

LE DR DAWSON

A la première réunion du Conseil des ministres, hier, M. le Dr George M. Dawson, assistant directeur de la commission géologique, gradué de l'école Royale des mines, de Londres, et membre de bien des sociétés savantes de l'Europe et de l'Amérique a été chargé de prendre la direction de la commission géologique, dont les bureaux sont dans la rue Sussex à Ottawa.

Cette nomination donne pleine et entière satisfaction et répond aux désirs du peuple de quelle couleur ou penchant politique qu'il soit. Géologue distingué, habile à la tâche, capable au superlatif quant à l'administration d'un bureau aussi important pour le pays que l'est notre commission géologique—le docteur Dawson est l'homme pour la situation rendue vacante par la retraite du docteur Selwyn qui a été directeur depuis 1870.

Le docteur Dawson est le fils aîné du fameux sir William Dawson, C.M. G., membre de la société royale de Londres, ex-président de l'Université McGill de Montréal, canadien distingué par ses écrits nombreux et puissants sur la géologie, la science et l'éducation. Le nouveau directeur est né à Montréal en 1852. Il a fait ses études au collège McGill, à l'école des mines à Londres en Angleterre.

Il a suivi des cours en Europe et entrepris des recherches dans les régions intéressantes volcaniques de Puy de Dôme en France, dans les mines d'asphalte de la Suisse. En 1874, il remporta les prix d'honneur et médailles d'or à l'école des mines. Son talent dans les recherches géologiques et minéralogiques attirèrent l'attention des géologues européens et en 1874 fut nommé membre de la commission impériale pour établir la ligne de frontières entre les Etats-Unis et le Canada. Son grand travail et rapport sur les ressources des régions traversées est classique aujourd'hui et depuis 1876 le docteur Dawson est employé à la commission géologique.—Ses travaux furent dirigés surtout du côté de l'ouest.

—Les mines d'or, d'argent, de platine, de cuivre de la Colombie-Anglaise ont été décrites par le docteur Dawson. Il a écrit plus de soixante travaux dans les revues les plus savantes de l'Europe et de l'Amérique. L'an dernier il était président de la société royale du Canada, et son travail en rapport avec la question des pêcheries dans les hautes mers des environs de Behring et de l'Alaska est trop bien connu pour le rappeler aux lecteurs.

Le choix du docteur Dawson est agréable non seulement aux membres de la commission mais donnera sans doute une confiance dans la question minière au Canada des plus encourageantes.

L'Empire Libér

—PAR—

EMILE OLLIVIER

(Suite)

Il montra Bismarck « depuis ans, préparant une diversion milit parce qu'il sentait que, sans son a gle bouillonnement, il ne pourrait mais museler l'Allemagne ». Il l'a se d'avoir fui, dans la guerre, les nières résistances de la liberté allen de. Loin de condamner l'Emper d'avoir enfin relevé la tête, il lui proche de l'avoir trop longtemps te baissée, « d'avoir lâchement end l'engloutissement du Hanovre, de Hesse, de Nassan, de Francfort, de la Prusse, d'avoir été sourd à le cris ». Après « ce lâche service ajoute-t-il, « on ne ménagea plus ri

Tous les jours on le provoquait. Prussiens ivres venaient nous dé dans Strasbourg. Comme dans poèmes de Renaud, on voyait Charlemagne dormir profondément France sur un trône où l'étranger sait impunément la barbe avec un son. »

Un publiciste de courage et de lent, M. Fernand Girardeau, dans livre bien informé, précis, d'une vig reuse dialectique, s'attaquait à la gende de mensonge, déjà en voie formation, et confondait et ne lais subsister aucune de ces falsificati

Le gendre du maréchal Magn Haentjens, la réfutait à la trib sans se laisser troubler par les ex cations niaises ou les interruptio violentes : « Je ne puis, disait-il, e tenir l'expression de l'irritation la vive, quand j'entends à cette tribu à une tribune française, soutenir c'est le gouvernement impérial qui coupable de la guerre... (Oui ! oui gauche.)

Je proteste de toute l'énergie mon patriotisme, de toute l'éne de ma loyauté... (Interruption), je déclare en face de mon pays, en de l'Europe, qui le sait bien, que la Prusse qui a voulu la guerre, Prusse qui nous a forcés de la fair Prusse qui l'a préparée de longue et qui l'a provoquée... et je vous de venir le contester à cette trib (Allons donc ! à gauche).

LITERARY NOTES.

Professor Dawson of the Dominion Geological Survey Department some time ago read before the Ottawa Field Naturalists' Club a paper which obtained something like a world-wide celebrity. It was re-published in full in Goldthwaite's Geographical Magazine, and extracts from it were printed in The London Times and other British papers. In this paper he showed that no Canadian who is desirous of making his fame as an explorer need leave his own country; that while the entire area of the Dominion is computed at 3,470,257 square miles, about 954,000 square miles of the continent alone, exclusive of the inhospitable detached arctic portions, is for all practical purposes entirely unknown. It is satisfactory to know that this useful paper is now to be found in a permanent form as an appendix to Mr. Warburton Pike's "Barren Ground of Northern Canada" (Macmillan & Co., London and New York; the Williamson Book Co., Toronto). Mr. Pike is above all things a hunter, and his object in roaming the solitudes of Northern Canada was to bag something unusual in the way of big game. In talking with the officers of the Hudson Bay Company he had heard of "a strange animal, a relic of an earlier age, that was still to be found roaming the barren ground, the vast desert that lies between Hudson Bay, the eastern ends of the three great lakes of the north and the Arctic Sea. This animal was the musk-ox. We quote the account of his first meeting with the game:

Soon after leaving camp we came to a rough piece of country, full of patches of the broken rocks that I have already described, and, mounting a small hill, saw a single old bull walking directly towards us at a distance of three hundred yards

Toronto Globe: 12. Nov. 92

OUT THE CIVILIZED WORLD.



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NOTICE.

The Phoenix Fire Insurance Co. of Hartford

hereby give notice that MR. R. H. BUTT has been appointed General Agent for Toronto and Attorney for Ontario in place of the late Herbert J. Maughan, deceased. The Agency will be continued at 30 Wellington street east.

GERALD E. HART,
General Manager for Canada.

EDUCATIONAL.

SHORTHANDERS WANTED.

"If you have any young men between the ages of 17 and 19, able to fill positions as shorthanders, have them write us by first mail, as we need a young man here immediately. Salary \$30 per month."

The above was received by us the other day from one of the leading offices of the Canadian Pacific Railway, and is but a sample of dozens of positions offered every month to our graduates. Every student in our Shorthand and Typewriting Department passes through the hands of MR. THOMAS BENGOUGH, Court Reporter. O'DEA & HOSKINS, British American Business College, Arcade, Yonge street, Toronto.

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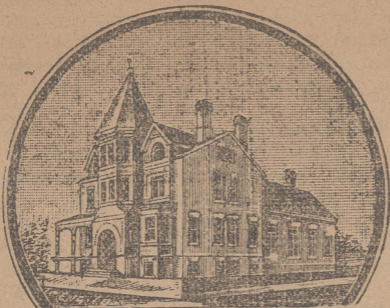
Special attention is paid to moral training. The facilities for physical development are unrivalled in Canada. Cricket ground of eight acres, well-equipped gymnasium four tennis courts, boat house, bathing crib, etc., etc.

We lay down in the snow and I had a capital chance of watching him through the glasses as he picked his way quietly over the slippery rocks, a sight which went far to repay all the trouble we had taken in penetrating this land of desolation. In crossing an occasional piece of bad ground he walked with a curious rolling motion, probably accounted for by the waving of the long hair on the flanks. This hair reaches almost to the ground, and gives the legs such an exaggerated appearance of shortness that at first sight one would declare the animal to be incapable of any rapid motion. The shaggy head was carried high, and when he finally pulled up at sight of us, within forty yards, with his neck slightly arched, and a gleam of sunshine lighting up the huge white boss forming the junction of the horns, he presented a most formidable appearance. His fate was not long in doubt, as my first shot settled him, and the main object of my trip was accomplished."

Mr. Pike gives a very full and interesting account of the cariboo and its habitat. The range of the barren ground cariboo, he says, is from the islands in the Arctic Sea to the southern part of Hudson Bay, while the Mackenzie River is ordinarily the limit of their western wandering. In this region the cariboo supplies the Indian with nearly all the necessaries of life; it gives him food, clothing, horse, and the equivalent of money to spend at the fort.

At one time Mr. Pike and his party lost their way, endured great suffering and hardship, and narrowly escaped with their lives. The chapters in which this story is told are of thrilling interest. The mechanical execution of the book is excellent, the paper heavy and the type large and clear.

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LITERATURE. *Savage***Mineral Wealth of British Columbia.**

"The Mineral Wealth of British Columbia," by George M. Dawson, D.S., F.G.S., Geological Survey of Canada, published by authority of Parliament (Dawson Bros., Montreal) is ready. Many of us have been in the habit of thinking and speaking of British Columbia as a province rich in natural resources of all kinds and especially so in mineral wealth; and in so doing we have doubtless been in the right. But in order that such prodigal gifts of generous mother earth should be turned to any practical account it is absolutely essential that our knowledge should cease to be loose and general and should become specialized, definite and reliable. It is in accomplishing this object that the work before us is especially important and commends itself to all desirous of having a practical knowledge of the wealth of the western province. It is also of no small interest to general readers. We may safely prophesy that before the next two or three years have passed, many successful miners and managers will look back with gratitude to the pages before us as having been at once their informant and guide. Passing over an introductory portion relating to the physical geography and geology of the region and the history of discoveries and mining operations within its limits, the work may be divided into three portions, the first treating of the precious metals—gold and silver—the second of coal and iron, as well as of copper, lead, zinc, etc., and the third and most elaborate and important part comprising a valuable list of localities in which mineral deposits of economic worth have already been found or worked. The several gold mining districts are described in detail, and interesting statements are given respecting the modes of occurrence of the precious metal and the manner of working it, with tabulated views of the yield of the several mines. Some of the placer deposits have proved remarkably rich. In Lightning Creek, for example, the richer claims have yielded from \$450,000 to \$200,000 each, and it is estimated that the average yield of gold has been \$200 to the running foot of the old buried channel of the creek. The total value of gold produced from the placer deposits of British Columbia from 1856 to 1888 has been over fifty-four millions of dollars. Vein mining for the precious metals has as yet been pursued to only a limited extent, but the veins of auriferous quartz, and of argentiferous gelina and other ores of silver are attracting greater attention than heretofore, and must ultimately become a greater source of wealth than the placer deposits. The coal deposits of Vancouver Island are minutely described, with notices of their possible unworked extensions, and useful tables of analyses and of the economic value of the several coals. In 1888 the mines of British Columbia supplied 345,681 tons of coal to the market of San Francisco alone. We cannot close without calling special attention and giving special commendation to the "annotated list of localities" to which reference has already been made. The information is here specialized and very definite, and has been collected and condensed by a great expenditure of time and labor, which can only be fully appreciated by those who have some knowledge of mining. To the mining explorer and to the practical miner it will prove of very great use, and will by them be valued at its true worth. Such publications as the present should go far to relieve the survey from the unmerited reproach of devoting too little attention to economic rocks and minerals.

chatelaine of daisies and grasses. The train was also of white poult de soie. The corsage was trimmed with tulle, daisies and grasses. Her court plumes and lappels were white. Pearls were her sole ornament, and her bouquet consisted of pure white exotics and maiden hair fern. Mrs. Robert McCormick, of Chicago, wife of the second secretary of legation, who was also presented by Mrs. Lincoln, wore black, handsomely trimmed with jet, lace and tulle. She wore diamond ornaments and carried a white bouquet. Miss Josephine Chamberlain wore an empire dress of white satin covered with white crepe lisse, with an empire sash and a white satin train lined and trimmed with ruchings of the crepe. She carried a bouquet of white roses and carnations. In the diplomatic circle Mr. Lincoln presented Mr. McCormick, second secretary of legation; Major Post, of the United States army, military attache, and Lieut. Buckingham, of the United States navy, naval attache to the legation.

FINER WEATHER

Is What the Weather Man Predicts for To-Morrow.

METEOROLOGICAL OFFICE.—TORONTO, May 30, 11 a.m.—The disturbance, with increased energy, is now central over Lake Erie, and the pressure is also low throughout the northwestern portion of the continent. Heavy rain has fallen over Ontario, attended by strong winds and gales from the northwest. Rain has also fallen along the St. Lawrence, and showers have occurred in the Rocky Mountain slope.

Maximum temperatures:—Calgary, 76; Winnipeg, 68; Toronto, 49; Montreal, 54; Quebec, 50; Halifax, 68.

Minimum temperatures—Minnedosa, 24; Winnipeg, 26.

The east cone is displayed throughout Canada.

St. Lawrence and Upper.—Strong winds and gales; cloudy and raining; not much change in temperature; finer to-morrow.

MONTREAL'S RECORD.

OBSERVATIONS TAKEN AT M'GILL COLLEGE OBSERVATORY—MAY 30.

Time....	*Bar....	Ther....	+Hum....	Weather.	-Wind-	
					Dir'n	Vel..
3.00	30.148	46.5	84	Overcast....	NE..	21
7.00	30.146	44.7	90	"	N....	20
11.00	30.134	48.0	81	"	N....	30
14.00	30.085	53.5	74	Clear....	NE..	32
19.00	30.091	47.8	83	Cloudy	NE..	32
23.00	30.086	45.0	88	Overcast....	E ...	29

Height above sea level, 187 feet.

*Barometer reduced to sea level and to temperature of 32° Fahr.

+Humidity relative, saturation being 100.

Maximum temperature of the 30th was 54.5.

Minimum temperature of the 30th was 44.5.

Total mileage of wind on the 29th was 366; greatest in one hour 25.

Rainfall, 0.05 inches.

SNOW IN QUEBEC.

QUEBEC, May 30.—Heavy snow was observed this morning on the Laurentides north of the city. The weather here is intensely cold.

WESTERN RAILWAY SCHEME

Winnipeg has its own Scavenging Trouble—Prospective Settlers—Forcible Prohibition.

WINNIPEG, May 30.—The *Sun* says this evening that the deal which has been going on for some time between the Northern Pacific and Great Northwest Central people, looking towards the purchase of the franchises of the latter road is all but completed. The details of the

The Colonies & India
Apr. 24. 97.

on 90 days' banks drafts on Paris has been increased to 30 per cent., and Treasury sight orders to 35 per cent., which unheard-of rates have rendered importation almost impossible."

X The action of the Royal Geographical Society in granting one of their gold medals to Dr. George Dawson, C.M.G., the director of the Geological Survey, Canada, will give much gratification in the Dominion. Dr. Dawson has a wide circle of friends and admirers, from the Atlantic to the Pacific, and his great abilities are generally recognised. His official connection with the Canadian Government commenced about 28 years ago when he was appointed Naturalist to the Boundary Commission which settled the frontier between the United States and Canada, from the Lake of the Woods westwards. Since that time his progress has been marked, and his reputation now extends far beyond the limits of the Dominion. Notwithstanding the apparent physical disability under which he labours, he has performed much exploration work and conducted many important geological investigations. He is indefatigable as a worker, and is a prolific writer on many scientific subjects. He is well known as the son of Sir William Dawson, an eminent geologist and formerly Principal of McGill University. Both father and son are Fellows of the Royal Society, a family distinction which may be regarded as somewhat unique.

viz., Colonel Rhodes, Mr. John Hays Hammond, and Mr. Lionel Phillips, are now on this side, but the fourth, Mr. George Farrar, will not reach England in time to be present. If success attends the function, the idea is to hold it annually.

A new development in the "press gagging" law of the Transvaal is the judgment of Justices Morice and Ameshoff in the matter of the suspension of the *Star*. The appeal of the Argus Publishing Company has been upheld by the judges, and the Court has set aside the order for suspension, with costs. In consequence of this, our contemporary appears again. It will be interesting to see how President Krüger and his Volksraad take this reverse.

The Earl of Elgin, Viceroy of India, has directed that June 21 and 22 be observed as public holidays throughout India in honour of the Queen's Diamond Jubilee.

In reference to the account of an interview with Mr. C. T. Hunter on the subject of railway development in British Honduras, which appeared in a recent issue, we have received a communication from Colonel David Wilson, C.M.G., the newly-appointed Governor of that Colony, dated

...nflower
...ate; Mrs. F
...son; Mrs. Joh
Wright, white; Stanstead, white; Carew
Underwood, red and bronze, are all good.
Of the new seedlings shown at the ex-
hibitions, a very valuable acquisition
the Ada Spaulding, illustrated in the cut
and originally photographed for Ameri-
can Garden. It is a Japanese of sturdy
habit. The flowers are silvery white and
blush rose. Other valuable seedlings
named by the authority quoted are Grove
P. Rawson, Henry Elkins Widener, Mrs.
Thomas A. Edison, Cyclone, E. G. Hill,
Rosebush Gem and Oriole.

Sowing Flower Seeds.

A common mistake in sowing flower
as well as other seeds, is in covering too
deep. As a general rule cover only to
the depth of the thickness of the seeds,
or with medium sized seeds like ~~be~~
zinnias, etc., a half an inch or so
too much. Such fine seeds as portulacas
need only to be pressed into the soil with
a piece of board or the palm of the hand.
Always press the earth down firmly
after sowing all flower seeds, else there
is danger of their drying up before the
roots can get firm hold of the soil. Seeds
of the hardier annuals may be sown
where they are to grow; but, as a rule,
it is preferable to transplant, as the
plants are generally stronger and stand
the drought better. During very dry
weather, and when the seedlings are
first set out, they should be watered fre-
quently. Provide some support for all
such annuals as require it, else the
plants become weak and straggling, and
do not make the show they otherwise

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and very complete... the geology
and resources of the region in the vicinity of
the forty-ninth parallel, after having ac-
companied the surveying party set out to
fix the international boundary. The re-
port is not only of much value in itself, it
is also written in a most pleasing and in-
teresting style. Since his connection with
the geological survey Mr. Dawson has
become one of the most prominent and
important members of its staff and the
publications of that survey bear from
year to year long and valuable reports
from Mr. Dawson's facile pen, showing the
importance and extent of the work done
by him. In this connection he has pub-
lished reports on the Tignites of the Teri-
tory formation from the Souris river to
the 108th meridian; on the region in the
vicinity of the Bow and Berry rivers; on
the Yukon district and on the mineral
wealth and other features of British Col-
umbia. These indicate only a small por-
tion of his work. And he has oc-
casionally stepped aside from geology and
topography and their practical matters to
engage in ethnological and other subjects,
as witness his extensive and valuable ar-
ticle upon the language and customs of
the Indians of the Pacific coast.

Although Mr. Dawson's name has be-
come a sort of landmark in the history of
the development of the geology and na-
tural science of our country, he is still in
his prime, and the complete scientific de-
velopment of this Canada of ours will no
doubt be largely indebted in the future, as
it has been in the past, to Mr. Dawson's
untiring labors and accurate powers of
observation.

The University Council.

The University Council is composed of
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*Obituary
Journal
14 May 91*

DR. G. M. DAWSON, F. R. S.

The highest possible compliment which a man engaged in scientific researches can have conferred upon him in the English-speaking world by those of his contemporaries who have already made a world-wide and appreciated reputation, is to be elected an F. R. S. or Fellow of the Royal Society of Great Britain. The news that this honor has just been conferred upon a Canadian in the person of Dr. George M. Dawson, LL. D., F. G. S., etc., of the Geological survey of Canada, whose excellent works and writings upon the mineral wealth and other geological and natural resources of the Dominion are widely known and esteemed, is received with pleasure in the Capital. In his careful, painstaking practical and constant application to the investigations of the geological resources of the Dominion and especially of the great Northwest and British Columbia in his important writings and voluminous reports already published, Dr. Dawson has won a name and mention in the history of Canadian letters and science which, when it has been recognized in such a tangible and unqualified manner at the hands of a society like that which has just acknowledged his worth and merit, ought to promote him in the esteem and admiration of the country.

It will be remembered that only a fortnight ago Dr. Dawson received the honorary degree of LL. D. at the hands of one of our Canadian universities, and only a few weeks before that the Geological society of London had awarded him the Bisby medal for his researches in geological science. In Dr. Dawson's case merit is being appreciated.

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GRAND OPERA HOUSE.

TO-MORROW EVE., MAY 15.

First appearance here of the Celebrated Young Canadian Songstress.



~~Lambton~~ ~~Examiner~~, Apr. 13.
EDITORIAL NOTES. 91.

McGill University has conferred an honorary degree upon Dr. George M. Dawson, of the Geological Survey. Old and famous as the institution is, it does itself as much honor in putting the name of so distinguished a Canadian upon its roll of graduates as it does him.

spring, will go as a missionary to China.

