total purchase price of which there remained to be paid at date £18,088, are situated in the Boundary Creek District of British Columbia.

Providence Mining and Developing Co., Ltd.— Capital \$300,000. Shares 25 cents each. Trustees: J. O. Tretheway, L. G. Munn, W. G. Tretheway. Head

Office: Vancouver, B.C. Formed to acquire and take over the "Silver Bell" mineral claims, situate on the west shore of Harrison Lake, in the Province of British Columbia.

Province of British Columbia Minerals Syndicate.—Registered 17th March, 1897. To acquire mines and lands in British Columbia or elsewhere. The authorized capital is £3,000 in shares of £1. Head Office: Broad Street House, London, E.C.

Provincial Mining, Development and Investment Co. of Toronto, Ltd.—Capital, \$1,250,000. Shares \$1.00 each. Directors: Sydney F. McKinnon, George J. Ashworth, O. Sprague. Head Office: Toronto, Ont.

Puget Sound Iron Co., Ltd.— Registered 18th March, 1898. Head Office: 530 California St., San Francisco. Authorized capital \$500,000 in \$10 shares.

Pyramid Kootenay Mining Co, Ltd.—Registered 1897. Authorized capital £50,000, in shares of £1. Head Office: 36 Lime Street, London, England. Canadian Agent: J. R. Macintosh, Nelson, British Columbia.

Pyrites Company, Ltd.— Registered 30th April, 1891. To acquire and work the Standard Pyrites Company's nines at Pilley's Island, Newfoundland. The authorized capital is £300,000 in 60,000 shares of £5 each, of which 30,000 are to per cent. cumulative preference shares; 24,007 preference, and all the ordinary shares have been issued credited as fully paid (except seven preference sharessubscribed.) There are 6 per cent. first mortgage debentures to the amount of £55,700, and also 5 per cent, second mortgage debentures to the amount of £25,000, the latter being issued as security for a loan of £20,000. At 31st December, 1895, the cumulative preference dividend was in arrears to the amount of £56,827 os. Iod. The accounts are made up annually to the 31st December. The accounts to 31st December, 1895, submitted on 29th September, 1896, showed a profit of £49,000 3s. on the year; deducting this from the debit balance of £841 6s. outstanding at December, 1894, left a balance of £792 3s. to debit of profit and loss account. Cash balances £2,766 12s. 9d. Quantity of ore shipped during the year 34,147 tons. The quantity of ore remaining in the mine was estimated at about two years output of 40,000 tons per annum; prospecting had not resulted in any fresh discoveries. Head Office: T. H. Carlton Levick, Secretary, 13 and 14 Abchurch Lane, London, E.C.

Quadra Mining and Milling Co., Ltd.—Incorporated 1896. Authorized Capital, \$500,000. Directors: G. A. Kirk, Thos. Shotbold, John Bryden. Head Office: Victoria. Formed to acquire within the Alberni mining Division on Vancouver Island, the mineral claims known as the "Ophir" and "Last Chance."

Railroaders Gold Mining Co. of Ontario, Ltd.—Incorporated 2nd September, 1897. Authorized Capital, \$500,000, in shares of \$1.00. Incorporators: James Hammond, L. L. Peltier, S. C. Young, G. W. Fleming, W. Blannerhassett, and G. Snelgrove, all of Fort William, Ontario.

Rriny River Mining, Exploring and Development Co., Ltd.—Capital, \$750,000. Shares \$1.00 each. Directors: Wm. Colcleugh, Geo. Brebber, James Morrison, M. McPhadden, Wm. Conor, Robt. Brown, J. P. Noonan. Head Office: Mount Forrest, Ont. Formed to purchase and acquire mining locations "D 605 and D 607," in the district of Rainy River, Ontario.

Ramsdell Mining and Milling Co., Ltd.—Registered 3rd January, 1898. Authorized Capital, \$1,000,000, in shares of \$1.00. Canadian Agent: C. K. Hammond, Sandon, B.C.

Recordia (British Columbia) Exploration Co., Ltd.—Registered 1897.

Authorized Capital, £200,000, in shares of £1. Directors: Col. W. J. Engledue, Sir George S. M. Thomas, Bart.; W. A. Bromwich, Thomas Rickard. Head Office: M. E. Penman, 49 Queen Victoria St., London, E.C., England. Formed for the purpose of acquiring all the properties, options and assets of the Recordia Syndicate,

Ltd., including (a) The Anaconda group, comprising three mining properties known the "Anaconda," "Kootenay," and "Columbia," in all about 150 acres, situated in the Deadwood Camp, Boundary District, British Columbia. (b). The right to acquire the Gold Coin mine, comprising 155 acres, and situated about a mile S. E. of the Mikado Gold mine, Lake of the Woods, Province of Ontario; and also the following options: (c) Three-quarters interest in the following:—(1) Over 2,000 acres of coal land situated near White Lake, Osoyoos Division, Yale District. (2) 460 acres at Grand Forks City, and in a one-half interest in 1,000 acres at Grand Forks City. (3) All unsold building lots in Grand Forks City, adjacent to the site of proposed Smelting Works. (d) The right to acquire two Gold Mining Locations the total area of which is about 80 acres, and situated near Schrieber, Ontario, close to the Otisse mine, within 11/2 miles of the main line of the Canadian Pacific Railway for a consideration payable partly in cash and partly in shares of a company to be formed. The company will also acquire the benefit of all negotiations and options which the Dominion Explorers, Limited, have obtained over mining and other properties in Ontario and British Columbia, included in which are negotiations for the acquisition on favorable terms of 160 acres, situate near Schreiber, Ontario, immediately adjoining the property known as the Otisse mine, and the Waterworks and Electric Light Company of Rossland, British Columbia, which is already working at a good profit with every prospect of increase, due to the rapid growth of the town. The waterworks will not only be a promising investment in itself, but the use of the surplus water for concentrating purposes should be of great value. The total purchase price of the properties, options and assets of the Recordia Syndicate, Limited (who are the vendors), and the assets of the Dominion Explorers, Limited, hereinbefore mentioned, has been fixed at £140,000, payable as to £8,000 in cash, the balance in fully paid shares, thus making the profit of the vendors entirely dependent on the success of this company, and leaving 60,000 shares to provide working capital.

Red Star Mining and Development Co.—Capital, \$250,000, divided into 1,000,000 shares of 25 cents each. Directors: J. L. Card, C. H. DeBeck, H. J. Stubbs, R. L. Reid, H. J. A. Burnett, all of New Westminister, B.C. Head Office: New Westminister. Formed to acquire the mineral claim "Red Star," situated on the north side of Kaslo Creek, in the district of West Kootenay, Province of British Columbia.

Regent Mining and Development Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: Wm. G. H. Todd, Chas. B. McCluskey, John W. Switzer, Head Office: Sandon, B.C.

Reliance Mining Co., Ltd.—Capital, \$500,000, divided into 500,000 shares of a value of \$1.00 each. Head Office: Vancouver, B.C. Directors: S. H. Baker, F. Coope, J. G. Crawford, L. Hind, J. D. Breeze. Formed to acquire and work the "Toronto" mineral claim, situate in the Osoyoos district, Yale division, British Columbia.

Revelstoke, Lardeau and Slocan Mining and Development Co., Ltd.—Capital, \$1,000,000, divided into 1,000,000 shares of a value of \$1.00 each. Head Office: Revelstoke, B.C. Directors: W. White, Slocan City; J. D. Sibbald, Revelstoke; C. E. Shaw, Revelstoke. Formed for the purpose of mining in British Columbia.

Richmond Developing and Mining Co., Ltd.—Incorporated 1895. Authorized Capital, \$120,000, in shares of \$10. Directors: Alex. McLeod, Chas. Barney, John T. Errington. Head Office: Vancouver, B.C. Formed to adopt and carry into effect, with or without modification, an agreement dated the 29th October, 1895, between Alex. McLeod, Charles Barney and John T. Errington, and to carry on mining in British Columbia.

Ripley Mining Co., Ltd.—Capital, \$1,000,000. Shares \$1 00 each. Trustees: Percy W. Evans, Robt. B. Skinner, David G. Marshall. Head Office: Vancouver, B.C.

Robinson Mining Co.—Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Rochester Gold Mining Co., Ltd.—Registered 24th January, 1898. Authorized capital \$500,000, in shares of \$1.00. Canadian Office: Roy H. Clark, Mining Engineer, Rossland, B.C.

Rock Creek Gold and Copper Mining Co., Ltd.—Registered 27th January, 1898. Authorized capital \$800,000, in shares of \$1.00. Canadian Office: Johann Wulffsohn, Vancouver.

Rossland Development Co., Ltd.—Capital \$1,000,000. Shares \$1.00 each. Trustees: John L. Whitney, L. H. Northey, E. L. Clark, Louis L. DeNoin. Head Office: Rossland, B.C. Formed to purchase the "Ivanhoe" and "Bell" mineral claims, situate on Salmon River in the Nelson Mining Division of West Kootenay District, in the Province of British Columbia.

Rossland Kootenay Mining and Development Co, Ltd.—Capital \$80,000. Shares \$1.00 each. Directors: Horatio N. Coates, William G. Scovil, John A. McAvity, James M. Scovil, Charles G. Milligan, Stephen S. McAvity, Isaac Burpee, Frederick D. Wedderburn. Head Office: Parish of Hampton, N.B.

Rossland-Slocan Mines Development Co., Ltd.— Capital \$1,000,000. Shares 10 cents each. Trustees: R. C. Macdonald, J. L. Parker, Geo. E. Toms. Head Office: Rossland, B.C.

Royal Canadian Mining and Development Co., Ltd.—Capital \$1,500,000. Shares \$1.00 each. Trustees: Jno. Kirkup, Thos. M. Daly, Wm. H. Cooper, Wm. B. Townsend, Jno. Moynahan, W. G. Kennedy, John L. G. Abbott. Head Office: Rossland, B.C. Formed to purchase "The Golden Eagle," "The Red Fox," "The Bonanza Queen," "The Rayner," "The MacDonald," and "The Bernice" mineral claims, all situate in the Trail Creek Mining Division of West Kootenay, British Columbia.