The Women's Medical College Foreign Missionary Society has sent \$20 to support a bed in a new hospital in India. The society has elected officers as follows: President, Miss Turnbull; vice-president, Miss Hulett; secretary, Miss Henderson, treasurer, Miss McCallum.

Willie McLaren, junior partner in the Renfrew milling firm of McLaren & Son, died at Renfrew on Thursday of inflammation of the lungs.

Rev. G. A. Lang, of Admaston, will short-

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QUEBEC, FRIDAY, JAN. 11, 1895.

THE TALK OF THE DAY.

If the report published in the Dominion Government organ at the Capital, the *Ottawa Citizen*, is to be credited,—though our dispatches last night contradict it,—Dr. A. R. C. SELWYN, C.M.G., F.R.S.C., who, for so many years, has held the high position of Director of the Geological Survey of Canada, has been superannuated, and in his stead, Dr. GEORGE M. DAWSON, C.M.G., F.R.S.C., and son of Sir WILLIAM DAWSON, F.R.S.C., has been appointed. The appointment would be a popular one, for the young scientist is well deserving of the post, and the fact that he is a native of Pictou, Nova Scotia, is, in itself, convincing proof of the ability which he possesses. Nova Scotia has furnished many big men to the Dominion, and it is a pleasing fact that the little Province by the Sea, is still strong in brilliant sons. Dr. DAWSON, soon to be Sir GEORGE, we trust, has served his country well. His father is the best known scientific man which Canada has produced, and the worthy son promises to maintain the standing which he has made. Sir WILLIAM DAWSON was the first President of the Royal Society of Canada. He is the discoverer of the *Eozoon Canadense*, of the Laurentian limestones, the earliest known form of animal life. Dr. GEORGE DAWSON has also been President of the Royal Society of Canada, and is as well-known as his illustrious father. On several occasions, his splendid services have been solicited by the Imperial Government, and it was on the data furnished by him, that the Behring Sea Commission mostly relied. All Canada understands his worth, and everyone will applaud the choice which the Government has made. There is hardly a learned body in the world which is not indebted to him for the fruits of his industry and ability in the investigation of scientific truths. He is modest and unassuming. He is genial and warm-hearted. He loves his profession with his whole soul, and his name will rank as high as those of his father, and Sir WILLIAM LOGAN.

Only the other day, another brilliant Nova Scotian, also a native of Pictou County, and the head of Queen's University, Kingston, Ontario, told a large audience some practical truths, which, we hope, will be taken to heart. Principal GRANT warns the sons of farmers not to leave the farm for life in the city. At best, they can only secure clerkships at small salaries. As farmers, however, they have a career before them. To know how to till the soil is an honorable art, and to the follower of the plow, our rich agricultural country is greatly indebted, and ever will be indebted. Would that we had more husbandmen, for, after all, it is to them that we owe much of our present prosperity.

not have struck at this season when work in their line is so dull. Word from the collieries last night was to the effect that terms of settlement had been reached, but some hitch occurred this morning and the men thereupon refused to work further.

SPRINGHILL MINES, Jan. 10—A Committee from Pioneer Lodge have been holding meetings with the Coal Company since yesterday, and this evening at 7.30 an amicable settlement was arrived at and work will be resumed in the morning. The Company's first arrangement was for the men to work from 6 a.m. to 6 p.m.; this the men refused to do. The Company have now made the following arrangement, which the men have adopted, at least for a time. They are to commence work at 6.30 a.m., and the first shift to work until 12.30 p.m., then the second shift will work from 1.30 p.m. until 7.30 p.m. Rejoicing that the grievance is settled prevails.

Delevan Hotel Fire.

Human Remains Discovered in the Ruins Yesterday by the Workmen.

ALBANY, N. Y., Jan. 8—The horrors of the Delevan fire were accentuated this morning by the discovery at brief intervals of portions of human remains. No sooner had the men started their work this morning when they struck several localities where bones were buried. Coroner Lasch, who was in charge, used four wooden boxes to deposit them in, numbered 1, 2, 3 and 4. No. 1 contained the bones of two bodies found at dusk last night at the foot of the attic. No. 2 held portions of two bodies dug up about ten feet away from the staircase this morning. These were found buried beneath two iron spring bedsteads. The victims must have retired, and when the fire broke out became suffocated. No. 3, the largest box of the lot, was almost filled up at the start with portions of the trunk of a body, supposed to be a male. It showed the thigh bone and several ribs. This was dug out in the cellar, directly over where the attic staircase terminated. No. 4 contained a solitary bone, dug up at the north end about 10 feet from the ovens. It was a piece of the temple bone. In this spot the stench was so great that it made the workmen sick. Several bodies are thought to be buried there. So many bones continued to be found that the Coroner increased the number of boxes to six, and also sent for a larger one, in case a body should be found intact. Portions of a dress, found with the bones underneath the iron bedsteads, were identified by Edward Davenport, the second steward of the hotel. He was positive that he saw the dress on Miss Agnes Wilson, the second housekeeper, when she went into supper on the fatal evening. It was brown and black. The trunk of another body was found imbedded among the ruins, about 10 feet north of the ovens. It will take some time to dislodge it. This portion of the last body visible is on a partially burned mattress.

BRAVE DICK REWARDED.

"Dick" Murtaugh, the hero of the Delevan house fire, is \$500 richer to-day than he was before. He was on duty in the only elevator the burned hotel had on the night of the fire, and he stuck to his post until the shaft was ablaze all around him. Then he escaped. He had hardly got outside when he heard Bradley Martin offer a reward of \$500 to anyone who would rescue the Martin baggage and jewellery from the rooms on the second floor. "Dick" took the risk, reached the rooms through the smoke, and filled the trunks with all the wearing apparel and jewellery he could find, and bundled them out of the window. In a stocking, upon which Mrs. Martin had been working, were two valuable rings, but their loss was not discovered until the next day, and then "Dick" went back after them, and luckily found the stocking frozen to the floor. "Dick" was forced to escape from the building by way of the roof on the night of the fire, and he was barely saved from death by the firemen, who got a ladder to him. Bradley Martin gave "Dick" the money last night, and the little fellow was so surprised that he fell against the piano in Henry Martin's parlor in a dead faint. He was quickly revived, and now feels as though

The Lop-Sided Philosopher.

To the Editor of THE EMPIRE.

SIR.—It is amusing to observe with what rapturous acclaim your contemporaries the *Mail* and *Globe* receive Mr. Goldwin Smith's last literary effort on Canada. The *Mail* indeed seems to find it difficult to discover within the ordinary range of the English language, words sufficient to convey its delight that a book so full of disparagement of Canada and Canadians has been produced, in which so many things which it dares not itself say, are plainly said.

To an outsider it appears somewhat remarkable that a man with Mr. Smith's peculiarities should be tolerated in Canadian society, where surely some means should exist for making it sufficiently obvious, even to him, that his talents are not appreciated. If for example we could repeat the conditions which induced him to leave England, or succeed in making him as uncomfortable in Toronto as he found himself when for a time he sojourned in the United States, possibly he might be induced to favor some other country with his biliously inverted consideration. Certainly if Canadians are all such fools and toadies as he seems to think we are, it is merely a waste of his valuable time to attempt to reason with us or for us. Meanwhile it may be well to remember that a mechanical facility for writing idiomatic English, which we may readily admit that Mr. Smith possesses in a high degree, does not alone make a philosopher, nor even qualify the writer to become a faithful councillor, for, though grammatically correct, his statements and opinions are obviously in themselves so hopelessly biased that they are likely to prove convincing only to those already of like mind.

Pessimism appears to be of the character of a natural secretion in the professor, the interference with which might result in serious functional derangement, but it is rather hard that the unpleasant product should be discharged upon Canada merely in consequence of the accident of his domicile in this country. Yours, etc.,

EPIGEA.

Ottawa, April 9.

dress, and present the same to Mr. Snyder which Mr. Klotz then proceeded to read, as follows :

To the Rev. Thomas Snyder, B.D., Ph.D.

DEARLY BELOVED PASTOR.--The church council of the Evangelical Lutheran St. Peter's church, in Preston, Ontario, on behalf of the congregation, hereby most cordially congratulate you upon the high honors which have been conferred upon you by the theological faculties of Yale, Montreal and Syracuse respectively, awarding to you the titles of bachelor of divinity and doctor of philosophy.

Those distinctions are evidence of your high scholastic attainments, and our congregation feel highly honored that the same have been conferred upon our good and beloved pastor.

We pray that our most gracious God will give you and your dear family long life, health and prosperity, and enable you, as a true servant of our Saviour our Lord Jesus Christ, to continue, as you so ably have done heretofore, to minister to the spiritual wants of those who, by His will and grace, are placed under your charge and ministrations, and that your reward may be commensurate to your ardent zeal and good results in the cause of true Christianity. Believe us to be, dear pastor, your faithful parishioners.

Elders, Martin Ewald, Christian Schultz ; wardens, Friedrich Schutz, John Stockfish, John Stalbaum ; trustees, W. Stahlschmidt, Otto Homuth, Jacob E. Klotz, church council.

Rev. Mr. Snyder then donned the hood which his title of B.D. carries with it, and feelingly responded, thanking his parishioners for the kindly sentiments expressed in the address. He frankly admitted that his aim had ever been the accumulation of knowledge in the field of theology, and that his ambition was to obtain by diligent study the title of doctor of divinity. By thus fitting himself to more competently minister to the spiritual wants of his congregation, he would be discharging his one great duty towards them.

NEW BRUNSWICK NEWS.

Crushed by Falling Rock—Last Days of the Legislature.

ST. JOHN, April 12.—James Grant, of Lower Perth, was crushed on Saturday under mass of falling rock. He was employed on the Tobique railway.

The last days of the legislative session are exceedingly interesting. The Government's proposal for the abolition of the Legislative Council came up in the council for its second reading.



CLOTHING

— F • B —

Boys and Youths

The Department ,grows, we're making it grow.

We're sparing no effort in our Big Preparations to "SUIT" the Boys at once the busiest spot in the house

A showing unequalled. And prices always so much under others that we're remembered. The Stock is a special one, and is being sold quickly.

COME EARLY

Bryson, Graham & Co.

GROCERIES—35 O'Connor Street.

150

This is a fine
lined, strong
PURSE, we

J. D. R.

...aining officer by 12 ma,
Saturday last.

DR. GEORGE MERCER DAWSON, D. S.,
F. G. S., F. R. S. C., associate of the
Royal School of Mines, etc., etc., assist-
ant director of the Geological Survey
department, who had just received
such a high distinction from the
Geological society of London, England,
in the award of the Bigsby medal for
services rendered to geological science,
was awarded the honorary degree of
doctor of laws by the corporation and
governors of McGill University, Mont-
real, at the meeting on Monday. This
generous act on the part of the McGill
authorities came most graciously, not
only on account of the high repute in
which that university is held through-
out the scientific and geological world,
but also on account of the
act having been done quite
independently and without the
knowledge of either Dr. Dawson or of
his eminent father, Sir William Dawson,
the principal and head of McGill Uni-
versity. Dr. George Dawson, who has
carried on such successful and valuable
researches in British American geology
ever since his appointment on the
British North American boundary com-
mission in 1874 and during his many
years of service on the staff of the
Geological Survey of Canada holds a
foremost position amongst the geolo-
gists of the present day both in Europe
as well as in America. The large
amount of valuable and carefully
described reports on the geological and
mineral resources and wealth of Canada
which has already been published
has done much to develop our natural
resources, which are of such a high
order.

"Unquestionably it does."

"And does not sound travel at the uniform rate of about 1,100 feet per second?"

"Practically. As a matter of scientific exactness it may be said that sound travels 1,090 feet in a second when the air is at a temperature of 32 degrees Fahrenheit, and one foot per second faster for each rise of one degree."

"Exactly. Now the problem I have to propose is this: A brick falls from the top of a high building in process of erection. At the moment it starts to fall the workman who has accidentally dropped it shouts a warning to those below. How high must the building be in order that the brick shall fall upon the head of a six-foot man on the sidewalk below at the precise moment that the warning voice strikes his ear?"

"The problem involves an absurdity. No building so tall as that would be erected anywhere except in Chicago, and a Chicago man would be out of the way long before the brick fell."—*Chicago Tribune.*

Plural Forms of Names of Edible Fish.

A few days ago I was asked by a foreigner, "Why do you say 'two herrings,' and 'two soles,' and not 'two cods' and 'two salmons'?" I do not think my answer was very satisfactory, but the question suggested the thought that there are several cases in which it would be difficult to say whether there is anything like a consensus of opinion as to whether a plural form of the name of a fish is admissible. We all speak of soles, herrings, sprats, lampreys, and anchovies; the singular form never, I believe, doing service for the plural. No one, I think, says mackerels, cods, salmons, trouts, breams, shads, carps, plaices, basses, barbels. Sturgeon, perch, mullet.

had been sent by Mr T. S. Paterson, W.S., who, he understood, acted for the Association in question, and he was afraid they had no locus standi.—Mr Young, in his remarks, contended in effect that the Court could only grant hotel, public-house, and grocers' licences as such; that a certificate to chemists and druggists was not contemplated by the Licensing Acts; and that if such a restricted arrangement as had been proposed were agreed to, it would enable this class of merchants to compete unfairly with the legitimate winesellers. One of the features of the grocer's licence, he observed, was that nothing was to be consumed on the premises, but even on Sunday it was not an uncommon thing for a man to go into a druggist's shop for a pick-me-up. The Lord Provost—What is it made of? (laughter.) Mr Young—That depends on the individual taste, and also on the contents of the cellar. (Renewed laughter.)—Replying, Mr Craigie said that, as he had already suggested, it seemed that Mr Young appeared for the Licensed Grocers' Association, on whose part the action taken was in order to keep a monopoly in their own hands. It was mere nonsense to say that the object of the applications was to enable druggists to sell strong pick-me-ups.—The Lord Provost intimated that the Court granted the applications, for the sale of medicated wines only, and that the premises be closed for the sale of these wines on Sunday.

A HOTEL EXTENSION REFUSED—A GIGANTIC PUBLIC-HOUSE.

An application for extension of premises at 5 Chambers Street (University Hotel) was made by Mr Ernest William Garrad. Objections were stated on behalf of ratepayers in and around Chambers Street and in the vicinity of the University. The principal of these were to the effect that the alterations would make the place really a public-house; that the presence of such a place in a neighbourhood where so many young people of both sexes attended would be a temptation to them; that the adjoining property would be deteriorated, and that there was already sufficient supply in the district.—Bailie Robertson reported satisfactorily as regards the alteration.—Mr Hunter, advocate, disagreed with the statement that the premises, because of the alterations would be converted into a public-house. His client simply desired to take the bar from the first to the ground flat.—The Lord Provost said when the hotel first got a licence he was the visiting Magistrate, and it was granted on the distinct understanding that there was to be nothing downstairs. Instead of that, they were going to have a gigantic public-house down below. The application was refused.

RESULT OF THE COURT.

The Court rose at twenty-five minutes past five having lasted six hours. The result, so far as could be ascertained, was that, as compared with las

sort of sympathy.

The annual awards of the Royal Geographical Society have, I am informed, just been made by the Council, and once more illustrate the international character of the premier Geographical Society of the world. The two gold medals—which are regarded as the blue ribbon of the geographical world—go this year one to a Canadian, the other to a Russian. The Canadian is Dr George M. Dawson, C.M.G., Director of the Geographical Survey of Canada, who has always taken a deep interest in geographical work, and has himself done much to assist in solving some of the most interesting geographical problems in the Dominion. It is, however, quite as much for the work he has done in inspiring others among his official subordinates, chiefly with a desire to do geographical work, that Dr Dawson is now receiving the highest honour in the gift of the Royal Geographical Society. His Russian colleague as a gold medallist is M. Semenov, a distinguished geographer, who has not only himself explored Tian Shan, but has been the moving spirit in the great series of Russian expeditions which have done so much during the past twenty-five years to increase our knowledge of Central Asia. M. Semenov is Vice-President of the Russian Geographical Society. Of the minor awards, two go to Englishmen, and two to foreigners, the former being Mr C. E. Douglas, who gets the Gill award, and Lieutenant Seymour Vandeleur, who takes the Murchison award. Lieutenant Vandeleur has seen service in many parts of Africa, and has everywhere made splendid use of his opportunities to do surveying work. He surveyed several hundreds of miles in Somaliland, on the Abyssinian frontier, over two thousand miles of routes in Uganda and the region of the Upper Nile, and quite recently did excellent work on the Middle Niger with Sir George Goldie's expedition. It was he indeed who swarmed the flag-post when Bida was captured and nailed the Union Jack to the top. The two foreigners who received awards are Dr Thorwald Thoroldsen, for his explorations in Iceland, and Lieutenant Ryder, of the Danish Navy, for his services to geography on the East Coast of Greenland.

Reduced.

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TS MEETINGS AND AMUSEMENTS.

ASTIC EXHIBITION

WHITE ELEPHANT, HORSE, Apparatus Work
and Guitar Club—Mr Roland Paul—Association Orch

R HALL, FRIDAY, MAY 7

and 25c. Seats on sale at Shaw's and

St. Antoine

DIVISION,

The friends of **Hon. John S. Hall** who will kindly place carriages at the disposal of his Committee for Tuesday next, are requested to send word to either of the following Secretaries :

W. E. CHRISTIE, 45 University.

JOHN ROBINSON, 344 St. James.

106 4

BICYCLE GYMKHANA

A NOVEL ENTERTAINMENT WILL BE GIVEN IN THE VICTORIA BINK

ON WEDNESDAY, MAY 12th, at 8 p.m.

AND

THURSDAY, MAY 13th, at 3 & 8 p.m.

IN AID OF THE

DR. DAWSON'S MEDAL.

The Star has already announced in a cablegram from its London correspondent that the Royal Geographical Society has honored Dr. G. M. Dawson by naming him as a recipient of one of the two special gold medals it gives every year for specially distinguished service.

The London Daily Mail has the following allusion to the event:

The Royal Geographical Society piques itself on the absolutely international character of its awards; and in those for 1897 it will be observed that both the gold medals (the blue ribands of the geographical world) go abroad—albeit one falls to our own colony of Canada.

The two eminent men who have been accepted as worthy to wear the gold medals are M. Semenov, the Russian explorer, and vice-president of the Geographical Society of his own country, and Dr. George M. Dawson, C.M.G., director of the Geographical Survey of the Dominion of Canada.

The work for which Dr. Dawson receives the highest honor in the gift of the premier geographical society in the world is varied in character, and of deep interest. As director of the Geographical Survey he has not only approved himself a skilled solver of pro-

blems, some of them the most interesting geographical questions in the Dominion, but was invaluable as infusing his official subordinates with enthusiasm and desire for geological and geographical work.

His observations on those oddly-named aborigines of Vancouver, the Kwakiwot people are full of value, as is his geological work in Alaska, the little-known territory to the west and south of Hudson's Bay, and other obscure parts of the Dominion.

It was in 1875 that Dr. Dawson entered the Canadian service. He was appointed assistant director and geologist of the survey of Canada in 1893, and director in 1895. He was joint commissioner with Sir George Eaden-Powell on the Behring's Sea Seal Fishery question. This was in 1891, and the following year he got his C. M. G.

For the last quarter of a century M. Semenov, who takes the other gold medal, has been the moving spirit in the great series of Russian expeditions which have done so much to increase our knowledge of Central Asia. As an explorer he was the first to wrest its secrets from the Tian-Shan, the great Thibetan range of mountains, called on the Chinese side of the frontier the Celestial Mountains, where the everlasting snows crown heights towering up to 15,000 feet above the sea level. M. Semenov was the discoverer of a glacial sea larger in extent than the well-known Mer-de-Glace of Chamounix.

The explorer's Addenda to Rivers' "Asia" form a most important contribution to geographical literature. In the minor awards the honor of England is chiefly upheld by Lieut. Seymour Vandeleur, a young Guardsman, who during his military service in Africa has surveyed some thousands of miles in Somaliland, on the Abyssinian frontier, in Uganda, and on the Upper Nile. With Sir George Goldie's expedition on the Niger he has done excellent work; and at the capture of Bida it was he who swarmed the flagpost and nailed thereto the British colors. He takes the Murchison award, a piece of plate worth £40, and a diploma. The Gill award goes to Mr. C. E. Douglas.

Dr. Thorold Thoroldson, for his Icelandic exploration, and Lieut. Ryder, of the Danish Navy, for services on the East Coast of Greenland, also receive awards.

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THE QUEEN'S BIRTHDAY HONOURS.

The Queen has been graciously pleased to confer the dignity of a Peerage of the United Kingdom upon His Royal Highness Prince George of Wales, K.G., by the name, style, and title of Duke of York, Earl of Inverness, and Baron Killarney.

WHITEHALL, MAY 24, 1892.

The Queen has been pleased to direct Letters Patent to be passed under the Great Seal of the United Kingdom of Great Britain and Ireland, to bear this day's date, granting unto Her Majesty's grandson, His Royal Highness Prince George Frederick Ernest Albert of Wales, K.G., and the heirs male of his body lawfully begotten, the dignities of Baron Killarney, Earl of Inverness, and Duke of York.

The Queen has been pleased to confer the dignity of a Peerage of the United Kingdom upon :—

The Right Hon. Sir Henry Selwin-Ibbetson, M.P., Bart.
Sir Evelyn Baring, G.C.M.G., K.C.B., Her Majesty's Agent and Consul-General at Cairo.

The Queen has been pleased to direct that Lord Balfour of Burleigh be sworn a Member of Her Majesty's Most Honourable Privy Council.

Her Majesty has also been pleased to confer the dignity of a Baronetcy of the United Kingdom upon :—

Francis Sharp Powell, Esq., M.P., and Henry Wiggin, Esq., M.P.
Her Majesty has also been pleased to confer the honour of Knighthood upon :—

Frederick Bateman, Esq., M.D.
William James Bell, Esq., LL.D.
William James Richmond Cotton, Esq., City Remembrancer.
John Gardner Engleheart, Esq., C.B., Clerk of the Council of the Duchy of Lancaster.
George Findlay, Esq., General Manager of the London and North-Western Railway.
George Johnson, Esq., M.D., F.R.S., Physician Extraordinary to Her Majesty.
Robert Micks, Esq., Secretary of the Excise Department, Inland Revenue Board.
Joseph Palmer Abbott, Esq., Speaker of the Legislative Assembly of New South Wales.
Alexander Lacoste, Esq., Chief Justice of the Queen's Bench, Quebec.
George Clarke Pile, Esq., President of the Legislative Council of the Island of Barbados.

The Queen has been pleased to approve the following promotions in and appointments to the Most Honourable Order of the Bath (Civil Division) :—

To be G.C.B.

Sir Julian Pauncefoot, G.C.M.G., K.C.B., Her Majesty's Representative at Washington.

To be K.C.B.

Courtenay Boyle, Esq., C.B., Assistant Secretary to the Board of Trade.
John Evans, Esq., D.C.L., LL.D.
Admiral Hornby, Commissioner of Prisons.
Henry Jenkyns, Esq., C.B., Parliamentary Counsel to the Treasury.
Lieutenant-Colonel George Archibald Leach, C.B., Secretary to the Board of Agriculture.
Godfrey Lushington, Esq., C.B., Permanent Under-Secretary of State, Home Department.
Lieutenant-General R. H. Sankey, C.B., Chairman Board of Public Works, Ireland.

To be C.B.

Joseph Brown, Esq., Chairman of the Incorporated Council of Law Reporting for England and Wales.
Viscount Charlemont.
George Culley, Esq., Commissioner of Woods and Forests.
Charles S. Murdoch, Esq., Home Office.
H. Nicoll, Esq., Superintendent Treasury County Court Department.
W. P. O'Brien, Esq., Chairman of General Prison Board, Ireland.
William Clayton Pickersgill, Esq., Her Majesty's Vice-Consul at Madagascar.
Louis Brennan, Esq., Superintendent of the Brennan Torpedo Factory.

WAR OFFICE, MAY 25, 1892.

The Queen has been graciously pleased, on the occasion of the celebration of Her Majesty's birthday, to give orders for the following promotions in, and appointments to, the Most Honourable Order of the Bath :—

To be an Ordinary Member of the Military Division of the First Class, or Knights Grand Cross of the said Most Honourable Order, viz. :—
Admiral Sir George Ommanney Willes, K.C.B.

To be Ordinary Members of the Military Division of the Second Class, or Knights Commanders of the said Most Honourable Order, viz. :—
Vice-Admiral John Ommanney Hopkins.
Vice-Admiral Algernon Charles Fieschi Heneage.
General John William Collman Williams, Royal Marine Artillery.

To be Companions.

Lieutenant-Colonel John Walter Ottley, R.E., Chief Engineer and Secretary to the Government of the Punjab.
Frederick Ewart Robertson, Esq., Chief Engineer of the East India Railway.
Lomesh Chandra Dutt, Bengal Civil Service.
Arthur John Hughes, Esq., Superintending Engineer, Northern Provinces and Oudh.
William John Bird Clerke, Esq., C.E.
Loudoun Francis McLean, Esq., C.E.
Lieutenant Hugh Daly, Indian Staff Corps, Superintendent, Northern Shan States.
James George Scott, Esq., Officiating Superintendent of the Northern Shan States.
George Pringle Rose, Esq., Officiating Deputy Manager, Northern Railway.
Bahadur Jai Prakash Lal, Diwan of the Maharajah of Gaon.
Bahadur Kadir Dad Khan, Gul Khan, Deputy Collector, Sind.
Gwan Ganpat Rai, Extra Assistant Commissioner, Baluchistan.
William Turner Thiselton-Dyer, Esq., C.M.G., Director of the Royal Botanic Gardens, Kew.

HONOURARY CHANCERY OF THE ORDER OF ST. MICHAEL AND ST. GEORGE, DOWNING STREET, MAY 25, 1892.

The Queen has been graciously pleased to give directions for the following appointments to, and promotions in, the Most Distinguished Order of St. Michael and St. George :—

Ordinary Members of the Second Class, or Knights Commanders of the said Most Distinguished Order :—

William Montagu Manning, Knt., LL.D., Member of the Legislative Council of the Colony of New South Wales.
David Tennant, Knt., Speaker of the House of Assembly of the Cape of Good Hope.
Joseph Caldwell Abbott, Esq., D.C.L., Q.C., Prime Minister of the Dominion of Canada and President of the Queen's Privy Council for the Dominion.
James Mowat, Esq., LL.D., Q.C., Attorney-General and Premier of the Province of Ontario in the Dominion of Canada.
Richard Alphonsus Buckley, Esq., Attorney General and Colonial Secretary of the Colony of New Zealand.
Ludovico Vincenzo Inglott, Esq., C.M.G., late Postmaster-General of the Island of Malta.

Ordinary Members of the Third Class, or Companions of the said Most Distinguished Order :—

George Mercer Dawson, Esq., D.S., LL.D., Assistant Director and Registrar of the Geological and Natural History Survey of the Dominion of Canada, one of Her Majesty's Commissioners on the Bering Sea Fishery.
Francis Pratt Winter, Esq., Chief Judicial Officer and Member of Executive and Legislative Councils of the Possession of British Guiana.
James Alexander Swettenham, Esq., Auditor-General and Member of Executive and Legislative Councils of the Island of Ceylon.
John Henry Phillips, Esq., Senior Unofficial Member of the Legislative Council of the Colony of British Honduras.
Thomas Shelford, Esq., an Unofficial Member of the Legislative Council of the Straits Settlements.
Robert William Span Mitchell, Esq., Government Emigration Agent in Calcutta for the Colonies of British Guiana and Natal.
Adolphus Bernays, Esq., Clerk of the Legislative Assembly of the Colony of Queensland.
Ernest Mortimer Stanford, Esq., Chief Magistrate of the Cape of Good Hope.
Ferdinand von Thurn, Esq., M.A., Government Agent of the North-Western District of the Colony of British Guiana.

HONOURARY CHANCERY OF THE ORDER OF ST. MICHAEL AND ST. GEORGE, DOWNING STREET, MAY 25, 1892.

The Queen has been graciously pleased to give directions for the following promotions in and appointments to the Most Distinguished Order of St. Michael and St. George :—

Ordinary Members of the First Class, or Knights Grand Cross of the said Most Distinguished Order :—

Horace Rumbold, Bart., K.C.M.G., Her Majesty's Envoy Extraordinary and Minister Plenipotentiary at the Hague.
Major-General Sir Francis Wallace Grenfell, K.C.B., for services rendered in Egypt.

Ordinary Members of the Second Class, or Knights Commanders of the said Most Distinguished Order :—

John Mitford Palmer, Esq., C.M.G., for services rendered in Egypt.
John Alabaster, Esq., Her Majesty's Consul-General at

Ordinary Members of the Third Class, or Companions of the said Most Distinguished Order :—

John Pasha, for services rendered in Egypt.
Edmund Bateman, Esq., of the Board of Trade, for services in connection with British commercial interests abroad.

SERVICE GOSSIP.

By "ANGLO-COLONIAL."

The following changes have taken place in Mauritius consequent upon the departure on leave of Dr. F. Lovell, Chief Medical Officer:—Dr. E. Chastellier to be Acting Chief Medical Officer; Dr. H. Lorans to act as Medical Officer to the Immigration Department; Dr. M. Jollivet to be Acting Surgeon-Superintendent of the Barkly Asylum, and Dr. V. Larcher to be Acting Health Officer in place of Dr. Jollivet. Dr. Chastellier has in addition been appointed, provisionally, a Nominated Member of the Council of Government.

Mr. E. P. Gueritz has been appointed District Magistrate at Sandakan, British North Borneo.

Mr. C. G. Walpole, Attorney-General of the Leeward Islands, is expected to arrive in England by the next West India mail, on leave of absence.

Mr. W. S. Turner, Chief Commissary, British Guiana, is acting as Auditor-General of the Colony, and Mr. F. C. M. Anson as Chief Commissary until further orders.

Consequent on the transfer of Mr. G. G. Munro to be provisionally Second Revenue Officer of Carriacou and the Grenadines, Mr. E. A. Martin, Third Treasury Clerk, Grenada, has been appointed Assistant Revenue Officer; and Mr. L. T. Kerr, Supernumerary Clerk in the Registrar's Office, becomes Third Treasury Clerk.

Mr. Justice L. B. Clarence, Senior Puisne Judge of Ceylon, has been ordered home on account of severe illness arising out of an attack of fever contracted a short time ago.

Mr. F. R. Saunders, C.M.G., Treasurer of Ceylon, having left the island on leave, Mr. G. S. Williams, Principal Collector of Customs, has been selected to perform the duties of Treasurer during his absence. The following changes have also taken place, arising out of the acting appointment:—Mr. Robert Reid acts as Principal Collector of Customs, Colombo; Mr. P. Arunachalan acts as Registrar-General of Lands, and Mr. H. White will perform the duties of Commissioner of Requests and Additional Police Magistrate, Colombo.

The exchange of offices between Mr. A. Lingham, Harbour Master of Georgetown, British Guiana, and Mr. Robert Wright, Inspector of Police at Grenada, which was mentioned in these notes as to take place some weeks since, has been approved by the Secretary of State. Mr. Wright is a brother of Mr. E. F. Wright, who is present Acting Inspector-General of Police in British Guiana and was formerly in the service of the Royal Mail Steam Packet Company, whose employ he left for an Inspectorship of Police in British Guiana, whence he was transferred to Grenada.

A rumour has gained currency in Trinidad that the offices of Colonial Secretary and Auditor-General of that Colony are to be amalgamated, and be taken charge of by Mr. Henry Fox, the present Colonial Secretary, at a saving to the Colony of a year.

The leave of absence of Sir Edward L. O'Malley, Chief Justice of the Straits Settlements, has been extended for six months, at half salary.

Mr. J. D. Dick, Government Engineer Surveyor, Penang, is acting as Government Marine and Engineer Surveyor at Singapore, during the absence on leave of Mr. A. Rowe, whilst Mr. Dick's duties at Penang have been taken over by Mr. J. W. Lawrie, Assistant Government Engineer Surveyor, Singapore, who will hold the acting appointment during Mr. Dick's absence.

Dr. W. Kenny, of the Coolie Emigration Service, will depart for England on June 2, for Calcutta, for the purpose of taking the medical charge of a number of coolie immigrants from India to British Guiana.

Major J. J. Crooks, Colonial Secretary of Sierra Leone, who is present on leave in England, is about to start on a pleasure tour to Canada and the United States, prior to returning to his duties on the West Coast of Africa. He intends leaving Liverpool on June 4.

MAY 28, 1892

ARRIVALS IN EUROPE

Persons arriving in Europe from our Colonies, India, and America are invited to forward their addresses to us for publication in our List of Arrivals. They can also have their letters addressed to the Office of this Paper, Imperial Buildings, Ludgate Circus, London, E.C., where the Manager will be happy to afford every information in his power.

Bagigian, Mr. H. (Boston, U.S.A.), 51 Upper Bedford Place, London.
Baldwin, Mr. and Mrs. (San Francisco, U.S.A.), 20 Granville Place, Portland Square, London.

Bell, Mrs. (Detroit, U.S.A.), 45 Rue de Clichy, Paris.
Blackley, Mr. Frank (Sydney), St. George's Club, Hanover Square, London.

Burden, Mrs. (New York, U.S.A.), 44 Rue de Clichy, Paris.
Cornley, Miss F. (Philadelphia, U.S.A.), 1 Bedford Place, London, W.C.

Converse, Mr. and Mrs. (New York, U.S.A.), 44 Rue de Clichy, Paris.
Crane, Mr. and Mrs. (Boston, U.S.A.), 45 Rue de Clichy, Paris.
Crum, Miss A. (Jacksonville, U.S.A.), 45 Rue de Clichy, Paris.
Davis, Mrs. and the Misses (New York, U.S.A.), 34 Brompton Crescent, South Kensington, London.

Dewey, Mr. R. (Detroit, U.S.A.), 44 Rue de Clichy, Paris.
Dyer, Mr., Mrs., and Miss (Chicago, U.S.A.), 74 Avenue Kléber, Paris.
Eagle, Mr. and Mrs. (Chicago, U.S.A.), 45 Rue de Clichy, Paris.
Embury, Mrs. (New York, U.S.A.), 5 Oxford Terrace, Hyde Park, London.

Fisher, Miss B. (Philadelphia, U.S.A.), 45 Rue de Clichy, Paris.
Giles, Mr. T. S. (Chicago, U.S.A.), 45 Rue de Clichy, Paris.
Griffin, Mr. T. C. (Scranton, Pa., U.S.A.), 10 Bedford Place, London, W.C.

Griffin, Mr. (New York, U.S.A.), 44 Rue de Clichy, Paris.
Gross, Mr. B. (Chicago, U.S.A.), 27 Rue Marboeuf, Paris.
Hackett, Miss E. (Jacksonville, U.S.A.), 45 Rue de Clichy, Paris.
Haines, Mr. and Mrs. (Philadelphia, U.S.A.), 1 Bedford Place, London, W.C.

Hambleton, Mr. and Mrs. (Buffalo, U.S.A.), 286 New Cross Road, London.

Harper, Mr. L. C. (Brooklyn, U.S.A.), 13 Garrick Street, London.
Haskett, Mr. and Mrs. (New York, U.S.A.), 44 Rue de Clichy, Paris.
Hayward, Mrs. (New York, U.S.A.), 45 Rue de Clichy, Paris.
Hein, Dr. and Mrs. (New York, U.S.A.), 44 Rue de Clichy, Paris.
Hinck, Mrs. and Miss (Enoch, Pa., U.S.A.), 44 Rue de Clichy, Paris.
Johnson, Mr. and Mrs. (Chicago, U.S.A.), 45 Rue de Clichy, Paris.
Kellog, Mrs. and Misses (New York, U.S.A.), 44 Rue de Clichy, Paris.

Le Conte, Mr. J. (Beverly, U.S.A.), 45 Rue de Clichy, Paris.
Lenicke, Mr. and Mrs. (Indianapolis, U.S.A.), 20 Rue d'Antin, Paris.
Lisberger, Mr. S. (Philadelphia, U.S.A.), 44 Rue de Clichy, Paris.
Moulton, Mrs. C. (New York, U.S.A.), 30 Rue Pergolèse, Paris.
Okie, Miss (Providence, U.S.A.), 13 Brook Street, Bond Street, London, W.

Parshall, Mr. D. (Lyons, U.S.A.), 45 Rue de Clichy, Paris.
Pond, Mr. and Mrs. (Boston, U.S.A.), 44 Rue de Clichy, Paris.
Porter, Mrs. (Minnesota, U.S.A.), 30 Rue Pergolèse, Paris.
Price, Miss M. (Chicago, U.S.A.), 45 Rue de Clichy, Paris.
Richards, Mr. and Mrs. (Indianapolis, U.S.A.), 20 Rue d'Antin, Paris.
Richards, Mr. H. (Indianapolis, U.S.A.), 20 Rue d'Antin, Paris.
Richardson, Mr. G. (New York, U.S.A.), 44 Rue de Clichy, Paris.
Shepard, Miss F. (New York, U.S.A.), 44 Rue de Clichy, Paris.
Simpson, Mr. L. W. (Buffalo, U.S.A.), 30 Rue Pergolèse, Paris.
Smith, Mrs. and Miss (Enoch, Pa., U.S.A.), 44 Rue de Clichy, Paris.
Sparks, Miss (Philadelphia, U.S.A.), 13 Brook Street, Bond Street, London, W.

Steele, Miss (Chattanooga, U.S.A.), 45 Rue de Clichy, Paris.
Swan, Mrs. (Scranton, Pa., U.S.A.), 10 Bedford Place, London, W.C.
Woods, Mr. and Mrs. (Boston, U.S.A.), 45 Rue de Clichy, Paris.

ALMOND'S HOTEL, London.

Paul, Mrs. and the Misses (Philadelphia, U.S.A.).
Pole, Mrs. (New York, U.S.A.).

COVENT GARDEN HOTEL, London.

Fox, Mr. H. V. (Boston, U.S.A.).
Giles, Mr. F. S. (New York, U.S.A.).
Labeke, Mr. and Mrs. (Chicago, U.S.A.).

GRAND HOTEL, Paris.

Gans, Mr. and Mrs. (New York, U.S.A.).
Guiterman, Mr. R. (New York, U.S.A.).
Skelton, Mr. R. P. (New York, U.S.A.).

HOTEL BELLEVUE, Paris.

Ames, Mr. and Mrs. (New York, U.S.A.).
Bacon, Mr. P. S. (Philadelphia, U.S.A.).
Bronson, Mr. M. A. (New York, U.S.A.).
Dodge, Mr. C. T. (New York, U.S.A.).
Godridge, Mr. C. (New York, U.S.A.).
Johnson, Mr. J. L. (New York, U.S.A.).
Kindersly, Mr. W. L. (New York, U.S.A.).
Lenet, Mr. A. (New York, U.S.A.).
Talbot, Mr. A. M. (New York, U.S.A.).

HOTEL BINDA, Paris.

Baker, Mr. and Mrs. (Kansas, U.S.A.).
Boardman, Mrs. (Cleveland, U.S.A.).

Ordinary Members of the Military Division of the Third Class, or Companions of the said Most Honourable Order, viz. :-

Captain Uvedale Corbett Singleton, Royal Navy.
 Captain Rodney Maclaine Lloyd, Royal Navy.
 Captain Tynte Ford Hammill, Royal Navy.
 Captain Sir William Cecil Henry Domville, Bart., Royal Navy.
 Captain Reginald Friend Hannam Henderson, Royal Navy.
 Captain Henry John May, Royal Navy.
 Commander Robert Archibald James Montgomerie, Royal Navy.
 Colonel Arthur French, A.D.C., Royal Marine Artillery.
 Lieutenant-Colonel William Guise Tucker, Royal Marine Artillery.
 Fleet Surgeon Edward Elphinstone Mahon, Royal Navy.
 Chief Inspector of Machinery, William Castle, Royal Navy.

INDIA OFFICE, MAY 25, 1892.

The Queen has been graciously pleased to make the following appointment to the First, Second, and Third Classes of the Most Exalted Order of the Star of India :-

To be a Knight Grand Commander.

Colonel His Highness Maharajah Partab Singh, Indar Mahindar, Bahadur, Sipar-i-Saltanat of Jammu and Cashmere.

To be Knights Commanders.

Sir Auckland Colvin, K.C.M.G., C.I.E., Bengal Civil Service, Lieutenant-Governor of the North-West Provinces and Chief Commissioner of Oude.

Henry Edward Stokes, Esq., C.S.I., Madras Civil Service, Member of the Council of the Governor of Madras.

His Excellency Maharajah Bir Shamsheer Jung Rana Bahadur, Prime Minister of Nepal.

Maharajah Mana Vikrama Bahadur Zamorin of Calicut.

To be Companions.

Sir Edward Charles Buck, Bengal Civil Service, Secretary to Government of India, Revenue and Agricultural Department.

Henry John Stedman Cotton, Esq., Bengal Civil Service, Officiating Secretary to the Government of Bengal, Member of the Legislative Council of Bengal.

Surgeon Major-General William Roche Rice, M.D., Indian Medical Service, Surgeon-General and Sanitary Commissioner with Government of India.

Colonel Frederick Jarvis Home, R.E., Inspector-General of Irrigation and Deputy Secretary to the Government of India, Public Works Department.