Royal George Mining and Development Co.—Capital \$1,000,000, divided into 10,000,000 shares of 10 cents each. Head Office: Victoria and Kamloops, B.C. Directors: T. J. Jones, G. H. Haynes, James M. Palmer. Formed for the purpose of mining in British Columbia.

Rupert Land Mining Co. of Ontario, Ltd — Capital \$200,000. Shares \$1.00 each. Directors: Robt. J. Campbell, Henry A. Costigan, Thos. H. Lock, Robert R. Wilson, Jas. Thompson, Joseph E. Huxley, John Brown. Head Office: Rat Portage, Ont.

Ruth No. 2 Mining Co., Ltd.—Registered 11th October, 1897. Authorized capital \$6,000, in shares of \$1.00. Canadian Office: Kaslo, B.C.

Salmon River Consolidated Mining Co., Ltd.—Registered 15th April, 1898. Authorized Capital, \$1,000,000, in shares of \$1.00. Canadian Agent: Fred. Adie, J.P., Waneta, British Columbia.

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; F. B. Wilkinson, M.B., Sarnia, Ont. Head Office: 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 down 1,600 feet at date.

Sault Ste. Marie Mining Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: W. S. Boyd, Daniel Harris, John S. Clute, jr., Geo. Lemon, David Manchester. Head Office: Sault Ste. Marie.

Schroeder Creek Consolidated Mining and Development Co., Ltd.—Capital, \$1,000,000, divided into 1,000,000 shares of a value of \$1.00 each. Head Office: Rossland, B.C. Directors: T. M. Daly, J. Lane, J. M. Clark, J. M. Robinson, G. R. Coldwell. Formed for the purpose of mining in British Columbia.

Scottish Columbia Mining and Development Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: George R. Maxwell, John C. McLagan, Peter R. Ritchie, John T. Wilkinson, Alexander Calley, Jas. S. McLeod, James B. Smith. Head Office: Vancouver, B.C.

Scottish Mining and Investment Corporation, Ltd.—Capital, \$2,000,000. Shares \$1.00. Trustees: Jas. M. Buxton, J. G. Crawford, Wm. T. Stein. Head Office: Vancouver, B.C.

Shamrock and Thistle Mining Co., Ltd.—Capital, \$100,000, divided into 400,000 shares of 25 cents each. Head Office: Vancouver, B.C. Directors: J.C. Keith, Vancouver; R. B. Johnson, F. W. Boultbee, of Vancouver. Formed to acquire the mineral claims known as the "Shamrock" and "Thistle," situated on Ganer Creek, in the Trout Lake Mining District of West Kootney, British Columbia.

Sheba Gold Mining and Development Co. of Ontario, Ltd.—Incorporated 23rd December, 1897. Authorized Capital, \$495,000, in shares of \$1 00. Incorporators: J. A. Jendron, L. V. Dusseau, C. R. de la Sabliere, W. T. J. Lee, L. V. Bachand, all of Toronto; P. A. Bogue, London, Out.; L. C. Bachand, Coaticook, Que.; Stephen Connolly, Spencer Cove, Que.; and James I. Bogue, Montreal.

Sheriff Mining Co.—Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Spokane, Wash. Formed for the purpose of mining in British Columbia.

Silent Friend Mining and Development Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: John A. Smith, J. S. McCullough, W. J. Green. Head Office: Rossland, B.C.

Silverine Mining Co., Ltd.—Registered 3rd January, 1898. Authorized Capital, \$500,000, in shares of \$1.00. Canadian Agent: Clive Pringle, Rossland, B.C.

Slocan-Cariboo Mining and Development Co., Ltd.— Capital \$1,000,000. Shares 10 cents. Trustees: E. Morrison, F. B. Gregory, F. S. Pope, C. T. Lyon, F. H. B. Lyon. Head Office: Sandon, B.C. Formed to purchase the "Rosedale," "Flower," and "May" mineral claims, on Payne Mountain, near Sandon, in West Kootenay District, and three leasehold and one freehold placer claims on Canadian Creek, Cariboo, B.C.

Slocan Development Co., Ltd. — Capital \$1,000,000. Shares \$1.00 each. Trustees: Walter Macdonald, William Tedford, Henry Akin, Frederick G. White, William J. Green. Head Office: Rossland, B.C.

Slocan Gold and Silver Mining Co., Ltd.—Capital \$1,000,000. Shares \$1.00 each. Trustees: John A. Thompson, Hector McPherson, F. S. Anderson. Head Office: Slocan City, B.C.

Slocan Lake Gold and Silver Mines, Ltd.—Registered 1897. Authorized capital \$1,000,000, in shares of \$1.00. Canadian Office: Nelson, B.C.

Slocan Lake Prospecting and Development Co., Ltd. — Capital \$150.000, divided into 1,500,000 shares of ten cents each. Directors: G. H. Suckling, F. W. Bauer, T. Parker, E. W. Liljegran, J. S. Clute, J. Henderson, E. T. Bartlett. Head Office: Rossland. Formed for the purpose of mining in British Columbia.

Slocan Lemon Creek Mining Co., Ltd.—Capital \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Directors: J. F. McRae, C. J. Campbell, T. Anderson, all of Rossland, B.C. Head Office: Rossland, B.C. Formed for the purpose of mining in British Columbia.

Slocan Western Mining Co., Ltd.— Capital \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Directors: C. C. Woodhouse, Jr., H.E.D. Merry, R. T. Penrose. Head Office: Rossland, B.C. Formed for the purpose of mining in British Columbia.

Slumach Mining Co., Ltd.—Capital \$500,000. Shares \$1.00 each. Trustees: Bartley W. Shiles, John Morrison, Fred R. Glover. Head Office: New Westminster, B.C.

Smuggler Gold Mine and Milling Co. of British Columbia.—Incorporated under the B.C. Companies Act, and owns the Smuggler gold claim in the Fairview mining camp, British Columbia. Authorized capital \$1,000,000, in shares of \$1.00. Head Office: Toronto, Ont.; Mines Office: Fairview, B. C. English Office: Arthur Hollinshed, 55 Holborn Viaduct, London, E.C.

Soo Mining and Exploration Co., Ltd — Capital \$99,000. Shares \$1.00 each. Directors: C. S. Beadle, A. B. Cracknell, G. C. Ramsey, G. S. Michael, C. S. Van Horne, A. Scanlan, D. McLeod, E. Harrison, Jos. Cozens, M. McFadden. Head Office: Sault Ste Marie, Ont.

Spencer Consolidated Mining Corporation, Ltd.—Capital, \$5,000,000. Shares \$5.00 each. Trustees: William F. Gore, R. A. Anderson, Wm. McCraney, Frank Spencer. Head Office: London, Eng.

Standard Mining and Development Co., Ltd.—Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Rossland, B.C. Directors: C. A. Godson, F. T. Claxom, G. E. Powell, Victoria, B.C.; H. Thorne, J. Pearson, Toronto, Ont. Formed for the purpose of mining in British Columbia.

Stanstead Granite Co., Ltd.—Incorporated in 1893 by Dominion Charter. Authorized Capital, \$100,000, in shares of \$100. Directors: Hugh W. Elder, Wm. Farwell, C. H. Kathan, D. W. Davis, Wm. Hanson, J. Brunet, H. P. Woodbury. Head Office: G. P. Butters, Secretary, Beebe Plain, Que. Formed to acquire and work granite or other quarries in Canada. Owns the quarrying rights over 200 acres in Stanstead County, Que., and are producers of rough dimension and cut granite.

Starmount Mining Co., Ltd.—Capital, \$500,000, divided into 500,000 shares of \$1.00 each. Head Office: Victoria, B.C. Directors: H. W. Ferguson-Pollok, P. A. Paulson, A. W. Taylor, R. B. Punnett, all of Victoria, B.C. Formed for the purpose of mining in British Columbia.

Sterling Mining and Milling Co., Ltd.—Capital, \$1,500,000. Shares \$1 each. Trustees: Peter Leclair, John J. O'Donnell, Eli Thompson. Head Office: Sandon, B.C.

Stoneleigh Mining Co., Ltd.—Registered 15th March, 1898. Authorized Capital, \$1,000,000, in shares of \$10. Canadian Agent: A. G. M. Spragge, Revelstoke, B.C.

Stratford Exploration and Development Co., Ltd.—Capital, \$30,000. Shares \$1.00 each. Directors: Wm. F. Tye, S. M. Johnson, R. M. Ballantyne, John Brown, S. R. Hesson, W. F. Van Buskirk, A. K. King, H. M. Johnson, Wm. Lawrence. Head Office: Stratford, Ont. Objects: To prospect for, explore, contract for, purchase, lease or otherwise acquire mineral lands and mining locations in the Dominion of Canada.

Sudbury Gold and Coal Mining Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Directors: Murray C. Biggar, Charles Jessup, Alex. Fournier, Lawrence O'Connor, Henry J. Purvis. Head Office: Sudbury, Ont.

Surrey Mining and Prospecting Co., Ltd.—Capital, \$100,000 divided into 100,000 shares of \$1.00 each. Directors: H. A. Bell, J. E. Gaynor, N. R. Hopkins. Head Office: New Westminster, B.C. ing on mining operations British Columbia.

Sydenham Mica and Mining Co.—Incorporated 10th May, 1889. Capital Stock, \$250,000. Directors: Isaiah Smith, Sydenham, Ont., President; J. P. Lacey, Sydenham, Ont.; Dr. R. L. Burrage, Newark, N. J.; J. L. Armitage, Newark, N. J.; H. S. Dunn, Newark, N. J. Head Office: Jonathan P. Lacey, Secretary-Treasurer, Sydenham, Ont.

Telluride of Gold Mining Co., Ltd.—Capital \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Vancouver, B.C. Directors: J. R. Brown, Harrison Hot Springs; R. J. Leckie, Vancouver; J. W. Girvin, Vancouver, Formed to acquire and work the mineral claims known as the "Gold Queen," "Prince," "Tellurium," "Wonderful," "Baby Mine," situated on Fire Mountain, in New Westminster District, British Columbia.

Terminal City Mining and Development Co., Ltd.—Capital \$800,000. Shares \$1.00 each. Trustees: Jos. Coupland, William Bailey, A. J. Scott. Head Office: Vancouver, B. C.