Major Henry St. Patrick Maxwell, Indian Staff Corps, Deputy Commissioner, Assam, and Political Agent and Superintendent of the Manipur State.

Surgeon-Major George Scott Robertson, Bengal Establishment, Agency Surgeon, Gilgit.

INDIA OFFICE, MAY 25, 1892.

The Queen has been graciously pleased to make the following appointments to the Most Eminent Order of the Indian Empire :-

To be Knights Grand Commanders.

Sir James Broadwood Lyall, K.C.S.I., Bengal Civil Service, late Lieutenant-Governor of the Punjab.

Maharajah Mirza Sir Pusapati Ananda Gujapati Raz Mani Sultan Bahadur Goru, Zamindar of Vizianagram, K.C.I.E.

To be Knights Commanders.

Tiruvarur Muthuswami Aiyar, Esq., C.I.E., one of the Puisne Judges, High Court of Judicature, Madras.

Griffith Humphry Pugh Evans, Esq., Barrister-at-Law, Additional Member of the Council of the Viceroy of India for making Laws and Regulations.

Edward Charles Kayll Ollivant, Esq., C.I.E., Bombay Civil Service, Political Agent and Collector of Stamp Revenue, Kathiawar.

Charles Pontifex, Esq., late Legal Adviser and Solicitor to the Secretary of State for India.

Henry Hoyle Howorth, Esq., M.P.

To be Companions.

Lieutenant-Colonel John Walter Ottley, R.E., Chief Engineer and Joint Secretary to the Government of the Punjab.

Frederick Ewart Robertson, Esq., Chief Engineer of the East India Railway.

Romesh Chandra Dutt, Bengal Civil Service.

Arthur John Hughes, Esq., Superintending Engineer, North-Western Provinces and Oudh.

William John Bird Clerke, Esq., C.E.

Loudoun Francis McLean, Esq., C.E.

Lieutenant Hugh Daly, Indian Staff Corps, Superintendent, Northern Shan States.

James George Scott, Esq., Officiating Superintendent of the Northern Shan States.

George Pringle Rose, Esq., Officiating Deputy Manager, North-Western Railway.

Rai Bahadur Jai Prakash Lal, Diwan of the Maharajah of Dumraon.

Rai Bahadur Kadir Dad Khan, Gul Khan, Deputy Collector, Sind. Diwan Ganpat Rai, Extra Assistant Commissioner, Baluchistan.

William Turner Thiselton-Dyer, Esq., C.M.G., Director of the Royal Botanic Gardens, Kew.

CHANCERY OF THE ORDER OF ST. MICHAEL AND ST. GEORGE, DOWNING STREET, MAY 25, 1892.

The Queen has been graciously pleased to give directions for the following appointments to, and promotions in, the Most Distinguished Order of St. Michael and St. George :-

To be Ordinary Members of the Second Class, or Knights Commanders of the said Most Distinguished Order :-

Sir William Montagu Manning, Knt., LL.D., Member of the Legislative Council of the Colony of New South Wales.

Sir David Tennant, Knt., Speaker of the House of Assembly of the Cape of Good Hope.

John Joseph Caldwell Abbott, Esq., D.C.L., Q.C., Prime Minister of the Dominion of Canada and President of the Queen's Privy Council for the Dominion.

Oliver Mowat, Esq., LL.D., Q.C., Attorney-General and Premier of the Province of Ontario in the Dominion of Canada.

Patrick Alphonsus Buckley, Esq., Attorney General and Colonial Secretary of the Colony of New Zealand.

Ferdinando Vincenzo Inglott, Esq., C.M.G., late Postmaster-General of the Island of Malta.

To be Ordinary Members of the Third Class, or Companions of the said Most Distinguished Order :-

George Mercer Dawson, Esq., D.S., LL.D., Assistant Director and Geologist of the Geological and Natural History Survey of the Dominion of Canada, one of Her Majesty's Commissioners on the Behring Sea Fishery.

Francis Pratt Winter, Esq., Chief Judicial Officer and Member of the Executive and Legislative Councils of the Possession of British New Guinea.

James Alexander Swettenham, Esq., Auditor-General and Member of the Executive and Legislative Councils of the Island of Ceylon.

Joseph Henry Phillips, Esq., Senior Unofficial Member of the Executive Council of the Colony of British Honduras.

Thomas Shelford, Esq., an Unofficial Member of the Legislative Council of the Straits Settlements.

Robert William Span Mitchell, Esq., Government Emigration Agent in Calcutta for the Colonies of British Guiana and Natal.

Lewis Adolphus Bernays, Esq., Clerk of the Legislative Assembly of the Colony of Queensland.

Walter Ernest Mortimer Stanford, Esq., Chief Magistrate of Griqualand East, in the Colony of the Cape of Good Hope.

Everard Ferdinand im Thurn, Esq., M.A., Government Agent of the North-Western District of the Colony of British Guiana.

CHANCERY OF THE ORDER OF ST. MICHAEL AND ST. GEORGE, DOWNING STREET, MAY 25, 1892.

The Queen has been graciously pleased to give directions for the following promotions in and appointments to the Most Distinguished Order of St. Michael and St. George :-

To be Ordinary Members of the First Class, or Knights Grand Cross of the said Most Distinguished Order :-

Sir Horace Rumbold, Bart., K.C.M.G., Her Majesty's Envoy Extraordinary and Minister Plenipotentiary at the Hague.

Major-General Sir Francis Wallace Grenfell, K.C.B., for services rendered in Egypt.

To be Ordinary Members of the Second Class, or Knights Commanders of the said Most Distinguished Order :-

Elwin Mitford Palmer, Esq., C.M.G., for services rendered in Egypt.

Chaloner Alabaster, Esq., Her Majesty's Consul-General at Canton.

To be Ordinary Members of the Third Class, or Companions of the said Most Distinguished Order :-

Morice Pasha, for services rendered in Egypt.

Alfred Edmund Bateman, Esq., of the Board of Trade, for services in connection with British commercial interests abroad.

✱ THE PICKLE PAR EXCELLENCE. ✱

MARGETT'S
 ANGLO-INDIAN PICKLE.

In special Patent Screw-capped Bottles,
 Expressly for the Colonies.

A combination of choicest Fruits, Vegetables, and Condiments,
 prepared in Pure Malt Vinegar, and without artificial
 colouring.

Delicious with either Fish, Flesh, or Fowl, it entices the appetite
 and assists digestion.

SOLE MANUFACTURERS:

MARGETT & CO., KINGSLAND, LONDON, ENGLAND.

The Canadian Gazette.

A Weekly Journal of Information and Comment upon matters of Use and Interest to those concerned in Canada, Canadian Emigration, and Canadian Investments.

LONDON: THURSDAY, JUNE 25, 1891.

THE BEHRING SEA COMMISSION.

THERE is good reason to feel satisfied with the selection of British members of the Commission to "inquire into the condition of seal life in Behring Sea and other parts of the North Pacific." SIR GEORGE BADEN-POWELL has during the past few years made himself intimately acquainted with the ins and outs of the fishery questions on the Atlantic and Pacific shores of Canada. He has several times visited Canada and the United States to carry on investigations on the spot, and his contributions to the discussion of the subjects in Parliament and in the public press have always been framed in a spirit well calculated to inspire confidence in his capacity for sifting facts and his ability to draw fair and sound conclusions from them. In the Colony of Victoria as secretary to the Governor, SIR GEORGE BOWEN, in the West Indies as Sugar Bounties commissioner, in Bechuanaland as a member of SIR C. WARREN'S staff, and lastly in Malta as boundary commissioner, SIR GEORGE has had a varied experience such as falls to few men still on the sunny side of fifty, and we may expect that he will render a good account of himself in his latest mission.

PROFESSOR GEORGE MERCER, more generally called in Canada DR. GEORGE DAWSON, the other British commissioner, is well known to many of our readers, and it would have been difficult to choose a more competent or acceptable Canadian representative. From his earliest days MR. DAWSON has been associated with scientific and kindred subjects. His studies associated him in youth with McGill University, Montreal, of which his father, SIR WILLIAM DAWSON, has for thirty-six years been the revered principal. In 1872, when only twenty-three years of age, MR. DAWSON became an associate of the Royal

School of Mines, having held the DUKE of CORNWALL'S scholarship given by the PRINCE OF WALES, and obtained medals in geology and palæontology. In the following year, 1873, he rendered valuable service as geologist and naturalist to HER MAJESTY'S North American Boundary Commission, and published at the conclusion of the inquiry, in 1875, an exhaustive report upon the geology and resources of the country in the vicinity of the 49th parallel. In the same year he formed the Geological Survey of Canada, and after eight years of painstaking and highly creditable labour, was appointed to his present position as Assistant Director Geologist of the Survey under DR. ALFRED SELWYN. MR. DAWSON'S researches have, too, specially fitted him for his present mission. Of his many reports to the Survey, a large number deal with the extreme western regions of Canada, where much the same natural phenomena exist as in the scene of his new labours, while it was only the other day that the Royal Society elected him to its fellowship in recognition of his services to science in these same districts. MR. DAWSON was, moreover, at Washington with MR. CHAMBERLAIN and SIR CHARLES TUPPER at the time of the Fisheries Commission of 1887-88, and made a report on the Behring Sea question which the HON. C. H. TUPPER found of much service in recent phases of the negotiations.

The United States has chosen its two members of the Commission, and there is no reason why the initial steps in the investigation should not at once be proceeded with. It is stated that the English and Canadian Commissioners will meet almost immediately at Ottawa, whence, after ascertaining the views of the Canadian Government, they will proceed to Vancouver. They will then spend two months cruising in a man-of-war over the field of the future arbitration, and, of course, visit the Prebyloff Islands and all the principal sealing stations, and enjoy the opportunity of acquiring on the spot such intimate acquaintance with the technicalities and local requirements and interests of the seal fishery as will prepare them to meet their United States colleagues as experts in the autumn. MR. ASHLEY FROUDE is the secretary to the British Commissioners.

Saruman (Captain William Richardson), which arrived at Liverpool on June 20th, having left Quebec June 11th. There were 115 cabin, 78 intermediate, and 56 steerage passengers:—

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| Professor Ardley. | Professor Holmes. | Dr. D. McLennan, M.D. |
| Miss A. Bailey. | Miss House. | Rev. George, Mrs., and |
| Rev. Provost, Mrs., and | R. Howe. | J. B. McLean. |
| Miss Constance Body. | Mr. Hutchinson. | Malcolm McKenzie. |
| Dr. Bowie. | S. Jones. | Miss Nightingale. |
| Miss Boyle. | W. M. Jones. | Rev. Cyrus, Mrs., and Miss |
| F. M. Bridgewater. | Rev. W. M. and Mrs. | Bessie Northing. |
| F., Mrs., and Miss Olive | Kincaid. | E. S. Perratt. |
| Brooke and Governess. | G. R. and Miss Kinloch. | James Talbot and Mrs. |
| E. P. Brownwell. | Miss Lunn. | Power. |
| Mrs. Bucksey. | Mrs. Lyttleton. | Mr. and Mrs. Rathwell. |
| Rev. Mr. Buller. | The Right Rev. J. T. Lewis | Mr. Ross. |
| Dr. Butters. | (Bishop of Ontario) and | D. and Miss Russell. |
| T. and Mrs. Caldwell. | Mrs. Lewis. | Miss Saunders. |
| Misses A. and K. Camp- | Mrs. Le Bas. | William Seath. |
| bell. | Mr. Lyons. | R. Sillito. |
| J. E. Chipman. | Miss Julia May. | Rev. Mr. Skelton. |
| Dr. J. Clemsha, M.D. | Mrs. James and Miss | William Spry. |
| S. and J. and Miss Crane. | Moran. | R. Stibbard. |
| Miss Davidson. | Mrs. and Master Morgan. | John and Mrs. Thomson. |
| Mr. and Mrs. Denton. | J., Mrs., and the Misses | Mrs., Miss Marjorie, and |
| Professor Downey. | Grace and Louisa | Master Edward Valpy. |
| J., Mrs., Miss, and Miss | Murphy. | Mrs. C. A. Vaughan. |
| L. Dunlop. | The Misses (2) and J. W. | A. W. and Mrs. Vercoe. |
| Miss Ewan. | Murkland. | C. R. Waldy. |
| Colonel and Mrs. Forster. | Mrs. D. J. Macdonnell. | Rev. W. G. Wallace. |
| Miss Galloway. | Miss Macnider. | Miss Catherine Warren. |
| L. W. Gammon. | Miss McArthur. | Rev. R. and Mrs. Williams. |
| H. Gordon. | Miss McNab. | John and Mrs. Young and |
| Mrs. Grove. | Mr. and Mrs. McClintock. | infant. |
| Miss Hamilton. | Miss Edith McMillan. | |

The following is a list of saloon passengers per Allan Line steamer *Caspian*, which arrived at Liverpool on June 17th, from Baltimore, Halifax, and St. John's. There were 36 cabin, 32 intermediate, and 43 steerage passengers:—

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| Mrs. Abbot. | Miss Florence Holson. | Clarence Smith. |
| Prof. D. C., Mrs., and | A. G. Rendell. | Miss K. C. Stiles. |
| Miss Aileen Bell. | W. F. Rennie. | Rev. R. Tierney. |
| C. Bleriot. | Captain W. and Mrs. | Mrs. Algernon and Masters |
| Mrs. J. Browne. | Richardson. | Algernon and Thomas |
| F. Carsley. | John Rusk. | Tillard and maid. |
| B. and Mrs. Gilpin. | J. D. Ryan. | Herbert Church. |
| Miss Leila Gittings. | Sergt. A., Mrs., Miss, | F. H. and Mrs. Ebigfall. |
| W. Hall. | Masters Alfred, Fred. | Miss M. D. Winchester. |
| Rev. J. E. Hughes. | and Henry Smith. | |

The following is a list of saloon passengers per Beaver Line steamer *Lake Superior* (Captain Wm. Stewart), which arrived at Liverpool on June 20th, having left Montreal on June 10th:—

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|---------------------------|--------------------------|----------------------------|
| Miss Ambrose. | Mr. and Miss Gates. | Mrs. (Rev.) W. H. Puls- |
| Mr. Ash. | Miss Gordon. | ford and infant. |
| H. C. Adams. | Mrs. J. B. and Masters | Mrs. Parker and infant. |
| W. G. and Miss Black. | Dudley and Gerald | A., Mrs., and Master Pain, |
| Miss and Miss Jessie | Goode. | and infant. |
| Bowen. | E. and Mrs. Hay. | Mrs. Rowand. |
| J. O. Billings. | Rev. Wm. Moore, D.D. | J. B. Reid. |
| C. A. and Mrs. Cordingly. | S., Mrs., and Miss Munn. | E. H. Retallack. |
| Rev. John Cattermole. | W. H. and Miss R. | Miss Stevenson. |
| John Campbell. | Morley. | Rev. Mr. Sandwell. |
| Miss Duncan. | Miss McFarlane. | The Misses Lillie J. and |
| Miss Dance. | W. G. and Mrs. W. H. | Maud M. Wilkes. |
| Mrs. Glover. | Martin, and infant. | |

Hudson's Bay Company intend to recommend a dividend of 6s. 6d. per share, being at the rate of 2½ per cent., carrying forward £23,860, as against £39,864 last year.

At the annual meeting of the Canada Company, to be held to-morrow (Thursday), the directors will propose the declaration of a dividend of 17s. 6d. per share. In July, 1890, 10s. was paid, and in January this year £1. In the period from the 1st of January to the 28th of May 357½ acres of land were sold, at an average of 37s. 7d. per acre; while 4,599½ acres were leased (with the option of purchase) at an average price of 78s. 5d. In the same period of 1890, 425 acres were sold, at an average of 78s. 4d., and 1,503 acres were leased, at an average of 69s.

Subjoined is the report of the directors of the Sydney and Louisburg Coal and Railway Company, Limited, to be presented at the annual meeting called for the 30th inst. :—

The directors beg to submit herewith the balance sheet and accounts for the financial year ending 31st December, 1890.

The quantity of coal won during the year, including slack, as well as coal consumed at the mines, and in working the railway, was 155,907 tons, as against 121,660 tons in 1889, and 124,050 tons in 1888.

The increase in the Company's business necessitated considerable outlays. The Emery mine has been opened up; mining rights over a large additional area have been acquired; a house at Sydney for the agent and manager, and several miners' houses, have been erected; one new locomotive and fifty new coal cars have been bought, while the railway, the pier at Sydney, and the general plant have been put into good working order.

The directors are glad to be able to report that the year's working shows a substantial increase over that of 1889. Owing, however, to the above-mentioned disbursements (a large proportion of which has been debited to revenue), only £1,715 9s. 6d. is carried to profit and loss account, instead of £3,618 18s. 2d. in 1889.

The balance of profit and loss account brought forward on 31st December, 1889, after payment of a dividend of 12s. per share on the 5,000 first preference shares, was £1,839 5s. 2d., which, added to £1,715 9s. 6d. as above, leaves an available balance of £3,554 14s. 8d.

Out of this sum the directors recommend the payment of a dividend of 12s. per share, equal to 10 per cent. on the amount paid up on the 5,000 first preference shares, which would absorb £3,000, leaving a balance of £554 14s. 8d. to be carried forward.

The directors are glad to report that the Cape Breton railway has been completed, and was opened for traffic on the 3rd January last.

The retiring directors are Mr. C. J. Russell and Mr. B. H. Schröder, and, being eligible, they offer themselves for re-election.

The auditor, Mr. John Paterson, retires, but offers himself for re-election

THE UNIVERSITY COUNCIL.

STANDARD OF MATRICULATION FURTHER DISCUSSED.

Two Degrees Conferred This Afternoon—
The Missionary Convention Last Night
Some Excellent Addresses Made.

At Convocation in Queen's University this afternoon two degrees were conferred. Rev. Prof. Williamson, in presenting Mr. S. D. Pope, B.A., to receive the degree of LL.D., said:—

Mr. Chancellor,—I beg leave to present to you the name of Mr. Stephen Daniel Pope, B.A., on whom the Senate has agreed to confer the degree of Doctor of Laws. Mr. Pope, in 1861, graduated from this University with honors in Classics and Mathematics. Having finished his college course, he first became Principal of the united Grammar and Common Schools at Stirling, in the County of Hastings, in Ontario; and after a long and successful career of similar educational work, was finally raised, in 1883, to the position of Superintendent of Education for the Province of British Columbia.

When we consider the circumstances of that part of the Dominion, so vast in its extent, with its many infant settlements so widely apart from each other, and the powers and duties assigned to him as Superintendent, it is evident that the office he holds involves special labors and responsibilities. To him is entrusted the selection of the text-books which the law requires shall alone be used in the Grammar and Common Schools of the Province. To him also, with two or more, generally graduates of British or Canadian Universities, is committed the examination of candidates for the different grades of teachers, and the granting of certificates of qualification. He has to advise and to distribute the grant made by the Legislature for the support of public education. Each school has to be visited from time to time by himself, or his Assistant Inspector. Full and explicit reports from all of them are sent in to him every year, and are embodied in his clear and elaborate annual reports to the Local Parliament. We may thus judge of the very great importance of the right fulfilment of the duties of the position which he occupies, and of their arduous nature. All honor, therefore, is due to him for their having been faithfully, and successfully and indefatigably fulfilled. Fitted for his high office by his accurate scholarship, his own practical experience in the work of the instruction of youth, his untiring energy and sound judgment, he has not only gained the respect of the members of the Government, and of the people generally, but has called forth from the teachers themselves to whom he holds relations so intimate the strongest expressions of their confidence and esteem.

Prof. Dupuis said: Mr. Chancellor, I have much pleasure in introducing to your notice the name of Mr. George Mercer Dawson as that of a gentleman worthy of being honored by having the degree of doctor of laws conferred upon him by this university. Mr. Dawson is well and favorably known as a most faithful and indefatigable observer and as a pleasing interpreter of the results of his observations.

back as 1874 he published a long complete report on

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ORCHARD AND GARDEN.

USEFUL HINTS FOR THE HORTICULTURIST BRIEFLY PRESENTED.

The New Chrysanthemums—List of Last Year's American Seedlings—Description of the Ada Spaulding, a Japanese Variety, the First Prize Chrysanthemum of 1889.

When it comes to the chrysanthemums John Thrope thinks that American seedlings far surpass the European kinds; that is to say, the American raised seedlings give more satisfaction, as a rule, in America, than do the varieties produced in Europe.



ADA SPAULDING, FIRST PRIZE CHRYSANTHEMUM OF 1889.

Of last year's American seedlings, the following are really first class: Beauty of Castlewood, red and gold; E. H. Fittler, gold and bronze; Coronet, golden orange; Mrs. W. K. Harris, pure gold; Colossal, white and pink; Excellent, rose pink and lilac; Advance, lovely shade of rosy lilac; Miss Anna Hartshorn, pure white; Violet Rose, carmine, shaded rosy purple, superb; Llewellyn, red and gold; Mrs. William Barr, plum purple, new color, fine; Mrs. Judge Benedict, white anemone; Mrs. M. J. Thomas, white; Mrs. Irving Clark, pink; Thomas C. Price, Mermet pink; Mary Wheeler, silvery blush; Sunnyside, white; Mrs. A. Carnegie, Crimson; Zillah, bronze and cherry red; Mrs. A. C. Burpee, chrome bronze.

Of Japanese importations, first is Mrs. Alpheus Hardy, with her distinct character; Kioto, golden yellow; Lilian B. Bird, silvery blush; Mrs. Fottler, rosy pink; Neesima, gold; W. H. Lincoln, glorious yellow. Other Japanese importations by way of Europe are: H. Cannell, yellow; Ed Molyneux, crimson and gold. Lady Lawrence, Mrs. Dunnett and Mrs. H. Cannell are identical with Robert Bottomley, Mrs. J. N. Gerard and Christmas Eve, which we have had for the last four years.

Of the English raised kinds, Sunrich yellow; Avalanche, white; Mrs. J. N. Gerard, bronze salmon.

A Hydrographic Survey Department for Canada.

From "THE GAZETTE," Montreal, June 3rd, 1899

At a meeting of Section III. of the Royal Society of Canada, held in Ottawa recently, Dr. Johnson, vice-principal of McGill University, presented a report of the interview of the representatives of the society with the Government last month on the subject of the establishment of a Hydrographic survey department for Canada.

He suggested that it was proper now for the society, to abstain from further action until some intimation had been obtained that the Government desired to receive further communications. He submitted also the following memorandum of the work done by the society in connection with the subject:—

The outline of the work done by the society may be illustrated by the analogy of a medical case, in which the enquiries taken seriatim are: (1) Is there ill-health? (2) The cause or causes, if ill-health be proved, and the remedy? unless (3) the case be pronounced incurable.

Now no one can doubt that the navigation of Canadian waters is in an unhealthy condition, who examines: (1), The annual wreck lists published by the Government; or (2), the rates charged by marine insurance companies; or (3), the frequent complaints of shipmasters, shipowners, boards of trade, underwriters, and others, of which the latest was last month, when, at an interview with the Government on the subject, six bodies were represented, in addition to the Royal Society, viz., two boards of trade (Montreal and Toronto), the Chambre de Commerce, the shipping interest, the underwriters, and the pilots.

CANADIAN INSURANCE RATES.

I. The second of these heads, the insurance rates, offers the most accurate measure of the disease, if any, inasmuch as it gives an opportunity for numerical comparison with United States navigation, which may for the

present purpose be taken as the standard of an average healthy condition.

Consider the case of the St. Lawrence route, the importance of which is shown by the statement of the president of the society, that Montreal has 18 regular lines of ocean steamers, besides "tramps," and ranks next to New York as an ocean port.

Even before the recent rise of rates the charge for insurance of a steamer, taking the St. Lawrence route, might be 10 1-2c per cent. for the year, while the charge for the same steamer going to United States ports, would vary from 3 1-2 to 6 1-2 per cent., according to the port.

If, for example, this applied to the fast Atlantic line, the proposed value of whose four steamers was announced in Parliament to be \$10,000,000, the insurance alone would amount to more than \$1,000,000 yearly; and the penalty for taking the St. Lawrence route, instead of going to United States ports, would vary from \$400,000 to \$700,000 a year.

Whatever the total charge might be, the proportionate difference would still remain; thus marking strongly the estimated disadvantages of the Canadian route; disadvantages which have been still more emphasized by the recent rise in Canadian rates.

No one would suspect the insurance companies of being influenced by any other motives in discriminating between the routes than those arising from a comparison of losses. Hence the value of the test.

The unhealthy condition may thus be considered to be proved.

THE CAUSE AND THE REMEDY.

II. The next question relates to the cause or causes, with which that of the remedies is naturally associated.

(1) An inspection of the annual wreck lists, when the committees of the British Association and of this society were first appointed seemed to show that a predominating cause was ignorance of the currents caused by the tides.

(2) This idea was confirmed when a comparison with the information to ma-

riners, published by Great Britain and by the United States, showed that full information was given respecting these currents in their respective waters, while none was afforded for Canada.

(3) Moreover, leading books on navigation laid great stress on the necessity for a knowledge by shipmasters of these currents. (It is compulsory by law in home British waters). One work of high authority (Captain Lecky's) specifies among the 16 books indispensable to a shipmaster in these waters two particular books on these currents.

(4) The idea was further confirmed by the answers sent by shipmasters to a series of questions circulated by the committee of the British Association. Copies of the answers of about two dozen shipmasters were sent to the Minister of Marine in 1885.

(5) If further evidence is wanted it is given by the petition of 400 (to be exact 393), masters and officers of ships frequenting Canadian waters, asking the Government to make the survey necessary for the knowledge of the tides and currents.

(6) All this is independent of the opinions (all confirmatory) of certain well known experts whose names are given below.

THE BAYFIELD SURVEY.

It may be asked why were not these tidal currents investigated at the time of Admiral Bayfield's survey in 1827-34. The answer is that they were not then known even for home British waters. Those for the Irish channel were first ascertained in 1848, and subsequently in 1851, those for the English channel, by Admiral Beechey, who discovered wonderfully simple rules for determining their direction at any time. The extension of similar investigations in colonial waters would naturally depend on the Admiralty funds; and after Confederation in 1867, Canada would probably be expected to undertake them herself.

The British Association took up the question in 1884, and the Royal Society immediately after.

ACTION OF GOVERNMENT.

III. The evidence summarized above, which was submitted by the committees of the two co-operating bodies induced the Government, after it had found by independent enquiry that the hydrographic offices of Great Britain and the U. S. recommended the proposal, to undertake the work of a tidal survey in 1890. Some little progress was actually made, tide-tables for certain ports having

been published, and the survey of the currents begun. Even at the beginning an important discovery was made, namely that the current at the Straits of Belle Isle (ill-famed for wrecks), was not constantly in one direction as set down in the existing charts, but was tidal in its nature, i.e., changing its direction with the tide.

Meanwhile, during the years that had elapsed since this society began its efforts, it became evident that a tidal survey alone was not sufficient—that Canada would still be behind other countries with extensive sea-coasts, unless it adopted the same safeguards for navigation as employed by them, and established a hydrographic or coast survey, which would include the tidal survey as a branch.

After the fundamental survey of 1827-34, made (at least 65 years ago) in the time of slow sailing-vessels and small tonnage—partial re-surveys were made by Staff Commanders Orlebar and Maxwell; the latest of any magnitude taking place in 1887-8. These efforts were spasmodic, while changes in the navigable routes due to natural causes were constantly going on. But of weightier import than all these were the great and rapid changes in the size and speed of steamers.

A COAST SURVEY WANTED.

The Royal Society took, therefore, a further step, and in 1894, recommended that the tidal survey should be extended in its staff and equipment, as funds could be obtained, so as to become eventually a hydrographic or coast survey (a hydrographic survey for the lakes and rivers had already been begun.)

To this the then Minister of Marine expressed his full assent, greatly to the satisfaction of the society, which considered its duty fully discharged.

At present, as the society is aware, the only part of the work that is being carried on consists in observations on the rise and fall of the tide, and the publication of tide-tables, the survey of the currents having been stopped, and the organization of a full hydrographic survey for the coasts never having been begun.

IV. The consensus of opinion with regard to the causes of the dangers of Canadian navigation, and their remedies, renders it unnecessary to consider a suggestion that has sometimes been vaguely thrown out, viz., that the disease is incurable—that there are inherent natural difficulties in the navigation of Canadian waters and more es-

pecially of the St. Lawrence route, which make any further advance in the path of safety hopeless.

V. Lastly, still following the medical analogy, it may be asked whether the society, considering its close relationship to the patient, has obtained the best professional advice, not only from local practitioners, but from those at the head of their profession in metropolitan centres. In other words who were the experts already referred to, and what were the opinions expressed?

EXPERT OPINIONS.

In 1884, the following were members of the committee appointed by the British Association in addition to others resident in Canada:—Lord Playfair (then Sir Lyon Playfair), President of the association (1885); Lord Kelvin (then Sir Wm. Thomson); Prof. Couch Adams, and Prof. George Darwin. No higher names can be found in the association.

The last two were astronomers, Prof. Couch Adams being one of the only two men who ever discovered a planet by mathematical analysis. Prof. Darwin had made the investigation of the tides a special study after it had been handed over to him by Sir Wm. Thomson. Lord Kelvin is one of the most practical of scientific men. His name is so well known in electricity and in connection with the success of the Atlantic cable that the attention he has given to navigation may be overlooked by some, but certainly not by sailors, who are so constantly using the sounding-line and the compass, with which he has supplied them—not to speak of certain tables he has published in aid of navigation.

In 1897, the British Association, at the Toronto meeting, appointed a committee to consider the question of a hydrographic survey for Canada as part of an imperial hydrographic survey. Lord Kelvin was again appointed, and, along with others, Admiral Sir Wm. J. Wharton, hydrographer to the Admiralty, who holds the same position in hydrography as the astronomer royal in astronomy.

An opinion has also been obtained from a prominent hydrographer (Commander Craig, U. S. navy), in the Hydrographic Office, Washington.

In addition, the opinions of Staff Commander Maxwell, R.N., formerly in command of H.M. surveying vessel "Guinare"; of the late Lieut. Gordon, R.N., of the Marine Department; of Captain W. H. Smith, R.N.R., also of the Marine Department, will be submitted.

Staff Commander Maxwell, R.N. (engaged for sixteen years in surveying the coasts of Newfoundland and Labrador), says in the opinion given in 1885 in answer to questions of committee:

"I am of opinion that it is highly important in the interests of navigation that as thorough an investigation as possible of the strength and direction of the tidal streams and currents should be made in the localities named. The advantages of such a survey would be that ship masters would be able to judge, almost accurately, of the set of their vessels from these causes; probabilities of abnormal streams would be anticipated by them; and shipwrecks like those at St. Shott's (St. Mary's Bay, Nfld.), and that of the R.M.S. Moravian would be avoided."

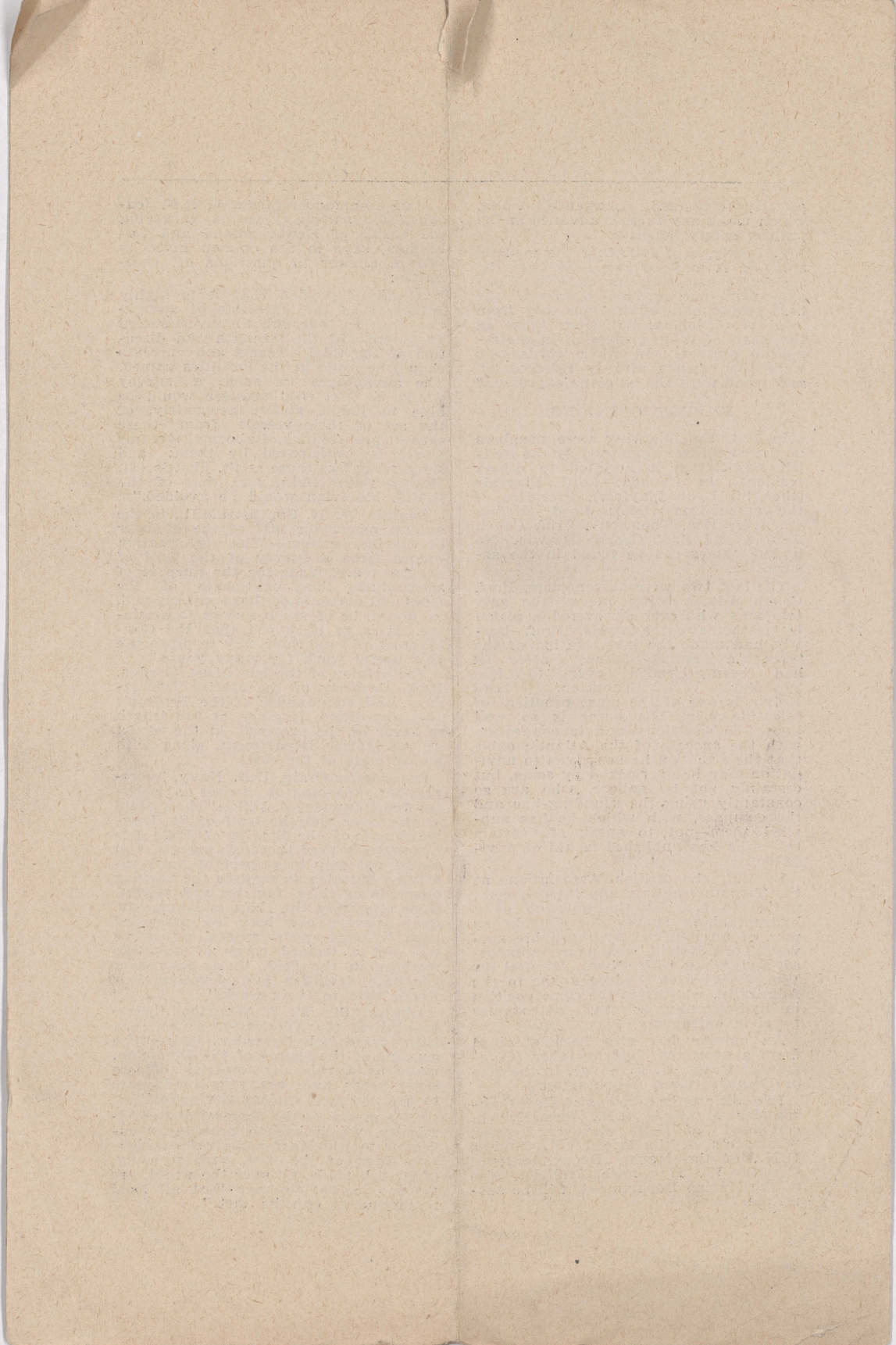
Captain W. H. Smith, R.N.R., in the annual report for 1897 of the Minister of Marine, writes:—"The information gained from a survey of the Gulf of St. Lawrence, made for the purpose of ascertaining the movements of the tides and currents of those waters, will, no doubt, be of much service to mariners. It is to be hoped that the Government will see their way to prosecute this useful work for many years."

The opinion of the late Lieut. Gordon, R.N., formerly of the Marine Department, and commander of the Hudson's Bay expedition, is given at full length in favor of the proposal, in the report of the Marine Department, along with an estimate of the cost.

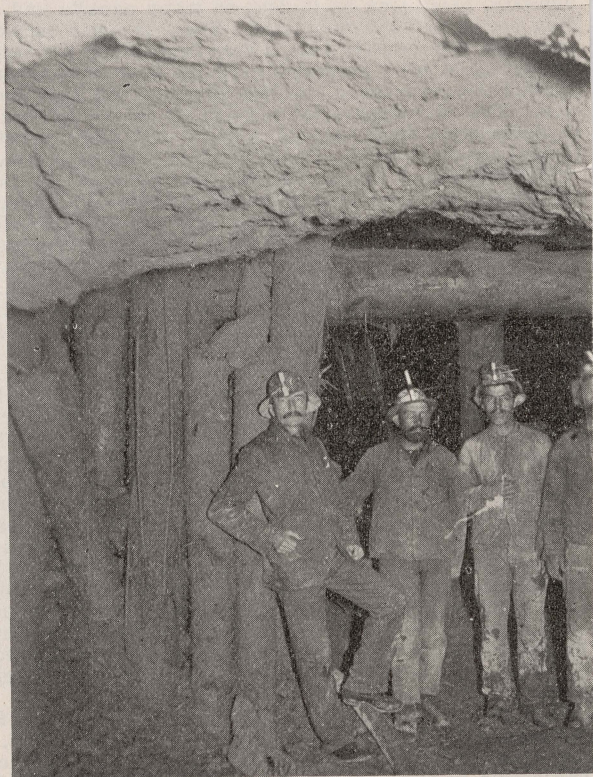
Commander Craig, U.S. Navy, hydrographer, Washington, writes in a letter dated January 4, 1898:—"The waters of the river and the Gulf of St. Lawrence and of the Straits of Belle Isle undoubtedly need thorough survey and study, not only in respect of fixed obstacles, but also as regards the varying elements of tides, fog, ice and storms, more especially the tides and currents. Such surveys can best be proceeded with by such governmental action as will put a trained corps of scientific workers in the field, those possessing adequate facilities and devoting their whole time to their work."

Admiral Sir W. J. Wharton, hydrographer to the Admiralty, writes in a letter dated 28th December, 1897:—"The surveys of the shores of the Dominion, made as a rule by imperial officers some years ago, are very inadequate to the needs of modern navigation."

"The means at the disposal of the Admiralty, which has to provide or endeavor to provide for the safe navigation, first, of the fleet, and, secondly, of British trade, all over the world, are far too limited to hope that all local requirements can be met."



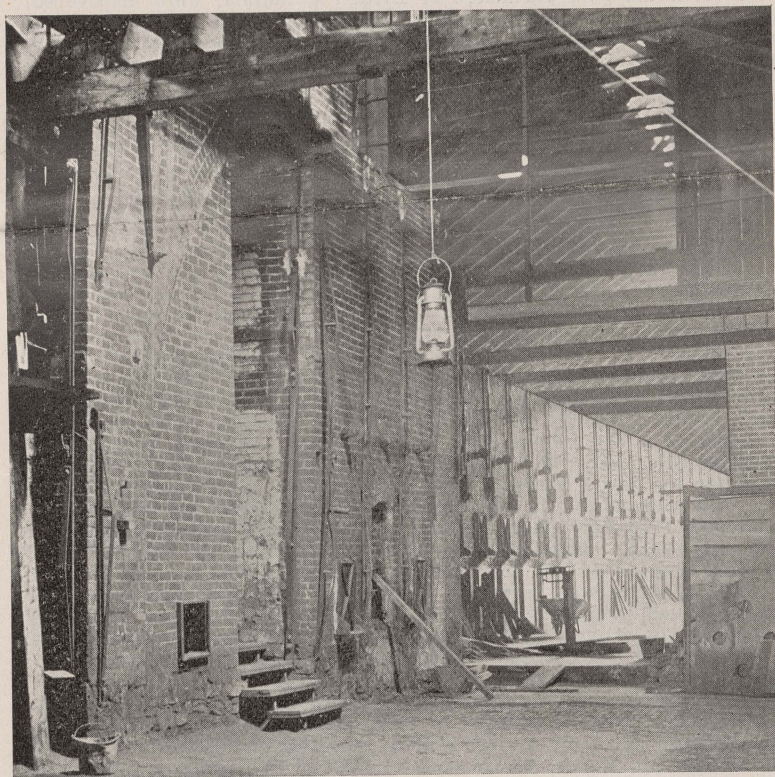
base of a large case, which contains the various grades of arsenic produced in the roasting and refining process. The various country rocks and the different kinds of ore handled at these works are illustrated by a full set of samples. A series of 12 enlarged photographs gives an excellent idea of the whole plant. The most important points of the process are explained in detail in an interesting pamphlet which was



UNDERGROUND IN THE SU

published by this company especially for the information of visitors to the Exposition.

Specimens of silver ore are exhibited here from every silver mine ever worked in the Province of Ontario. Some of them are particularly rich. Mr. F. N. Gibbs, of Port Arthur, has loaned his collection for exhibition, thus enabling the Bureau of Mines to represent all the old



ARSENIC WORKS AT DELORO, ONTARIO.

mines, including some idle ones, such as the Silver Islet. Wiley & Company, of Port Arthur, have sent to the exhibit some large pieces of silver ore, several hundred pounds in weight, from their West End Silver Mountain Mine, west of Port Arthur. The specimen, which runs 5,000 oz. silver to the ton, is composed chiefly of calcite with a little amethystine

Written for the Engineering and Mining Journal by E. Jacobs.

It is not practicable to deal adequately with mining in British Columbia within the limits of one short article, so the following review must necessarily fail, in some respects, to do full justice to so important an industry, presenting as it does so many aspects and extending over a long period in its development. There is much included in the earlier records of the industry that is very interesting, but since the present intention is to give prominence to its later commercial and industrial phases, the progress of the last 10 years will here receive most attention. The following brief account of earlier mining in the province is summarized from various articles and from reports of the late Dr. G. M. Dawson, director of the Canadian Geological Survey.