Thistle Gold Mining Co., Ltd.— Capital \$350,000, divided into 350,000 shares of \$1.00 each. Directors: J. S. Murray, W. J. Quinlan, A. F. McCrimmon, G. L. Courtney, J. Maynard, A. E. Belfry, F. A. Hall. Head Office: Victoria, B.C. Formed for the purpose of mining in British Columbia.

Tidal Wave Consolidated Mining Co., Ltd.—Capital \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Head Office: Vancouver, B.C. Directors: J. Loewan, J. M. Buxton, W. H. Carson, all of Vancouver, B.C. Formed for the purpose of mining in British Columbia.

Tobasco Prospecting and Exploration Co., Ltd.—Capital \$1,000,000. Shares \$1.00 each. Trustees: H. P. McCraney, L. H. Northey, B. F. Budd, H. V. Stevenson. Head Office; Rossland, B.C.

Tobique Gypsum Co., Ltd.—Incorporated 1893. Authorized capital \$200,000. 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. Flead 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. Value of machinery, plant and building, \$14,000.

Tom Payne Consolidated Mining Co., Ltd.— Capital \$1,000,000, divided into 1,000,000 shares of \$1 each. Head Office: Rossland. Directors: F. M. Davis, F. B. Shav., B. E. Gillespie, A. J. Shirley. Formed for the purpose of acquiring the "Tom Payne" and "Myrtle" mineral claims, situated on Wild Horse and Porcupine Creeks, tributaries of Salmon River in the Nelson Mining Division of British Columbia.

Toquart Mining Co., Ltd.—Authorized capital \$50,000. Head Office: Victoria, B.C. Formed to purchase the "Great Expectations" and "Equinox" claims in the Alberni District, British Columbia.

Toronto Mining Syndicate.—Capital, \$1,000,000. Shares \$1.00 each. Directors: John A. McGillivray, Alfred Ansley, Wm. K. McNaught, Thomas W. Dyas, Hugh C. McLean. Head Office: Toronto, Ont.

Toronto Tudor Mining Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Directors: Appleton J. Pattison, James W. Curry, Frederick Diver, George R. Warwick, Arthur F. Rutter. Head Office: Toronto, Ont.

Trail Creek Gold Syndicate, Ltd.—Registered 30th September, 1896. Authorized Capital, £1,000, in shares of £1; 757 shares have been issued and are fully paid. Head Office: 110 Cannon St., London, E.C.

Trustees: Edward W. McKim, Jas. Fitzsimmons, W. H. Armstrong. Head Office: Vancouver, B.C.

Trixie Mining Co, Ltd:—Registered 10th July, 1897. Authorized Capital, \$1,000,000. Head Office: Rossland, B.C.

Trout Lake Mines and Milling Co.—Capital, \$250,000, divided into 1,000,000 sharess of 25 cents each. Head Office: Vancouver, B.C. Directors: Wm. J. Page, J. W. Campion, Charles Stinson. Formed for the purpose of mining in British Columbia.

Union Investment Co., Ltd.—Capital, \$50,000 Shares \$100.00 each. Trustees: J. A. Kirk, T. S. Gilmour, A. F. Corbin, S. P. Thompson. Head Office: Rossland, B.C.

Union Jack Gold Mines Co. of Foley, Ontario, Ltd.—Incorporated 27th August, 1897. Authorized Capital, \$150,000, in shares of \$1.00 Incorporators: E. Bristol, W. H. Cawthra, G. B. Burns, R. A. Smith, G. W. Beardmore, A. O. Beardmore, all of Toronto.

Utica Group Mining and Developing Co., Ltd.—Capital, \$1,000,000. Shares \$1.00 each. Trustees: W. A. Campbell, C. J. Campbell, Thos. Anderson. Head Office, Rossland, B.C.

Vancouver and British Columbia General Exploration Co., Ltd.—Registered 1896. Capital £25,000, divided into 25,000 shares of a value of £1 each. Head Office: 20 Threadneedle Street, London, England. Agents in Canada: Evans, Coleman & Evans, Vancouver, B.C.

Vancouver and Boundary Creek Development and Mining Co., Ltd.—Capital \$500,000. Shares 25 cents each. Trustees: Chas. Wilson, C, S. Douglas, Robert Wood. Head Office: Vancouver, B.C.

Vancouver-London Mining Syndicate.—Capital \$250,000. Shares 50 cents each. Trustees: Thos. Mathews, L. N. Mackechnie, Jas. B. Smith, Jas. Ramsay. Head Office: Vancouver, B.C.

Vavasour Mining Association.—T. F. Nellis, Metcalfe Street, Ottawa, President. The property is situated on lot 10 in the 21st range of Hull, near the village of Cantley. Opened lince May, 1891, and has produced over 300 tons of merchantable mica. Several hundred tons of phosphate of high grade are on the dump, waiting an improvement in market. There are four veins of calcite, pyroxene and apatite running in a north-north-easterly direction with a dip of 45 degrees east, one of which has been followed for a distance of 1,646 feet, the size varying from 3 feet to 15 feet. Considerable work has been done, consisting at date chiefly of an opening 200 feet and shafts of 90 feet and 70 feet respectively into a gallery of 80 feet. The principal vein has been opened for a length of over 400 feet. There is a cutting shop at the mine. A small force employed.

Victoria and Kootenay Mining and Development Co., Ltd.—Capital, \$100,000. Shares, \$1.00 each. Directors: Geo. Riley, Richard Hall, Stephen Jones, Head Office: Victoria, B. C.

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 \$50.00 each. Directors: Wm. Gibson, Williamsport, Pa., President; J. C. Fender, Chester, Pa., Treas.; Hon. Gardener G. Hubbard, Washington, D.C.; W. F. McCurdy, Baddeck, C.B. Head Office: W. F. McCurdy, Resident Manager, Baddeck, B. C. 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:—

730 acres at North Gut, St. Ann's; 725 acres at South Gut and Monroe'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 Washaback 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 two miles from the quarries to wharf, equipped with locomotives, cars, etc., the whole estimated to have cost in the vicinity of \$30,000. 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 15 ft. of water at low tide, and at the other 21 ft. The quarries are situate about eight miles from the quarries at Port Bevis. Both the harbors of St. Ann's and Fort Bevis are very easy of access and may be called perfect harbors for large or small vessels. Capacity for shipping at Port Bevis wharf, 400 tons per day.

Victoria Mining and Development Co., Ltd.—Incorporated 1897. Capital, \$1,000,000, divided into 10,000 shares of \$100 each. Directors: John Bryden, Victoria; M. McGregor, Victoria; J. E. Martin, Victoria. Chief place of business, Victoria, B.C.

Victoria Tripolite Co., Ltd.—Incorporated 1896. Authorized Capital, \$7,000. Directors: J. D. Copland, Frank T. Lemoine, W. J. B. Bingham. Head Office: North Sydney, Cape Breton. Formed to mine tripolite in the Province of Nova Scotia.

Viking Gold Mining Co., Ltd.-Capital, \$100,000, in shares of 10 cents Canadian Office, Slocan City, B.C.

Wakefield Mines, Ltd.—Registered in B.C., 5th April, 1898. Authorized Capital, £100,000. Formed to adopt an agreement between the West Kootenay (B.C.) Exploring and Mining Company and Hugh Moncrieff, and to carry on min-Canadian Office: David Brenner, Manager, Silverton, B.C.

Walla Walla Mining, Milling and Smelting Co., Ltd.-Registered 21st March, 1898. Authorized Capital, \$300,000. Canadian Agent: Smith Curtis, Rossland, B.C.

Webbwood General Mining and Development Co., Ont , Ltd. - Capital, \$490,000. Shares \$1.00 each. Directors: Geo. Bayes, Alex. Beck, John Robinson. Head Office: Webbwood, Ont.

Wentworth Gypsum Co., Ltd. - Incorporated by an Act of the Legislature of Nova Scotia, 19th May, 1891. Authorized Capital, \$200,000, in 200 shares of \$100 each. Clarence H. Dimock, Manager and Treasurer; E. Norman Dimock, Secretary. Head Office: Windsor, Nova Scotia. 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. Two hundred persons employed Owns and operates a line of railway, locomotives and rolling stock, connecting with shipping wharves about two miles distant from quarries. The equipment comprises two cable derricks, each having a span of 1,025 ft. and of a capacity of 500 tons per day, electric rock drills and other plant. The annual output is about 100,000 tons.

Western Canadian Gold Fields Co., Ltd. - Incorporated 12th August, 1897. Authorized capital, \$250,000 in shares of 10 cents each. Head Office: Nelson, B.C.

West Kootenay (B.C.) Exploring and Mining Co. - This company was registered in Edinburgh, Scotland, on the 17th March, 1897, to carry into effect an

agreement with A. H. Bremner, stock broker, Glascow, for the acquisition of certain mineral rights in British Columbia. Head Office: 40 West Nile Street, Glasgow, Scotland. The properties comprise the "Exchange" group, "Bachelor" group, and "Wakefield" group, Slocan district.

West Le Roi and Josie Consolidated Mining Co., Ltd.—Registered 2nd December, 1897. Authorized capital, \$500,000, in shares of \$100. Canadian Agent: C. F. Jackson, Rossland, B.C.

White Bear Gold Mining and Milling Co., Ltd.—Authorized capital, \$2,000,000, in shares of \$100. Canadian Office: Fred. J. Stewart, Secretary, 30 Victoria St., Toronto. Owns the "White Bear" claim, near Rossland, B.C.

White Grouse Mining Co., Ltd.—Registered 20th January, 1898. Authorized capital, \$1,000,000. Canadian Agent: H. L. Sawyer, Pilot Bay, B.C.

Yale and Kootenay Mining Co., Ltd.—Capital, \$100,000. Shares \$100 each. Trustees: Angus McNish, William Brown, A. C. Sinclair. Head Office: Rossland, British Columbia.

Yankee Doodle Mining Company of Toronto, Ltd.—Incorporated 22nd September, 1897. Authorized capital, \$45,000, in shares of \$1.00. Incorporators: Robert Kilgour, Lloyd Harris, John Pugsley, John Wolfe, C. B. Nicolson, F. C. Kaye, J.B. Coulthard, all of Toronto; and John R. Barber, Georgetown.