The celebrated David Douglas, the botanist, in the early twenties discovered the Blue Bell Mine (silver-lead) on Kootenay Lake. Coal was discovered at Fort Rupert in 1835, and some development was done by the Hudson Bay Company, but these workings were abandoned in 1851 for those at Nanaimo, also on Vancouver Island, where coal mining has ever since been carried on. The early discoveries of gold in small quantities ranged between the years 1850 and 1857. In 1850 specimens came from Vancouver Island and Queen Charlotte Islands. An incipient mining boom took place on the latter in 1851-2. Dr. Dawson says that from one little seam or pocket of gold in Gold Harbor, Moresby Island, between \$20,000 and \$75,000 were reported to have been taken. It is stated by others that more was lost in the harbor in the operation of mining than was recovered. However, much or little, the find ended there. About the same time the Indians from the Skeena River brought pieces of gold to the Hudson's Bay Company's fort, but several expeditions to find its source met with failure. In the interior gold was found in the Natchez Pass and the Similkameen as early as 1852, and in 1854 Colville Indians were known to have nuggets in their possession. Bancroft, in his "History of British Columbia," states that Chief Trader McLean procured gold dust from Indians near Kamloops in 1852. Various authorities place the first finds at various places. However, between 1855 and 1857 discoveries were made on the Thompson, Fraser and Columbia rivers, and the news of these, together with the dispatches of Governor Douglas, soon attracted attention to British Columbia as a possible gold-field.

It is an old story now of how people hurried from San Francisco to Victoria, now the capital of the province, by thousands, and set up their tents; of how they rushed up the Fraser River, many crossing the Gulf of Georgia in open boats; of how they rounded Cape Horn, or crossed the Isthmus of Panama, or plodded wearily overland from Eastern Canada. Victoria became a city in a day, and the mainland solitude was converted into a Crown colony in a year.

Up to 1858 nothing but preliminary work had been done, consequently little was known of the mineral resources of the province. In that year, however, gold mining really began, and from that period dates the history of mining in British Columbia. The increase in the production of gold was rapid, and from \$705,000, which is a rough estimate of the output in 1858, it rose in 1863 to \$3,913,563. In 1861, after laborious journeyings of daring prospectors, Williams and Lightning creeks, two of the most noted gold producers of British Columbia, were discovered, and in this and the following year most of the other rich creeks in Cariboo became known. Then occurred that second rush, which is the most notable event in the history of British Columbia, and one that had the most lasting effects in determining its future. The finds were very rich and the lucky prospectors who became owners of claims amassed large sums of money in a very short time. Dr. Dawson wrote of these creeks that Williams Creek has yielded more gold than any other stream in British Columbia. As examples of its yield in early years Steele's claim gave a maximum yield of 400 oz., or \$6,524 a day. More than \$100,000 in all was taken from this claim of 80 by 25 ft. In 1862 Cunningham's claim produced gold to the value of nearly \$2,000 a day for the season, while on several days as much as 52 lbs. weight in gold was taken out. The Adams' claim yielded to each of its three partners \$40,000 clear. These claims were above the cañon, in shallow ground. The deep ground below the cañon was first bottomed toward the end of 1861 by the Barker Company (whence the name of the town, Barkerville). The Diller Company was the next successful in this, and it is credibly stated that here, on one occasion, 200 lbs. of gold, worth \$38,400, were obtained in one day. In 1863 three claims below the cañon yielded \$300,000, and 20 claims were steadily producing from 70 to 400 oz. a day. Four hundred miners were at work on Williams Creek in this year, "the Golden Year." The aggregate of Williams Creek for the first 7 years of working, for which no returns are available, was very large. In 1861 \$200,000 worth of gold was taken from Campbell's Discovery claim and the adjacent Whitehall claim, both on Lightning Creek. Attempts were made almost from the first to reach the deep channel of this creek, but, after much work, were abandoned in 1864. Sinking was, however, resumed in 1870, and having proved successful, led to subsequent great developments. The rich character of some of the ground on this creek may be illustrated by stating that at one time the Butcher claim yielded 350 oz. a day, the Aurora 300 oz., and the Caledonia 300 oz.

Space limitations prevent the hardy prospectors being followed northward into the Omineca country in 1869; into the rich Cassiar District, which in 1872, and later, yielded gold to the value of \$5,000,000 or \$6,000,000, or into the Yukon, where gold was found in paying quantities in 1880. It may be noted, though, that the yield of placer gold, which in 1863 reached its maximum amount of \$3,913,563, after fluctuating during several years, fell in 1869 to \$1,774,987, and though 1875 saw a temporary substantial recovery to \$2,474,000, the decline continued steadily until, in 1882, the total was below \$1,000,000, and thereafter production fell until the minimum was reached in 1893, the total for that year having been only \$356,131. Since then there has been a gradual increase, so that the showing for 1899 of \$1,344,900 was the best since 1877.

It will be observed that the foregoing summary deals almost exclusively with placer gold mining. From the published reports of the

BRITISH COLUMBIA COAL FIELDS.

By WILLIAM M. BREWER.

There is a historical feature connected with the discovery and development of the coal fields of British Columbia which is of sufficient interest to be referred to by the writer as an introduction to the following descriptive article of the various coal fields and collieries on Vancouver Island and the Mainland. Dr. George M. Dawson, Dominion geologist, in his report dated March 1, 1887, refers to the fact that Dr. W. F. Tolmie in 1835 was the first to make known the occurrence of coal on Vancouver Island. It was not until about 1849 that any systematic exploratory work was commenced. This was inaugurated by the Hudson's Bay Company, which brought a number of coal miners from England to Vancouver Island. Suquash, situated on the northeast coast, about semi-distant between Port McNeil and Beaver Harbor and near the head of Queen Charlotte Sound, was selected for boring. Two seams of coal outcropped on the beach at this point, the upper being about 1 foot and in places 2 feet in thickness, and the lower about 6 inches with about 1 foot of soft shale separating the two seams. A short tunnel was driven and several borings made. From the former it is reported that in all about 9,000 tons of coal were mined, and the bulk of it shipped to Victoria. A record of three borings is included in Dr. Dawson's report, two of these in the immediate vicinity of Suquash, and the other at Kirk River on the beach about 2½ miles easterly from Port Rupert in Beaver Harbor. The borings at Suquash were continued to depths of 329 feet 4½ inches and 265 feet 4 inches, respectively; that at the Kirk River was carried to a depth of 180 feet 7 inches. An examination of these records does not show that any coal seams of commercial value were encountered, but as work was carried on continuously from 1849 to 1853, there were undoubtedly several other trial shafts and borings besides those of which the records were obtained by Dr. Dawson. About the latter date, according to history, coal was discovered at Nanaimo, about 100 miles northwest from Victoria by water, and the force of miners transferred to that point, where extensive collieries are being operated to-day by the New Vancouver Coal and Land Company which acquired its title from the Hudson's Bay Company.

The area of Cretaceous rocks, in which occur all the coal measures on Vancouver Island, has not yet been definitely fixed by actual surveys. There are five known occurrences of rocks belonging to this period on Vancouver Island in which coal seams occur. At the northern end of the Island, there are two areas on Quatsino Sound on the west coast, the Port McNeil Beaver Harbor area on the east coast, a few miles only from the head of Quatsino Sound; and the Comox area on the east coast along the northwest shore line of the Strait of Georgia. Towards the southern end of the Island occur the Nanaimo, Wellington and Extension areas which embrace the most important fields so far known at present, and within their boundaries are the most extensive collieries in this portion of British Columbia.

The history of these coal-fields dates back to about 1853, when boring operations were suspended at Suquash because of the discovery of a wide seam of coal in Nanaimo Harbor on the east coast of the Island, and about 100 miles by water from Victoria. Until 1862 the Hudson's Bay Company mined coal from a shaft sunk within the present city limits of Nanaimo. During that year a large area of this coal-field was acquired by the New Vancouver Coal Mining and Land Company, Limited, an English corporation which is still actively engaged in coal mining in the same field with headquarters and main working shaft still located at the outskirts of the city of Nanaimo.

Soon after the organization of this company, the late Hon. Robert Dunsmuir, who had been in the employ of the Hudson's Bay Company as a miner, commenced systematically to prospect the territory outside of the lands acquired by the New Vancouver

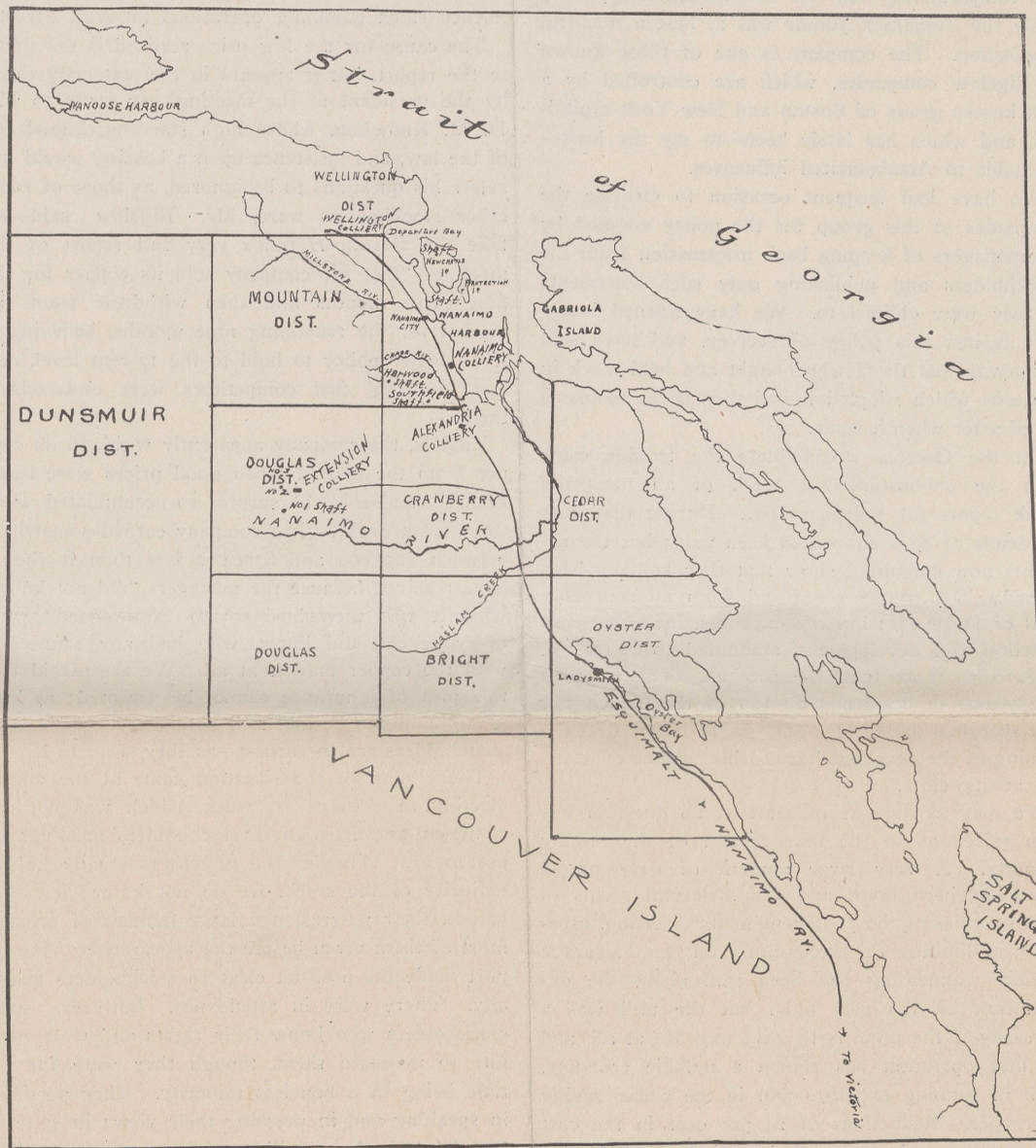
Coal Company. He first located the Harewood field at a distance of about 3½ miles to the west from Nanaimo and secured 9,500 acres for an English company which has since sold the tract to the New Vancouver Coal Mining and Land Company. Later he discovered the Wellington field about 6 miles northerly from Nanaimo, which he acquired himself, a short time previous to the entrance by British Columbia into the federation of the provinces.

This portion of the history of the development of the coal mining industry in British Columbia is important, because as a direct result of Mr. Dunsmuir's work, it has followed the building of the Esquimalt & Nanaimo Railway, as well as the opening up of the collieries at Wellington, Extension, Alexandria and Union, the latter about 50 miles up the east coast of the Island from Nanaimo. In all of these enterprises he was, during his life, the prime

group of islands in the Straits of Georgia easterly from Nanaimo Harbor should also be included in this territory; these are Newcastle, Protection, Gabriola and Salt Spring.

On Vancouver Island these coal-fields form the water-shed of the Nanaimo, Millstone and Chase rivers with their tributaries. Portions of this territory are rough and rugged, erosion having cut in places deep gullies and canons for the beds of the streams, and although no high mountains occur within the boundaries of the coal-fields, yet there are numerous bluffs and ridges, with mountain peaks towering above this rugged country to the south and west beyond the boundaries of the productive coal-fields. The most prominent of these are Mt. Brenton to the south and Benson to the west.

Geology.—The fields referred to occupy the most southerly area of Cretaceous rocks on Vancouver



SKETCH MAP OF COAL MINES, VANCOUVER ISLAND.

mover and organizer. Associated with him in building the railroad and operating all the collieries, except Wellington, were the late Senator Leland Stanford, the late Charles Crocker, the late C. P. Huntington and General Bullard of California, who were the organizers of the Southern Pacific Railway. In the Wellington colliery some officers in the British Navy were associated with Mr. Dunsmuir, but their interests were purchased by that gentleman previous to commencing construction of the Esquimalt & Nanaimo Railway.

Geography.—The situation of the Wellington, Nanaimo, Alexandria, Harewood and Extension coal-fields is on the east coast of Vancouver Island, and the territory covered by them extends along the shore line from a point a few miles east of the mouth of the Nanaimo River to the neighborhood of Nanaimo Harbor, almost directly west from the entrance of Burrard Inlet on the Mainland side, and at the head of which is located the city of Vancouver. The

Island. To what distance this Cretaceous area extends towards the interior of the island is not yet known positively. The mountains referred to are composed almost, if not entirely, of igneous and metamorphic rocks classed by the late Dr. Dawson, director of the Dominion Geological Survey, as belonging to the "Vancouver Series," in which he included all the igneous and metamorphic rocks together with the crystalline limestone of which the greater portion of the island is composed. The islands referred to are also made up principally of the Cretaceous coal measures.

Natural outcroppings of coal occur in many portions of the coal-fields under consideration. The dip of the seams varies from about 1 foot in 12 feet to 1 foot in 5 feet, and the strike usually nearly east and west. The direction of the dip varies because of the number of anticlinals and synclinals which occur. On Gabriola Island there is apparently a basin covering considerable area where the coal dips towards

substitute for it is not, historically was not, and could never be or have been a normal development of those principles. The substitution would be as violent, revolutionary and unnecessary as it would be foolish.

R. W. RAYMOND.

THE OSCEOLA COPPER COMPANY.

The Osceola Consolidated Mining Company was formed some years ago by the consolidation with the old Osceola Company of two other properties in the Lake Superior copper district, the Kearsarge and the Tamarack Junior. The Osceola had been fairly prosperous, though not considered as one of the first rank among Lake properties; the Kearsarge was comparatively new but of considerable promise, while the Tamarack Junior was at best a doubtful proposition. The company is one of those known as Bigelow companies, which are controlled by a well known group of Boston and New York capitalists, and which has lately been—to say the least—amenable to Amalgamated influences.

We have had frequent occasion to criticise the companies of this group for the policy adopted by the managers of keeping back information from the stockholders and publishing only such statements as they were obliged to. We have warned investors against this policy of secrecy, and have said frequently that those who bought and held stock in concerns which adopted it had themselves to blame for disaster when it came.

On the Osceola stockholders the trouble came with the publication last week of an unusually frank report for the year 1901. During that year dividends of \$6 a share had been paid; but the accounts now submitted show that they had not been earned. The company realized from all sources a total of \$1,934,437; but the expenses, including construction and development, amounted to \$2,151,296, or \$216,859 more than the receipts. The payment of \$576,900 in dividends on top of this deficit not only absorbed the surplus of \$552,261 reported at the opening of the year, but left a debit balance of \$241,498 at its close.

We may say at the outset that no question has been raised as to the management of the mining property. A very large amount of development work has been done, and Capt. Parnall seems to have exercised good judgment in its direction, especially in limiting the expenditure on the Tamarack Junior. Something has been said about the expenditure on the new mill; but the mill was a necessity if the mine is to have any life at all, and its first operation has shown a notable economy, both in running expenses and in the closer saving of copper. Reductions of 24 per cent in the cost of stamping rock, and of 64 per cent in the loss of mineral in the tailings are improvements not to be despised.

The criticisms made by the protesting stockholders, which certainly seem to be justified by the facts, relate to the Boston management and its handling of the mine product entirely. The actual sales of copper from the Osceola realized in 1901 an average of 13.90 cents per pound, according to the statement of the directors. But reports covering the same period have already been issued by Lake companies, and—taking two of these concerning whose managements there is no question in anyone's mind—we find that in the same period the Quincy Company realized an average of 16.20 cents and the Atlantic 15.76 cents per pound. If the Osceola Company had obtained the same average price as the Quincy it would have earned \$315,640 more than it did last year. Or if we admit—as is claimed—that Quincy copper brings a little more usually

than the average for Lake ingot, and take the Atlantic price as a fair one, the addition to Osceola earnings would have been \$255,257. These are sums which stockholders do well to inquire about.

There is a somewhat peculiar sentence in the directors' report, which says: "The management wishes to assume the responsibility for the price which the company has received for its copper during the year 1901—13.90 cents per pound." With whom should the responsibility rest? Why should the management "assume" a responsibility which, in fact and in law, already rested upon it? It looks very much as if the directors were uneasily conscious of a general belief that they had not acted upon their own judgment, but were merely puppets moving at the dictation of the interest which has demoralized the copper market by using it to influence stock gambling operations in Wall Street.

The cause for the low price realized is not given in the report, but it appears in the statement made by the president at the meeting. In reply to Mr. H. M. Knowlton, whose high standing, knowledge of the law, and insistence upon a hearing would not suffer his questions to be ignored, as those of some other stockholders were, Mr. Bigelow said—we take the *Boston Herald's* very full report of the meeting—"that the company sold its copper for the first three months and then withdrew from the market for the remaining nine months, believing it to be better policy to hold to the 17-cent level, and 'not knowing' that competitors were underselling them."

That is, the company apparently withheld its copper from the market when good prices were being realized, and sold the surplus so accumulated when the market broke. The company earned somewhere between \$250,000 and \$300,000 less than it should have received because the managers "did not know" what it was their business to know—and what everyone else did know, who had any connection with the copper market at all. We are afraid that this plea of ignorance cannot be accepted; at least it ought not to be and will not be if the protesting stockholders are in earnest—as they seem to be.

The climax of the situation came at the annual meeting in Boston last week, which was not one of the cut-and-dried affairs stockholders' meetings are apt to be. Whether the directors actually hold a majority of the stock, we do not know; but they had in their possession a large number of proxies, most of them given before the appearance of the report made the position clear to stockholders generally. There were in attendance, however, some stockholders who know their rights and were resolute to maintain them, though they were for the time being in a hopeless minority. They persisted in speaking and in pressing their views in spite of the determined opposition of the managers. The minority brought forward two propositions, the appointment of an independent committee of stockholders to investigate the company's affairs, and the adjournment of the meeting for a week, in order to permit any stockholders who wished to withdraw their proxies in view of the developments of the report, an opportunity to do so. The first proposition was rejected by a vote of 59,350 shares to 3,693; and on the second motion being offered a scene occurred which deserves to be recorded. President Bigelow, though steadily endeavoring to stop discussion, had acted throughout with courtesy—as might be expected from him—but all the managers were not so discreet. We quote here again from the report given in the *Boston Herald*:

"A motion was then offered to adjourn the meeting for a week. The chairman asked: 'Do you want a stock vote on that?'"

"Protests followed on the waste of time which would be involved by a stock vote.

"Director T. Henry Brooks—There are only 3,000 shares about against the present management. We have had altogether too much fuss and riot here. We have the power, and by — we will use it.

"Immediately after making this observation, Mr. Brooks asked leave to withdraw it.

"Thereupon Mr. John B. Moran sprang to his feet, and in indignant tones, said: 'You have got the power now, but you won't have it long.'

"Boyd B. Jones, with still greater warmth of manner, protested as follows: 'It is an indication of wickedness and wrongdoing to say such a thing. You have got the power, but you have also got some duties, and we will make you perform them, if we have to go through every court in the land. I want you to understand that you cannot, because you have a great bundle of proxies, trample under foot the rights of these stockholders. You ought to be ashamed of yourself. We have got the power to make you do what is right, and I for one have enough confidence in your president to believe that if I could come up here into his office and ask to look at his books, and make an independent investigation, it would be seen that instead of him having the power to turn me down, he would have the manhood and honesty to place those books at my disposal. You, sir (addressing Mr. Brooks), owe an apology to every man here, and I hope I may never again see a man standing in a room of stockholders and forgetting the fact that he is their servant. When you go home to-night, sir, you had better think over the relation between you and the stockholders. Then you will be able to come back and do what is right, and be a decent man.' Loud applause greeted this protest.

"Mr. Brooks then made a formal apology, but it was uttered in such low tones as to be practically inaudible.

"Mr. Moran asked the chairman to put the motion for adjournment for a week. The chairman said the vote must be a stock vote.

"Mr. Knowlton—There is no use in taking a stock vote. Everybody knows that the proxies used here were received before the situation was understood. If the meeting is adjourned, I believe enough proxies will be recalled to change the result. I respectfully challenge the management to continue the meeting for a week.

"The chairman—I do not propose to adjourn for a week.

"Mr. Knowlton—They do not dare to adjourn for a week.

"The chairman—Did you say we did not dare?"

"Mr. Knowlton—I say exactly that you do not dare.

"The chairman—I think you will find yourself mistaken.

"Mr. Jones—That is rather an unfortunate expression, though Mr. Knowlton is sincere in what he says. I have heard, Mr. President, that there is a person in close connection with this company, and with you, Mr. President, who was 'copper short' in London. Now I do not pretend to say such statements as this should stand as against the well known reputation and successful administration that has characterized the Bigelow management. Yet we have the right, also the duty, of looking at the books of the company. You are going to be put in the position of putting your hands on the throats of the minority stockholders. I say that position is not a worthy one, and does not do justice to the Bigelow management."

This scene was certainly unparalleled in a Boston meeting; but it showed the spirit of the minority, and it was only right that the brutal insolence of Director Brooks should meet with such prompt and telling rebuke.

It is needless to say that the adjournment was voted down. At the close of the meeting, however, President Bigelow decided to make a concession and on his own authority appointed an investigating committee consisting of Messrs. Knowlton, Hardy and Brigham. It does not appear exactly what this committee can do, in the absence of any specific authority from the stockholders.

While we hope that the minority of the Osceola proprietors will insist upon their rights, we are free to say that the stockholders generally have themselves to blame for their present position. They acquiesced in the policy of secrecy as long as matters went smoothly, and disregarded all warnings. If they had acted in time they might be in a very different position to-day.

a common center from the various points of the compass. This had been demonstrated by diamond drill boring as well as the fact that a thickness of nearly 2,000 feet of shale overlies the coal seam. The roof of the coal throughout the entire area is variable, sometimes being composed of conglomerate, at others of shale, and in some cases sandstone; the floor is sometimes sandstone, but usually shale. Fire clay of commercial value is wanting in this portion of the island.

There are two productive seams known as the Douglas and the Wellington, the latter underlying the former. At the Nanaimo and Alexandria collieries the Douglas seam is mined, and on a portion of the Nanaimo field both seams are productive, but at the Wellington and Extension collieries, the Wellington seam only is mined, the Douglas having been carried off by erosion.

Much faulting has occurred through this portion of the Island which of course causes complications in the workings. For instance, a bore-hole on the Harewood property exposed a workable seam of coal, but a shaft sunk about 200 feet from the bore-hole failed to intersect the seam at the depth estimated, and later investigations proved that a fault had occurred in the space between the shaft and bore-hole, which was not apparent on the surface, and the

ing a valley lying between two ridges. On the north side the coal measures dip northerly and on the south side southerly. The field to the north which has not yet been opened covers an area of about 5,000 acres, that to the south immediately adjacent an area of 2,400 acres. Beyond the southern boundary of this, a fault occurs and the coal is not picked up again for a distance of about 2 miles to the south. At that point No. 1 slope was driven on the south slope of Mount Benson, from which the coal mined on that side of the fault is hauled to the surface and shipped to Extension over a narrow gauge railway 3 miles in length.

On the north side of the fault in addition to the main tunnel already referred to, there are two other openings designated as slopes Nos. 2 and 3 which have been connected with the main adit level, but at the time of the writer's visit were closed because of the fire which broke out during the summer of 1901. Preparations are being made to flood these slopes. This could not be done economically during the summer, because the water necessary would have to have been pumped up a considerable distance and elevated about 300 feet, but during the rainy season the accumulation of surface water above the level of the slopes can be carried into the burning mine by gravity.

in cars of about 1½ tons capacity by mules, from the levels to the inclines, where a cable is clipped on and the loaded cars are lowered by means of an electric winch, of 50 horse power, stationed near the face of each incline to the sidings on the main tunnel level which is double tracked.

There, the loaded cars are coupled together and hauled to the weighing scales at the mouth of the tunnel by an electric motor. At Nos. 1, 2 and 3 slopes the coal has heretofore been hauled to the surface by steam hoists, but since the connections have been completed between the tunnel and Nos. 2 and 3 slopes these hoists will be only used in future to lower the loaded cars to the main tunnel level and haul the empties up the slopes to the entrances of the levels. The main tunnel sidings and winch stations are lighted by incandescent lights. Two 10-ton electric motors are in use for haulage through the tunnel.

The tunnel opening is well ventilated by a 10-ft. Murphy double fan working at 180 revolutions per minute; all the other openings are ventilated by Guibal fans.

Inclines have been run on each side of the tunnel on the rise of the coal, the levels are driven off the inclines and the workings are all long wall.

At the mouth of the tunnel a building 1,717 feet in length by 18 feet in width covers the tracks, scales and tipples, forming a covered way from the mouth of the tunnel to the screen house. The loaded cars are all run to tipples and dumped by means of a lever into the screens which separate the lump from the nut and slack. The lump coal passes over a travelling picking table 50 feet in length to the loading shutes, and into 25 ton railway hopper cars. The screening and loading capacity is 4 long tons per minute. Two dynamos, each of 250 volts power, furnish the electricity for lighting the entire plant and haulage. The boiler plant, 48 by 40 feet, electric power house 60 by 35 feet, and blacksmiths shops 35 by 60 feet are built of brick, adjacent to each other, and in the vicinity of the frame buildings used for offices, storehouses, etc.

The fuel used in the boilers is the slack coal unwashed. All coal mined in British Columbia is weighed as it comes from the mines previous to screening. The output from this colliery during 1901 was 415,580 long tons; the sales 369,154 long tons.

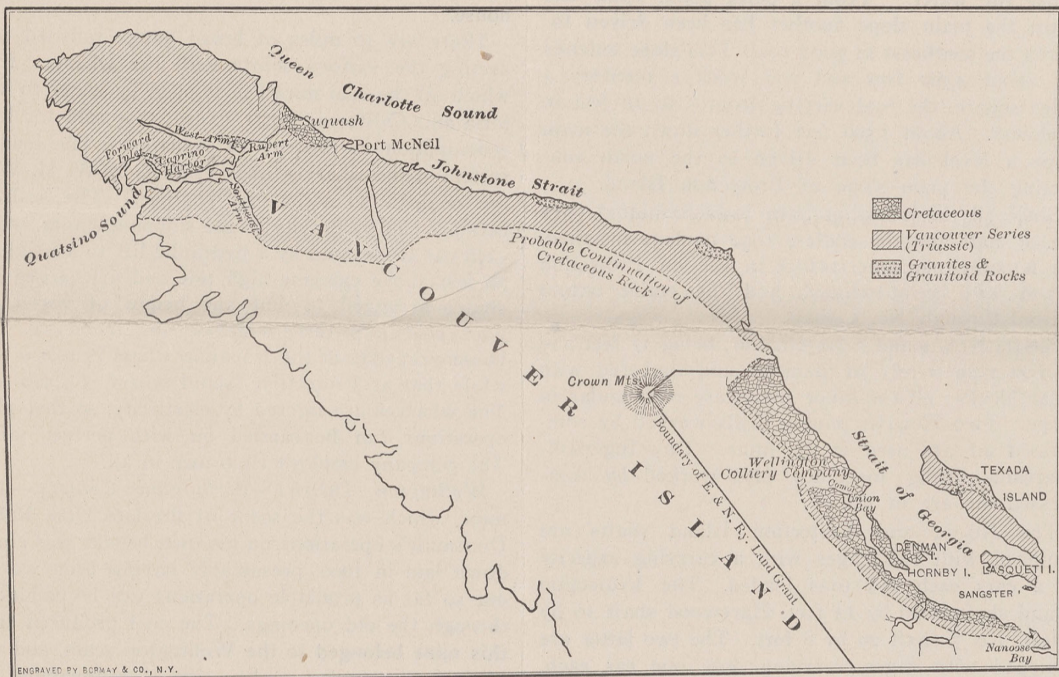
The Extension Colliery is about 13 miles by present branch railway from Ladysmith on the main line of the Esquimalt & Nanaimo Railway, over which the coal is hauled to the wharves at Oyster Bay, where the town of Ladysmith has been built within the past two years. A shorter branch is being constructed which will reduce this distance to 9½ miles.

On the shore of Oyster Bay, bunkers have been built with a capacity of 9,700 tons, while the wharves are so constructed as to afford a loading capacity of about 5,000 tons per day into vessels. There are three wharves, one 1,000 feet long by 40 feet wide, with three standard gauge railroad tracks, another 400 feet long by 60 feet wide with four railroad tracks, and a transfer wharf for handling freight to the steam ferry which plies between Ladysmith and Vancouver.

A Robinson washer with a capacity of 400 tons per day receives the slack coal from bunkers. After washing, the clean small coal is elevated by bucket elevator to the bunkers or to a chute for loading into vessels. This is shipped by steamer to the coke oven plant at Comox, about 60 miles to the northwest on the east coast of the Island.

A cleverly devised arrangement for regulating the flow of coal down the chutes from the wharf into vessels deserves mention. It is a movable lip fastened at the bottom side of the discharge end of the loading chute to which levers are attached and worked by a Chinaman on the wharf. Instead of shutting off the flow by a shutter dropping down on the moving coal, this iron lip is pulled up and the flow of coal is easily and quickly regulated.

Cranberry District. Alexander Colliery.—To the northeast from the Extension mines is situated the



OVAL GEOLOGY OF COAL MINING REGION ON VANCOUVER ISLAND.

down-throw had been 80 feet. Another instance is at Extension, where the main working tunnel was driven half a mile to catch the coal seam on the dip; beyond the intersection a fault occurred and the tunnel being driven another half mile, picked up apparently the same seam, the dip in both cases being to the south.

The total area of the productive territory cannot be estimated because no accurate detailed geological survey has been made. With the exception of the Wellington colliery proper and the acreage owned by the New Vancouver Coal and Land Company, and a few small holdings, the entire field is included in the land grant of the Esquimalt & Nanaimo Railway.

In the following description of the collieries in these coal fields, the writer will begin at the southern portion.

Douglas District. Extension Mines.—Operations by the Wellington Colliery Company, Limited, were commenced at these collieries about three years ago, when an adit 14 by 8 feet was started under the coal seam and driven 1 mile in a southerly direction with the dip of the coal. This tunnel serves to-day for transporting the coal to the surface from a field having a superficial area of 2,400 acres. The breast of the tunnel is about 300 feet below the surface. Nature has done a great deal towards forming this field advantageous for economic mining. The upper folds of an extensive anticlinal have been eroded off, leav-

All of these openings are on the coal seam known as the Wellington. A record of three bore holes on the line of the main tunnel and ahead of its present breast shows the following: No. 1, bore at a depth of 402 feet, coal was encountered underlying conglomerate, below that the record reads:

Coal	1 foot
Shale	9 inches.
Coal	2 "
Coal and shale	1 " 3 "
Coal	4 " 3 "
Coal and shale	4 " 6 "
Coal	7 " 9 "
Coal and shale	2 " 6 "
Coal	2 " 9 "

No. 2 bore on same line, coal encountered at a depth of 509 feet underlying conglomerate, below that the record reads:

Coal	2 feet 3 inches.
Shale	9 "
Coal	3 "
Coal and shale	6 "
Coal	6 feet

No. 3 on same line, coal encountered at a depth of 519 feet underlying conglomerate, below that the record reads:

Coal	4 feet 3 inches.
Coal and shale	9 "
Coal	1 " 3 "
Shale	2 "
Coal	1 " 10 "

A portion of this field, but apparently limited in extent, lies to the south of the Nanaimo River, while all that portion already referred to lies to the north of the river.

At the tunnel opening, the coal as mined is hauled

Alexandria Colliery, which has been in operation about 6 years, but was closed down at the time of the writer's recent visit. The output from this colliery during 1901 was 71,829 long tons, of which 70,450 were sold. The operator is the Wellington Colliery Company, Limited.

The Nanaimo River apparently forms the southern boundary of the productive coal measures from the point where it is crossed by the Esquimalt & Nanaimo Railway westerly to near the South Fork. The coal outcrop is easily traceable along the line of the railroad from a short distance north of the river to the Alexandria Colliery. The dip is nearly east and the seam is the Douglas or upper of the two workable seams in this portion of the island. The Wellington seam, which is worked at Extension, has not been opened near Alexandria, if it occurs in that field while the Douglas seam has evidently been eroded off in the Extension field.

The thickness of the seam at Alexandria averages about 8 feet with a maximum thickness in places of 22 feet. Where this extreme thickness occurs a portion of the coal is left in the roof if it is not so located as to leave the whole thickness as pillars.

The upper portion of the coal, where the seam is thickest, is softer than the lower and a poorer quality.

The slope has been driven 2,500 feet to the east, with levels run off to the north and south at about 200 feet from the mouth. The pillar-and-stall system of mining is carried on. The roof is often sandstone and the floor a shale, but no fire clay of commercial value occurs so far as known.

Rope haulage operated by steam at the pit head is used for bringing coal to the surface, but mules are used to convey the loaded cars from the levels to the slope.

A screening plant furnished with the necessary triples, and having a capacity of handling 500 tons daily, is situated near the mouth of the slope, from which the coal is dumped into 25-ton railway cars and hauled to Ladysmith for transfer to vessels, or washed for making coke.

Although the mine was idle at the time of the writer's visit, yet the Murphy fan, by which the mine is ventilated, and the pump are kept running as it is expected active operations will be resumed early in the present year.

Nanaimo Colliery.—This colliery is owned and operated by the New Vancouver Coal Mining and Land Company, Limited, which acquired that portion of the field adjacent to Nanaimo Harbor and underlying the Straits as well as the Islands of Newcastle, Protection, Gabriola, and a portion of Salt Spring, from the Hudson's Bay Company, in 1862. This property embraces a total acreage of about 30,000 acres. The shipments during 1901 reached a total of about 500,000 long tons.

The openings at this colliery are shafts Nos. 1 and 2 Esplanade; vertical depth of each 634 feet. No. 1 is the main working shaft, while No. 2 is an upcast for ventilating all the workings between No. 1 and Protection Island. Protection Island shaft is situated about 1 mile north from No. 1 shaft; vertical depth 670 feet. Southfield No. 5 shaft is situated 3 1-2 miles south of No. 1 shaft; vertical depth 504 feet. Harewood shaft is 3 1-4 miles west from No. 1 shaft; vertical depth 226 feet. Newcastle shaft is in the centre of Newcastle Island to the northwest from Protection Island; vertical depth 380 feet. The air shaft is connected with workings under Protection Island, for ventilating field north from that island. Slopes and levels have been driven from these shafts to work the extensive field east, north, and south.

The seam of coal chiefly worked at this colliery is the Douglas, its thickness varies from 2 feet to 20 feet. Except on Gabriola Island, the coal dips to the east at an incline of about 1 foot in 12. Boreholes have demonstrated that under Gabriola Island there occurs a basin with the coal dipping from the different points of the compass towards a common centre. The underground workings have not yet reached this basin.

The upper portion of the seam where it reaches its maximum thickness is softer, and a poorer quality of coal usually than the lower, but because of the lack of regular stratification of the coal itself, the entire thickness has to be mined. The lower portion of the seam in these thick places averaging about 8 feet in thickness is a much harder coal, and most of it is therefore sold for domestic fuel, while the remainder is an excellent steaming coal.

In the northern portion of the field near the boundary of the Wellington District, the Wellington seam, a coal of better quality than the Douglas, occurs underlying the latter and is also being mined. The extent of the productive coal-field to the west from Nanaimo cannot be estimated from present knowledge, but the seam is workable on the Harewood tract, 3 1-4 miles west, which embraces an area of 9,500 acres, and is also owned and operated by the New Vancouver Coal Mining and Land Company. To the east of Nanaimo Harbor under the sea, the productive area of the coal field extends an undetermined distance.

The main slope from the bottom of No. 1 shaft has been driven 7,200 feet towards the east. All the workings from and connected with No. 1 shaft except those under Newcastle and Protection Islands, are under the water. From a point about 1,800 feet down the main slope another has been driven towards the southeast in good coal. This slope extends for about 4,500 feet and will work a territory 3 miles square, the coal varying from 5 to 10 feet in thickness. About 1,500 feet further down the main slope a level has been driven to the north connecting the main slope of Protection Island.

Since all the workings have been connected with No. 1 shaft and the endless rope haulage installed, the hoisting plant heretofore in use on Protection Island will be abandoned, and the entire output hoisted through No. 1 shaft.

Shafts Nos. 1 and 2 are circular, being 17 feet and 14 feet respectively in diameter and timbered with cedar blocks; all the other shafts are rectangular in shape. Two Howells mining drills worked by compressed air are used in the mine. Two Ingersoll-Sargeant cutting machines also worked by compressed air are in use.

The No. 1 and Protection Island shafts are equipped with two cages with a carrying capacity of 2 cars each 1½ tons loaded. The Protection Island shaft is 20 by 12 feet; Harewood shaft 16 by 8 feet, No. 5 shaft 20 by 8 feet. The two latter are equipped with cages, carrying only one car each. The total length of underground tracks is 36 miles.

In addition to the electric motors on Nos. 1 and 2 levels and about 100 mules for handling cars between the stalls and levels, a system of endless rope haulage has recently been installed near the bottom of No. 1 shaft to replace the old one of single rope, and winches to serve Nos. 3, 4 and 5 levels. The Danville, Ill., Foundry and Machine Company have furnished this plant. The Morgan clip will be used. Two Guibal fans, one 36 feet by 12 feet at No. 2 upcast shaft, the other 14 feet by 5 feet at the Newcastle Island shaft, are operated in the workings known as the Nanaimo Colliery proper. About 150,000 cubic feet of air per minute ascends through the former and about 40,000 cubic feet per minute through the latter.

At the No. 5 or Southfield Mine, 3½ miles south from Nanaimo, a Murphy fan is used passing about 65,000 cubic feet of air per minute. At the Harewood Mine a Murphy fan is also used which passes about 40,000 cubic feet of air per minute.

The water which accumulates in the mines is not excessive, and is easily handled by the aid of two pumps at the bottom of No. 1 Esplanade shaft, one at Harewood and three at No. 5 Southfield shaft.

Although there are four surface plants for hoisting, the most important are those at Protection Island and No. 1 Esplanade shafts. The former of these, although very complete in every equipment, is to be abandoned as soon as the endless rope haulage is operated, when the output from both the shafts will be hoisted through No. 1 Esplanade. A de-

scription of that will consequently suffice for the purposes of this article.

The top of the gallows frame is 65 feet above the surface and 35 feet above the floor to which the mine cars are hoisted. From the cage the cars are run by gravity to the scales, then to a revolving tippie, through which the coal is dumped on to the screens, the coal is separated into the different sizes, the nut, fine coal and dross passing through chutes directly into their respective railway 5-ton hopper cars, the lump coal is delivered on to a picking table 60 feet in length, divided into sections, one for large size, another for smaller sizes and the centre for rock and waste. The hoisting and loading capacity is 1,000 tons in eight hours, and seven men are sufficient to handle the entire output, three of these working at the picking table. A Shepard washer is located under the screen house, but only a limited portion of the output passes through it.

In the engine house are two Oliver & Company Chesterfield engines of 300 horse power each; two others of the same size and pattern, but built in Peterboro, Ontario, are used at Protection Island shaft. The boiler plant consists of 16 boilers. The electricity used in the mine for lighting and haulage is generated by two Edison dynamos, 250 volts each, stationed in a detached building near the engine house.

There are 10 miles of broad gauge railroad connecting the various shafts with the wharves from which all the coal mined is shipped by water to Victoria and California ports, except that sold for local consumption in the city of Nanaimo. The loading system at the wharves was designed by W. H. Wall, the company's mechanical engineer. The railroad cars are run by gravity to the shipping stages, where each car is elevated by a hydraulic lift to a height of 38 feet above extreme high tide and discharged into chutes arranged to suit any height of vessel and pour coal into three hatches simultaneously. The bunker capacity at the Nanaimo wharf is 10,000 tons, while that at Protection Island wharf is 7,500 tons. The wharves are lighted by electricity, so that night operations can be carried on with perfect safety. The company employs 1,100 men in all.