Yankee Girl Mining Co., Ltd.—Capital, \$1,000,000, divided into 1,000,000 shares of \$1.00 each. Directors: J. Henry, M. W. Garrison, A. Lucas, G. C. Marsh, and H. W. Bucke. Head Office: Kaslo, B.C. Formed for the purpose of mining in British Columbia.

Yukon Mining, Trading and Transportation Co., Ltd.—Capital, \$10,000. Shares \$10 each. Head Office: Wilmington, Delaware.



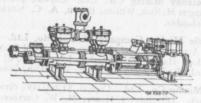
Write for Quotations

Northey Wanufacturing Co.

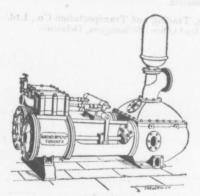
TORONTO, ONTARIO.

Mining... Pumps

FOR ALL DUTIES



Pot Valve Pattern



Regular Duplex

Write for Quotations

Northey Manufacturing Co.

TORONTO, ONTARIO.

The Snow Steam Pump Works

MANUFACTURERS OF

STEAM PUMPS, PUMPING ENGINES AND HYDRAULIC MACHINERY

General Agents for Canada: DRUMMOND, McCALL & 60., Montreal. Local Agent: F. R. MENDENHALL, Rossland, B. C.

Pumps kept in stock at Montreal and Rossland.

Canada Iron Furnace Company, Limited

... Manufacturers of ...

CHARCOAL PIG IRON

(From the Famous Ores of the Three Rivers District)

OFFICE: CANADA LIFE BUILDING, MONTREAL, QUE.

GEORGE E. DRUMMOND, Managing Director.

Plants at Radnor Forges, Que., Grandes Piles, Que., Lac-a-la-Tortue, Que., Three Rivers, Que., La Peche, Que.

Montreal Car Wheel Company

MANUFACTURERS OF

RAILROAD CAR WHEELS

Offices: CANADA LIFE BUILDING, MONTREAL.

Works: LACHINE, Que. THOMAS J. DRUMMOND, General Manager.

DRUMMOND McCall Pipe Foundry Co. Limited.

MANUFACTURERS OF

CAST IRON PIPES, SPECIAL CASTINGS, ETC.

WORKS: LACHINE, QUEBEC.

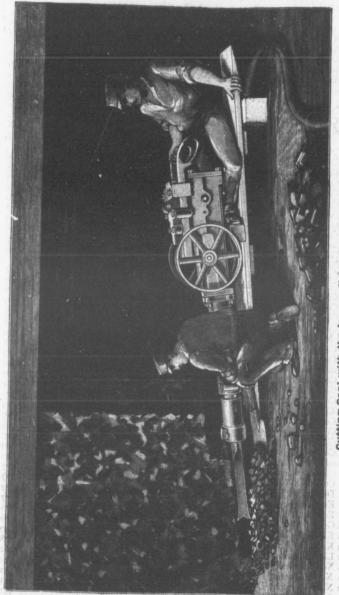
OFFICES: CANADA LIFE BUILDING, MONTREAL.

Ludlow Hydrants, Valves, etc., always on hand.

INDEX TO COMPANIES.

| | PAGE | ALTONO THE PROPERTY OF THE PARTY OF THE PART | |
|--------------------------------------|---------|--|--------|
| Aaron's Rod Mining and Develop't | FOL | | AGE. |
| Abbotsford Gold | . 534 | Arlington Gold and Copper | 371 |
| Abe Lincoln Gold | . 369 | Arington Silver Mine | 460 |
| Abraham Lincoln Gold | . 309 | Aspestos and Asbestic | 507 |
| Acadia Coal | . 309 | Aspestos Mining and Manufacturing | CTT |
| Acadia Gold Reduction | . 36 | Associated Gold Mines of B. C. | EZE |
| Active Mining and Development | . 309 | | |
| Active Mining and Development | . 309 | Atlas and Huntingdon Dev. Synd | FOF |
| Adamant Manufg. Co. of America. | . 534 | Atlas Milling and Development | EDE |
| Adams British Columbia | 416 | Austen and others | 371 |
| Adams Mining | . 534 | APRILLI ANTHONE | 1 |
| A. D. 2 Gold
Adventurers of B. C. | . 369 | Sadger Tourmaline Con | - |
| Adventurers of B. C | . 534 | Baker Gold Mine
Bald Indian Bay Mining and Invest. | 371 |
| Agnes Hydraulic | . 360 | Bald Indian Bay Mining and Invest. | 371 |
| Ajax Mining and Development | 534 | Darrachols Gold. | 3 m . |
| Alabama Hydraulic | 369 | Dath Island Wilning. | F 3 F |
| Alabastine Co | E-2 A | Dear Lake Consolidated | 160 |
| Alaska Gold Fields | 534 | D. C. and Dominion Exploration | P -3 P |
| Albany Gold | 260 | D. C. Development. | F 26 |
| Alberni Gold Dev. Syndicate | 360 | | |
| Alberta and Kootenay Dev | 534 | D. C. Gold Fields Exp. Dev & Invest | P36 |
| Alberta Gold | 260 | B. C. Syndicate | 530 |
| Alberta Railway and Coal. | 40 | Beatty Gold Dredging | 530 |
| Albert Manufacturing | 524 | Beaudette Gold | 372 |
| Alberni Gold | 360 | Beaudoin Chromite Mine | 372 |
| Albion Mining | F 2 4 | Beaver Asbestos | 150 |
| Alexandria Colliery. | 4.4 | Belcher Consolidated Gold | 512 |
| Alexandria Mining and Dredging | 300 | Bell's Asbestos | 530 |
| All Gold | 270 | Bertie Natural Gas | 512 |
| Algonquin Con. M. and Dev | 524 | Rig Rend Gold | 485 |
| Alhambra Gold and Copper | 270 | Big Bend Gold | 372 |
| Alki Gold | 270 | Big Bump | 536 |
| Alliance Prospecting Synd. of B.C | 525 | Big Manitou Mining and Dev | 372 |
| Allison Ranch Hydraulic | 270 | Big Six Gold and Copper | 372 |
| Allison Ranch Hydraulic | 370 | Big Three Gold | 373 |
| Alpha Silver Mine. | 469 | Blackburn Miss Miss | 235 |
| Alwilda Gold Mining and Develop't | 270 | Diackbulli Mica Mine. | F 76 |
| Amazon Gold Mining and Milling | | Black Creek Hydraulic | 373 |
| mazon Gold Mining and Smelting. | 535 | Black Current Mining Co. | 536 |
| Ambrose Mining and Development. | 370 | | |
| Imbrozine Gold Mines | 270 | Black Prince Gold | 373 |
| American Eagle Gold | 370 | Divided & Roberge (Chromita) | w w.C |
| mherst Prospecting and Mining | 370 | Blue Bird Mining | 469 |
| anaconda Consolidated Gold | 535 | Blue Eyed Nellie Gold | 373 |
| Inderson Gold Mine | 535 | | |
| anderson Gold Mine | 370 | Dollatiza Mountain | 200 12 |
| inglo-Canadian Asbestos 156, | 500 | Bondholder Mining Bon Diable Mining | 160 |
| inglo-Canadian G. M. and Dev. Co. | A 42 LL | Bon Diable Mining | 36 |
| of Brantford, Ont | | Doston and Nova Scotta Coal | AA |
| ntler Creek Gold | 371 | Dotnwell Oil and Gas Co. | 146 |
| ntoine Silver Mine | 469 | Doundary Creek Mining and Milling | 200 |
| pex Gold Mining and Development | 303 | Boundary rans mining. | 3773 |
| rganaut of Kootenay | 3/1 | Doundary Helen Gold | 2 00 4 |
| rgentine Gold | 535 | Boundary Mines, Ltd | 274 |
| rgo Mines of Sandon | 469 | Bozedown Silver | 160 |

Air Compressors, Rock Drills, Ore Crushers



Complete Mining, Tunnelling and Quarrying Plants.

MANUFACTURED BY THE JAMES COOPER MANUFACTURING COMPANY, LTD., Cutting Coal with the Ingersoll-Sergeant Coal Cutter.