Wellington District.—Wellington Colliery.—This mine, which was the scene of the late Hon. Robert Dunsmuir's operations on his own behalf, was closed down late in 1900, presumably having been worked out so far as profitable operations can be conducted through the old openings. The coal produced from this mine belonged to the Wellington seam, and was of such a superior quality that it commanded the highest price in the California markets. The results from this mine made a millionaire of Mr. Dunsmuir, besides furnishing the bulk of the capital required to build the Esquimalt & Nanaimo Railway. The shipping point for this colliery was Departure Bay to the north from Nanaimo Harbor. There an extensive wharf and plant for shipping were erected and operated until the mine was closed down.

West Wellington Colliery.—This mine adjoins the Wellington property on the west. The property has not been actively operated for some years. When it was, the output was shipped from Nanoose Harbor 6 miles distant and connected with the mine by means of a wooden tramway. To the north and west from Nanoose there occur limited areas of the igneous and metamorphic rocks of the Vancouver Series which form a break in the continuity of the Cretaceous Coal Measures for a short distance, and divide the Wellington and the fields south of it from the Comox coal-fields to the northwest. In another article the writer will describe these latter, which are of vast importance and furnish the bulk of coal used by ships in the Alaska trade and a portion used by the British Northern Pacific Squadron stationed at Esquimalt Harbor near Victoria.

COAL DEPOT AT KINGSTON.—Vice-Consul-General Murphy, of Frankfort, says that, according to the *Frankfurter Journal*, the Hamburg-American Line has decided to establish a coal depot at Kingston, Jamaica, where not only its own vessels but others will be supplied with coal.

Provincial Department of Mines it is learned that the total value of coal mined in British Columbia up to 1860 was \$149,548, and that in that year the production was \$56,988. In 1884 the total was \$1,182,210, and although there have been fluctuations, the movement since has on the whole been upward, the maximum having been attained in 1900, with a total value of \$4,318,785. Coke has been added to the mineral products of the Province during the last 5 or 6 years, commencing with \$7,825 for 1895-6, and increasing to \$425,745 for 1900.

Geological survey statistics show that lode mining of metallic minerals in the province commenced in 1887, in which year silver and lead were produced to a combined value of \$26,547, and in 1888 of \$104,813. For some unexplained reason the only lode product on record for 1891 was silver, \$4,000. In 1893 lode appeared in the records for the first time, with a value of \$23,404, and the following year copper made its appearance, adding \$16,234. In 1894 the total value of silver, lead and copper produced was \$656,328, while in 1900 it was \$6,616,378, this being a tenfold increase. It is interesting to here note that gold, which in 1894 was only \$530,531 (placer, \$405,516; lode, \$125,015;) increased

Lillooet, Yale (Camp McKinney) and the Coast districts; silver in East Kootenay, West Kootenay (Ainsworth, Nelson, Slocan and Rossland) and the Coast; copper in West Kootenay (Nelson and Rossland), Yale (the Boundary) and the Coast; lead in East Kootenay and West Kootenay (Nelson and Slocan), and coal at East Kootenay (Crow's Nest Pass) and Vancouver Island. One of the features of the year 1900 was the material increase in the production of copper and gold from the mines of Rossland. The current year bids fair to see a still larger increase there, while the Boundary District will also add considerably to the output of these metals, and Mount Sicker and Alberni Canal mines, on Vancouver Island, give promise as well of contributing an appreciable quantity. East Kootenay is showing a very heavy increase in lead (it is estimated that one mine in that district alone produced 18,000,000 lbs. during 1900) and, to some extent, silver, while the Slocan is regaining the ground it lost—as a result of labor troubles—during 1898-9 as a producer of silver and lead. New coal-fields are to be opened up shortly in the Crow's Nest Pass, Nicola Valley and near Fairview, in the Lower Okanagan. An endeavor will be made to work the iron deposits near Kamloops, those on Texada Island, and others on the west coast of Vancouver Island. The production of placer and hydraulic gold in the Cariboo is increasing considerably, while Atlin, Bennett and Chilkat districts are full of promise of a greatly enlarged



MOTHER LODE MINE, BOUNDARY DISTRICT, B. C.



PLACER MINING ON MCKEE CREEK, ATLIN, B. C.

in 1900 to \$4,732,105 (placer, \$1,278,724; lode, \$3,453,381;) and copper from \$16,234 in 1894 to \$1,615,289 in 1900. The following tables are taken from the "Annual Report" of the minister of mines for 1900:

Total Production for all Years up to and Including 1900.	
Gold, placer.....	\$62,584,443
Gold, lode.....	12,812,860
Silver	\$75,397,303
Lead	13,649,809
Copper	7,619,956
Coal and coke.....	4,362,583
Other minerals.....	40,140,917
	1,984,640
Total value.....	\$152,155,208
Total Production for Each Year from 1891 to 1900 (Inclusive).	
1891.....	\$3,521,102
1892.....	2,978,530
1893.....	3,588,413
1894.....	4,225,717
1895.....	5,643,642
1896.....	\$7,507,956
1897.....	10,455,268
1898.....	10,906,861
1899.....	12,393,131
1900.....	16,344,751

Another table is added below for the purpose of showing the very important position the part of the Dominion lying west of the Rocky Mountains occupies in relation to Canada's total mineral production in 1900 as compared with that situated east of the Rockies. It will be seen that the total value of metallic minerals, coal and coke produced in British Columbia and the Yukon was \$38,369,751, as against \$15,140,801 for the remainder of the Dominion:

	British Columbia.	Yukon District.	All other provinces.	Total for Dominion.
Gold	\$4,732,105	\$22,275,000	\$709,647	\$27,716,752
Silver	2,309,200		421,398	2,730,598
Copper	1,615,289		1,447,890	3,063,119
Lead	2,691,887		68,634	2,760,521
Iron	1,740		583,158	584,898
Nickel			3,327,707	3,327,707
Zinc			9,342	9,342
Coal	4,318,785		8,349,690	12,668,475
Coke	425,745		223,395	649,140
Totals	\$16,094,751	\$22,275,000	\$15,140,801	\$53,510,552

It will be observed that there is a difference of \$250,000 between the total mineral production of British Columbia, as shown above, and that given in the table immediately preceding. This amount is the value of "other minerals" included in the latter total for 1900.

As the output of coal in British Columbia is rapidly increasing, and attention is now being directed to its iron deposits, it appears as though it will not be long before the mineral production of the province will be greater, not only in the total, as at present, but as well in all the individual minerals (excepting, perhaps, nickel and zinc) than that of the remainder of the Dominion east of the Rocky Mountains.

From the exhaustive and valuable "Annual Report" issued by the Provincial Department of Mines, already referred to, it is gathered that placer gold is produced chiefly in Cariboo, Cassiar (including Atlin), East Kootenay, Lillooet and Yale districts; lode gold in West Kootenay,

yield. Gold from milling quartz will have additions from the Nelson District, and to a smaller extent from Camp McKinney.

There are numerous extensively developed and equipped mines in the province, a few of them being the Consolidated Cariboo Hydraulic Company's mine at Quesnel Forks, Cariboo (where a total expenditure for ditches, flumes, dams, piping, etc., of \$549,292 has been incurred, with the result that gold valued at \$881,146 has been recovered, about \$350,000 of which was the product of operations for the season 1900); Le Roi, lowstone and Ymir, near Nelson; B. C., Mother Lode and Old Ironsides Group, near Greenwood; Cariboo, at Camp McKinney; Van Anda, on Texada Island; the Crow's Nest Pass Coal mines, near Fernie, and the big coal mines of Vancouver Island.

(To be Concluded.)

THE ANTIMONY DEPOSITS AT WEST GORE, NOVA SCOTIA.*

By W. R. Askwith.

Through the courtesy of Mr. Alex. McNeil, the writer is enabled to give a description of the West Gore antimony deposits of Hants County, Nova Scotia. In the year 1880, float antimony ore was found by John McDougal on his own farm, and trenching was commenced with the view of discovering its source, but owing to the idea that the vein would run parallel with the strike of the country rock, considerable work was done before the outcrop of the vein was reached. During the years from 1880 to 1892 the mine was worked with varying success, and under a number of managements, when it was closed down, and remained so until the present owner acquired the property about two years ago; since then considerable prospecting work has been done.

About 1,100 ft. from the McDougal discovery, in a southwesterly direction, another vein of this same ore was found by Gould Northrup in 1887. The North and South veins, as they have been called, each have the same course, dip, and general characteristics, but it was from the North vein that the large proportion of ore was obtained.

The North vein is a true fissure vein; it has a course N. 45° W. and a dip to the S. W. averaging 85° from the horizontal, and has been traced upon the surface for over 1,200 ft. The jumbled up slate, calcite and quartz which constitutes the vein filling are cut by numbers of small quartz stringers from the footwall side. This footwall is irregular and indistinct, but the hanging wall is always clear cut and smooth. The country rock is made up of gray slate and quartzite, which have a strike almost east and west, and a dip of 45° from the horizontal, toward the south, and no faulting has occurred since the vein was formed. The ore as a rule clings closely to the hanging wall, but in one or two places it splits in two and one part follows the hanging wall and the other the footwall, while at times it will break entirely away from either and follow the center of the vein.

*Abstract of article in the "Canadian Mining Review."

The ore is stibnite, solid sometimes, and then again mixed with quartz. Where the stibnite has been exposed it has oxidized into the orange-colored kermesite and the white valentinite, but these oxides are in very small quantity and only as a thin coating over the solid ore. Sometimes the stibnite is replaced by iron pyrites, arsenical iron pyrites and galena. More or less gold is always found in the ore, and it seems as a rule to be richest in that metal when the percentage of stibnite is high. Except where a cross vein of quartz comes into the vein at No. 1 shaft, none of the gold is free, even in ore assaying as high as 10 oz. gold to the ton. The ore body has varied in size from a few inches to 7 ft., and in its widest place has been solid stibnite. The ore shoot has an average dip of 45° to the southeast.

Many shafts have been sunk on the vein, but the one now called No. 3 was the first deep shaft put down, a little to the west of this outcrop, and reached a depth of 170 ft. No. 2 shaft, 220 ft. to the eastward, was sunk to a depth of 170 ft., but has since been extended another 70 ft. No. 1 shaft, vertical for 240 ft., with a crosscut to the vein and crooked winze shaft of 188 ft., was the last sunk and is situated 156 ft. east of No. 2 shaft; besides these, four shafts from 20 to 40 ft. deep have been sunk on the vein east of the Rawdon road, and two more west of No. 3 shaft; in these, except in No. 4 shaft, the ore was very low grade, but they demonstrate the great strength and continuity of the vein.

The amount of ground stoped is estimated roughly at 76,000 sq. ft. of the vein, and this no doubt is the outside limit, for no account is taken of a little low grade ore which is left in the stopes as pillars and in other places. Only ore carrying 50 per cent. of antimony and over was marketable. Of course some of the second class ore was sorted up to the standard. From the ground stoped there has been shipped, according to the export returns of the Customs Department, 3,121 tons, and since the present owners secured the property they have shipped 1,236 tons of second class ore from the dump; 550 tons of this were sold to the Antimony Gold and Complex Ores Extraction Company, sampled and assayed by Claudet, of London, and gave 12 per cent. antimony and 18 dwt. in gold; 686 tons were bought by the St. Helen's Metal Recovery Company, sampled and assayed by Harrington & Company, and gave 11.83 per cent. of antimony. From the many assays made of the high grade ore, it is safe to say that the 3,000 tons shipped previous to 1892 averaged between 2 and 3 oz. of gold per ton. For a long time it was not known that the ore contained any gold, and when it was discovered the smelters refused to give any value for it.

The greater demand for antimony ore has increased the price, and improved metallurgical processes have not only made possible the utilization of a much lower grade ore, but have enabled the smelters to pay for a considerable proportion of the gold. The St. Helen's Metal Recovery Company, after putting up a trial plant and proving it successful, is erecting works to treat 600 tons a month, and will not only buy ore as low as 12 per cent. antimony at regular market prices, but expects to be able to pay for 75 per cent. of the gold contents. There are several thousand tons of this second class ore in the mine to-day not stoped, besides large quantities said to be lying on the scaffolds, which, at the time operations were carried on, it did not pay to hoist to the surface.

A number of assays of the second-class ore, so called, showed from 1.14 to 41.13 per cent. antimony, and from \$1.50 to \$80 per ton in gold; the average being about 12 per cent. antimony and \$20 to \$23 gold per ton. Several veins carrying stibnite have been located within the neighborhood, and float ore has been picked up a mile from the West Gore Mine. The country, however, has never been carefully prospected.

THE MINERAL PRODUCTION OF ONTARIO.

In the "Canadian Supplement" of the "Engineering and Mining Journal," March 23d last, we gave a preliminary statement of the mineral production of Ontario. We now give the completed statement as made in the Report for 1900 just issued by the Bureau of Mines.

Mineral Production of Ontario in 1900.				
Product.	Quantity.	Value.	Employees.	Wages.
Building stone, rubble, etc.	\$650,342	1,688	\$535,000
Cement, natural rock, bbls.	125,423	90	32,760
Cement, Portland, bbls.	306,728	598,021	166,143
Lime, bushels	3,893,000	544,000	171,300
Drain tile, number	19,544,000	209,738	3,312
Common brick, number	240,430,000	1,379,590	647,856
Pressed brick and terra cotta, number	11,561,600	114,419	209
Paving brick, number	2,710,000	26,950	58,855
Sewer pipe	130,635	87
Pottery	157,449	162
Petroleum, imperial gallons	23,381,783	.....	.....
Illuminating oil, imperial gallons	11,783,755	1,076,242	.....
Lubricating oil, imperial gallons	1,980,423	222,805	.....
Benzine and naphtha, imperial gallons	1,463,539	174,346	347
Gas and fuel oils and tar imperial gals.	3,669,102	200,934	163,077
Paraffin wax and candles, lbs.	4,599,683	184,713	.....
Natural gas	392,823	161
Carbide of calcium, tons	1,005	60,300	32
Salt, tons	66,538	324,477	243
Gypsum, and products of, tons	1,095	18,050	28
Talc, tons	1,000	5,000	5
Graphite, tons	1,802	27,030	25
Mica, tons	643	91,750	133
Corundum, tons	60	6,000	35
Felspar, tons	4,000	5,000	25
Iron ore, tons	90,302	111,805	439
Pig iron, tons	62,336	936,066	419
Steel, tons	2,319	46,380	97,915
Nickel, tons	3,540	756,626	1,444
Copper, tons	3,364	319,631	5
Zinc ore, tons	500	500	2,179
Arsenic, lbs.	606,000	22,725	750
Gold, oz.	18,767	297,861	351,514
Silver, oz.	160,612	96,367	24,000
Totals	\$9,298,624	10,934	\$3,366,601

The total value of the output in 1900 compares with \$8,416,673 in 1899, and \$7,235,877 in 1898; showing increases of \$881,951 and \$2,062,747 respectively. The number of workmen employed and the amount paid in wages were respectively 9 per cent. and 15 per cent. in excess of the figures for 1899. The chief increases shown last year over 1899 were in portland

cement, \$153,794; petroleum products, \$121,693; iron ore, \$80,854; pig iron, \$127,909; nickel, \$230,522; and copper, \$143,444. The main decreases were in natural gas, \$48,081; and in gold, \$126,707.

The Report says that a glance at the foregoing table will show that there has been continuous, if not rapid, expansion in the value of the mineral production of the Province during the last three years; and there is reason to believe that the rate of increase will be maintained, if not accelerated during 1901, since a number of important enterprises which have hitherto been in the development stage will no doubt contribute to the production of the present year. Further inspection will also reveal the fact that the mineral products of Ontario are increasing in variety as well as in bulk and value. In last year's report the remark was made that during the eight years 1892 to 1899 paving brick, sewer pipe, carbide of calcium, graphite, talc, arsenic, iron ore, pig iron and zinc had been introduced as new products of the mineral industry. The statistics for 1900 add three substances to this list, namely, corundum, feldspar and steel, the united output of which last year amounted to \$57,380. The last of these is entered in the table of production as having a value of \$46,380. Strictly speaking, perhaps, this sum should be eliminated from the aggregate of value for the year, since the pig iron from which it was made is already reckoned in, or at most only the additional value created by the conversion of the iron into steel should be taken note of; but the same reasoning would exclude iron ore smelted in the Province, and as the amounts involved are as yet comparatively small, it has not been thought expedient for the present to make any change in the method of enumeration.

As to the method of valuing the products of mines or works, the basis is adhered to which has been used from the beginning, namely, the selling value at the mine or works. For example, the nickel and copper contents of the nickel-copper matte produced at the Sudbury mines are computed on the market value of these metals in the matte at the smelters as returned by the producers, not on the selling prices of refined nickel and copper in the New York or any other market. The ground of this is evident, for the matte leaves the smelters in that condition, to be refined elsewhere, mostly in the United States, and hence the only value which can be taken into account for statistical purposes in this Province is the value which it has before being loaded on the cars for export. To compute the metallic contents of the matte at the value of the refined metals when the refining is done outside the Province would be as unreasonable as to reckon all the wool shipped out of Canada at the price of cloth, all the pulp at the price of paper, or all the wheat at the price of flour.

NICKEL AND COPPER IN ONTARIO.

The report of the Ontario Bureau of Mines for 1900 gives some interesting particulars in relation to nickel and copper mining, from which we give extracts below.

The production of nickel in 1900 was much greater both in quantity and value than in 1899, being 3,540 tons worth \$756,626 in the matte as against 2,872 tons worth \$526,104, an increase in quantity of 668 tons and in value of \$230,522. The same thing is true of copper, the output last year being 3,364 tons worth \$319,631 as compared with 2,834 tons in 1899, worth \$176,236; an increase of 530 tons in amount and \$143,445 in value. It must be borne in mind that the figures of value given here are those for the metals in the form of matte before being exported for refining. If the price of the fine metals were made the basis of computation, the values would be many times increased.

The subjoined table gives the statistics of ore raised and smelted last year along with similar data for the eight years previous:

Year.	Ore raised, tons.	Ore smelted, tons.	Year.	Ore raised, tons.	Ore smelted, tons.
1892	72,349	61,924	1898	123,920	121,924
1893	64,043	63,944	1899	203,118	171,230
1894	112,037	87,916	1900	216,695	211,960
1895	75,439	86,546			
1896	109,097	73,505	Totals	1,069,853	975,042
1897	93,155	96,093			

Details as to products and labor are embodied in the following table, which covers also the four preceding years for purposes of comparison:

Schedule.	1896.	1897.	1898.	1899.	1900.
Ordinary matte, tons	9,733	13,706	21,101	19,109	23,336
Bessemerized matte, tons	.....	328	.....	106	112
Nickel contents, tons	1,948½	1,999	2,733¾	2,872	3,540
Copper contents, tons	1,868	2,750	4,186¾	2,824	3,364
Value of nickel, dollars	357,000	359,651	514,220	526,104	756,626
Value of copper, dollars	130,660	200,067	268,080	176,236	319,631
Wages paid, dollars	247,151	253,226	315,501	443,879	728,946
Men employed	485	535	637	839	1,444

Producers of nickel and copper had the advantage of an active demand throughout last year, and the average price realized for both metals was higher than for a number of years previous. Especially was this true of nickel, the selling price of which in the New York market advanced from about 35c. per pound in January to 55c. or 60c. per pound in December. The average value of the nickel contents of matte at the Sudbury works as returned to the Bureau was \$213.73 per ton or 10.686c. per pound, and of copper \$95.03 per ton or 4.756c. per pound. These figures compare with \$183.18 per ton or 9.159c. per pound for nickel, and \$62.18 per ton or 3.109c. per pound for copper in 1899. The returns as to labor showed 1,444 employees at work in the nickel and copper mines of the Province, of whom 348 men and 2 boys were underground workers and 1,029 men and 23 boys were engaged above ground.

The Canadian Copper Company continues to be the chief producer of both copper and nickel, and its operations at Copper Cliff were on a larger scale than ever. Dr. Ludwig Mond is equipping his property at Victoria Mines with a modern mining plant and smelting works suitable for the production of high grade nickel-copper matte. A Chicago syndicate, of which Mr. Maier Neumann is manager, is developing the Sultana nickel mine in the township of Trill, and the Lake Superior Power Company are opening up the Gertrude mine in Creighton township.

In purely copper ores, the old Bruce mines are undergoing complete renovation at the hands of the Bruce Copper Mines, Limited, an English company. Extensive works for the treatment of the ore are in process