| PAGE | DAGE. |
|--|--|
| Brandon and Golden Crown 238 | TAGE. |
| Bright Prospects Gold Mining and | Brown Bear Cold |
| Development | Bruce Gold 375 |
| Britannia Mining 421. 536 | Bruce Gold |
| Dritish America Corporation 238 | Buckingham Gold |
| British America Development 536 | Buffalo Gold |
| British American Exploration & Gold 536 | Buffalo Mining Co. of Slocan |
| British American Gold 374 | Buffalo M. and Dev. of Rat Portage 276 |
| British and Canadian Gold and Silver | Bunker Hill and Sullivan 376 |
| Mines 537 | Bunker Hill and Blackwood 540 |
| British Columbia Agency 537
British Columbia and Canada Gold | Burrard Mining Association, 540 |
| British Columbia and Canada Gold | Burley Gold, of Ottawa |
| Mining Syndicate 537 | Bushnell Co |
| British Columbia and New Find | Byron N. White Co 417 |
| Gold Field Corporation 374 | |
| British Columbia Bullion Extraction 374 | Caledonia Consolidated Gold 376 |
| British Columbia Copper 177 | Caledonia Gold Mining Association, 376 |
| British Columbia Development Assn. 537 | California Gold |
| British Columbia Exploration, Ltd. 537
British Columbia Finance and Min'g 537 | Cambridge Gold 376 |
| British Columbia Financial Trust and | Cameronian Gold and Silver 376 |
| Cenoral Corporation | Camp Hewitt M. and Dev 377 |
| British Columbia Gold Fields Exp. 537 | Camp McKinney Development 540 |
| | Canada Coals and Railway Co 46 |
| British Columbia Gold Discovery 375, 537 | Canada Iron Furnace |
| British Columbia Gold Fields M. & M. 537 | Canada Prospecting and Mining 540
Canada Rolling Mills and Horseshoe |
| British Columbia Gold Prospecting 375 | Works |
| British Columbia Gold Syndicate 275, 527 | Canada Venture Syndicate 540 |
| British Columbia Gold Trust . 375, 537 | Canadian Anthracite Coal 48 |
| British Columbia Exp. and Gold Est. 375 | Canadian Copper |
| British Columbia Land Exp. & Dev. 538 | Canadian Gold Fields245 |
| British Columbia, London and Koo- | Canadian King Gold 540 |
| tenay M. and Dev 538 | Canadian Mining Syndicate 540 |
| British Columbia Mineral Properties 538 | Canadian Pacific Exploration 247 |
| British Columbia Mining and Devel- | Canadian Pacific Mining and Milling 423 |
| opment Syndicate 538 | Canyon Gold and Silver |
| British Columbia Mining 538 | Cape Breton Colliery 49 Cape Breton Copper 184 |
| British Columbia Oil 486 | Cape Breton Copper 184 |
| British Columbia Exp. Syndicate 538 | Carbonate Mountain M. and M 460 |
| British Columbia Ore Sampling 538 | Carbonate Silver Mining 469 |
| British Columbia Purchase 538
British Columbia Proprietory 538 | Cariboo Creek & Canadian M. & Dev. 540 |
| British Columbia Prospectors 539 | Cariboo Creek Mining 469 |
| British Columbia Southern Prospect- | Cariboo Gold Fields |
| ing and Dev | Cariboo Mining, Milling and Smelt'g. 260
Cariboo Reefs Development 540 |
| British Columbia Syndicate 539 | Caribon Gold Mining |
| British Columbia Tunnel and Dev 539 | Caribou Gold Mining. 377 Carnes Creek Consolidated . 377 Cassiar, Cariboo and Kootenay M 377 Castle Municipio and Footenay M 377 |
| British Dominions Exploration 539 | Cassiar, Cariboo and Kootenay M |
| Mystich Russian Ringman Composation was | Castle Mountain M. and Dev 377 |
| British Empire Mining | Cayoose Creek Mines |
| British Gold 375 | C. B. & Q. Gold M. and Dev 278 |
| Diffish Klondyke Mining & Finance 539 | C. C. & I. M. and Development 540 |
| British Kootenay Exploration Synd. 539
British Lion M. and M 375 | Central Rawdon Mining 378 |
| British Lion M. and M 375 | Central Rawdon Mining |
| British North America M. and M 375 | Central Exploration 540 |
| British North America M. and Dev. 375 | Central Ontario Mining 541 |
| British North-Western Development 539 | Charleston Mining |
| British Queen Gold Mines 539
Broad Cove Coal 45 | Charleston Mining 541 |
| Broad Cove Coal | Chehalis Mining |
| A STATE OF THE PROPERTY OF THE | Complete Mining, Lunner, |

9-96-30 M.-8.F.M.

SPOKANE NORTHERN TELEGRAPH COMPANY.

All Messages Taken by this Company are Subject to the Following Terms:

All Messages Taken by this Cempany are Subject to the Fellowing Terms:

It is agreed between the sender of the following message and this Company shall not be liable for damages arising from failure to transmit or deliver of rom any eye of the sender of

Direct Connection with Atlantic Cables and Western Union Telegraph Company.

| Beceiver's No. | Time Filed. | Check. | L blob |
|-----------------------|-------------------|--|---------------------|
| end the following as | BOSSLAN | D, B. C. | 789_ |
| CANADI | AN RAND DR | ILE CO. | grindly. |
| il.
Hoing and Redi | SHERBRO | OKE, QUEBE | bista. |
| Danie yer | Depart Manel or | The state of the s | (blob) |
| Compre | seof Starte | Imp kerper | etly |
| ceepto | ny Since | congrate | eletis |
| by Duc | ha mags | up cent mi | ashin |
| and Investment | Man Eld | ell Rups | irish Co
und Cox |
| Meli | Len | Thine | n.i hen |
| V - E-/ // | Eganorous Rand Sa | E. ************************************ | |

Sherbrooke, Rat Portage, Que. TORONTO, ROSSLAND. ONT. HALIFAX, VANCOUVER N.S.

| P. | AGE. | p. | AGE. |
|---|------------|--|------|
| Chemical Manufacturing and Mining | | Crystal Gold Mining, of Rathburn | |
| of Ontario | 541 | Cumberland Railway and Coal | |
| Christina Cascade M. and Dev | 541 | Cambernata Ranway and Coat | 56 |
| Chrysolite Gold M. and Dev | 541 | Daphne M. and Dev | E42 |
| Cinnabar Mining Co. of B. C. | SAT | Dardanelles M. and M | 124 |
| Clarke-Seattle Gold | 378 | Darlington Bay Gold | 280 |
| Cliff Gold Mine | 262 | Deer Park Gold | 270 |
| Cliff Gold Mining
Climax Gold Mining of Ontario | 378 | Delacola Gold | 280 |
| Climax Gold Mining of Ontario | 378 | Del Ecuador Mines | EAR |
| Cochrane Hill Gold | 378 | Delia Mining and Milling | 543 |
| Cody-Slocan Mining and Milling | 54 F | Delta Mining and Development | 543 |
| Colcleugh Gold M. of Rat Portage. | 378 | Derby Mining | 543 |
| Cold Brook Rolling Mills | 122 | Derby Mining | 380 |
| Coleraine Mining 156,
Collona Gold Colonial Mines Dev. Co. of Canada | 541 | Diamond Hill Mines | 543 |
| Collona Gold | 378 | Diamond Jubilee Exp. M. and Dev. | 343 |
| Colonial Mines Dev. Co. of Canada | 541 | Co. of Toronto | 543 |
| Columbia Cariboo Gold Mining | 378 | Co. of Toronto
Diamond Jubilee M. and Dev. Co. | 343 |
| Columbia and Western Syndicate | 541 | of B.C. | 544 |
| Columbia Gold Fields Prospecting | | Dollarocracy Mining and Smelting | 380 |
| and Dev | 542 | Dominion and B.C. Minerals Syndic. | 544 |
| Columbia Hydraulic | 542 | Dominion Coal | 60 |
| Columbia Limited | 542 | Dominion Developing and Mining | 544 |
| Columbia Mineral and Mines Ass'n. | 542 | Dominion, Fairview and Golden | |
| Columbia Mining of Canada | 542 | Klondyke Syndicate | 544 |
| Columbia Mining of Victoria | 542 | Dominion Gold & Silver Mines Dev. | 544 |
| Combination Mining and Milling | 542 | Dominion Gold Dredging and Placer | 381 |
| Combined Gold Mines of Ont | 379 | Dominion Mineral | 186 |
| Commander Mining and Smelting | 379 | Dominion Gold Mining and Reduct'n | 272 |
| Commonwealth M. and Dev | 379 | Dominion Mining, Dev. and Agency | 544 |
| Comstock Gold M. and Dev | 379 | Donald Prospecting and Developm't | 544 |
| Comstock Mammoth Quartz Mining | | Double Eagle M. and Dev. | 544 |
| and Milling, of Fairview | 542 | Dragon Creek Mining Drury Nickel Mining and Milling | 544 |
| Comstock M. (British Columbia) Ltd. | 542 | Drury Nickel Mining and Milling | 188 |
| Consolidated Alberni Gold | 379 | Dry ben Mining and Mining | 409 |
| Consolidated Cariboo Hydraulic | 264 | Duncan Mines | 278 |
| Consolidated Gold Fields of B.N.A. | 542 | Dundee Gold | 381 |
| Consolidated Gold Fields of Canada | | Dundurn Gold | 381 |
| and British Columbia | 542 | Dunlop Mining and Investment | 544 |
| Consolidated Goodenough and Ruby
Gold | 10-40 | and the same of th | |
| Campalidated T. J. Mill. | 379 | Eastern Townships Chrome Iron M. | |
| Consolidated Lake Mining | 379 | and Milling | 545 |
| | | East Kootenay and Elk River Dev.
and Exploration | |
| C - 1'1 - 1 C 31' | 542 | and Exploration | 544 |
| Cordova Evploration 127 2417 7A TM 186 | 379 | East Kootenay Mining and Dev | 545 |
| Cordova Exploration. | | East Kootenay Exploration Syndicate | 544 |
| Cornwallis Mining and Development | 424 | Eastville Gold Mine | |
| | | East Waverley Tunnel | 381 |
| Cottonwood River (B.C.) Alluvial | 380 | Echo Mining and Milling | 545 |
| Gold Q | 242 | Economic Gold and Nickel Pyritic | 9810 |
| | 543
380 | Elarton Salt Works | 545 |
| C. P. F. Mining Associates. | 280 | Smelting, of Sudbury | 545 |
| | 543 | Elk Gold Mining of Cariboo, CLIMAN | 301 |
| | 80 | Elkhorn Silver | 301 |
| | 143 | Elkhorn Silver | 470 |
| Crown Warehousing | 187 | Emmire Mining and Milling | 20+ |
| Crow's Nest M. and Dev. of Ontario | 43 | Empress GoldXA | 381 |
| Crow's Nest Mining | 260 | Empress of India Mining | 282 |
| Crow's Nest Pass Coal | 50 | Emu Mining Syndicate | 502 |
| Crow's Nest Pass Mining Co 5 | 543 | Emu Mining Syndicate
English and French Gold | 282 |
| , | 113 | Burn and rienen dold | 302 |

| | Erie Mining and Milling Essex Gold Mine | AGE. | | PAGE |
|-----|---|-------|---|--------|
| | Essex Gold Mine | 545 | Golden River Quesnelle | 20 |
| | Essex Gold Mine
Ethel Group Gold M., of Rossland. | 382 | Golden Star Mining and Exploration | nn 10 |
| | Eureka Congentiation, of Rossland. | 382 | Golden Wedge | 28 |
| | | | Gold Exp. and Dev. Synd. of B.C. | 54 |
| | | | Gold Explorers of Canada 38 | 5 54 |
| | | | Gold Fields of British Columbia | 3, 34 |
| | | | Gold Hill Mining | |
| | | | Gold Hill Quartz of Fairview | - 54 |
| | | | Goldie-Rene Mining | . 50 |
| | Excelsior Gold | 382 | | |
| | Exchequer Gold Mining | 383 | Good Friday Gold | . 470 |
| | | | Good Friday Gold Good Hope Mining and Milling Gopher Gold Gore Lawn M. and Dev. of Toront | . 38 |
| | Fairfield Exploration Syndicate 5 | 145 | Gopher Gold | 547 |
| | | | Gore Lawn M. and Dev. of Toront | . 385 |
| | Fairview | 80 | | |
| | | | Grace Darling Gold | . 386 |
| | | | Grand Forks Cold | . 426 |
| | | | Grand Forks Gold | . 386 |
| | ravourite Gold M and Dou | 82 | Grand Prize Mining | - 547 |
| | reducti Willing and Development | | Grand River Plaster | . 547 |
| | Ten Gold Milling and Milling | 82 | Grand Union Mining and Dev | . 548 |
| | Finance Gold | 0.0 | | |
| | | 00 | Great Commonwealth Dev. and M | PAR |
| | and Smelting and Smelting 48 | 70 | Great Granite Gold Mining and Dev. | 101 |
| | riorclice Willing and Dev of Sloom | | of Ontario | 548 |
| | roley Gold Mines of Ontario | 3 | Great Northern Gold M and Day | |
| | roley Milles Exploration of Ontania | | of Rat Portage | 386 |
| | Forfarshire Mines 54 | 6 (| Meat Western Wines | 200 |
| | Forfarshire Mines | 0 (| ireat Western Mining | 548 |
| | | | | |
| | Trascr Niver Consolidated -o | 4 | Sypsy Queen Gold | 548 |
| | Fraser Kiver Gold Mine | | | |
| | Frederick Arm Mining 54 | 6 1 | dalifax Mining | 386 |
| | | 0 1 | Tall Exploration of B.C | 548 |
| | Frechette (Chromite) Mine 150 | | | |
| | | | tail I. I. (Chromite) | PHE. |
| | Galena Farm Mining 470 | ~ L | raumton and Rossland Gold | 286 |
| | | | Iamilton Blast Furnace | 122 |
| | | | lamilton Iron Mining | 548 |
| | General Willing Association | O I | tallimond trold Reet | |
| | Giant Mining | 9 I | larrison black Diamond | P . O |
| | Gibson Mining and Milling | | dastings (Dritish Columbia) Evplor | FAQ. |
| | | | astings offiver Lead . | AMO |
| i | Glasgow and Montreal Ashestos 516 | , 11 | attle brown Gold | F48 |
| - 2 | Gien fron Wining | 41 | awk Day | 206 |
| 1 | Globe Mining | II | lawatha Gold Mining and Milling | AOH. |
| - | Globe Mining | 11 | igiliand Group Mining and Dev | F.O. |
| | | | ign Ole Gold Milling & Smelting | 206 |
| | | 111 | uiside Silver | |
| | | 22 | mekiey and Diack Liold | H |
| (| Golden Cache Mines | 4.4 | omestake Gold | 200 |
| , | Joine Chain Prospecting and They 28. | LI | opewell Gold | ~O- |
| ١, | Joiden Crown Mining and Smelting Fin | 4.45 | Dischy Gold Wilning | 2 |
| (| Goldendale Mining | TI | orsefly Hydraulic
bb Gold Mining and Development | 300 |
| (| Golden Eagle Consolidated 547 | III | Gold Mining and Development | 387 |
| (| Golden Eagle Mountain Cold | H, | W. McNeill | 78 |
| (| Golden Group | 8,0 | Attainer and Smelting 38 | tori V |
| 0 | rolden Lode 288 | I be | x Gold | 287 |
| G | 547 Golden Eagle Mountain Gold 384 Golden Group 288 Golden Lode 384 Golden Province Mines of B.C. 288 | 1 Ibe | ex Gold | 540 |
| - | 288 | Ida | Queen Gold | 187 |

| | | PAGE. | | |
|-----|---|----------|---|------|
| | Imperial Gold | | | AGE. |
| | Imperial Gold Mining and Dev. Cor- | 387 | Klondyke, Yukon & Stewart Pione'rs | 551 |
| | poration of Ontario | | Knob Hill Gold | 307 |
| | poration of Ontario | 549 | Nokanee I reek Mining and Milling | 470 |
| | Imperial M. and Dev. Co. of Ontario | | Koohinoor Gold | 388 |
| | Imperial Oil | 488 | Kookanee Gold | 389 |
| | Incorporated Exploration Co. of B.C. | | Kootenay and Cariboo Mining Syn. | 552 |
| | Incorporated Gold Mines of B. C | 549 | Kootenay & Columbian Gold Fields. | 552 |
| | Independent Mining Co | 549 | Kootenay and North-West Mining | 552 |
| | Indian Chief Gold | 387 | Kootenay and Slocan Prospecting | |
| | Industrial Mining, Dev. and Invest. | | and Promoting | 552 |
| | Co. of Toronto | 549 | Rootenay (B.C.) Mining Syndicate. | 552 |
| | Ingersoll Mining | 549 | Kootenay Company | 552 |
| | Intercolonial Coal | 78 | Kootenay Development | 552 |
| | International Devel. Corporation | 549 | Kootenay Gold Fields Syndicate 380. | 552 |
| | International Mica and Mineral of | | Kootenay, Gold, Silver and Corper. | EEO |
| | Ontario | 550 | Kootenay London Mining | 552 |
| | Inter-Ocean Mining and Prospecting | | Rootenay Mine Exploration | 552 |
| | of Ontario | 550 | Kootenay Ore | 552 |
| | Investors' M. and Dev. Co. of Ont | 550 | Kootenay Promotion Syndicate | 553 |
| | Invicta Gold Mines | 550 | | HID |
| | Iowa Mining and Milling | 550 | Lady of the Lake Gold (of Ottawa). | 380 |
| | Island Mountain Gold Mines | 550 | Lake Caribon Chrome | 156 |
| | Irish Proprietory Oil Fields of Gaspé | 488 | Lake Erie Oil and Gas | 489 |
| | Iron Colt Gold | 387 | Lake Koo-Ka-Gaming M. and Exp. | 389 |
| | Iron Horse Mining and Milling | 387 | Lake of the Woods Gold Mines Dev. | 280 |
| | Iron Mask Gold 306, | 387 | Lake Shore Mining | FFO |
| | Iron Mask Gold 306,
Island Mountain Gold | 388 | Lake Superior Mines Dev | 280 |
| | Ivanhoe Gold | 388 | Lardeau Goldsmith Mines | 200 |
| | Mor server error Dio Astronomy | STORY OF | Lardeau M. and Dev | EES |
| , | Jackfish Bay Syndicate | 550 | Lardeau Trout Lake M. Syndicate | 553 |
| | Jackson Mines | 550 | La Kegina Gold | 200 |
| | John Dwyer Gold Mining of Toronto | 550 | Last Chance Mining and Milling
Lee Mines of Slocan | 390 |
| | John E. Redmond Mining | 550 | Lee Mines of Slocan | 4,30 |
| | Johnson's Company (Asbestos) | 516 | Legal Tender M. and Dev 440, | 553 |
| | Iubilee Gold Mines | EET | Lemelin (Chromite) Mine | 353 |
| | lubilee Gold M. and Dev. of Ontario | 288 | Lemieux (Chromite) Mine | 156 |
| 1 | lumbo Gold 307, | 388 | Leonard (Chromite) Mine | 156 |
| | | Man I | Le Roi Mining and Smelting | - 12 |
| 1 | Kabaskong Gold | 388 | Le Roi Mining and Smelting Lexington Mining and Milling | 308 |
| - 1 | Namioops Copper | 100 | Lightening Creek Gold Gravels | 553 |
| | Kamloops M. and Dev | 551 | Lillooet, Fraser River and Cariboo | 390 |
| ı | Kasier Gold and Silver | 551 | Gold Fields | 210 |
| -] | Kaslo Development | 470 | Lily May Gold | 310 |
|] | Kaslo Slocan Development | 470 | Lily May Gold
Lodestar Gold M. and Dev | 310 |
| 1 | | 551 | London and B.C. Alliance Syndicate | |
|] | Kekionga Mining and Development. | | London and B.C. Corporation | 553 |
|] | Kenneth Mining and Development . | 551 | London and B.C. Exploration | |
| 1 | Kettle River Mining and Develop't. | 551 | London and B.C. Gold Fields | 553 |
| | Ceystone Gold | 551 | London and Vancouver Finance and | 316 |
| | Kimberley Mining and Milling | 551 | Development | *** |
| 1 | King Bros. (Asbestos) | 517 | Development | 553 |
| 1 | King Bros. (Asbestos) | 388 | London Hill Development & Mining | 129 |
| 1 | | 551 | London Oil | 440 |
| 1 | King Solomon Mines | 388 | Loyal Canadian Gold and Copper | 490 |
| 1 | Kingsville Natural Gas and Oil | 180 | Lucky Boy Mining and Development | 390 |
| 1 | | 388 | Lucky Boy M. and M. and Dev | 470 |
| 1 | Clondyke and NW. Territ. Expl. | 551 | Doy M. and M. and Dev | 470 |
| I | Clondyke M., Trading and Trans- | 22. | Mackenzie I ake of the Woods Class | 11 |
| 1 | port Corporation | cer | Mackenzie Lake of the Woods Gold | 390 |
| | r Position is it is | 334 | Macleod Gold and Silver | 554 |
| | | | | |

| PA | GE. PAGE |
|--|--|
| Mammoth Gold (of Ontario) | · Man |
| Maritime Exploration Co. of D. G. | 91 Nelson and Ontario Prospecting and |
| | Development 556 |
| | |
| Megatherium Gold of Jackfish38 | - D |
| | |
| McConnell Mining 30 | Nelson Slocan Prospecting and M. 556 |
| McConnell Mining | Neosho Mining |
| | |
| | I New Brunswick Mining and Dev Fra |
| Colopolitati Kolling Mills | 0 17 7 |
| | 6 Newfoundland and Canadian Explor- |
| | I ation Trust re6 |
| Miller Creek Mining | 4 New Braser River Gold 221 FFF |
| Mineral Ring M. and Dev | 1 New Glasgow Kiver Gold 222 |
| | 4 New Gold Fields of B.C 332 |
| | New Jerusalem Mining 557 |
| The same of the same and warnie | New Ontario Mining and Dev 557 |
| and Hospectors Evp & Day | . N. D. 11 100 |
| | |
| AND THE COUNTY OF CONTRACT OF | A CONTRACTOR OF THE PROPERTY O |
| The secretion Co. of Loronto | . NT 171 . CI 12 |
| and Exp. (o of R (| 17 77 10 |
| Trailes Liust of Brilish Columbia | 37 11 131 |
| Minimenana Gold | Niekel Ct : 1 CC : |
| Milocelle Gravel Mining of Cariboo | Nickel Plate Mining |
| Mira Monte Mining | Nickel Steel of Canada |
| Moir Granite | Nitinat Gold Mining and Dev 202 |
| MOHAICH CIOIC | Noble Five Con. M. and M 442 |
| Montana Gold | Noblesse Gold 392 |
| | Noble Three Mining. |
| Montreal and B.C. Prospecting and | Noonday Gold |
| I (Omorino | North American Graphite 558 |
| and the state of t | North American Mining 558
Northern Giant Mining 558 |
| And Modernay | Northern Light Gold |
| Montreal London Gold and Silver | Northern Untario Development |
| Development 327 | Northern Ontario Gold 393 |
| Montreal Rolling Mills Co | Northern Prince Mining. |
| Moose River Gold | North Fork Gold Mining. |
| Morning Mining Co | North Star Mining |
| Mountain Chief Silver | North Star M. and Dev. of Toronto. EES |
| Mount Mabel Mining and Smelting 470 | TYOUR Sydney Mining and Trans |
| Mount Mabel Mining and Smelting. 470 Moyie Placer | North-West Pacific M. and Dev. 552 |
| Murphy Creek Gold | Tworthup Gold |
| | Nova Scotia Gypsum |
| Colborne | Nova Scotia Steel |
| Myers Flat Gold | Nugget Gold of Rat Portage 393 |
| | Observation Mountain Gold 393 |
| aucau et al. (Chromite) | Occidental M. and Exp. of Ottawa. 558 |
| Ivalianio Rossland Mining | Occidental M. and Milling 558 |
| Tranki-Foo Gold of Offawa | Ocean Mining and Milling. |
| Tradional Willing and Development | Okanagan and Kootenay Dev |
| Native Silver Bell | Oland Gold |
| Natural Gas and Oil of Ontario 491 | Old Dominion M. and Dev |
| on on on ontario 491 | Old Flag Gold |
| | |

| Old Gold Operts and Disease | PAGE | I'A | AGE. |
|-------------------------------------|---------|---------------------------------------|--------|
| Old Gold Quartz and Placer | . 394 | Prospecting Syndicate of B.C | 561 |
| Old Ironsides Mining 334 | , 394 | Providence M. and Dev. Co. | 561 |
| Old Provincial Gold | 394 | Province of B.C. Minerals Syndicate | 562 |
| Olga Gold Mining and Milling | 559 | Provincial Mining, Development and | |
| | | Investment Co. of Toronto | 160 |
| Omenica Con. Hyd. M. Co. | 225 | Provincial Natural Gas and Fuel | AME |
| Ontario and Western M. and Dev | EFO | Puget Sound Iron | 495 |
| Untario Exploration & Development | . www. | Pyramid Kootenay | 502 |
| Ontario Gold Estates | FFO | Pyrites Co. Ltd | 502 |
| Outailo Gold, Sliver and Conner | FFA | Carlo Landelle Sont March to the best | 502 |
| Untario Government Gold Con. | FFO | Quadra Mining and Milling | |
| Uniario Graphite | M 40 44 | Queen Bee Gold Mines | 502 |
| Ontario Lands and Uni | ACLY | Queen Bee Gold of Ottawa | 395 |
| Untario Limited | *** | Queen Bess Proprietory | 395 |
| Untario Miners' Development | FEO | Queen City Oil | 448 |
| Gutario Wilnes Assaving & Smelting | FFO | Queen of the Lakes Gold Mining and | 495 |
| Untario Peat Fuel | 560 | levelopment of Ontaria | |
| Children Trospectors M. and Dev | 460 | Ouespelle River Cold Dead- | 395 |
| Ontario Rolling Mill. | 140 | Quesnelle River Gold Dredging | 338 |
| Original Swede Boys | eho | Railroaders Gold of Ontario | |
| Officie Gold of Wabigoon & Saw-Rill | 260 | Kainy Day Cold | 562 |
| Oriole Syndicate | ran | | 395 |
| Oro Mining and Milling | 260 | | 395 |
| Ottawa and Ivanhoe Silver. | 471 | Rambler and Cariboo Consolidated | 562 |
| Ottawa Gold Willing and Mining | 226 | Gold and Silver | Na Li |
| Oxford Gold | 304 | | 153 |
| | | Kat Portage Gold | 562 |
| Pacific Bullion. | 560 | Keco Mining and Millian | 339 |
| racine Consolidated Gold | 201 | | 156 |
| Pacific Mining and Construction | 160 | | 62 |
| Paris Bell Gold | 160 | Rod Hoven and Cal D' care | 95 |
| ravne Group (Silver) | 116 | | 196 |
| raio Alto Gold | 204 | | 96 |
| ratinninger M., Red. and Invest | 204 | | 96 |
| ravo Consolidated Mines | 560 | | 63 |
| Pay Ore (B.C.) Mines | 160 | | 17 |
| Pelee Gas and Oil of Ontario | 102 | Kegino (Canada) Cald | 63 |
| Pelly-1 ukon Gold | 560 | R F Lee Cold | 39 |
| reopie's Light and Heat | 04 | | 96 |
| Peroria Mining and Milling | 561 | Kenublic Gold | 63 |
| Petroleum Oil Trust | | Revelstoke, Lardeau and Slocan M. 34 | 43 |
| Petrolia Crude Oil and Tanking | 493 | and Development | 62 |
| retrolla Oil | 470.4 | | 63 |
| Phœnix Consolidated | | Kichardson Gold | 96 |
| Phoenix Gold | 464 | | 44 |
| ricton Development Syndicate | PAY | Kin Grand Lold and Cilian | 63 |
| rictou Charcoal Iron | Y 12 PM | Piplay Mining | 96 |
| Pictou Dev. and M | 305 | Robinson Mining | |
| ranow & Hersey Mnfg | 146 | Robinson Mining | |
| Pilot Bay Mining and Development | 501 | Nochester Gold | 95 |
| Tine Kidge Gold Mining and Milling | 395 | Rock Creek Gold and Copper 56 | |
| | 561 | | |
| Pittsburg & Cariboo G. & Dredging. | | Roderick Dhu Gold | 144 |
| Pittsburg Gold | 395 | Rossland and Green Mountain Gold 39 | |
| Poorman Gold | 395 1 | | |
| Portiand Kolling Mills | C.434 1 | | |
| | | Kossland Homestake Cold | Sand I |
| Primrose Gold | 395] | Rossland Homestake Gold | 1 |
| Princess Gold of Ontario. | 38 1 | Rossland La Belle M. and Dev 39 | 4 |
| | | Rossiand La Belle M. and Dev 39 | / |

| | Include Del March and | PAGE | | AGE. |
|------|---------------------------------|------------|---|------|
| r | ossland Red Mountain Gold | . 397 | Slumach Mining | 566 |
| P | ossiand Slocan M. and Dev 1 | P6. | Smuggler Gold Mining and Milling. | 566 |
| - 15 | Ollette Mining and Milling | | Snowbird Mining and Development. | 473 |
| I, | oyal Canadian M. and Dev | 164 | Soo Mining and Exploration | 4/3 |
| 11 | upert Land M., of Ontario | 46. | Sophia Mountain Gold | |
| R | uth Minesuth No. II. Mining | . 304 | | |
| R | uth No. II. Mining | . 457 | Sovereign Gold M. and Dev | 399 |
| | | . 564 | Sovereign Mining | 399 |
| S | alisbury Gold | - | Spencer Con. M. Corporation | 500 |
| S | almo Con. Gold M. and Dev | . 397 | Standard Mining and Development. | 566 |
| S | almon River Consolidated | . 397 | Stanstead Granite Star Exploring and Mining | 566 |
| S | Imon River Cold | . 564 | Star Exploring and Mining | 458 |
| C. | almon River Gold | . 397 | Star Mining and Milling | 473 |
| . C. | almon River Valley | . 397 | Starmount Gold | 399 |
| C | mson Gold | 398 | Starmount Mining | 566 |
| 25 | ndon Mining and Milling | . 471 | Stellarton Gold | 350 |
| 28 | in Francisco Gold. | 208 | Sterling Mining and Milling | 566 |
| Sa | n Joaquin Gold | 208 | Stoneleigh Mining | 566 |
| Da | rnia Sait | 564 | Stratford Exploration and Dev | 166 |
| 29 | uit Ste. Marie Mining | E64 | Strathroy Petroleum | 106 |
| 28 | W Bill Lake Gold | 240 | Sudbury Gold | 490 |
| 200 | proeder Creek Con. M. and Dev | 264 | Sudbury Gold | 399 |
| Sc | ottish Colonial Gold Fields. | 128 | Sultana Gold | 500 |
| Sc | ottish Columbia Mining and Dev. | #50
#6# | Sultana Gold | 350 |
| SC | Ottish Mining and Invest. Corpn | rhe | Sunchine Mining of B.C | 399 |
| Se | ine River (Ontario Gold) 349, | 305 | Sunshine Mining | 473 |
| Se | kirk Mining and Milling | 390 | Surrey Mining and Prospecting | 500 |
| Sh | amrock and Thistle Mining | 4/1 | Sutherland Gold | |
| Sh | andon Bell G. M. and Dev | 505 | Sweden Gold | 399 |
| Sh | eba Gold M. and Dev. of Ontario | 398 | Sydenham Mica and Mining | 566 |
| Sh | ebandowan Gold M. and Dev | 505 | V. C | |
| Sh | eriff Mining | | Tangier Mine | 352 |
| Sil | eriff Mining | 565 | Telluride of Gold Mining | 567 |
| CH | ent Friend M. and Dev | 565 | Tennycape Manganese | 168 |
| CH | ver Band Mining | 471 | Terminal City M. and Dev | 567 |
| SH | ver Bear M. and Concentrating . | 471 | Texada Island Mining and Land | 200 |
| SIL | ver Bow Quartz | 398 | Texada Kirk Lake Gold | 399 |
| SIL | ver Hill Mining | 472 | Texada Silver King Gold | 400 |
| Sil | ver Hill Mining and Milling | 472 | Thessalon Gold | 400 |
| SIL | er Hustler Mining | 172 | Thistle Geld | 567 |
| SIII | rerine Gold | 308 | Tidal Wave Consolidated | 567 |
| SIII | erine Mining | 565 | Tidal Wave Mining | 100 |
| SIIV | er Leaf Mining and Smelting | 172 | Tilbury Peninsular Oil and Gas | 406 |
| Ske | ena River Mining | 399 | Tilt Cove Copper | 102 |
| 210 | can and Maple Leaf M. and Dev. | 472 | Tilt Cove Copper Tin Horn Quartz | 192 |
| 210 | can Belle Mining and Milling | | Tobasco Prospecting and Exploration | 400 |
| Sio | can Beauties Silver | 172 | | |
| Slo | can Cariboo M. and Dev | 565 | Tobique Valley Gypsum M. and M. | 507 |
| Slo | can City Mining | 472 | Tom Payne Consolidated | 507 |
| Sloc | can Development | 161 | Tom Payne Consolidated | 507 |
| Sloc | an Gold and Silver | 565 | Toquart Mining | 507 |
| Sloc | can Lake Gold and Silver | 505 | Toronto and Parada Carl Miles | 400 |
| Sloc | an Lake M. and Dev | | Toronto and Boundary Creek Mining | 100 |
| Sloc | an Lake Prospecting and Dev | 4/2 | Toronto Mining Syndicate | 567 |
| Sloc | an Lemon Creek | 505 | Toronto Salmon River Gold | 100 |
| Sloc | an Lemon Creek | 505 | Toronto Tudor Mining | 567 |
| Sloc | an Mines | 472 | rail Creek Gold Syndicate 400, | 567 |
| Sloc | an Mines | 4/2 | ran Creek Fildden Freasure Gold. 4 | 100 |
| Sloc | an Ousen Mining 1 Mill | 472 | I rail Smelting and Refining Works. | 358 |
| 2100 | an Queen Mining and Milling | 472 | I reasure Mountain | 68 |
| 2100 | an Silver-Lead Syndicate | 472 | Triumph Mining | 255 |
| oloc | an Western Mining | 565 | Trixie Mining 5 | 68 |
| | | | | |

| PAGI | E. PAGE. |
|--|--|
| Trout Lake Mining and Milling 568 | Wassington M. I.D. |
| Troy Gold | Washington Silver Mines 463 |
| Tudor Gold 355 | Waverley Mine |
| A diamicell Hydraulic and Imp | Webbwood Con Milian 17 |
| Tulameen Mining 356. 401 | Wellington Square Gold 402 Wellington Square Gold 402 Wentworth Gypsum 569 Western Algoria and Gold of Wellington Square Gold 600 Western Algoria and Gold of Wellington Square Gold 600 Western Algoria and Gold of Wellington Square Gold 600 Western Algoria and Gold of Wellington Square Gold 600 Western Algoria and Gold 600 Western Algoria and Gold 6000 Western Algoria and Gold 6000 Western Algoria and Gold 6000 Western Algoria and Gold 60000 |
| I wentieth Century Gold Mining and | Wellington Silver |
| I rading | Wellington Square Gold 473 |
| Twin Silver Mining 473 | Wentworth Gypsum |
| | Western Algoma and Gold of Wabi- |
| United Asbestos | |
| | |
| Union Investment | Western Canadian Gold Fields 569 |
| Union Jack Gold 568 | Western Ontario Mining 402 |
| opiaz Gold M. and Dev. of Ontario 401 | West Kootenay (B.C.) Expl and M 760 |
| Utica Group M. and Dev 568 | West Le Roi and Josie Con 570 |
| | West Wellington Coal |
| Van Anda Copper and Gold 401 | White Bear Gold M. and M 402, 570 |
| vancouver & British Columbia Expl. 400 | white Bird Gold |
| vancouver and B.C. Gen. Explor'n 568 | White Grouse Mining 570 |
| vancouver and Boundary Creek De. | White Pine Mining |
| veloping and Mining 568 | Whitewater Miner |
| vancouver and Lillooet Gold | Wild Horse Gold |
| vancouver and Meteor Gold. | Will Chester Gold Wilnes of Wairview 400 |
| Vancouver London Mining 568 | winnipeg and Eureka |
| Vavasour Mining Association 568 | Withrow Gold Mine (N.S.) |
| victoria and Kootenay M. and Dev. 568 | Wolverine Gold |
| Victoria Con. Hydraulic 356 | Wonderful Group |
| Victoria Gypsum | |
| Victoria M. and Dev | wate and Kootenay Mining |
| Victoria Tripolite | rate Gold and Copper |
| Victory-Triumph Gold 401 | rate Homestake Gold and Silver |
| Viking Gold 569 | rankee Doodle Mining |
| Wahiraan Cald Will Go | rankee Giri Mining |
| Wabigoon Gold Mining of Ontario, 401 | Tellow Jacket Gold of Seine River |
| Wakefield Mines | Tukon Mining, Irading and Trans |
| Walla Walla M & M and C 11 496 | rum rum Gold |
| Walla Walla M. & M. and Smelting 569 | [[[[[[[] [] [] [] [] [] [] [] [] [] [] [|
| Wallingford Mica | Allor Gold 402 |
| . al Dagie Coll. M. and Dev 357 | Silvering Cold |
| | |
| | |
| | Steam Eres Atoms Market 199 Steam and Market 199 Mr. and Dev. 472 |
| | |
| | |
| | |
| | |
| Trought Among | |
| Toppart Stance 20mil Stanger | |
| Congress of Contract Course Manage (Con- | |
| Tonasto and Country Creek, Maring 400 I foreste Maring 500 I | Stoom Lake beat one when Mig |
| Toronto Scinon Siem Gald | |
| Toronto Tudar Manag | |
| Test Creek Guld Syndicate 400, 507 | Shoran Lemon Creek |
| Trail Circle Midden Treasure Gold 100 | Shown Veiden Mining and Millings 472- |
| Trail Smelting and Robiting Works, 250 | |
| Transpire Management State | Storm Guran Manual Storm Storm Care Storm Comment Storm Comment Storm Comment Storm Care |
| Tenneph Maning 2555 | |
| Trixie Mining 56 | Sloren Silver Lead Syndrente 472 |
| Tuxie with a second second second | Slocan Wastern Mining 505 |

WATER WHEELS

SAMSON and CASCADE

ADAPTED TO ALL HEADS FROM

3 Feet to 2000 Feet.

Specially designed and adapted to



Power purposes. Securing a high guaranteed percentage and great steadiness of motion, under variable loads. An unequaled concentration of power and an unprecedented high velocity. Their quickly operating balanced gates, affords prompt and fine regulation by governor. Satisfaction guaranteed where others fail. Write for pamphlet of either wheel, stating your Head pressure and your wants.

JAMES LEFFEL & CO., Springfield, Ohio, U. S. A.

16th YEAR OF PUBLICATION.



The Oldest and Drily Official Mining and Engineering
Paper in Canada

PROFUSELY ILLUSTRATED.

RELIABLE CORRESPONDENTS IN EVERY MINING CAMP.

Picks, Shovels among Mome and Pricks, Picks, Shovels and Roman and

Mining Engineers and Intestorbin 6 9008 911W

Mining Properties.

HEAD OFFICE: Stater Building, Ottawa, Ont.

BRANCHES: Montreal, Que.; Halifax, N. S.; Slocan City, B. C.; Rossland, of a gniffit and Branches Creenwood City Branches on most?

J. T. DONALD,

Assayer and Mining Geologist

112 St. Francois-Xavier St., MONTREAL.

Analyses and Assays of Ores, Fuels, Furnace Products, Waters, etc. Mines and Mining Properties Examined and Valued.

JOHN McAREE, B. A. Sc.

Graduate School of Practical Science, Toronto University.

Mining Engineer and Assayer

Ontario and Dominion Land Surveyor.

Surveys, Reports, Prospecting, Development. Three years experience in the Rainy River District.

RAT PORTAGE, ONT.

ARTHUR B. LEE, President.

A. BURDETT LEE, Vice-Pres. and Treas.

RICE LEWIS & SON, Limited

TORONTO

ORRESPONDENTS IN EVERY MINING CAMP Picks, Shovels

Dynamite

Wire Rope and Cables Chain

Powder

Bar Iron

Detonators

Steel

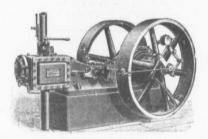
Drill Steel in long and short lengths

HARDWARE

Steam and Compressed Air Hose, Valves, Pipe, Fittings, etc.

Robb Engineering Company, Ltd.

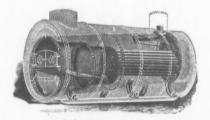
Contractors for High-Grade Power Plants, Heating and Ventilating Apparatus, etc.



Robb-Armstrong Engine

(SIMPLE AND COMPOUND)

Containing all the best points of Standard American High-Speed Engines and several Improvements.



The Monarch Economic Boiler

Strongest and most portable Boiler in use

OFFICE AND WORKS: AMHERST, N.S.

CARRIER, LAINE & CO.

Founders...
Machinists and
Boiler Makers

LEVIS, QUE.

Hoisting Gear, Engines, Steam Pumps Boilers and all Machinery

-FOR-

MINERS, CONTRACTORS AND QUARRYMEN.

-ALSO-

Builders' Castings, Stoves, Stove Fittings, Hollow-ware, Flour and Saw Mill Machinery, Marine Engines and Boilers, &c.

WRITE FOR OUR PRICES

Advertisements.

CALEDONIA IRON WORKS

JOHN MCDOUGALL

OFFICE:

COR. WILLIAM & SEIGNEUR STS.

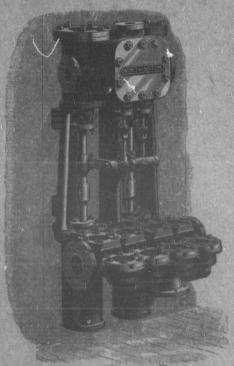
MONTREAL.

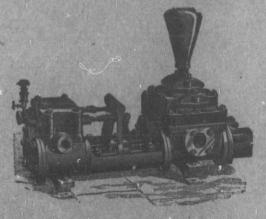
General and Manufacturing Agents for the Celebrated

WORTHINGTON

MINE

PUMPS...





IRON FOUNDERS
BOILER MAKERS
MACHINISTS
ENGINEERS, Etc.